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Recent Foreign Inventions.

A NEW CANNON.—A patent has been obtained by Capt. T. A. Blakely, of the Royal Artillery, England, for making cannon as follows: He takes a tube of cast steel, and then surrounds this with external rings of wrought iron shrunk on. He also employs a buffer or spring of air at the butt of mortars to moderate their recoil. He also claims the method of strengthening old guns, by shrinking wrought iron bands on them.

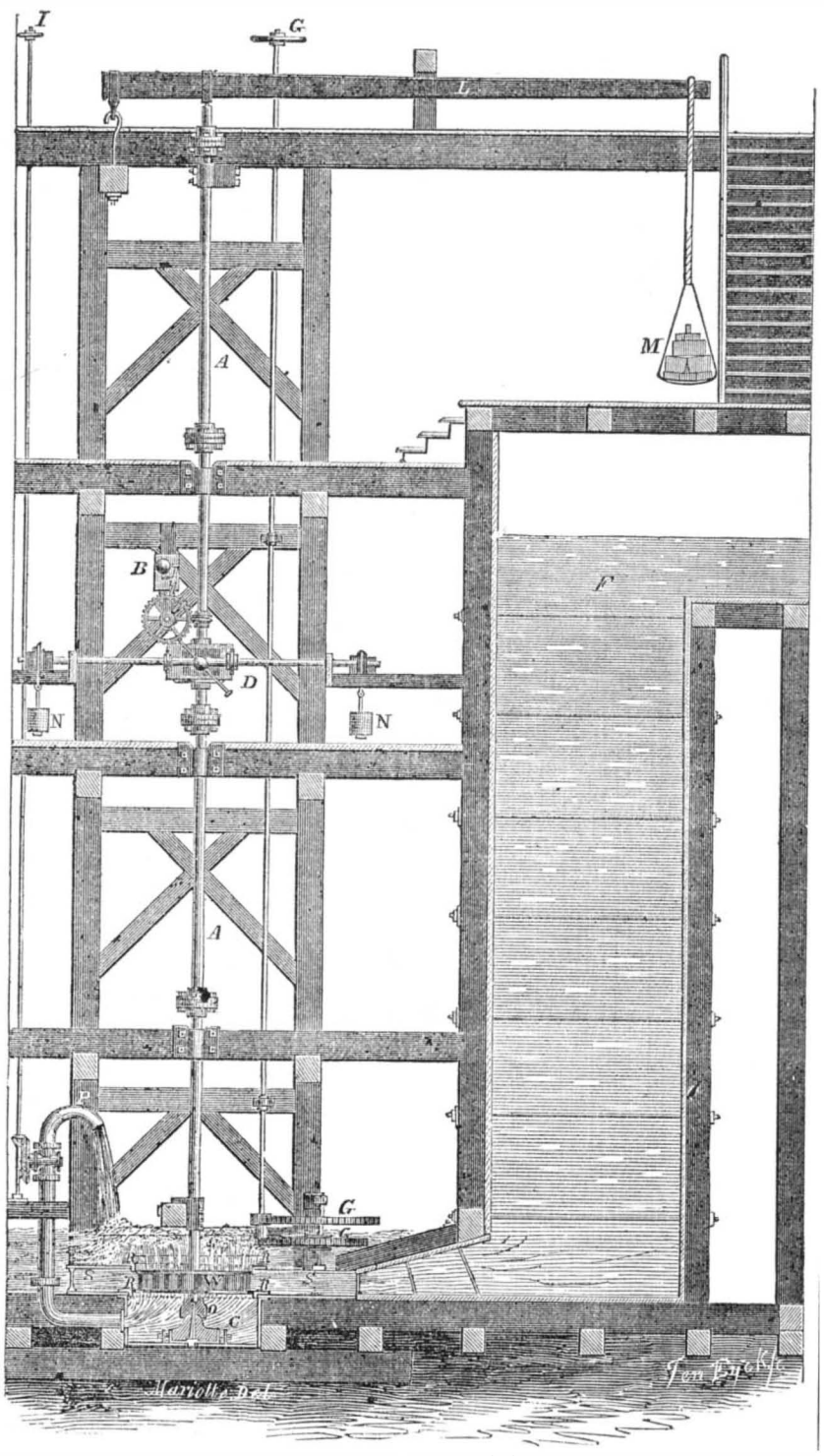
WOODEN COMPOSITION PIPES.—B. Blackburn, of Clapham Common, Eng., has obtained a patent for the following method of making pipes. He takes thin strips of wood, and bends them spirally and diagonally, and fills up the interstices with asphalt, or cement.

NEW MATERIAL FOR PAPER.—Alex. Brown, of Tarbet, North Britain, has obtained a patent for the use of fern, or the bracken plant, in making fibrous materials to be used in the manufacture of paper. He has also produced a textile fabric from the bracken, (our common brake,) and other plants of the cryptogamic series, and claims the manufacture of cloth from such. Our Patent Office has refused, in times gone past, patents for the application of a well-known material to a new purpose, but it should be generous in such cases when the results produced are improvements.

PICKERS OF POWER LOOMS.—Thos. Helliwell & Joseph Barker, of York, Eng., manufacturers, have taken out a patent for preserving pickers and picker-sticks, and for preventing caps coming off the shuttle during the process of weaving. The invention consists in the use of a spring of steel or whale-bone fixed behind the back end of the shuttle-box, such spring being attached at one end to a raw hide, and it has a hole in the other end passing around the sirspindle of the shuttle-box. The raw hide forms a buffer bringing the shuttle gradually to a state of rest, and preventing it going too far into the box, and it also assists in returning it for the next shot.

AN IMPROVED SOAP.—W. A. Armand, of London, has secured a patent for the following method of making a soap called "saponitoline," and which is stated to be of a superior quality. He places in a copper 88 gallons of soft water and mixes with it 112 lbs. of crystal soda, or 79 lbs. of salts of soda, and after two or three hours have elapsed, agitates it, and adds 112 lbs. of common soap. He then heats the whole to 40° or 45° centrigrade, and adds 17 lbs. of pearlash, and 17 lbs. of quick lime. When ebullition has commenced in the copper he slowly agitates the heated mass, and pours into it about 5 gallons of mucilage of linseed or marshmallow seed, after which he adds 7 1-2 pounds of borax, or about 2 1-2 pounds of calcined alum. When the whole is well mixed in the copper, and the liquid presents the appearance of being perfectly homogeneous, he leaves it to boil on a slow fire for 3-4 of an hour. The fire is then extinguished, the copper covered over, and the temperature allowed to fall to 55° or 60°. He then pours the liquid into barrels, where it becomes solidified in about 24 hours, (supposing that hard soap has been used,) if otherwise, it remains in a gelatinous state.

CENTER VENT WHEEL WITH HYDROSTATIC CHAMBER.



The accompanying figure is an elevation of Reuben Rich's patent Center Vent Wheel with a cast iron scroll, to which is applied Winters' Hydrostatic Chamber. This view represents a wheel in successful operation at the cotton mills of the Tallassee Manufacturing Co., at Tallassee, Ala. A "Prony Brake" for ascertaining the power of the wheel, is also represented.

A is the shaft of the wheel, W. R R are adjustable rings in which the wheel revolves. C is the hydrostatic chamber. O is the step and support of the wheel. S S is the section of the cast iron scroll. F is the fore-bay or water flume. P is a discharge pipe, having a stop cock, I, for regulating the upward pressure on the disk of the wheel from the hydrostatic chamber, C D is the Prony's friction brake or dynamometer. N N are weights suspended on it, and B is a bell to announce the number of revolutions performed by the wheel, it being struck with a hammer operated by a cam, as shown. L is the lever of the dynamometer, and M the weights on the scale. G, at the top, is a wheel lever on a shaft, to open and close the gate of the wheel by the pinions and wheels, G G, at the foot. These parts are all plain, and will be readily understood.

In this illustration it will be observed that the wheel discharges its water at the top only, its bottom being a solid plate. Between the periphery of the water wheeel, W, and the rings, R R, in which it revolves—although the rings and wheel are fitted very accurately to one another—there will still escape a certain quantity of waste water between the lower ring and the wheel, into the hydrostatic chamber, C; this chamber soon fills, and an upward pressure is thereby exerted on the sole or bottom plate of the wheel, proportioned to the head of water employed and the area of the wheel. This pressure is regulated by the valve in the discharge pipe, P, so as to proportion the discharge with the quantity of water that escapes into the chamber, C. In this manner the escaping waste water is made subservient to relieve the wheel of downward pressure on its step, O. In the wheel, at Tallassee, the entire upward pressure of the hydrostatic chamber, with the valve in the discharge pipe closed, is 25,000 lbs; the weight of the shafting, &c., amounts to 22,000 lbs. To balance this, about three twenty-fifths of the water flowing into chamber C, is allowed to escape by pipe P, and thus twenty-two twenty-fifths of the waste water is saved, by this useful method of applying it.

This hydrostatic chamber, C, is made of iron, but it might be formed in a rocky foundation, excavated in a proper situation for the purpose. Various devices may be employed for the escape of water from the hydrostatic chamber. A wheel put up for the Cartright Manufacturing Co., at Cartright, Ga., has inch holes bored through its disk (the number of such corresponding to the quantity of water,) for the escape of water from the hydrostatic chamber.

In experiments made with this wheel, to test its power, by a Prony brake, we are informed by the inventor that the increased useful effect of the Hydrostatic Chamber amounted to ten per cent. The same principle is alike applicable to the double as the single wheel, and to all water wheels running on vertical shafts, or carrying round a weight of water as they revolve. The invention can be applied by a small elevated tube of water to relieve the friction and pressure on any revolving vertical shaft of an engine or machine, which carries a great weight of machinery. The same principle can be applied to wheels that discharge below instead of above, but that method is not shown in the figure; the inventor, however, will explain the plan of doing this to those who apply to him.

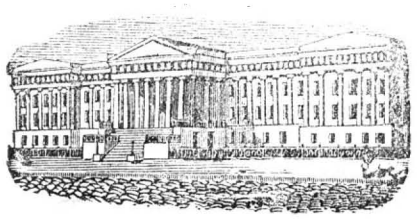
It is evident that the Hydrostatic Chamber is a very useful improvement, that it nearly annihilates all the friction incident to the weight of the wheel, and its shafting on step O. Devices heretofore applied to relieve the friction on heavy vertical shafts, have rather aimed at disseminating than reducing the friction, so as to reduce or equalize the wear of the rubbing surfaces. The improvement is an exceedingly simple one,—its qualities and merits are apparent at a glance. This Hydrostatic Chamber, on Reuben Rich's wheels, is employed by the Cartright Manufacturing Co., Ga., and Tallassee Manufacturing Co., Ala. Daniel Keith, Esq., is Superintendent of the former, and Z. Philips, Esq., of the latter—who can be referred to for opinions respecting its value.

The inventor of the Hydrostatic Chamber is J. S. Winter, Esq., who has applied for a patent, and from whom more information respecting its use and application may be obtained by letter addressed to him at his residence, Montgomery, Ala.

American Ship-Building.

During last winter and spring the docks of New York were crowded with ships for which no cargoes could be obtained, and, as a consequence, ship-building was almost suspended in all our dock yards. Things have taken an entire change within the past two months. Freights are now very high—a sure sign of abundant employment to our shipping—and in all the ship yards the sounds of hammer, mallet, and adze ring merrily from morning till night. There has been a partial failure of the crops in France and England during the present season, while there never was such a great surplus raised in our country. We are therefore able to supply the foreign demand, and this calls into activity the immense amount of capital invested in our commercial navy, which is stated to be larger now than that of any other country.

The Camden and Amboy Railroad Company, N. J., on whose road so many lives were lately lost by accident, have attached to some of their engines small whistles connected with exhaust pipes, through which the waste steam issues, making a continual succession of short shrill sounds, audible to a considerable distance.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING OCT. 9, 1855.

SEWING MACHINES—C. J. Cowperthwaite, of Philadelphia, Pa.: I do not claim the application of a weight, simply to give pressure to the cloth holder, either fixed or adjustable.

But I claim, first, the weight trip lever, K, applied substantially as described, to the bar, J, or its equivalent, which holds the cloth so as to serve not only to apply pressure to the cloth, but to hold up the said bar, or equivalent, from the cloth, when desired; and also to allow the said bar, or equivalent, when its foot is struck by the needle bar, while it is held up, to descend and to hold it down again, until it is lifted by the operator, substantially as described.

Second, I claim arranging the shuttle race obliquely to the direction in which the cloth is moved, to produce the seam or line of sewing, substantially as described, for the purpose of causing the visible parts of the stitches on the front or upper side of the cloth to be straight, or all in the same line.

[The foregoing invention consists, first, in an improved feed motion. Second, in the employment of a weighted trip lever, instead of spring pressure in feeding the cloth. Third, in an oblique arrangement of the shuttle race relating to the line of the feeding movement, or of the sewing, whereby the stitches formed by the needle and shuttle are all caused to be produced in line with each other, instead of zig-zag, as in other machines. Fourth, in a new way of regulating the tension of the spool thread. Fifth, in a novel device for regulating, positively, the length of needle thread which is given off to form each stitch.—Sixth, in a novel device for the purpose of holding the thread, and keeping it extended in a straight line from the cloth to some distance above the needle during the descent of the needle, until the eye thereof passes through the cloth, for the purpose of preventing the kinking of the thread around the needle as it enters the cloth.—Seventh, in an improvement in the shuttle whereby a cop is therein successfully used.

We should need several diagrams in order to illustrate clearly the various improvements outlined as above. They are all intended to render the common shuttle sewing machine more convenient of management, and more perfect in its operation than it has heretofore been. So far as we can judge, Mr. Cowperthwaite's efforts have been crowned with much success. Nothing can exceed the exactness and uniformtiy of the work which he produces, or the ease and certainty with which his improved machines are managed. We regard his invention as one of value and importance.]

WASHING MACHINES—J. A. Bills, of Troy, N. Y.: All I claim is the movable partitions, i i.

PREPARING VEGETABLE FIBER—Jean Blanc, of New Orleans, La.: I do not claim burying the plants in either wet sand or mud, as described in the "India" process, found in the Agricultural Reports of the Patent Office for 1854, page 174.

Nor do I claim, simply rotting the plants on end, with the butts down, as described in the Southern Cultivator

But I claim the staking of the plants, butts down, in a pit dug for said purpose, and surrounding them with dry leaves, or straw, with earth thrown around the same, thereby enclosing them entirely on all sides, leaving the top open and uncovered, as fully set forth.

ECONOMISING STEAM—Geo. M. Longacre, of New Orleans, La.: I claim the employment of two sets of boilers in the manner and for the purposes described, having steam of different pressure and temperature therein, and passing the steam from the boiler of the highest pressure through the pipes of the evaporators, &c., to the other boiler, from whence it is used to move the machinery of the mill.

CHURNS.—John G. Dungan, of Steubenville, O.: I claim giving the outer leaves of an alternately opposite rotating agitator, a rocking motion to and from the sides of the churn, substantially as set forth.

APPARATUS FOR HEATING BUILDINGS BY STEAM—Chas. Davenport, of Watertown, Mass.: I do not claim a boiler, radiator, and supply cistern so connected by pipes that the steam from the boiler may be made to circulate through the radiator, and from thence pass in a condensed state back to the boiler.

But I claim the arrangement of the vessel, M, and its connecting pipes, Q N P, and valve, O, the supply cisterns, L, the boiler, A, the radiator, l, and the leading steam and return pipes, K and R, of the said boiler and radiator, the whole being made to operate together, substantially in the manner and for the purpose specified.

CORN SHELLERS.—Stephen Elliott, of Wayne Co., Ind.: I claim the combination of the screws, B, with the clamping jaws, D, arranged and operating in the manner set forth.

MANUFACTURE OF BORAX FROM NATIVE BORATE OF LIME—Thomas Bell and Henry Scholefield, of South Shields, Eng. Patented in England July 25, 1854: We do not claim making borax by combining the boracic acid of commerce with a solution of carbonate of soda, and boiling and evaporating the same.

But we claim our mode of manufacturing borate of soda from borate of lime, the same consisting in boiling the borate of lime in water, and an acid, separating the lime and other foreign matters, adding a saturated solution of soda to the liquid, boiling the compound, separating the impurities or foreign matters therefrom, and subsequently evaporating the clear liquor and crystalizing out the borax therefrom, as specified.

CORN SHELLERS—Charles Bishop, of Norwalk, Ohio: I do not claim, separately, the toothed or corrugated wheel, C, for that has been previously used.

But I claim, in combination with a shelling disk or wheel, such as described, the series of ear boxes radially arranged around it; said boxes being composed of elastic backs and unyielding partitions, as described.

[The above is an improvement on the oldest of all the corn shellers—that in which a bevel toothed shelling wheel is employed, having a yielding movement on it, bearings, or a spring, to accommodate different sized cobs. In these shellers there is generally only one opening for the reception of the corn. When a small ear is put in followed immediately by a larger one, the latter is apt to force back the wheel or spring, and cause the first ear to drop down without being perfectly shelled

Mr. Bishop obviates this difficulty, and also increases the capacity of the sheller, by a slight alteration which any one can make He provides several openings to the sheller, each opening furnished with a spring back, which presses its ear up against the shelling wheel. This enables him to present, simultaneously, against the surface of the wheel, as many ears as there are openings, and all of the ears will be stripped of their grain with the utmost certainty. It is a good invention.]

GAUGING AND MEASURING STAVES—L. T. Atkins, of Sage County, Va.: I claim the combination of treddles, clamps, and vibratory arms or levers, operating in the manner and for the purpose set forth.

ACID SULPHITE OF LIME—P. L. Bernard and Jos. Albrecht, of New Orleans, La.: We claim the apparatus for the manufacture of sulphite and bi- (or acid) sulphite of lime, consisting of the oven, g r u x, the three superposed cylinders, No. 1, 2, and 3, and the ventilator, v, each of said parts constructed, furnished, and arranged substantially as described and for the purposes specified.

COTTON GINS.—H. H. Fultz, of Lexington, Miss.: I claim giving the cotton to be ginned within the feed box and directly over the saws, B, a spiral or twisting motion, by means of the plates, c, or an equivalent device, so that the cotton will pass from one end of the feed box to the other, and have a fresh surface presented successively to the action of the saws as it passes over them, for the purpose as shown and described.

[We have in preparation an engraving illustrative of the above excellent invention, which will be shortly published.]

VIBRATING PUMPS.—Ellwood Garrette, of Wilmington, Del.: I claim, in vibratory double-acting pumps, the arrangement of the side passage, a, with its openings, l c, into chambers, e a, respectively, in combination with the vibrating pistons, f g, having their valves, h i, opening upwards, or in the direction of the outlet of the water, in the manner and for the purposes set forth.

GRAIN SEPARATORS.—Peter Geizer, of Smithsburg, Md.: I am aware a self-acting blast regulator for fan blowers is not new; this I do not claim.

But I claim the vanes within the fan case, against which the blast acts, for the purpose of closing or opening the register automatically, to regulate the blast, as set forth.

I also claim the manner of separating the grain from the straw and other impurities, by means of aprons, vents, and grooved rolls, without the use of a riddle, whether one, two, or more sets of such separating apparatus be used, substantially as described.

I also claim, in combination with the separating apparatus, the self-regulating dividing shelf, upon which the grain drops, for the purpose of carrying the heavy grain back, and the lighter forward, for a second or more complete separation, as set forth.

I also claim the hinging of the upper to the lower portion of the straw carrier frame, and providing it with adjustable sides or conveyors, for dividing and conveying the straw into any desired localities, as set forth.

CUT-OFF VALVES FOR OSCILLATING ENGINES.—Henry E. Canfield, of New York City: I claim the arrangement in oscillating engines of separate loose valves moving independent of each other, when the motion is given them by the oscillation of the cylinder for the purpose of cutting off the steam at such part of the stroke as may be desired, substantially as shown and described.

AMALGAMATOR—Samuel Gardiner, Jr., of New York City: I claim, first, the hollow perforated rollers, A A, receiving water at their journals, and discharging it in small streams all over their peripheries, and revolving in opposite directions, in a trough or troughs of quicksilver, so that their upper parts are constantly approaching each other, and having the auriferous and other metaliferous matter fed above or between them, all substantially as described.

Second, The arrangement of the amalgamating rollers and the distributing rollers and trough, substantially as shown and described, whereby the matter is fed equally on both amalgamating rollers, and on the descending portion thereof.

[This amalgamator consists of one or more pairs of metallic rollers geared together and revolving in a trough in contact with mercury. The journals of the rollers are hollow, and so are the rollers themselves; the latter are perforated with fine holes, so that, by the introduction of water through the journals, there will be an unceasing outward discharge of water on the surfaces of the rollers, keeping them continually moist.

The quartz previously pulverized and mixed with water into a thin paste, is introduced from above upon the rollers, and by them spread over their entire surfaces; the rollers coat themselves, as they revolve, with mercury, and the latter absorbs the gold dust from the paste. The issuing water from the rollers loosens the quartz as fast as it forms upon their surfaces, and the gold, being heaviest, falls to the bottom of the trough. A running stream of water constantly flowing into the trough carries away the quartz dust, and the rollers come round with a fresh coating of mercury at every turn. This is a simple and apparently effective and economical amalgamator.]

MORTISING MACHINE.—Hezekiah B. Smith, of Lowell, Mass.: I claim moving the chisel carriage, B, to and from the wood to be mortised, by power, essentially in the manner and for the purposes set forth.

Second, I claim, in combination, the bent lever, O2, clutches, K2, a b c and d, pulley stops, P2 and Q2, or their mechanical equivalent, by which the said chisel carriage, B, will stop its own motion, at or near any desired point, substantially in the manner, and for the purposes set forth.

SEEDING MACHINES.—H. R. Smith, of Massena, N. Y.; I claim the combination of wheels, H I, with the hopper, F, when arranged substantially as shown, for the purpose specified.

DAGUERREOTYPE PLATE HOLDER.—David Shive, of Philadelphia, Pa.: I do not claim a two part daguerreotype plate holder, nor do I claim actuating the two parts by means of springs and the force of the hands.

But I claim a daguerreotype plate holder so constructed that when its under side is compressed by the hand of the operator, as described, its upper side shall expand so as to admit of the plate being placed between the hooks, b b, and b' b', thereon, and so that when the pressure of the hand is relaxed, the said upper side shall contract, causing the hooks, b b, and b' b', to catch upon the outer edges of the plate and hold it firmly upon the face of the holder, substantially as described and set forth.

FEEDING THE SHINGLE BOLT TO KNIVES.—Wm. J. Scott, of Carthage, N. Y.: I claim the application and construction of the two handled cams, v v. Also the adjustability of the arms, M M, by means of the bars, L L, as described.

Second, I claim the combination of the rocking lever, i, clutch or hand, g, lever, f, and spring, l, with the knife frame, for the purpose of feeding intermittingly the block to the knives, in the manner described.

PORTABLE BORING ENGINES—Thos. Goodrum, of Providence, R. I.: I claim, first, conducting the steam to the engine through a pipe, which is fitted to slide within another pipe, substantially in the manner described, whereby the weight of the engine may be supported by the pressure of the steam.

Second, the employment of two or more sliding pipes, 1, 12, 13, 14, of different sizes, and within the other, in combination with suitable clamps, l, substantially as described, for the purpose of securing all but such one of the said pipes, whose area, acted upon by the working pressure of steam, will receive an aggregate pressure about equal to the weight of the engine.

[The apparatus which forms the subject of this invention consists of a portable steam engine, carrying one or more auger stocks, either attached or geared with its main shaft. The cylinder of the engine receives steam from a boiler through a flexible pipe, which allows it to be carried about in the hands, and operated in different places at pleasure. The engine is also provided with a curious arrangment of sliding pipes, whereby nearly the whole weight of the concern is supported by the pressure of the steam. In boring, therefore, the operator only requires to guide the auger by handles attached to the frame of the engine. If desirable, steam may be introduced, to cause the necessary pressure upon the tool. This is a singular improvement, applicable, we are told, with much useful effect in ship building, and wherever large amounts of boring are to be done. Experience proves that steam may be conveyed with perfect facility in flexible pipes, for short distances around a stationary boiler.]

WIND REGULATOR FOR ORGAN PIPES.—Danl. George, of Nazareth, Pa.: I claim constructing the lower part of each or any of the pipes of an organ with a transverse seat, fitted with a plug, b, like that of a faucet, having a suitable passage or passages, the area of which is regulated by turning the plug, for the purpose of regulating the tone of the tube, and tuning the instrument, substantially as described.

[In church, and other organs, the throats or lower parts of the music pipes, rest on a box called an air chest, into which the air from the bellows first flows. Holes are made through the air chest, and into them the pipes are placed to receive wind. The tone of each pipe is set or tuned by altering the size of its throat. If the sound is too low, the throat is jammed together a little, with a hammer: if too shrill, it is enlarged with a mandrel. Mr. George's invention consists in simply placing a common stop-cock in the throat of each tube—an improvement which permits the tuning of the pipes with the utmost convenience and perfection. We wonder that it was never thought of before.]

FARM GATE—S. A. Skinner, of Derby, Vt.: I do not claim elevating a gate by means of a windlass and draft and connecting chains; nor making the gate to close into a recess below its sill; nor balancing a gate by means of counterbalance weights, cords, and pulleys.

I claim the manner of making the gate, viz., of a series of bars or chains, D D, and upright chains, connected and arranged as specified, and so as to fold into, and unfold out of a recess below the sill, as explained.

I also claim the combination and arrangement of the latch bar, I, and the cords, g h, the same being constructed and applied to the windlass, and made to operate substantially as specified.

REGISTER BOTTLE FASTENINGS.—John Smylie, of Philadelphia, Pa.; I claim the spindle, F, with its sliding ball, E, in combination with the arm, H, projection, L, lever, J, spring catch, K, and dial, G, or their equivalents, arranged and constructed substantially in the manner, and for the purposes specified.

APPLYING FIRE EXTINGUISHING CARTRIDGES.—Wm. Mt. Storm, of New York City: Having described my improved method of extinguishing fires, I claim simply the plan of projecting into the flames with precision and penetrating force, by means of an apparatus or gun, purposely adapted, and by means of a projectile power, independently and separately generated, the fire-extinguishing gas generating solid itself, in the concentrated and properly adapted form, substantially as described and in moderate, distinct, and rapidly intermittent masses as explained, whereby the gas is generated apart from the machine, and within the source of the fire, by all of which I attain the many points of increased efficiency and convenience of operation set forth.

SEWING MACHINES.—Isaac M. Singer, of New York City: I claim, First, the employment of a supporting tongue substantially as described, placed between and in combination with the two needles, to support the cloth or other substance, and prevent its being puckered during the operation of sewing, and drawing the two rows of stitches tight, substantially as described.

Second, the employment of the guide plates, substantially as described, to guide cloth that has been folded in making flat, lapped, or other analogous seams as described, so that the row or rows of stitches shall be made at a regular and determined distance from the folded edge, as set forth.

Third, in combination with one or more eye pointed needles and shuttles, or the equivalent therefore, for sewing one or more seams, the employment of a vibrating thread carrier, for carrying a thread or threads alternately in opposite directions across the seam or seams, and laying it on the face of the cloth substantially as described, so that it shall be secured to the face of the cloth by the needle thread or threads as described.

SEWING MACHINES.—Isaac M. Singer, of New York City: I claim, in combination with the shuttle and attached thereto, the employment of a spring pressure guide, substantially as specified, to control the shuttle thread, as the needle enters the cloth or other substance to be sewed, as set forth, and for the purpose specified.

And I claim the continuous feed motion for spacing the stitches, substantially as specified, in combination with the vibratory motion of the needle, imparted in one direction by the feed motion, and in the opposite by a spring or any equivalent therefor, substantially as and for the purpose specified.

[Mr. Singer is the inventor and patentee of many highly ingenious and successful improvements in cloth-sewing machinery. But the inventions above patented, strike us as forming a crowning triumph. They consist in a new plan of stitching, and in a novel method of embroidery, whereby ornamental designs, of every description, can be wrought out on the cloth in the most splendid manner, with great precision and rapidity. We have seen some elegant specimens. Thread, silk, worsted, gold lace, and other species of embroidering stuffs, varied in colors to suit the taste, may be laid on with singular ease and facility. The work performed is, moreover, very firm and durable. The field of employment for inventions of this kind is a very large one. But the extensive resources and well known energy of Messrs. Singer & Co, leave no room to doubt that it will soon be well supplied.]

MUSIC BY STEAM OR COMPRESSED AIR—J. C. Stoddard, of Worcester, Mass.: First, I claim the musical instrument described, consisting of a number of what are commonly known as steam whistles, of such tones as to produce a musical scale, arranged in a convenient manner, upon a steam chest, chamber pipe, or generator, and furnished with valves and a rotating studded barrel, finger keys, or other suitable mechanical means of opening the said valves, to allow the escape of steam or air, to the whistles, substantially as set forth.

Second, as a part of the said musical instrument, I claim the described valve, with its two puppets and seats of unequal size, and with one end of its stem exposed to the atmosphere.

[Music by steam is no longer a myth; it is, at last, a patented reality. A daring inventor has seized the steam whistle by the throat, opened its mouth, and thrust down vocal organs wholly new. Its horrid screech is turned into a voice of melody, powerful, but pleasing. Slumbering villagers will no longer complain of broken rest. The midnight locomotive, rushing with lightning wing, will henceforth bear along sweet sounds instead of discord. The Sunday mail train, ceasing to shock, with its piercing din, the moral sense of whole communities, will lead them in vast choruses of hymns and psalms.

In plain matter-of-fact terms, this steam musician consists of a number of steam whistles of proper relative size, to produce any musical scale, arranged in any convenient manner, and provided with separate valves, by the opening of which they are caused to receive steam or air from any suitable pipe, chamber, or generator. The said valves are opened for the steam or air to escape to the whistles, by finger keys or by the revolution of a studded barrel or by any other suitable mechanical means. The important feature of this instrument is the peculiar kind of valve employed for the escape of the steam]

FISH HOOK—Job Johnson, of Brooklyn, N. Y.. I do not claim forming a spider of hooks in themselves, as the same have been used for meat and a variety of other purposes

But I claim the method described and shown, of catching fish by means of a cluster or spider of hooks, beneath and around suitable bait, so that said hook can be suddenly raised up and catch the fish, while nibbling at the bait, in the manner and for the purposes specified.

I also claim the method set forth of attaching and hanging the hooks, e, from the ends of the spider arms, c, by means of the spring throat, q, whereby said hooks can be raised or replenished in the manner and for the purposes specified.

LEADING CLASP FOR CATTLE—Jos. Welton, of Waterbury, Conn.: I do not claim the method of leading cattle; but I claim the combination of the spring and slide with the clasp, as set forth.

INTERLOCKING GRATE BARS—Samuel Vansyckel, of Jersey City, N. J.: I claim so casting grate bars with projections and recesses on their sides and ends, as that when laid together they shall interlock, one over, under, or behind the other, in such manner as to prevent them moving vertically, horizontally, or from warping, whilst they may be readily removed or replaced, as set forth.

ATTACHMENT FOR SAWING MACHINES—G. W. Worden, of Fayetteville, N. Y.: I claim the vibrating gauge formed of the lever, G, with arms, d d, attached to its ends, the lever working on a pivot, c, attached to one of the arms, F', of the sliding gauge, E, and the arms of the lever, G, working horizontally through the gauge, E, substantially as shown, for the purpose specified.

[The above gauging contrivance is intended for use in connection with circular saws, its object being to facilitate the cutting of exact bevels and angles. A gauging apparatus of nearly the ordinary construction is secured to the sawing table in the common manner. The improvement consists in combining therewith an additional gauge bar, shaped somewhat like the following [. This bar is pivoted, and its arms pass through slots in the other gauge apparatus. If one of the arms of the improved bar is pressed in, by the stuff to be sawn the other arm will be consequently thrown forward and the two will form the desired bevel gauge. This is a very simple, cheap, and useful invention.]

CARD PRINTING PRESS—D. K. Winder, of Cincinnati, Ohio: I claim the double inclined bed, B, traversing form, F, and inking surface, g, in combination with the lever, C, spring roller supports, and operating lever, L, constructed, arranged, and operating substantially as and for the purpose specified.

MAKING ENVELOPES, &C.—E. W. Goodale, of Clinton Mass.: I claim, first, the employment, in a machine for making envelopes or bags, to support the blanks during either or all of the operations of pasting, stamping, and applying the gluten of a self-adjusting table, C, supported by a cam, whose position is so controlled by a spring, or its equivalent, applied to its shaft, that, as the blanks are removed, one by one, the table is caused to rise, to bring the next one to the proper hight or position, to be pasted, stamped, or have the gluten applied, substantially as set forth.

Second, giving the self-adjusting table a drop movement, substantially as described, by means of the cam, H, the lever, H', pawl, k', ratchet wheel, I, or their equivalents, acting on the shaft of the supporting cam, C2.

Third, applying the gluten which makes the envelope or bag self-sealing, to that part of the blank which is to form the seal flap or closing flap of the envelope or bag, by a die, while in the machine, at the commencement of the process, substantially as described, whereby the said die serves the two purposes of applying the gluten and of lifting the blanks, one at a time, from the pile, or retaining the top one while the remainder of the pile is lowered away from it.

Fourth, applying the two dies, h h', to two arms or jaws, I I, which are connected together by a hinge, or its equivalent, arranged at the rear of the table, C, and have a sliding motion back and forth, substantially as described, to move the said dies out of the way of every successive blank, till the latter has had the gluten applied, and been separated from the pile, and then to bring them forward again, to receive the separated blank, and to receive the pressure of the screw, g, or its equivalent.

Fifth, attaching the paste box, the gluten die, and the screw, g, or other equivalent device which gives pressure to the stamp, which produces the seal to a head, E, receiving such a motion as is described, from a pair of cranks, or their equivalent.

Sixth, the employment of a pair of nippers, o o', having a motion of a positive length in the line parallel with the line in which the blank is required to move from the pasting to the folding apparatus, either to take a cut blank from a table, or to draw the material, before it is cut, from a roll, and measure off the proper length to be cut, substantially as set forth.

Seventh, The method of giving the necessary movement to the lappers, t1, t2, t3, t4, by means of the bent levers, u1, u2, u3, u4, and the springs, t*, applied to their hinges substantially as described.

Eighth, the creasing fingers, w, arranged and operating substantially as described, to hold the blank in position, and crease it in the line for folding the seal flap, substantially as described.

Ninth, the nippers, y y, arranged and operating in a lateral direction, substantially as described, to remove the finished envelopes or bags at one side of the folding stand.

Tenth, the lifter, 10, applied substantially as described, to the folding stand, and operated by the lever which carries the nippers, y y, for the purpose of lifting the finished envelope or bag at one side thereof from the stand, to enable it to be taken by the nippers.

Eleventh, applying a stamp, V, to work through the table, C, substantially as described, for the purpose of stamping a card, or other, on a bag during the process of manufacture.

Twelfth, the general arrangement and combination of the several working parts of the machine, substantially as set forth.

[The foregoing claims explain, as clearly as it can be done without engravings, the nature and operation of the invention to which they relate. Its purpose is to take the blank envelopes or lozenges, as they are technically called, fold and stick them, stamp their flaps with an ornamental seal, and put on the self-sealing gum.

An envelope is a simple looking affair when finished but its manufacture, by mechanism, involves a number of operations, and the rapid movement of many different parts. Even when made by hand, it requires a great deal of fingering. The estimated annual consumption of envelopes in this country is at present between forty and fifty millions; their manufacture is an important branch of business. Girls are generally employed to do the folding, who are paid according to the number of envelopes produced. The rapidity and expertness which they acquire in the operation is really surprising. A smart girl, we have been told, can fold between four and five thousand per diem.

Several attempts have been made within the past few years to perform all the labor of envelope making by machinery. There are some successful machines in use, but their advantage over hand labor is not very striking, as they require considerable superintendence, and only turn out between fifteen and twenty thousand envelopes a-day. Mr. Goodale claims to have realized some important improvements, and thinks that the above invention will altogether outstrip, in speed and quality of work, any of the best machines in use.]

VARIABLE EXHAUST OF LOCOMOTIVE ENGINES—Saml. L. Hay, of Reading, Mass.: I claim the application of a self-regulating and adjustable blast pipe to a locomotive engine, as described, or such modification of it substantially the same.

TELEGRAPHS—Washington A. Peaslee, of Indianapolis, Ind.: I claim the mode described of dividing a long line of telegraph into two sections, and transmitting signals from either section to the other, viz.: by means of two receiving electro magnets at an intermediate station, the helices of which are interposed in the line of main wire, one after the other, said magnets acting in conjunction upon an armature lever, or its equivalent, which, by the motion produced by the attraction of the magnets, makes contact of a ground wire or wires, with the main line between the two helices, and the said receiving electro magnets and armature lever being combined with a spring, or other equivalent force, adjusted so as to draw back the armature lever with a force greater than the attraction of either electro magnet, but less than the sum of their attractions, or any combination of apparatus operating in substantially the same manner.

RADIATORS OF STEAM HEATING APPARATUS—A. S. Pelton, of Clinton, Conn.: I claim the arrangement, substantially as specified, in a chamber exterior to the escape valve of a porous packing, w, for preventing noise during the escape of steam from the heater, as set forth.

Also the employment of the float valve, m, in connection with the heater and pipes leading to the boiler, as pecified, to prevent the accumulation of condensed team.

PLOWS—Harrison Norton, of Farmington, Me.: I claim attaching the share, E, to the mold board, C, and "land side," D, of the plow by a hinge or joint, and moving said share by means of the bar, G, and lever, H, or their equivalents, substantially as shown and described.

[This improvement consists in a novel means of regulating the depth of the furrow. The plow point is hinged, and there is a rod extending down to it from the plow beam. By raising or depressing this rod the plow point will, in like manner, be moved up or down, and the plow will accordingly cut a shallow or a deep furrow, as may be desired. The rod is operated by means of a lever which runs along the beam to the rear part of the plow, within convenient reach of the plowman. In the tilling of rough and rocky soils, where it is requisite to have some means of instantly altering the depth of the furrow, this improvement will be found valuable. The expense of its attachment is trifling.]

SASH FASTENER—Wm. Patton, of Towanda, Pa.: I claim the arrangement of the self-acting catch or holder, with its staples on the outside of the window frame and sash, so that it may be more easily placed upon any window, without taking it out of the frame, or be readily repaired, and to prevent the cutting away or mortising of the frame or sash, as represented.

MUTUAL ARRANGEMENT OF VINEGAR ROOMS AND WHITE LEAD CORRODING CHAMBERS—Robert Rowland, of St. Louis, Mo.: I claim arranging the room wherein the metallic lead is placed, immediately above the room, wherein the manufacturing of vinegar is going on, and perforating the floor between the two rooms, so that the acetic acid, which is generated in the manufacturing of vinegar, may pass from the lower room, through said perforations, into the upper rooms, and there, in combination with carbonic acid produced in the upper room, by the fermentation of wort, or other similar substances, (or introduced into the upper room by pipes) act upon the metallic lead, for the purpose of converting the metallic lead into the carbonate of lead.

DOUBLE SEAMING CANS—Elliot Savage and Noah C. Smith, of East Berlin, Conn.: We claim the arrangement of the periphery of the bearing roller, L, that of the roller, I, the cylindrical portion, shoulder, and conical part of the roller, K, substantially as specified, and so as to operate together, in manner and effect advantages as stated.

We also claim the arrangement and application of two sets of conical rollers, so as to receive and work against the rim of a pan or vessel, and support it as explained.

OPERATING FARM GATES—J. K. Weber, of Seneca Falls, N. Y.: I claim the arrangement of the levers, a a', b b', cords, a2 a3, b2 b3, in combination with the spring bolt, for opening and closing a gate, which opens and shuts both ways, the whole operated and operating, substantially in the manner set forth.

ARGAND LAMPS—J. G. Webb, of New York City: I claim the arrangement of the button, 5, and deflector or button, g, as described and shown, when used in combination with the draft spaces, i and il, on each side of the burner or flame, having the relative proportions set forth, for the purposes and as specified.

WASHING AND BLEACHING FIBROUS AND TEXTILE SUBSTANCES—Julius A. Jillson, of Poughkeepsie, N. Y., and Henry Whinfield, of New York City: We claim combining with the washing, extracting, or receiving chamber, the double-acting force pump, and the disinfecting or bleaching vessel, operating substantially as and for the purposes set forth.

WIRE DISH COVERS—Wm. Lincoln, of Oakham, Mass.: I claim the combination of rotary forming and holding dies, A and B, with bedding mechanism applied, to operate therewith substantially as described.

I also claim the guide spindle, C, in combination with the cup die, A, and follower, B, substantially as described.

I also claim the carriage, D, the guide, H, the gearing, a o, and shaft, K, as combined with the dies and the beading mechanism.

I also claim combining with the cup die, A, the movable gauge top, l, the same being in the manner and for the purpose as specified.

LARD LAMPS—J. S. Brown, of Washington, D. C., assignor to Jos. Kent, of Baltimore County, Md.: I claim the combination and arrangement of the open bowl, A, with its hollow support, B, the inverted cup, C, with its air space, H, and enlarged mouth, h, and the piston, I, constructed and operating substantially in the manner and for the purposes set forth.

DESIGNS.

METALLIC COVERS FOR JUGS—Orrin Newton, of Pittsburgh, Pa.

ORNAMENTING DAGUERROTYPE AND OTHER MATS—Hiram W. Hayden, of Waterbury, Conn.

BURIAL CASES—Martin H. Crane, assignor to Crane, Breed, & Co., of Cincinnati, Ohio.

[For the Scientific American.]

Machine for Peeling Willows.

I have taken much pleasure in the perusal of your valuable paper from time to time, and have been in the habit of looking to your columns for any new and useful invention, as I see you take much interest in any new thing that promises to be of value to the world. But there is a new thing which I believe has not yet appeared in your columns, viz., a machine for peeling basket willows.

The cultivation of willows is a subject which has excited a good deal of attention in this country for a number of years, and many farmers have tried it on a small scale, and found it very profitable; but owing to the great amount of labor required at one time to peel them, while the bark is loose, it was found that there could be but very few raised in this country, where labor is so scarce and high, without there could be a power machine for peeling them.

Here was a fair field for "Yankee ingenuity," and in this instance said ingenuity has accomplished its object in a most perfect manner. Mr. Geo. J. Colby, a young man in this village, is the inventor. He commenced the cultivation of willows some three years ago, and last winter he got up this machine for peeling them by horse power, and it works beautifully. I had often heard of the machine, but had my doubts of its being very valuable, for I imagined that a machine that would adapt itself to the different sized willows and effectually remove the bark from the large and small ones, and not injure the rod, must be a complicated affair. But I have lately witnessed a trial of it and have become satisfied that it is a valuable invention. Its operation is very simple, the willows being passed through between two or three sets of India rubber rollers, one set of which have a vibrating motion which rubs the bark off very effectually; the others mainly separating the willows from the loose bark. The rollers being made of india rubber, there is no possible chance for the willows to be injured, and it will adapt itself to all sizes, so that from twenty to thirty rods can be passing through at the same time.

With one horse, and two men to attend it, it will peel from one to two tuns per day, while to do the same amount of work by hand it would require 30 or 40 men and boys. In short I think this is one of the greatest labor-saving machines of the age, and if farmers only understood it they would soon plant willows enough, so that we should not be obliged to send to Europe for them as we now do.

Mr. Colby has published a circular giving directions for cultivating the European willow and preparing it for market, which he offers to send free to any one wishing to engage in the business, which, from his account of it, and from what I have learned from other sources, I think is the most profitable business that farmers can engage in when they have suitable land for this purpose. I remain, yours, very truly,

Jonesville, Vt. A. L. JONES.

[For the Scientific American.]

On Preserving Fruit.

The following article on the subject of preserving apples, pears, grapes, &c., has been prepared by Mr. Parker, the patentee of the Fruit Preservatory, illustrated on page 356, Vol. 10, SCIENTIFIC AMERICAN. The information contained in it is collated and condensed from the Penny, Rural, and London's Cyclopedias; from Downing, Barry, Prof. Dubrill, of Paris, Liebig's Organic Chemistry, &c. All the sources of information on the subject up to the present date have been examined, and to these the author, who is an extensive fruit dealer of many years standing, adds his own experience and practical knowledge.—[Ed.

GATHERING FRUIT—No precise time can be specified when it should be plucked; those kinds that ripen or mature early, should be gathered before they are quite ripe. Slight frosts will assist many valuable kinds of winter pears and apples in collecting all they can of grape sugar, which not only improves the flavor, but is the most important element for preservation. Fruit should be gathered when the trees and fruit are perfectly dry (this rule holds good for all kinds.) The best time, as a general rule, is when the fruit stalk separates easily from the spur. Apples and pears for preserving should have their stalks separated from the tree, but never from themselves. This should be done carefully by the hand, catching the stalk so that the bloom will not be disturbed. Such fruit as are the least defective or bruised when gathering should be rejected. Improved fruit ladders, and baskets two feet long, eighteen inches wide, not more than twelve deep, with carpet inside, will be found useful, so that the fruit may not receive the slightest bruise till placed in the Preservatory, or packed in good oak barrels so that they shall not shake inside while being conveyed. In the Preservatory they should not be laid more than four tiers deep; this should be done before the fruit is the least moist; a few hours with the slightest change of temperature will cause this. Some are of the opinion that fruit should be placed in heaps and covered with straw or flannel till they perspire thoroughly, say for three weeks, then opened when the air is dry, so that the evaporation may be removed. Any that remains on the fruit is wiped off with flannel before they are put away in the fruit room or in barrels.

I object to this mode of sweating; it not only spoils the flavor, but the wiping removes the bloom—that which nature supplies for protection from damp should not be foolishly taken off. If we would study nature, and patronize and read good periodicals, we would know and practice better methods. "Prove all things." Apples and pears have been deposited for winter use in the following methods: First, in single layers on the bare shelves of a fruit room; second, in the same manner, but covered with light canvas, which must be dried occasionally, as it absorbs the moisture. Third, in drawers, one layer or several layers in depth. Fourth, in oak casks without any interposing material; a few weeks after they are put in, they require to be carefully picked over, the casks made perfectly dry, and re-filled, the heads closely fitted, and the fruit on no account disturbed till unpacked for use. Fifth, in boxes, casks, large garden pots or jars, with pure and dry sand interposed between the layers of fruit. Sixth, in jars in which no sand or other substance is allowed to come in contact with the fruit, the mouths of the jar being covered with a piece of slate, and the whole plunged into a quantity of dry sand, several inches from the free atmosphere. The sand being a slow conductor of caloric, the sudden changes of temperature, and their powerful effects in causing the decay of fruits is avoided. Seventh, in heaps in a dry airy loft, a slight covering of straw being given to prevent the frost from injuring the fruit. Eighth, in close cellars excluded from the light which is in all cases injurious. Ninth, in dark but airy vaults. Tenth, on a small scale under a bell glass, cemented down air tight, this must be done on wood free from resin, else it will communicate its flavor to the fruit by the confined and accumulating exhalation. Eleventh, buried in a box placed on four bricks, under another box inverted, in an excavation so deep that the upper portion of the fruit may be 1 1-2 or 2 feet below the surface of the earth. Twelfth, in thrashed grain or straw, with or without a covering of the same. Thirteenth, in chaff of wheat or oats. Fourteenth, in flaxseed chaff. Fifteenth, in powdered charcoal; this, if it cannot prevent, will in no degree contribute to decay, internally or externally. In this substance the Newtown Pippins sent to England are frequently packed; were it not for the bruises they receive before they are put aboard, they would arrive in better condition. Sixteenth, in dried fern leaves packed in baskets. To keep preserved fruits, glass jars, or salt glazed earthenware are considered better than tin cans. The acids of the fruit act on the solder, producing sugar of lead. Much has been said and written respecting how preserved fruit should be cooked, what proportion of sugar used, the method of expelling the air, then sealing the cans so that they may be kept from atmospheric influence. The best mode consists substantially in expelling the air from the jars by placing them in hot water so long till the fixed air is dislodged then hermetically sealing them. In all this there are so many minute particulars to be attended to, not only the right time when, but the proper manner. If these are neglected or improperly done, the fruit will be worthless—experience is indispensible.

To construct a fruit room, choose a dry soil, somewhat elevated, facing the north, and completely shaded from the sun by high plantations of evergreen trees. The dimensions of it must be determined by the quantity of fruit to be preserved: this fruit room is inclosed by two walls, leaving between them an open space about ten inches wide. This stratum of air interposed between the two walls is the surest means af protecting the interior from the exterior temperature. In sunken fruit rooms some are so constructed that natural currents of dry air are made to pass through them; some use a stove, the air from which is intended to take off the damp which may accumulate. A subterranean cave or grotto in a rock, if perfectly dry, would make a good fruit room.

Loudon, page 2308, affirms that he kept apples at a temperature from 32 to 42 degs. for a whole year; their flavor was good, and they were in perfect order for eating. He does not say how so low a temperature was attained. M. Paquet, of Paris, received from the Royal Society of Horticulture a medal when he presented, on 12th June, 100 apples and pears, fresh and of good flavor. The building used by him consisted of an inner and outer house; this depository of the fruit was kept at a temperature of 50 degs. Fah.,—as low as 39 degs. would not be injurious; but 66 to 73 degrees proved destructive. He employed eight parts of sawdust—not pine—and one of charcoal highly dried in an oven, interspersed with the fruit, and kept in drawers several layers in depth. He says fruit should be gathered with the greatest care, and not in the least bruised, the fairest and finest specimens selected, and on no account to be wiped previous to being deposited in the fruit room.

[The remainder of this article will be given next week.]

Return of the Kane Arctic Expeditions.

On the 31st of May, 1853, Dr. Kane left this port, with seventeen bold companions, in the brig *Advance*, on his second Arctic Expedition in search of the unfortunate Sir John Franklin. For nearly two years no intelligence had been received from the party, and the fear became general that the vessel was destroyed, and that this Exploring band were perhaps cooped up in some Arctic wild, suffering for the means of escape. An expedition consisting of two vessels, named the *Rescue* and the *Arctic*—the latter a small propeller—was therefore fitted out to go in search of Dr. Kane, and left New York on the 4th of last June. No news having been heard of it for some time, our citizens were electrified on the evening of the 11th inst. with the thrilling intelligence of the arrival here of Dr. Kane, and his party, and the whole Expedition that went in search of him. Their arrival produced a universal feeling of delight among all our citizens.

Dr. Kane has discovered a new northern land, which he named "Washington," and a new channel which he named "Kennedy," also an open polar sea, and some other interesting geographical discoveries. The *Advance* became frozen in a pack of ice, in September, 1853, and had, finally, to be abandoned. The party made many expeditions from it on the ice, and at last effected their escape to Greenland, with Francis' metallic lifeboats and sledges, from which place they took their passage to England in a Danish ship, but were so fortunate as to meet with the American Rescuing Expedition sent in search of them at Discoe Island. With grateful hearts, they immediately embarked, and sailed for home on the 10th of August last, and here they have arrived, having lost but three of their crew during the two years and four months cruise, amid dangers of a most appalling nature, and sufferings almost unparalleled. All had the scurvy at one time except Dr. Kane and Mr. Bonsall, the daguerreotypist. The cold was 50 degs. below zero for months—last winter being very severe. Dr. Kane states that Gail Borden's Meat Biscuit, with which the Expedition was well supplied, "was an excellent article, much used by them all."

We feel thankful and overjoyed at the safe and fortunate return of both Expeditions. The great discovery of Dr. Kane is an open Polar Sea, into which there is an open channel. He predicted the existence of such a sea before he started, and like Columbus, he has been fortunate in realizing one object of his expectations. We hope, however, that no more Arctic expeditions will be fitted out, for this very open Polar Sea found by him, may be entirely closed next season.

The hazard of such undertakings overleap entirely all the practical advantages that accrue from them. Men may perform bold and praiseworthy acts to rescue the unfortunate; but with the sad fate of Sir John Franklin's Expedition and the bitter experience of Dr. Kane's search for him, we hope to find no one sufficiently foolhardy to again undertake the navigation of this dangerous and unhospitable Northern Ocean.

For all the purposes of commerce, the Northwest passage is entirely sealed, and must always remain so, until the nature of things is reversed by the Great Architect. Then why persist in impossibilities?

In connection with this gratifying announcement of Dr. Kane's return we will make a dash at that superlative humbug of the 19th century called "Spiritualism." On page 363, Vol. 10, we published the lugubrations of a Baltimore correspondent, in which he says: "Dr. Kane has lost about thirty of his men, and is at present near Sir John Franklin. He will soon meet him, and return with him to New York—a triumph and pride to every truly American heart," and so on. The facts connected with Dr. Kane's Expedition and return, and the prognostications embodied in our correspondent's letter are strikingly at variance; and go to show the fallacy and deception that will work upon human understanding. Our readers will be amused by referring again to the article from which the above extract is made.

Dr. Kane was officially received by President Pierce on the 15th inst, The interview was very cordial.

New Inventions.

Improvement in Screw Fastenings.

The accompanying engravings represent new and useful improvements in expanding screw fastenings, for which a patent was granted to John Loudon and Otto Ahlstrom, of this city, on the 3rd of July last.

The invention relates to expanding screw fastenings, to be used under conditions in which bolts and nuts of the common construction are not applicable. It consists in a method of constructing either a bolt head or a nut, as the case may require, whereby the screwing up of the nut or the bolt causes it to expand, and makes it fit tightly within any opening or hole in which it is inserted, and so wedges it in that it cannot be directly drawn out. The figures represent various modifications, applications, and views of the expanding fastening.

Fig. 1 is a view of a screw bolt, A, with wedges, *a a*, on its head, but its nut and expanding jaws are removed. The form of the wedges, *a a*, are shown in figs. 1, 2, 3, and 6, the latter being an end view of fig. 1. A, fig. 2, is a common screw bolt, the nut, B, being its head. The wedge, *a*, is a hollow piece with a thread inside forming a nut, and the end of the bolt works in it, so that by turning round the head of the bolt, the wedge, *a*, will be forced up into the wedge recess in the jaws, *b b*, as the screw of the bolt is forced down. The expanding jaws, *b b*, form a centrally divided small cylinder, and when drawn close together, they fit so as to work freely on the bolt. They are cut away beveling on opposite sides, as shown in fig. 4, to fit the wedges, *a a*. The wedges extend up the sides of the bolt far enough to terminate in a point, and thus allow the head to be made small and give a great breadth of bearing to the expanding pieces. A small groove is formed around the expanding pieces, *b b*, to receive a thin steel split ring, *c*, for confining them together, and yet allow them to expand, as shown in fig. 4—an outside view—and fig. 5, a section. When the nut is unscrewed and the collar or jaw loosened, this ring contracts the collar, and allows it to be removed. This would be very difficult to accomplish without this ring. The application of this ring is shown in fig. 7, which is a section in the line, *x x*, fig. 3. B, figs. 3, 4, and 5, is a nut of the common kind. The expanding jaws, *b b*, form a collar to the screw bolt, and they must be of a proper size to fit the opening in which it (the fastening) is to be placed.

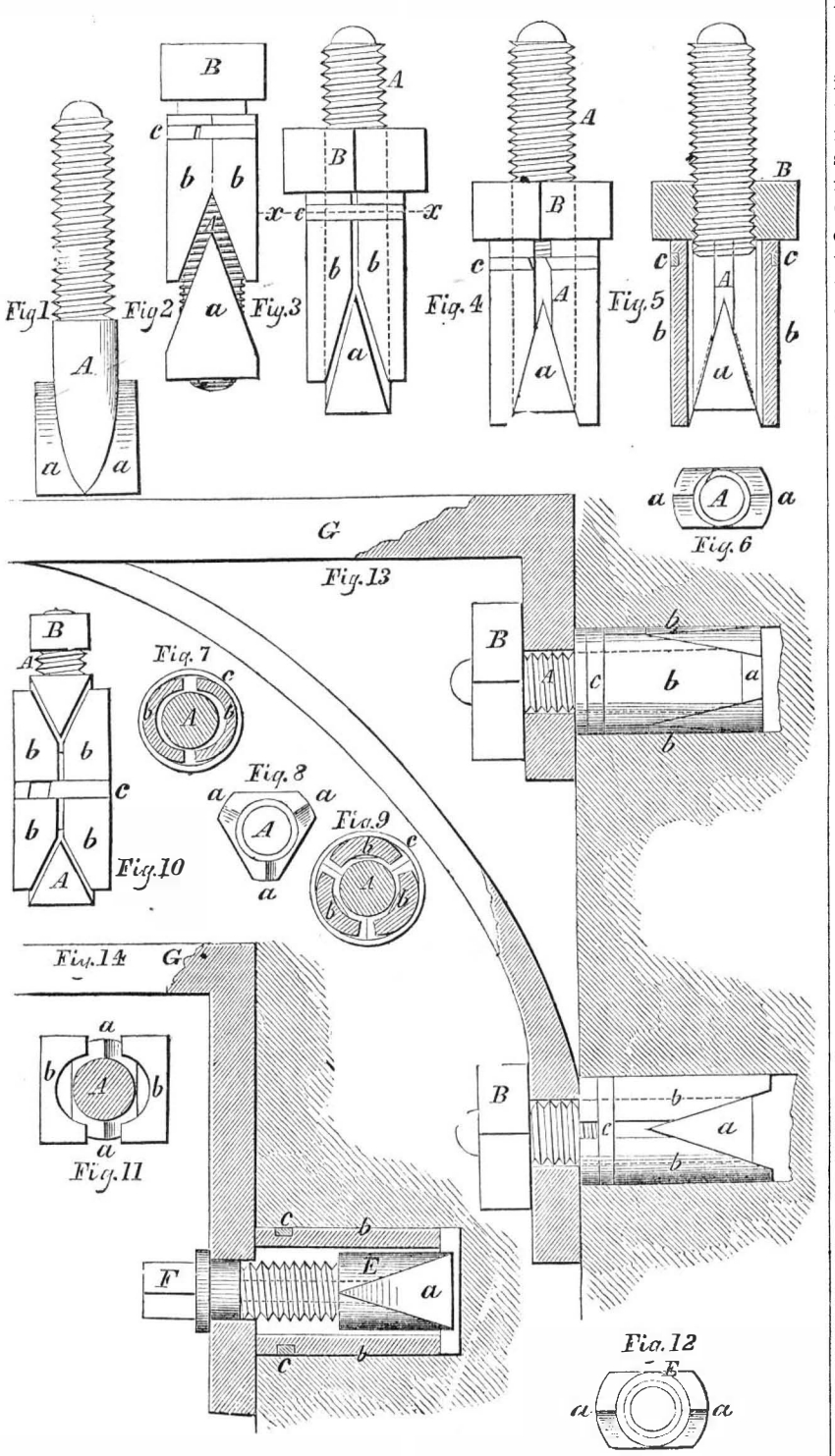
Fig. 13 illustrates the application of this screw fastening, set into a stone wall to support and screw up an iron bracket. The bracket, G, has holes drilled or cast in it, and the masonry of the wall has also two holes drilled in it to correspond with those in the bracket. These holes must only be of sufficient size to let the bolt pass snugly in. The bolts, A, with the expanding pieces, *b b*, pressed tight by the ring, *c*, are first placed in the holes with the wedge heads, *a*, first or at the bottom, and the screw parts protruding outside. The bracket is then put on and held up, and the nuts, B B, placed on the bolts, and screwed up with a wrench. The act of screwing the nut close up, draws the wedges, *a a*, into the expanding jaws or collars, *b b*, and forces them apart, thus wedging them perfectly tight in the holes. The harder the nuts, B B, are screwed down, the tighter becomes the fastenings, making a perfect fit, and supporting the bracket in the most firm and substantial manner. Instead of making the bolt with only two wedge pieces, *a a* on its head, three or more may be used, and the expanding collar pieces, *b b*, must consist of a corresponding number of pieces.—Fig. 8 represents an end view of a bolt head, with three wedge pieces, *a a a*; and fig. 9 is an end view of three separate collar pieces, *b b b*, confined by the ring, *c*. In fig. 13 the upper supporting fastening is thus formed: the lower fastening in the same has but two wedges and collar pieces. By making the nut in the form of a handle, as represented in fig. 15—an outside view and a section—this expanding bolt becomes a lifting apparatus, exceedingly convenient to be inserted into a hole drilled in a block of granite or metal, to be hooked by a chain, and elevated to any part of a building in the course of erection. This principle of application of the expanding bolt does not require a perfect round hole to fit into; the hole may be square, and the expanding head may be of a square form, as represented by the end view, fig. 11—A representing the bolt, *a a* the wedge projections, and *b b* the expanding jaws.

In employing the bolt for lifting purposes, however, it is preferred to use the fastening represented by fig. 15, as there will be no danger by the slacking of the nut during the lifting operation.

Figs. 12 and 14 show the expanding principle of this fastening applied to the nut instead of the bolt—fig. 12 being an end view of the nut, E, having wedges, *a a*, at opposite sides, like the head of the bolt, A, and having the expanding pieces, *b b*, applied to it with a ring, *c*, fig. 14, in the same manner as a bolt. The bolt is a common screw, F, with a slit in its head to be driven by a screw driver. The nut is inserted in the hole drilled in the wall, and by turning the screw bolt, F, with a driver, the nut is drawn up, and its wedges force apart the expanding pieces, *b b*, until they are perfectly wedged in the opening, and thus secure the iron bracket, G, as firmly to the wall as the bolts represented in fig. 13. Fig. 10 shows a double set of wedges, with a screw bolt passing through the upper one, to force down one wedge, and draw up the other, and thus expand the pieces, *b b*, in both directions.

All the expanding fastenings represented can be withdrawn by unscrewing the bolt, like any other method of screw bolting, as the bolt, A, may be unscrewed, and thus the expanding pieces become loose, so that in their very nature they are exceedingly convenient, both in the method of securing and releasing them, according to the circumstances, and the purposes for which they are applied. Stone and cast iron cornices may be secured to a back wall with these fastenings, and the head of the bolt left flush with or below the surface, so as to leave a smooth, unbroken face. For securing iron brackets to a stone wall, or cornices to a solid back wall, or for a key to hold stones, or masses of metal to be grasped with a hook, to be elevated to any hight, this expanding screw bolt is a most beautiful, useful, and effectual improvement. It is applicable to many purposes besides those named. The civil and mechanical engineer, and the architect, will at once perceive the variety of uses to which it can be applied, and can appreciate its real utility. The claims for the improvements embraced in these fastenings will be found on page 353, Vol. 10, Scientific American. They are broad and strong, and their merits have been acknowledged by all who have had the opportunity of seeing the fastenings applied. Patents have been secured in France and England, as it is one of those inventions which has for its field of application "no pent up Utica," but the whole globe.

More information may be obtained by letter addressed to the patentees, at their works No. 276 Bowery, this city, where numerous specimens can be shown, to all who wish to examine them.



Improvement of Railroads.

The *Railroad Times* (Boston,) of the 4th inst., in a brief and sensible article, directs the attention of our railroads to the economy of good railways. "The very first thing needed," it says, "to economical operation, is a good permanent way." It then quotes and endorses Clark's opinion on this point, that "the great element for improvement is the permanent way," and adds: "The extra cost for tear and wear of machinery, and the extra cost of fuel on some of our badly constructed and managed roads would go some way in paying a respectable dividend. The first thing is to put your road in a condition to be operated cheaply and safely."

How true all this is. Numerous accidents have taken place from having railroads in bad repair, thereby causing losses amounting to vast sums for damage to persons and property.

The permanent way is no doubt "the grand element of improvement," and those who take opposite views misunderstand the subject. The railroad itself, as a modern element of progress, is but an improvement of the permanent way. Were this not the case, it would be the hight of absurdity to construct railroads. But could such loads be drawn or speed obtained with steam carriages on common roads as are now on railroads? No. The speed of passenger cars on the railroads in this State is double that which prevailed ten years since, and with greater economy to the stock-holders. This has been accomplished principally by improvements in the permanent way. The first railroad built in New York was the "Mohawk and Hudson." It had two inclines operated by stationary engines, and the rail was the old "flat." It never paid expenses, and the stock was about the lowest in the market until new cuts were made, and the permanent way improved. The speed on it, fifteen years since, was but fifteen miles an hour; it is now thirty miles, and the expenses of running are much less. It was the same with the whole of the sections of what is now known as the "Central Railroad." The speed on all them is about doubled for passenger trains since 1845, when the flat rail was used on a great portion of it, and the working expenses are much less in proportion to the results obtained. In the winter of 1846, when there was such an uncommon freight traffic over this road, all the machine shops belonging to it were converted into great locomotive hospitals, owing to the bad permanent way. We do not know the amount of reduction in the cost for repairs since the permanent way was improved, but it must be very great.

We are surely not at the end of improvements in railroads yet, both with regard to speed and economy. Those who take the view that the limit of speed has been obtained, and that further improvements in the "permanent way" cannot alter the results, excepting by the removal of atmospheric resistance, and traveling in a vacuum or by adopting "Bessemer's" hoods for the locomotive and cars, place themselves in an awkward conservative position.

Great improvements have, no doubt, been made in the engines and cars as well as in the railroads themselves, and still greater improvements may be expected; but in giving utterance to the foregoing we place ourselves in the position of advocates of engineers and all concerned, for the fact is introvertible, that we shall never know all that our engineers can accomplish in the building and running of locomotives until the limit of perfection has been arrived at in the "permanent way."

The carbonate of iron is stated to be excellent to stop obstinate bleeding from leech bites.

Scientific American.

NEW-YORK, OCTOBER 20, 1855.

More Encroachments on the Patent Office.

We learn from good authority, that, on the 22nd ultimo, the President of the United States, under the escort of the Secretary of the Interior, paid an official visit of inspection to the Patent Office building. The wily Secretary took advantage of the occasion to descant upon the pressing requirements of the Interior, the Land, and the Indian Departments, and then grew eloquent upon the unnecessary space occupied by the Patent Office, proposing to lop off a branch here, another there, &c., &c. The President is stated to have replied, in his bland and modest manner, that as far as he saw, the Patent Office appeared to need an extension rather than a restriction.

To this sensible view, we are sorry to say, he did not adhere. Yielding to the solicitations of the Secretary, and the plea that fire-proof space, for the preservation of certain important Indian papers, *must* be had, the President assented to the absorption of six of the Patent Office rooms, and they have, we are informed, been accordingly transferred. Thus was consummated another of those official outrages on the rights of inventors and the interests of the country, regarding which we have felt it our duty, of late, so bitterly to complain. New movements by the Secretary, placing the Patent Office more completely than ever under his thumb, and adding insult to injury, are now, we understand, in progress.

Under the laws of the Republic, the Patent Office, as it now stands, is almost an independent Department. Its chief is required to report the state of its affairs directly to Congress. It has ever been the desire of our statesmen to isolate it, as far as practicable, from politics, to relieve it from outside subservience, to promote its dignity, to increase its facilities, and in every way to encourage its growth. In its first organization it was nominally attached to the State Department, but was never regarded by any of the Secretaries of that branch of government as subject to their interference or control.

The law which created the Secretaryship of of the Interior, merely transferred the nominal connection then existing between the Patent Office and the State Department to the Interior Department. The Secretary of the Interior has never received, by statute, a single iota more of authority over the Patent Office than the Secretary of State formerly held. But, in the absence of a Commissioner of Patents, the Secretary of the Interior becomes his own lawmaker, and aspires to self-constituted powers. Ignorant of the wants of the Patent Office, and disregardful of the views of its officers, he assumes a control over it for which he is utterly unqualified by nature, and unjustified by right.

There is but one permanent remedy for this miserable state of affairs, and it consists in the absolute separation of the Patent Office from the Interior Department. If inventors will but rouse up, appeal to their Representatives, and show a determined spirit in the matter, this much-needed reform may, we doubt not, be triumphantly carried through the next Congress.

The Weight of Coal.

It is rather remarkable that the price of coal this season is about one dollar less per tun than it was last year. If it had been cheaper then it would have proven a greater blessing, because of the great numbers who were suffering for want of employment in all our cities, and were, consequently, less able to purchase winter fuel. We do not understand how one coal dealer can sell coal for half a dollar (and in some cases more) per tun less than another, but such is the fact. The dealer who charges the high price asserts that those who sell for less must cheat in the weight, and thus he makes an excuse for himself. This may be so, we cannot say; but we take this opportunity to tell our readers the same story we did last year, viz., that a tun of coal is not 2,000 lbs. merely, but 2,240 lbs., and every person should receive this weight, as it is the legal amount provided by law, and any seller giving less can be sued for fraudulent dealing. We are afraid that many dealers sell 2,000 lbs. for a tun; and we think that some high-priced sellers of coal are no more scrupulous about the exact weight than those who sell at lower prices. Last fall we directed the attention of our city authorities to this matter, and demanded some means for the public weighing of coal, in order to impose a healthy check upon those who might presume to deceive by false weights. Nothing has been done to carry out the reform in our city, but in Boston, on the other hand, as we have been informed, the city authorities have provided means whereby every buyer of coal can easily have even-handed and exact justice done to him, by demanding his coal to be weighed at public scales if he suspects he has not received the full amount.

Reminiscences of the Paris Industrial Exhibition. No. 2.

Clocks, Electric Apparatus.—It is now about five hundred years (according to the best information we can gather upon the subject) since the first clock was invented and put into operation; and for more than two hundred years their manufacture was carried on only upon a very limited scale. The kings and nobles of Europe were the only ones, during this period, who were able to support the luxury of a clock.

The invention is not due to a single mind. On the contrary, a great many men of genius have been successively engaged in rendering the clock what it is to-day, an almost unerring recorder of the passing moments.

The old mummy-looking wooden clock, "that ticked behind the door" when we were boys, made its appearance in Holland about 200 years ago; and within the past quarter of a century the clock has been reduced and simplified till it is no longer regarded as a curious machine. The farmer with his jack-knife and tweezers is no longer afraid to perform a surgical operation upon his diseased time-keeper; and that ghost of a "clock fixer" has disappeared from the public highway.

The clock has become an article of such common use for the dwelling and the office that we forget its value and importance. And it is interesting to reflect what great improvements have been made in this branch within a few years; and so cheap are they now that every family can support one or more *institutions* of this kind; and its tickings are suggestive monitors of man's mortality.

In the great French Exhibition the display of clocks was very grand, and we were surprised to find so many large clock manufactories in Paris. The traffic in this branch is immense; and no matter how poor or how rich a Frenchman happens to be, he is sure to have a good looking clock in almost every room in his house. The Yankees beat the French "all hollow" for cheap clocks. For fifty cents we can supply ourselves with time enough to last from 20 to 24 hours every day; but for beauty of finish and good style of casing, the French are in advance of us. The leading clockmaker in Paris is Paul Garnier. His workshops are a model of neatness and good order, and his skill as a manufacturer is unsurpassed; his clocks are used by nearly all the continental railway companies. Among his beautiful collection on exhibition we were particularly well pleased with some small traveling clocks of a parallelopiped form, having four crystal faces to show the time on all sides, and so constructed as to stand the roughest usage. The finest monumental clock we ever beheld was one placed over the American Department. It was encased in a splendid glass cover where every part of its works could be readily examined. It presented no special novelty in its arrangement of mechanism, but it exhibited the highest order of skill in workmanship.

Collin & Wagner exhibited some beautiful clocks, embracing a peculiar uniform movement, which was obtained by a differential pendulum and two friction cones. The escapement consisted of pallets actuating a horizontal ratchet wheel, and the regulating movement was produced by the friction cones. This clock was provided with a style which traced out a straight line on the co-ordinates and abcissa of a cylinder, thus giving evidence of its uniform movement.

Electric clocks were exhibited in great abundance, but they were more remarkable for beauty of construction than for anything specially novel. No essential improvements seem to have been added to them since 1852. In that year the beautiful electric clock of Detouche & Gobert, in the Exhibition, was illustrated in the Sci. Am., Vol. 8, page 24.

The Electric Telegraph is now becoming very generally employed in Europe, and it is gratifying to our countrymen to know that Morse's American system is generally adopted. Certain restrictions, unknown in this country in the use of this wonderful invention, exist on many parts of the European continent, and it is thus made an instrument in the hands of Governments, and not as a means of social and commercial promotion. In France, all messages to be sent by telegraph must be submitted to the Government authorities at the stations, who have full power to refuse or permit their transmission. In Prussia there are special signs for the use of the officers of the army, and also for civil functionaries, differing from each other, and understood only by them.

Paul Garnier, of Paris, exhibited a telegraph "commutator" of very ingenious construction, intended to be used with Morse's telegraph. Instead of operating the key by hand for sending messages in the common way, the message was composed beforehand, and disposed helically along a cylinder, which is provided with two thousand keys, made of some non-conducting substance, and according as they are arranged on the cylinder they effect the breaking and closing of the circuit and write the message. The operator turns a small winch, and his message is written a thousand miles distant, in dots, dashes, and spaces, with the greatest rapidity. We witnessed a dispatch of two hundred and ten words transmitted by this apparatus in one minute. The mere idea thus ingeniously carried out by M. Garnier, as applied to the Morse telegraph, is undoubtedly new; but it was substantially applied to Bain's telegraph in 1847, as published in the Sci. Am. Vol. 3, page 273.

Bain composed his messages on strips of perforated dry paper, which opened and closed the circuit. These strips were run between rollers by simply turning a small winch, and thus the message was sent buzzing through the wires at a great rate. We are very glad the same principle has been applied to the Morse telegraph. Like the famous revolver, the commutator is previously supplied with a number of charges ready for action at the moment required.

Perhaps the most distinguished maker of telegraph apparatus in France is M. Breques. He exhibited quite a number of beautiful signal dial telegraphs, such as were in general use in Europe a few years since, but are now bending before the superior American system. M. Garnier had an eye, no doubt, to the future of the Morse telegraph in Europe, when he applied his genius to the construction of his "commutator."

Express Charges on Models.

We would advise inventors who are shipping models to us by express, to send us their receipts of pre-payment of freight charges. We are often called upon to pay charges on boxes when they are delivered, and upon informing the inventor of this fact he has sent us a receipt showing that the charges were prepaid.

Express companies ought to be more careful or honest in their accounts. This attempting to collect the freight charges the second time is a very mean business, and is carried on to a great extent, it is time it was abandoned.

Machine for Re-sawing Boards.

Pearson Crosby, of Fredonia, N. Y., has applied to the Commissioner of Patents for an extension of the above important patent for seven years from the original date, which expires on the 2d of November next. The case is to be heard on the 22d of this month. Parties who have opposition to make to the extension must appear at the Patent Office at that time.

The art of gilding, plating, and electrotyping is practiced in this country with great perfection. P. J. Clark, 14 Fifth street, Pittsburg, Pa. has sent us a medalion likeness of Henry Clay. It is an elegant piece of work, and reflects great credit upon Mr. Clark's skill in this beautiful electrotyping art. We thank him for his highly prized gift.

Great Fair of the American Institute.

The Twenty-seventh Annual Exhibition of the American Institute opened at the Crystal Palace, New York, on the 4th inst., and is now in the highth of its glory.

The old Institute has done well this year. Young go-ahead America has ruled in her councils. Dropping from her Committee lists some of her oldest old fogies, and appointing in their places younger men, of energy and discrimination, she has taken a stride far in advance of any of her previous achievements.

The display this season is a splendid one, creditable, in the highest degree, to all the parties concerned in its realization. It is true that the Palace building, stripped of its many partitioned compartments, with their rich and splendid linings, and their crowds of rare and wonderful objects, products of every clime, does not present such a vast and diverse array of attractions as were once gathered within its walls; it is true that the present display by no means fills up its allotted space, and that the visitor has ample room to walk around each particular object without the least danger of being jostled by the crowd; still, the collection of industrial specimens is a very large one, and possesses peculiar interest from the fact that the whole, or nearly the whole, is of American production.

The success of the present exhibition leads us to believe that, if proper steps were taken, there would be no difficulty in annually filling an edifice as large as the Crystal Palace, from top to bottom, with magnificent specimens of home industry and genius. Would that there were some national organization of this sort, whereby each State might be separately represented, and the manufacturers, mechanics, and artizans of all might assemble to vie with each other in honorable contests for superiority of skill and perfection of results.

The Mechanical Department.

The mechanical department of the exhibition will first claim our attention. In glancing over it we were struck with the general novelty of the machines there shown, and the large number of recently patented inventions now, for the first time, publicly developed. There is a marked absence of several of the old stereotyped features of former Fairs, to wit—steam engines of common construction, noted only for beauty of polish; iron planing machines and lathes, with which everybody is familiar; dusty grist mills, having no special novelty, &c. Such-like articles, that have hitherto usurped the most conspicuous places, are made to stand one side, and in their lieu we have fresh improvements, of novel form and peculiar characteristics.

Motive Power.

The motive power which gives life to the whole machine room is derived from six engines, of which four are driven by steam, one by gas, and one by a combination of steam and air, called by its inventor the Cloud Engine. The two last are intended as substitutes for steam. Of the four steam engines, the larger one is of the horizontal kind—12 horse power—exhibited by Tyler & Co., of Springfield, Mass. Its only peculiarity is in its truss frame, which has great strength, with a comparatively small weight of metal.

Oscillating Engines.

There are three portable steam engines and locomotive boilers, the engines being constructed on the oscillating plan, and placed on top of the boilers. They look, for all the world, like monkeys on horseback. Notwithstanding their odd appearance they are very effective. Two of them are from the well known manufactory of Geo. Vail & Co., Morristown, N. J. The other is a new invention, by Mr. J. A. Reed, of this city, and is now for the first time exhibited in this country. It is called the "Chronometer Oscillator," owing to the perfect regularity with which it moves. This improvement was illustrated in the last number of the Scientific American; it was also patented in Europe through the Scientific American Patent Agency. One of these engines is at work in the Parisian Exhibition, where it has greatly attracted the notice of European engineers. It seems to be a highly valuable invention.

Gas Engine.

Our attention is next fixed upon the "Ignition Engine," invented and patented by

Alfred Drake, M. D., of Philadelphia, Pa. This is the first exhibition of the machine; the apparatus consists of a horizontal cylinder of 16 inches diameter, with piston, crank and a large fly-wheel—the whole resembling in size and appearance a steam engine of say 25 horse power.

Everybody has heard how gas accidents sometimes occur in great cities like New York, —how the pipes in apartments are sometimes accidentally left with their stop-cocks open,—how unwitting persons enter with lighted candles, and explosions ensue,—how vaults under the street, becoming thus charged with gas, have blown up with tremendous force, attended with loss of life and property.

Mr. Drake is a philosopher after the Franklin school. He proposes to harness up this rampant power, and put it to a useful service. He admits a mixture of gas and air into his cylinder, and then touches it off with a hot iron. An explosion is the result, and the piston is driven to the other end of the cylinder. This operation constantly repeated gives rotary motion to the fly-wheel. "It is well known," says the inventor, with correctness, "that certain gases and vapors, when mixed with definite proportions of atmospheric air, form inflammable compounds, which burn rapidly or explosively when fired, the heat evolved occasioning a large increase of bulk, or an expansion.

When a mixture of one part of coal or illuminating gas with nine or ten times its bulk of atmospheric air is confined, as in the cylinder of an engine, and then ignited, a great pressure is exerted by the expanded products of the combustion in every direction. This," continues Mr. Drake, "is the power which actuates the "Ignition Engine," which may be described, in fact, as an air engine, using fuel in a gaseous form in its cylinder, and dispensing with a separate heater, furnace, smoke-pipe, &c."

We should need an engraving to convey a clear idea of the internal parts of the machine. As a mechanical curiosity, it is certainly interesting to look upon. But so far as economy or practical utility is concerned, it is to be classed with Ericsson's chimera.

Mr. Henry Meigs, Recording Secretary of the Institute, in his address at the opening of the Exhibition, delivered a dreadful broadside against our old friend Steam, and at the same time heralded, with a loud blast, the advent of this new gaseous substitute. Only hear him: —"Look at the Ignition Engine, sought for these hundred years, to be rid of that terrible boiler, whose burstings have killed more human beings than were killed at the capture of Sevastopol. The inventor, Dr. Alfred Drake, of Philadelphia, now here with his engine, forms the gas as fast as it wanted, and injects regular measured charges of it into his cylinder, where it ignites by means of a small piece of iron, which is kept hot. The ignition of the gas forms the requisite vacuum, giving the weight of the atmosphere only for power, and not by expansion, so that the danger from explosion is nothing. Space is saved, and in all things a saving is made of probably forty per cent. Here is a great triumph of mechanical skill, entirely subject to your will. Not like that tremendous steam boiler which has so often struck horror into the minds of men, like the destroying angel."

It is barely possible that if the inventor employs for his attendants a few aeriform individuals like Mr. Meigs, he may be able to secure a supply of gas so cheap as to effect, with his engine, a saving, as claimed, of forty per cent. over steam. But should he be reduced to the necessity of distilling his gas from coal, he will find that all his savings are overbalanced by loss. Our city gas companies, we opine, will never have occasion to enlarge their capacities in consequence of the introduction of the above contrivance.

The Cloud Engine.

This is a patented invention by Wm. Mount Storms, of this city, and is now for the first time publicly exhibited. Its peculiarity consists in the introduction of a portion of cold air with the steam in the cylinder, whereby it is claimed that a saving of 73 per cent is gained over the use of simple steam. The engine exhibited at the Palace is a small one on the horizontal plan, having a cylinder of 6 inches diameter and 14 inches length. Estimated power, six horses. It has nothing externally to distinguish it from the common steam engine, except that on one side there is an extra pump which forces in the required supply of air. This pump is surrounded with a water jacket to keep it cool. It is a matter of importance to have the air cold when it enters the cylinder; hence the air passes from the pump into a reservoir, where its temperature is further reduced, and then to the steam cylinder. The proportion of air employed to steam is one-third. The air is first let in, and its valves closed, then the steam. There is no change in the exhaust.

The name Cloud Engine is given from the fact that the steam, when it combines with the air in the cylinder, instantly assumes the form and color of fog—the same, in short, as steam when it is discharged into the atmosphere.

The inventor claims, as stated, a gain of seventy-three per cent. over simpl esteam. This we are told is a proven fact, of which there is abundant witness; the tests having been carefully made with a 30-horse engine.

The inventor's theory as to the *why* and *wherefore* of this gain is said to be, briefly, as follows:—Between cold air and hot steam there is a strong affinity, electrical in its nature. The globules of simple steam are solid, that is to say they are not hollow. When air is introduced, as in the engine, a sudden change takes place, and hollow vesicules are formed, occupying greater relative space—in other words, increased expansion takes place.

The engine at the Palace had only been running for a short time when these notes were made, and no opportunity had been given to test the economy or power of the machine.—We shall, hereafter, examine it more critically. If it will accomplish all that the inventor claims, it is certainly a remarkable discovery. Several times while we were looking at it, and when it was working at a pretty rapid pace, the air valve was opened, so that no air passed into the cylinder, but discharged into the atmosphere. The result, in every case, was an immediate falling off in the speed.

Stone Dressing Machine.

The American Stone Dressing Co., of this city exhibit, for the first time, one of their full-sized Steam Stone Dressing Machines—Eyre's patent. The reader will find engravings illustrative of this invention in Vol. 9, Scientific American. Its operations at the Palace attract large crowds of spectators, who evince astonishment at the rapidity of its movements and the excellence of its work. In outward appearance the machine resembles an iron planing machine, the stone being moved on a traveling bed. The cutting is done by means of series of chisels held above the stone at an angle to its surface, just as a workman holds the same tool when at labor. Behind the chisels there is a strong cylinder, having projections upon its periphery, similar to the barrel of a hand organ. As the cylinder revolves, these projections, like so many hammers, play upon the butts of the chisels, and drive them on to the stone with great force. Ornamental work, such as cornices, fluted columns, &c., may be done with the same facility as plain dressing. The machine shown at the Palace, although not of the largest dimensions, strikes, we are told, 28,000 blows upon the chisels per minute, dresses 1000 superficial feet of stone per diem, and saves the labor of fifty or more men. Larger machines have correspondently increased advantages.

Rope Machine.

A very interesting and curious specimen of mechanism is the patented rope machine of Harris, Stott, Richmond & Dutcher. This apparatus condenses the long old-fashioned rope walks into a space five feet square, makes ropes of every kind and variety, from every species of material, of every size, from bed cords to men-of-war cables. One of these machines, attended by a boy, turns out, we are informed, the ordinary inch manilla rope of commerce at the rate of some thousands of feet per diem, accomplishing the labor of seven or eight operatives. Nor is this all.—The quality of the article produced is superior to the hand made, since the tension of each thread and strand is more even. Some of the finest specimens of rope we have ever seen were done by this invention. The improvement is now on exhibition for the first time. The patent is owned by the Troy Rope and Cordage Co., Messrs. Briggs, Draper & Church, agents, Troy, N. Y.

[Our notices of the Fair, and its many interesting objects, will be continued in our next issue.

Gunpowder, Percussion Powder, and their Substitutes.

[Concluded from last week.]

There are, however, certain detonating compounds which contain no oxygen, nor any other supporter of combustion, but which are easily caused to undergo an internal change, and to resolve themselves into gaseous products. The most remarkable of these are certain substitution products of ammonia—the so-called ammoniurets of gold and other noble metals, and the so-called iodide and chloride of nitrogen. The iodide is a black powder, which, when dry, will explode on the slightest touch of a hard substance, and even sometimes by a sudden concussion of the air near it. Its composition has been examined and found to be always N.H.I.2. The chloride is a still more dangerous substance, since it explodes with the greatest facility under water. It is an oily liquid, discovered simultaneously, in 1811, by M. Dulong, in France, and by a young English chemist, Mr. Burton, of Tonbridge. Mr. Gladstone's analyses gave as its composition N.2, H, Cl.5. The qualities requisite to render an explosive practically useful depend, of course, on the purpose to which the explosive is to be applied. If it be merely for the production of an instantaneous flame, in order to ignite some other body, those compounds which are exploded by percussion have a great advantage. Percussion caps of various kinds were exhibited—those intended for muskets being filled with a mixture of equal parts of fulminating mercury and chlorate of potash, fixed by a varnish; those made use of for cannon being charged with two parts of chlorate of potash, two of native sulphuret of antimony, and one of powdered glass, which last appears to be practically a beneficial ingredient, although it takes no part in the chemical action. Caps made of fulminating mercury and collodion, bronzed over, were also shown. Explosives, however, are generally intended for blasting. Most of the compounds previously described explode too rapidly, and produce a very powerful local effect. If employed in fire-arms they would tear or strain the gun, and not propel the ball any great distance. Gunpowder, if tightly compressed, as in a fuse, or a port-fire, burns comparatively slowly; the necessary rapidity of explosion is given to it by granulation; and this can be modified according as the different purposes for which it is manufactured require. Supposing an explosive to have the necessary propulsive power, a very important quality is safety—safety in the process of manufacture, and in its subsequent keeping and handling. This practically excludes the use of all those compounds which are exploded by a blow. Gunpowder requires a temperature of 600 deg. Fah. to ignite it; and this gives it a great advantage over gun-cotton, which is fired by a heat not much exceeding that of boiling water.

It is a desideratum that the explosive should not be injured by wetting. In this respect gunpowder fails, while gun-cotton, and several of the substances previously mentioned, suffer no injury by being soaked in water and dried again. Good gunpowder, however, is not materially affected by the ordinary damp of the atmosphere. Nitrate of soda, though it contains a much larger amount by weight of gas-forming constituents, cannot be substituted for nitrate of potash in the manufacture of gunpowder, partly because the resulting mixture is hydroscopic. The complete combustion of an explosive is another desideratum. In firing cannon a considerable portion of the charge of gunpowder is always lost, by being blown out unburnt; but this is the case to a much greater extent with gun-cotton. It is important, also, in respect to fire-arms, that the products of combustion should not foul nor corrode the piece. Gunpowder leaves a considerable residuum, which has to be sponged out afterwards, but it is an alkaline salt, and has little effect upon metal. Gun-cotton, on the contrary, leaves no residuum; but the piece remains filled with the highly corrosive red nitrous fumes, which have an acid re-action. Cheapness is, of course, an important element in comparing the practical value of different explosives; but the calculation must be made not according to the weight, but according to the propulsive force of the various substances. This review of the qualities requisite in an explosive shows that gunpowder is admirably suited to such a purpose, on account of its great propulsive power with little local strain, its great safety, both in manufacture and use and its cheapness. It has two disadvantages its being spoiled if wetted, and its leaving after explosion, a quantity of solid matter. It is evident that most of the fearfully explosive substances with which chemistry has made us acquainted, are perfectly inapplicable to the projection of balls. Mixtures containing chlorate of potash, though good in some respects, are dangerous. Gun-cotton is the only substance that puts forth, just now, any great pretensions as a substitute for gunpowder. Its propulsive force is somewhat about three times that of an equal weight of powder, and it has some other advantages, coupled, however, with serious disadvantages. The Austrian Government has lately put it very fully to the test of experiment; and that they have been to some extent satisfied of its value, is attested by the fact that a considerable number of cannon, of great thickness of metal about the breech, have been formed expressly with the object of employing it. It is said to be a modification of gun-cotton which is used. In England, experiments have sometimes been made with this material, and it is said to have been employed with advantage for filling shells; but on account of the many accidents that have occurred with it, it finds little favor at present with our military authorities.

Economy of Oil on Railroads.

We have received from Edward H. Jones, Master Mechanic on the Albany and Utica Division of the New York Central Railroad, his monthly report, giving the quantity of oil used and the miles run by engines during the past month (Sept.) The saving of oil during the past month is wonderful, amounting to nearly one-eighth over the previous month. In Aug. 46,675 miles were run, using 2904 pints of oil —16 miles to the pint. In September 48,305 miles were run, using only 2,554 pints, or 18 91-100 miles with one pint. One engineer of a freight train, D. Apps, has increased his run seven miles to the pint of oil; another, John V. H. Beech, has increased the run 17 41-100 over last month. These are certainly astonishing results, and exhibit what carefulness can do in one line of economy.

Singular Robbery and Large Reward.

Some time last month the American Express Company was employed to convey certain boxes of specie, each alleged to contain $25,000, from the Land Office, Dubuque, Iowa, to the U. S. Sub-Treasury in New York. The boxes were of peculiar shape, iron hooped, and sealed with the Government stamp. They were duly delivered at New York, the seals apparently untouched, and the whole without the least indication of having been meddled with; two of them were found, on opening, to contain leaden balls instead of specie. The Government demands the restoration of $50,000 by the Express Company. The latter declares that the boxes were delivered in the exact condition received but it is willing to pay the loss on the substantiation of contrary proof. In the meantime the Company has offered a reward of fifteen thou and dollars for information that will throw light upon the fraud.

New Locomotives.

The Central Railroad Company has just ordered up six more locomotives. They will be built at Schenectady, and will have a sufficiency of power to go forty miles an hour "with one hand." These machines will cost twelve thousand dollars each; a large expenditure, but one warranted by the immense business which comes to this, the greatest thoroughfare in America. The Hudson River Railroad Company is also getting four new engines built for the passenger business. The Albany and Boston Company is getting three new machines at Lowell. These orders speak well for the fall trade, and show that the anticipations made in July, are being very rapidly realized.—[Albany Knickerbocker.

TO CORRESPONDENTS.

A. B., of N. Y.—The broad gauge is not generally adopted in England. It is said that a locomotive on the Great Western Railway, broad gauge, is capable of taking one hundred and twenty tuns at an average speed of sixty miles per hour on easy gradients. The weight of one of these engines, empty, is about 30 tuns, and the tender about 9 tuns; when supplied with water and coke the weight is increased to about 52 tuns. The boiler contains nearly 1800 feet of brass tubing On all the English roads the system of indicating the grade is adopted for every mile—so that the engineer can always know how to work his engine to the best advantage.

E. A., of Conn.—During the progress of the East India war, the English army have taken and sent home to the government several very rare specimens of war cutlery; as to workmanship and quality of material used, they are not excelled by those made in any other country,—the sword blades are especially of the best quality. In the manufacture of steel the Hindoos have an impression that iron hammers and anvils are injurious, they therefore use stone hammers and anvils as substitutes. The steel is probably made of the magnetic oxyd of iron, and the smelting is done in clay furnaces. After the iron is thoroughly hammered it is broken into small pieces and put into crucibles with a small quantity of dry wood. These crucibles are then put into a charcoal furnace, and a blast is applied for two or three hours; when the crucibles are removed they are not opened till they have become cooled. The iron has become steel during this process.

R. A., of Miss.—The patent to which you refer was granted in 1853. To prepare the cloth for being painted upon, it first undergoes a series of chemical preparations. The mordant is composed of muriatic acid. Sulphuric acid and block tin in proportions of 18 lbs. of the first, 9 lbs. of the second, and 2 1-2 lbs. of the third; the whole being warmed in a sand bath, whilst chlorine gas is introduced by a pipe to saturate it.

A. G., of N. C.—When you send your model do not fail to attach your name to it, that we may know it is from you. We are often much bothered to find out where models come from.

E. G., of Pa.—Railroadiron is not manufactured very extensively in this country, most of it is imported from England. The shops in your State, we think, are principally employed in re-rolling old rails—a large business is done in this line, we understand. You cannot patent the improvement you describe. The patent of J. D. Steele, issued in 1853, consists in making a rail of two parts, which is composed of a flanged bridge, or U-shaped rail of the usual form. The flanges of one rest upon the flanges of the other, and are fastened together by rivets. This form of rail presents a double bridge and a double base and must be quite strong.

R. G., of Pa.—We do not know the address of Mr. Green.

L., of N. Y.—Your idea of propelling canal boats by means of a locomotive on a railway placed on the tow path, is new but not patentable. The many objections to the plan would prevent its adoption, we should think

J. C. P., of Mich.—Your letter covering $30 came duly to hand, and we have entered your case upon our books, and will prepare the papers in your turn—probably in about one week—and forward for you to execute. The idea of "braking up" (stopping) a train of cars by the weight of the cars and their contents, is not new, but the manner you propose of accomplishing such an object we believe is. Magnetism as an agent for operating brakes has been known for some time—send us a detailed statement of your plan, and we will advise you more definitely by mail.

E. R. C., of Me.—Your improvements in marine engines do not appear to possess any novelty. The engines used on the Collins steamers are essentially the same. The shaft of a steamer makes about 210,000 revolutions during a passage from New York to Liverpool.

B. W., of Miss.—From the titles appended to your name we should judge you to be a sort of universal genius, and we are glad you are willing to let your light shine; but you have unluckily stumbled upon some ideas not positively new. A revolving gang of plows is well known in this country and also in Europe, and could not be patented. There is no patentable novelty in a clawed hatchet, and it would be presumptuous to undertake to patent a hole through the face for drawing or turning nails. Strike out a new path and try again.

W. B. G., of N. Y.—Your plan of getting a power to move vessels by hinging them at the center, is the same as the "Bender" of Prof. Smith, illustrated on page 280, Vol. 9, Sci. Am.

G. N. F., of Pa.—Unable to answer your interrogatories about portable steam engines, we have referred your letter to manufacturers in this city.

A. G., of Mo.—Examine some good work on Geometry in relation to dividing angles.

S. H. N., of Phila.—The Water Light to which you refer, meant the gas light produced by decomposed water, not the Benzole Light, respecting which we have heard nothing since the illustrated article appeared on page 152, Vol. 10, of this journal, representing Mace's Benzole Gas Apparatus We hope your will prove economical.

J. M. W., of Pa.—We have no objections to prosecuting your application for a patent on the marble saw, since you are aware of all the obstacles that interpose, but we cannot, in view of the circumstances, advise you to proceed. You would be obliged to contend with previous applications, some of which were matured some time previous to your invention. We cannot undertake to negotiate between yourself and Mr. Manly. Your offer is liberal, it is true, but we have no idea of entering into the speculation for the prize he offers: the race belongs to the inventors who have embarked in it, and we shall congratulate the one who is successful in getting hold of the cash.

W. P., of C. W.—It would be perfectly practicable to construct a self-regulating almanac on the same principle as a clock, but no patent could be procured for it.

T. C. H., of N. Y.—There are several patents on nail feeding machines.

J. W. A., of Halifax—We cannot discover anything about your windlass that approaches patentability. The same plan your model represents may be seen on sloops and schooners in our harbor, which were built twenty years ago. You seem so anxious to make an application for a patent, that we tried to study out an improvement that might be attached to it to make it patentable, but it was of no use, the foundation was too indifferent for a superstructure. Your last suggestion would not render the apparatus patentable.

L. M, P., of Mich.—The artificial leg patented and manufactured by B. F. Palmer, No. 378 Broadway, has stood the test for many years, and we are of the opinion that you would be safe in adopting it. You had better write to him, setting forth the truly distressing condition of the lad, who has been so very unfortunate as to lose both legs.

H. D. S., of Geo.—Corundrum is in no demand here some fine specimens may be sold for gems of jewelry.

O. H,, of Md.—Yours has been received and will meet with attention next week.

W. G. Ross, St. Nicholas Mills, near Quebec, C. E. wishes to procure good machinery for making buckets he wishes to know the cost, and the address of a manufacturer. We are often having inquiries for such machinery, and we think an advertisement of it in our columns would yield a good percentage.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Oct. 13, 1855:—

W, N. G., of Ct., $30; I. J. O., of N. Y., $30; M. P., of Vt., $25; J. & S., af Me., $30; C. D. F., of N. J., $30; D. E. H., of N. Y., $32; M. P., of N. Y., $30; S. B., of N. Y., $55; J. P., of Ga., $25; S. & S. M. C., of Ct., $25; J. B., of N. Y., $30; J. W. K., of N. H., $55; B. B. B, of R. I., $50; J. L. P., of N. Y., $30; H. M. P., of N. J., $25; T. B., of L. I., $30; G. R. J., of N. Y., $30; J. A. K., of N. Y., $100; J. H., of Iowa, $25; A. F. W., of Ky., $30; G. W. C., of O., $30; W. P. DeS., of Pa., $25; J. B. E., of Miss., $25; G. W. B., of Ct., $30; D. W. H., of Mo., $25; E. W. B., of Ill., $50; W. W. W., of Mass., $30; J. J. J., of Mass., $10; J. D., of N. Y., $30; J. S. L., of Mass., $23; H. & C., of O., $50; J. S., of L. I., $27; W. A. K., of N. Y., $25; A. D., of Ill., $25; E. A. P., of N. Y., $55; L. F., of N. Y., $20; J. W. P., of Mich., $30; A. M., of N. Y., $25; C. & P., of O., $30; J. B., of N. Y., $30; C. M. S., of Mass., $25; P. W., of Pa., $25; H. & M., of O., $25; W. D. H., of Mass., $25; J. M., of R. I., $25; B. E., of N. J., $25; W. L., of Md., $40; R. Y. H., of N. Y., $10; T. F. T., of N. Y., $30; W. P. C., of La., $25; T. D., of N. Y., $27; B. O. R., of N. Y., $15; H. W. H., of N. Y., $25; J. H., Jr., of Wis., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 13:—

S. M., of N. H.; W. H. M., of Mass.; W. P. C., of La.; M. P., of Vt.; H. M. P., of N. J.; I. J. O., of N. Y.; S. & S. M. C., of Ct.; S. A. K., of S. C.; T. D., of N. Y.. B. O. R., of N. Y.; E. W. B., of Ill.; J. B. E., of Miss.; A. M., of N. Y.; W. A. K., of N. Y.; D. E. H., of N. Y.; J. H., of Iowa; J. McM., of Ky.; D. W. H., of Mo.; J. K., of L. I.; J. S. L., of Mass.; A. D., of Ill.; G. W. B., of Ct.; H. W. H., of N. Y.; J. H., Jr., of Wis.; S. B., of N. Y.; B. E., of N. J.; P. W., of Pa., C. M. S., of Mass.; W. P. DeS., of Pa.; H. & M., of O.; W. D. H., of Mass.; L. M. B., of N. Y.; J. M., of R. I.; St. J., & B., of N. Y.

Important Items.

Models—We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

Patent Laws and Guide to Inventors.—This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office. Price 12 1-2 cents per copy. A Circular, giving instructions to inventors in regard to the size and proper construction of their models with other useful information to an applicant for a patent, is furnished gratis at this office upon application by mail.

Subscribers or exchanges who are entitled, to the paper and fail to receive it regularly are desired to inform us that any omission may be corrected. Missing numbers are furnished gratuitously where the fault rests with the publishers.

Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 as fees for copying.

Literary Notices.

The Nautical Magazine—The October number of this Magazine commences a new volume, increased in size and improved in appearance. A new department, under the charge of a naval officer, is added to it, and there can be no doubt of the ability engaged in making a most useful and able magazine—the only one of the kind in the world. It should receive a hearty support from our ship-carpenters, marine engineers, and all those interested in the nautical affairs of our country. Every number is illustrated by figures relating to nautical architecture, such as diagrams of new vessels. It is published by Griffiths & Bates, 115 Nassau st.

The Deserted Wife—By Mrs. Emma D. E. N. Southworth. This gifted authoress has more names than are usually awarded to humanity; but then she has more brains, and who shall say that the two properties ought not to go hand in hand. Mrs. Southworth has, for a long time, held a high place among female literati. Every work she produces evinces a high grade of talent. Her style is easy, pathetic and sometimes thrilling. The present work is one of her best for descriptive scenes and vividness in depicting character. It will make the fair ones weep, we are quite sure. J. B. Peterson, 102 Chesnut Street is the publisher, and he has done his work well. 12mo. pp. 586, bold clear type, smooth white paper.

Iowa in 1855.—Mr. N. Howe Parker is the author of a very excellent volume of over 250 pages, filled with valuable information respecting far-west Iowa. It is, in fact, a complete hand-book of the State, and conveys a clear knowledge of all her multitudinous resources, agricultural, mineralogical, geological, her manufactures, water powers, timber lands, soils, her railroads, population, schools, churches, &c. Useful information is also given for immigrants and strangers. The work is illustrated with a number of fine engravings of public buildings and remarkable objects. Chicago, Ill.: Keen & Lee, publishers.

India, China, and Japan, by Bayard Taylor.—It cannot be denied, we think, that Bayard Taylor is the greatest living American traveler, and that he is no less distinguished as a narrator of what he has seen. This volume contains the account of his travels in the above-named countries, and is, we think, the best written of any that has come from his pen. The style is more simple, and has less of the personal *grand flourish* which, to us, marred the style of his former works. He was attached to the United Expedition to Japan, and his accounts of that wonderful country possess a strange interest for us. His travels in India, however, are the most thrilling and attractive; his descriptions of men and scenery are graphic and spirited, for he writes with a singular flow of spirits, is never dull, and never prosy. Putnam & Co., Park Place, are the publishers.

Saladee's Coachmaker's Magazine.—The October number of this magazine contains quite a number of engravings illustrating various improvements in the art of coach and carriage making, and its kindred branches. The office of the Coachmaker's Magazine in this city, is No. 196 Elizabeth Street. The editor and proprietor is C. W. Saladee, Columbus, Ohio.

The Country Gentleman, published at Albany, N. Y., by Luther Tucker, is one of the best papers that we take up. It is always richly stocked with useful information about farming, gardening, and general fire-side miscellany.

Science and Art.

A Moon of the Moon.

We have received a letter from E. B. Kenrick, of Cambridgeport, Mass., in which he states he has discovered, by "unentranced clairvoyance," a *lunagen*—composed wholly of gas—revolving round the moon. He announces this discovery now, because there is to be a lunar eclipse on the 25th of this month, during some part of which he supposes a bright spot of solar light may be reflected through the center of the *lunagen's* disk, and discoverable by a telescope, thus affording evidence of the *lunagen* being located about two degrees from the moon's disk. This *lunagen* is a mass of gas, having a diameter three-fifths that of the moon, and a period of revolution amounting to thirty-one hours.

It is our opinion that Mr. Kenrick must have mistaken some flitting cloud in the upper regions for a gaseous attendant of our venerable globe's satellite. The astronomers of the present day are great on gas; the most of them can see far back into the time when the whole universe was nothing but gas; and some of them can see a ring of gas round the earth. We must, however, give the palm to Mr Kenrick for subtle examinations of the heavens, he having been able to discover such a minute gas bag in a part where no such thing was expected. This *lunagen*, however, may be composed of gas projected from some recent eruption of Tycho—the great burning mountain of the moon—and as we have no telegraph to these regions, no surprise should be felt at the general ignorance prevailing on the subject.

Apples as Food.

This fruit is exceedingly abundant this year, and, as a consequence, the price of it is reasonable. The working people in our cities do not, as a general thing, regard apples as food, but merely as a luxury; this is especially the case with our foreign population. But apples are not estimated according to their real value as an article of food; they hold a low rank in the estimation of most persons in comparison with potatoes, so far as it relates to their nutritive qualities, whereas the best qualities of apples are perhaps superior. In Cornwall, England, the peasantry consider ripe mellow apples superior to potatoes as food, and nearly equal to wheaten bread. In many parts of Europe the laboring people eat sliced apples with their daily bread, and make a hearty healthy meal of them. The finest apples in the world are raised in the United States, and the working people in our cities would do well to use more of them for food, especially during the fall and winter seasons, when they can be obtained cheap. We hope yet to be able to eat apples during the midst of summer (at fair and reasonable prices,) as sweet in flavor and rich in nutriment as when plucked from the tree. Much attention is now directed to their perfect preservation during summer's heat and winter's cold.

Rendering Teeth Insensible to Pain.

The Dublin *Hospital Gazette* states that diseased teeth have been rendered insensible to pain by a cement composed of Canada balsam and slacked lime, which is to be inserted in the hollow of a tooth, like a pill. It is stated that such pills afford immediate relief in all toothaches but chronic cases of inflammation. This remedy for toothache is simple, safe, and can easily be tried by any person.

A Polar Coal Region.

E. Meriam, the Brooklyn meteorologist, states that the Arctic Zone is not a barren waste. It will in time be found one of the richest mineral districts of the globe. Coal is abundant there as far north as beyond latitude 75 degs.

Gold in the Crimea.

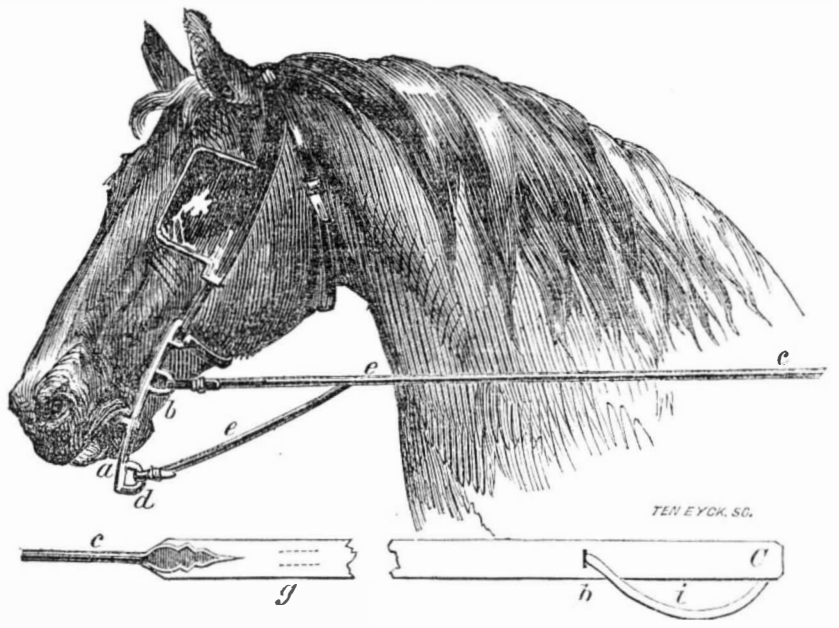
It is asserted by a Dr. F. Maynard, of Paris that there is an abundance of gold in the Crimea, and that in ten years it will become the "El Dorado" of the "Old World."

E. Meriam states that a number of earthquakes must have taken place at various points on the earth's surface this season.

GODDARD'S PATENT BRIDLE REIN.

The accompanying figure illustrates the improvement in bridle reins for the better management of horses, for which a patent was granted to Kingston Goddard, of Philadelphia, Pa., on the 24th of July last. The figure represents the curb bridle applied to a snaffle bridle—compound snaffle and curb bit. The curb and snaffle bits have long since been combined with a separate and independent bridle for each, but this involves a mass of reins in the hand, which is very troublesome to the rider or driver, producing confusion when a horse takes a sudden start.

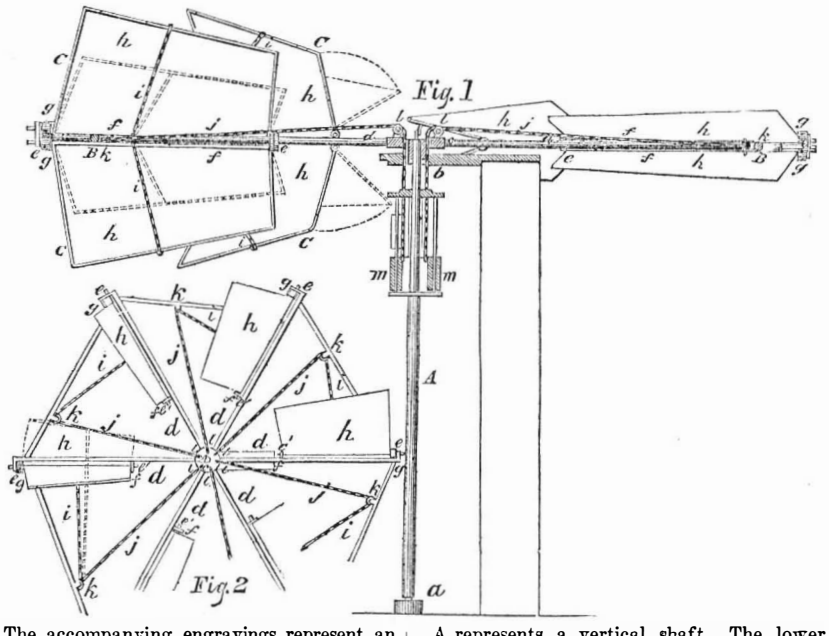
The object of this invention is to employ the combined snaffle and curb bits, and avoid the inconvenience and danger arising from the use of two separate reins. The nature of it consists in making the snaffle rein or bridle, tubular for a small portion of its length, on each side, and passing the curb rein through such tube, then out near the hand of the driver, forming a loop to be grasped by the hand in cases of danger, to control the curb bit.



a is one of the levers of the curb bit, of the usual construction. *b* is a ring, to which is secured one end of the snaffle rein, *c* At the lower end of the lever is another ring, *d*, to which is secured the curb rein, *e*. The opposite side of the bridle and reins is the same as the nigh side. The snaffle rein, *c*, is made tubular from about nine inches from the bit, as shown at *g*, in the detached open rein, C. The rein, *c*, receives the curb rein at the junction, *e*, as shown, and it (the curb rein,) comes out again at *h*, in the detached rein, near the place where the snaffle rein is grasped by the hand. The curb rein forms a loop, *i*, near the hand of the driver or rider, and it is thus ready to be grasped in case of danger, to rein up the animal. The tubular part of the snaffle rein is made sufficiently large to allow the curb rein, *e*, to pass through it; the latter should be of a cord, or round form, and of sufficient strength. For ordinary riding or driving, one rein only is grasped by the hand, but in case of the horse starting off, or when an accident occurs requiring him to be instantly stopped, the curb rein at *i* is convenient for the hand to control the animal suddenly and effectually.

More information may be obtained by letter addressed to Mr. W. B. Goddard, at Knorr & Nece's, Sadlery Warehouse, Philadelphia.

MORGAN'S PATENT WINDMILL.



The accompanying engravings represent an improvement in Windmills for which a patent was granted to J. S. Morgan, of Highland, Madison Co., Ill., on the 17th of July last. Fig. 1 is a side elevation of the windmill, and fig. 2 is a top view of it. Similar letters refer to like parts.

The nature of the invention consists in having the sails or wings attached to the ends of horizontal radial arms or wings, and arranged in pairs, one above and one below the end of each arm, the sails or wings being connected by pinions, so that they will rise and fall simultaneously. The sails or wings have cords attached to them, to which weights are connected and arranged so that a greater or less area of the wings or sails will be presented to the action of the wind accor ing to its velocity, and the mill will be made to receive uniform motion therefrom, however variable it may be.

A represents a vertical shaft. The lower end of it runs in a suitable step, *a*, and its upper end is fitted in a suitable bearing, *b*, attached to proper frame-work. To the top of the shaft there is attached a hub or boss, *c*, to which horizontal radial arms, *d*, are connected, any suitable number being employed. The ends of these arms are connected to a rim, B, which serves to brace them. At the ends of the arms, *d*, there are attached small plates, *e*, and center plates, *e'*, two plates on each arm. These plates form bearings for two shafts, *f f*, that is, two shafts to each arm, one being directly over the other, and connected by pinions, *g g*, which gear into each other. To the shafts, *f f*, there are attached wings or sails, *h h*, one to each shaft. The wings or sails may be formed of cloth, wood, sheet metal, or any proper material. If constructed of cloth, the cloth, of course, will be stretched over frames, *c*. To each wing or sail there is attached a cord or chain, *i*, at about the center of their edges, as shown in fig. 1. These cords or chains are connected to cords or chains, *j*, which pass through pulleys, *k*, attached to the rim, B. and through pulleys, *l*, in the hub or boss, *c*, The lower ends of the cords or chains, *j*, have weights, *m*, attached to them, as shown in fig 1. In consequence of each pair of shafts, *f f*, being connected by pinions, *g g*, one shaft will move simultaneously with the other, and also the sails or wings, *h h*, but in opposite directions, that is, towards or from each other.

When the mill is in operation, the wind will open or expand the sails or wings, and cause the wind wheel to rotate, the wings or sails being in a vertical position, but the wind cannot throw the wings or sails over or beyond a vertical position without raising the weights, *m*, the cords or chains, *j*, being of such a length to allow this. The weights when not raised by the action of the sails or wings, rest upon a circular plate attached to the vertical shaft, A. Thus it will be seen that a light or moderate breeze will expand the sails so that they will be in a vertical position, and present their whole surface or area to the action of the wind; but if the wind increases, the wings or sails will be thrown over or beyond a vertical position, raising the weights, *m*, and presenting a less area or surface to the wind, and consequently equalizing the speed of the mill. The wings or sails, of course, close when moving in the face, or towards the wind, as the weights only act upon them when moved in one direction.

This is another windmill presented to the attention of the public. The object of the improvement is to obtain a simple means of self-regulating the sail surface, to be exposed to the wind according to the force of the latter.

More information respecting it may be obtained by letter addressed to the patentee at Highland, Ill. See advertisement on another page.