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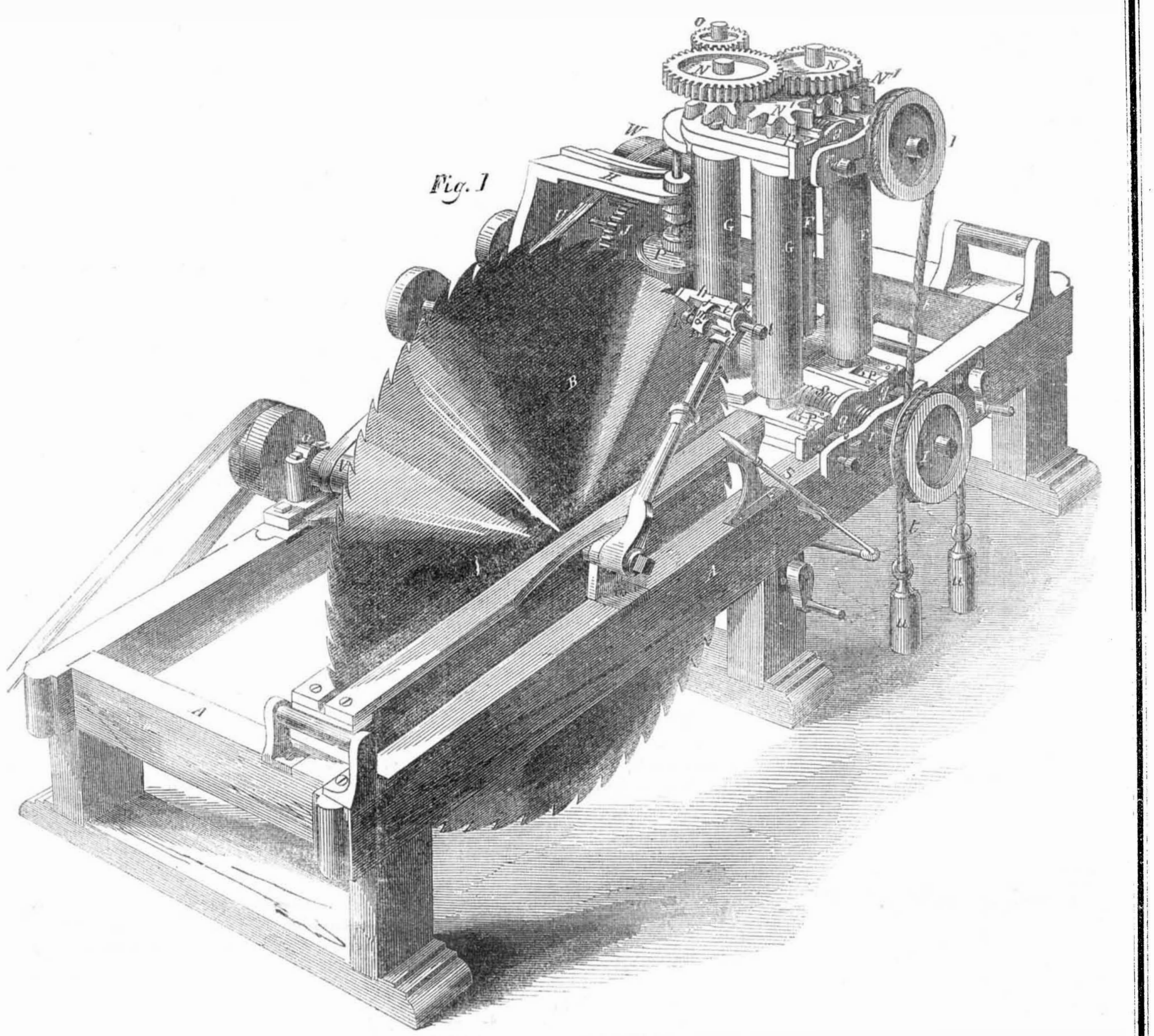
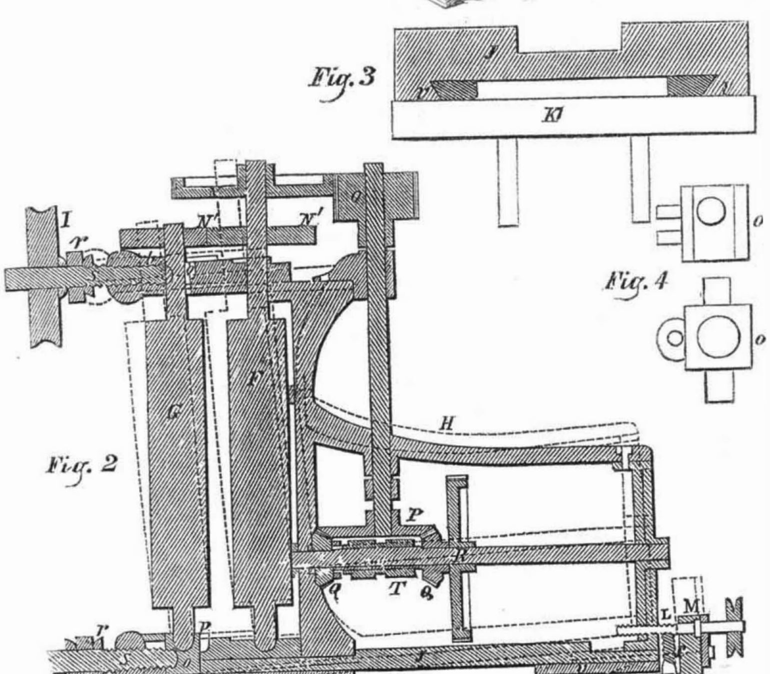
SAWING MACHINERY FOR RE-SAWING.





Sawing Machinery.

The accompanying figures represent an improvement in machines for re-sawing, for which a patent was granted to John J. Squire, of St. Louis, Mo., on the 17th of October last.

Figure 1 is a perspective view; figure 2 is a vertical longitudinal section of the feed roller frame, the plane of section being through the center; figure 3 is a transverse section of the lower plate of the feed roller frame, and bed plate; and figure 4 shows two of the feed roller boxes—a top and side view. Similar letters refer to like parts.

The nature of the improvement consist, 1st. In the employment of a radius guide constructed and applied to the saw in a peculiar manner, as will be further described, for the purpose of guiding and controlling it as it enters the stuff to be sawed, also insuring a true movement of the saw, and preventing its vibration. 2nd. In the employment of feed rollers placed within a sliding frame and arranged in a peculiar manner for the purpose of gauging the stuff to the saw, and properly guiding it while being cut.

A is the frame of the machine constructed in any proper manner, so as to support the working parts; B is a circular saw hung upon a mandrel, which works in suitable bearings, *a a*, said bearings resting upon ways on the upper part of the frame, A. The bearings, *a a*, are connected together by a cross plate, D, the bearings and cross plate forming an adjustable frame, in which the mandrel of the saw is hung. The saw, B, is perfectly straight or even on the "line side," but a portion of the opposite side is bevelled. E is a radius guide attached to the outer end of an adjustable arm; the inner end of said arm being hung on a wrist, in line with the saw mandrel. The adjustable arm is formed of two parts, the lower part being a socket, in which the upper part slides, and is secured at any desired point by a set screw. The guide, E, is formed of a stock, *h*, which passes over the teeth of the saw, B, the stock being provided with dove-tailed ledges, *i i*, between which a slide, *j*, is fitted, said slide having pins, *k k*, at both of its ends which are opposite sides of the saw, and nearly in contact with it. The slide, *j* is operated by a thumb screw, *l*, and the pins, *k*, are adjusted by means of set screws, *m m*, which pass through sockets, *n n*, in which the pins, *k*, are fitted; F F G G are vertical feed rollers placed in a movable or sliding frame, H, the rollers, F, are permanently attached to the frame, H, and have no movement independently of it, except their rotary motion, while the rollers, G G, are fitted in boxes, *o o*, which work in grooves, *p p*, on the upper and lower parts of the frame, H, said boxes being attached by arms, *g*, to cross heads, *r r*, through which screws, *s*, pass, said screws having pulleys, I I, on their outer ends, around which pulleys, chains, *t t*, pass, having weights, *u u*, at their ends. The frame, H, may be moved in a direction transversely of the frame, A, and its bottom plate, is provided with ledges, *v v*, which rest or fit between guides upon a bed plate, K, attached transversely to the upper part of the frame, A, figure 3. The frame, H, may be moved when necessary by means of a screw, L, which passes through a lug or projection, M, at one side of the bed plate, K, and through one of the side pieces of the frame. The bed plate, K, is secured at one end on the upper part of the frame, A, by screws, *x x*, and at the opposite end by a joint or hinge, *y*, shown clearly in figure 3, whereby the frame, H, may be inclined when desired, for the purpose of sawing the stuff in a bevelled or taper form. The feed rollers are operated by means of horizontal gear wheels, attached to the upper end of the rollers, the wheels, N, gearing in a pinion, O, on the upper end of an upright shaft, which is provided with a bevel wheel, P, which gears into bevel pinions, Q Q, placed loosely on a shaft, R, said pinions, Q, being thrown either one of them in gear with the wheel, P, by means of a lever, S, figure 1, which operates a clutch. Underneath the wheels, N, are pinions, N′, which gear into each other, and communicate motion to the outer rollers, G G. Motion is communicated to the feed rollers, F F G G, by means of a belt, U, which passes around a pulley, V, on the saw mandrel, and around a pulley, W, on a shaft, running in suitable bearings on the frame, H.

By having the saw mandrel hung in a movable or sliding frame, saws of various sizes can be used, and the saw in use, as it becomes worn, adjusted. By the use of the radius guide, E, the saw is prevented from vibrating, and it controls and governs the saw as it enters the stuff to be sawed, and causes it to work in a straight line, the pins, *k k*, nearly touching the saw.

By means of the feed rollers, F F G G, arranged within a frame, H, as described, the stuff will be fed properly to the saw, the outer rollers, G G, adjusting themselves to the thickness of the stuff by means of the weights, *u u*, which keep them pressed firmly against the stuff. The stuff may also be sawed obliquely, by raising one side of the bed plate, K, and throwing the feed rollers angularly

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with the saw, as shown in dotted lines in fig. 3. The stuff to be sawed is fed between the rollers, F F and G G, to the saw, the radius guide, E, resting upon the stuff.

The claims of the patent are as follows:—

1st. The employment or use of the radius guide, E, constructed, arranged, and applied to the saw, B, substantially as herein shown and described, for the purpose of controlling the same, and preventing any tremor thereof.

Secondly. Placing the feed rollers, F F G G, in a movable or sliding frame, H, constructed and arranged as herein set forth, for the purpose of gauging the stuff to be sawed, and properly presenting said stuff to the saw, and guiding it while being sawed.

These claims clearly express the advantages obtained by the machinery as illustrated and described, and require no further comment.

More information may be obtained by letter addressed to the patentee.

The Art of Dyeing—No. 2.

In the last number we described the method of dyeing cotton yellow with the bi-chromate of potash and the acetate of lead. The salt formed in the cotton which makes this dye,(reflects the yellow ray of light,) is termed the "chromate of lead." Chrome colors are more permanent that any known vegetable yellow colors,because the metal chromium, which is the base of the color, is not easily oxydized.

Bark Yellow—A very good yellow can be produced on cotton by American yellow oak bark (Quercitron,) by the use of the sulpho-muriate of tin as a mordant. About five pounds of bark will dye a good full color on ten pounds of cotton yarn. The bark is placed in a bath of boiling water and suffered to boil about ten minutes, then about one-sixth of a pint of spirits (nitro-muriate of tin,) is added for every ten lbs. of yarn; the liquor is cooled down about ten degrees, and the yarn entered. It is handled (turned over pins) in this for about fifteen minutes, and then lifted to drip, taken out and aired. It is best not to give all the dye stuff at one dip, but at two or three separate dips, as the airing and dripping after each dip seems to give the yarn an appetite (to use a common term) to eat up the dye stuff more cleanly, and produce a deeper shade from the same quantity of dye wood.

Yellow on Wool—This bark is used to dye yellow on wool and flannel, which must be boiled in the liquor, otherwise the process is the same as in dyeing the cotton. The yellow oak bark must be placed in a clean bag to prevent it sticking like burrs to the goods. Dr. Bancroft, of London, discovered the qualities of this bark as a dye while on a visit to the Colonies, before the Revolution. It makes a very good and beautiful yellow. Fustic, another dye wood, makes a tolerable yellow, by using a mordant of alum. It is but seldom used now, however.

Yellow on Silk—A fugitive yellow is dyed on silk with turmeric. This dye wood is scalded in a clean vessel with boiling water, and the clear poured off into the dye kettle, and then a little sulphuric acid added (about enough to give a sharp sour taste to the liquor.) The silk is then entered and well handled for fifteen minutes, when it will assume a fine yellow color, capable of standing the action of an acid, but fades away very fast when exposed to the rays of the sun. One pound will dye five pounds of silk. To dye silk with fustic, the goods are steeped for two hours in a strong solution of alum, then taken out and entered in the fustic liquor, in which they are handled for about half an hour. It takes about ten pounds of fustic to dye ten pounds of silk, or twenty pounds of wool a tolerable yellow. The wool in the state of yarn, and also the silk, are handled like cotton, on pins, but the wool is only dripped, never wrung; the cotton and silk yarn are wrung and not boiled, but the wool is always boiled in the liquor. The weld plant was at one time extensively used in dyeing in France and England, but never in America. The bi-chromate of potash, yellow oak bark, fustic, and turmeric, are the dye stuffs generally used for dyeing yellow on cotton, silk, and wool, in our country.

Wool must be scoured from its grease before it will absorb the dye from the liquor, and for this purpose good soap is the best substance, but the quantity is economised by the use of soda lye, which converts the grease of this wool into soap, which can be easily washed away with water. A dye shop should always be located on a stream of soft water, because hard water adds greatly to the expense in neutralizing the useful effect of the soap used in scouring.

Silk must be prepared for dyeing—that is raw silk—by boiling it in good soap until all the natural gum is removed from it. Nothing has been discovered equal to good soap for removing the gum from silk. The soap is cut up in small pieces and dissolved in water in a clean boiler, until it has attained to a strength that will feel slippery between the fingers; into this the silk is entered; if in hanks, it is turned on pins; if in pieces, it is reeled over a "winch," or if in dresses (like old silks dyed by renovating dyers,) it is dropped loosely into the boiler and turned with a clean wooden smooth stick. Most persons will be liable to conclude that boiling silk in strong soap suds would destroy its texture, but it is a fact, that all silk must be boiled in soap before it can be dyed. All the soap must be well washed out before the goods are ready for dyeing, and after goods are dyed they should also be well washed.—Cleanliness is one great secret of success in a good dyer. Spun silk is merely scalded in hot water, and is then fit for the dye tub. Cotton and silk in pieces are selvedged, drawn constantly between the hands by the selvedges, from end to end of the piece then plunged under the liquor, until they are finished in the dye, or else they are turned over a winch or reel. Woolen goods in pieces, such as broad cloths, merino twills for ladies wear, and such kinds of goods, are all handled on reels in both the mordant and dye kettles.

Alum is the common mordant for silk; a tub of it in solution about 3° in Twaddle's hydrometer, or of a very strong taste (a practical dyer can tell the proper strength by tasting,) is always kept ready in every dye shop.

By the old method of dyeing wool, in yarn or in piece, all the goods were first mordanted before they were boiled in the dye wood. The modern system is to use the mordant and dye stuff in one kettle for most colors, and dye off at one operation; thus shortening the process. (This we shall describe for each color.)

The "spirits" in general use for dyeing is the nitro-muriate of tin. Some dyers use a great variety of such spirits, but it is all nonsense. One kind will answer for every color, as well as to have fifty of different proportions. These spirits are made by taking nitric and muriatic acids, one part, by measure, of the former to seven of the latter, and feeding in pure tin, in small pieces, very slowly, until the acid will not dissolve any more. It is best to take three days to make these spirits. The muriate of tin will answer, its own self, every purpose of a jobbing or renovating dyer, and as it is more easily kept and made, no other should be used in our climate.

Saffron is employed for making yellow ink, and a new vegetable substance named "wongshy," a native of Batavia, has lately been introduced into Germany with some success, to dye yellow on cotton and wool, but it is more expensive for this purpose than chrome and yellow oak bark.

Within the past thirty years, the chrome has almost entirely superseded vegetable substances for dyeing yellow on cotton. It is an oxyd of the metal chromium (Cr., chemical symbol,) which is found combined with iron (chrome iron,) which is its principal ore, in Maryland. The composition of this ore is Fe.O.+Cr.2O.3. The pure metal is unknown in the arts, only known in the laboratory. Some other substances are employed for dyeing yellow, but as they cannot be used, owing to their great expense, in the arts, it would be imprudent to occupy space in describing the methods of using them.

By the plan we have described for dyeing yellow on wool, every person can dye their own family flannel yellow with great ease, in a clean tin kettle.

This completes all we have to say on dyeing yellow, one of the three primary colors. Our next article will treat of the various plans and substances for dyeing red.

Wire Fences.

Messrs. Editors—Professor Mapes, in his *Working Farmer* of June, 1854, says that wire fences have nearly gone out of date, &c. Is it so, or merely his opinion?

Is there no one who has had experience with wire fences, and whose opinion, after trial, can be had? Next Spring I have an amount of fencing to build, and had calculated upon using wire, but if that "be found to carry the elements of its own destruction," I will not use it. Something besides lumber (where stone is not to be had) must be found for the purpose, particularly if the present prices are to remain, else land must remain unfenced.

Will you make inquiry, or scare up some reliable information about wire as used for fences, and the proper and best mode for erecting same. H. H. W. S.

Dec. 15, 1854.

[Prof. Mapes should know a great deal more about the success or want of success of wirefences, than us, because his attention is devoted to agriculture entirely. So far as our observation goes, we have witnessed considerable wire fencing in Long Island, and in Connecticut, within the pas three months.—It appeared to us, however, that these fences, although well constructed, were not faithfully attended; they were all rusty, and gave evidence of early decay. This we looked upon as disgraceful, and exhibits a want of intelligence or good sense in their owners. Iron wire is very easily affected by the atmosphere, it oxydizes rapidly, and soon becomes useless, unless protected; but if well protected, it may be made to endure for a century; this, we believe, can easily be done, and at no great expense, by the use of paint composed principally of red lead. Attention is the great secret of keeping fences in good order. Whenever a spot of paint is observed to be removed, it should be painted over again at once. Hot coal tar, into which is stirred a little oil, is also an excellent and cheap coating for wire fences. But unless wire fences are kept carefully protected from the atmosphere they will "go out of date" very fast. We have a very favorable opinion of such fences; they should be made of good strong wire, surmounted with a single board from post to post, and have one at the foot in places where hogs run loose, not otherwi e. With such precautions, wire fences have much to recommend them to farmers, where wood and stone are scarce and dear.

Study of Natural History.

In the following passage Prof. Nichol, the most eloquent living lecturer and writer on astronomy, points out the value of the study of natural history, as affording a firm basis for our knowledge of that order in variety which is the great law of creation:—"Each physically distinct portion of the earth's surface, and each similar period of its history, is characterised by its own peculiar organic creation. Whether we travel in space from land to land, and sea to sea, or in time from one epoch and formation to another, the result is the same. We everywhere find the organic creation changing with the inorganic condition in which it has to exist. There appear to be certain natural laws which necessitate this adaptation of one part of nature to another, and, strange as it may seem, of the higher to the lower, of the organic to the inorganic world. The physical laws of the universe, in their rigid mechanical necessity, seem to move on their majestic way, producing revolution after revolution in unvarying cycles, heedless of the organic world. Not so the living being; it must yield to those physical powers it is unable to control, and, where it cannot elude their force, perishes in the contest. Now, it is the study of these general laws of the physical world, and of the co-ordinate changes in organic nature, which constitute what I must regard as the highest department of natural science and of a true scientific geology—that is, a rational account of the diverse phenomena of the earth, in relation to their causes, consequences, and connection with each other. In studying these laws in this light the character of rigid necessity disappears, and we find that though the laws have been unvarying, the collocations of matter have been manifold, and regulated by the highest wisdom and beneficence. Even as the earth's surface at the present time is diversified with sea and land, plains, valleys, and mountains, with lagoons, and marshes, and sandy deserts—and a more complex diversity imparted to all these by varieties of climate, elevation, and exposure—so it has been in the bygone history of the earth. Sea and land have been continually changing places, altering their forms and relations, and with these, also, the physical climate of each locality. But as at the present day we find no portion of the globe destitute of its appropriate inhabitants, so when we travel back into remote geological periods, we find one race of organic beings following another in wondrous succession. New forms appear as the old die out, but each well adapted to the then existing conditions of the earth's surface. We thus find that manifold organic creations, wisely adapted to the varying states of the inorganic world, have existed, and, as there is nothing in the physical laws to produce these adaptations of plant and animal to place and climate, we must look for its source in a higher power. Thus, where inorganic revolutions alone led us only to mechanical necessity—conjoined with organic creations—they compel us to acknowledge a wise beneficent designer."

Virginia Salt.

E. Merriam, in a communication to one of our city papers, gives some interesting information respecting the great deposit of salt in Virginia. He states that Virginia is moving in the great work of internal improvement, and is making a railroad that will reach the great salt mines of their mountains, and in a few years this salt will be distributed over the whole of the Eastern States—its superior quality will insure for it a ready sale everywhere, for it is better worth one dollar per bushel for table use than any other salt that ever came to our market is worth twenty-five cents. It is a pure *chloride of sodium*, and will remain as dry as flour in any latitude from the equator to the pole.

This great salt mine is in a trough between two mountains, at an elevation of 1,882 feet above the level of the sea, and near the waters of the north fork of the Holsten river, a tribute of the river Tennessee, and is near the rivers of the State of Kentucky, Tennessee, and North Carolina, where these border on a south-western point of the State of Virginia.

The fossil salt lies about 220 feet below the surface of the ground, and is encased in a vast deposit of gypsum.

The Barometer and Cannonading.

A gentleman named Chas. Le Maout, has communicated to the French Minister of War the discovery that a heavy cannonade, like that of the battle of Balaklava of the 25th of October, produces so sensible an effect upon the barometer, even at the distance of fifteen hundred or two thousand miles, as to indicate, by an extraordinary rise of the mercury, the probable occurrence of such a battle, and in a much shorter space of time than the facts can be communicated in any other way than by the electro magnetic telegraph.

Philadelphia Locomotives.

We learn from the *Ledger* that the building of locomotives commenced in Philadelphia in 1831, by M. W. Baldwin. In 1832 he built the first successful one made in the United States, and called *Old Ironsides*. From that time up to the present, he has built 630 locomotives and tenders. He commenced building them with 30 men and has now 430 in his employ.

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(For the Scientific American.)

On Painting.

No trade in our country needs improvement more than painting, especially in regard to durability. The most common error in painting grows out of the idea that spirits of turpentine is a dryer; or, in other words, has a drying effect upon oil and paints with which it is mixed; hence it is used indiscriminately by painters to make paint dry, when the fact is, it only diminishes the quantity of oil used, and evaporates very soon after the paint is spread on wood, without having imparted any drying quality to the oil or paint. The only proper use of spirits of turpentine in painting or varnishing, is to reduce dry paints or gums to a consistency capable of being spread out, as in painting or varnishing, and if we could spread out the other ingredients on the same surface, without the turpentine, we might dispense with its use. For example, to make a hard paint that will bear rubbing down with pumice stone, take dry paint of any kind, and oil sufficient to make a hard cement, when spread out and dried, then reduce it with turpentine to a consistence that may be spread with a brush, and when the turpentine evaporates it leaves a hard body composed of the paint and oil. Again, take gum copal or rosin, by heating and mixing with the turpentine we reduce them to a liquid state, and can use them for varnishing; and when the varnish is spread, the turpentine evaporates without having imparted any essential quality of drying, luster, or durability to the varnish. Hence no turpentine should be used in painting intended to stand the weather, as it can be reduced to a proper consistence with oil, and made to dry without injuring its durability.

Paint, to stand the weather, depends entirely on the oil for its durability. For example, take very thin oil in warm weather, and mix with white lead or other paint, and some turpentine for a dryer; the whole being of the consistence of common paint, put on three coats and it soon looks dry and dead, and in a year or two will begin to rub off like whitewash, because the proportion of oil to the paint was too small. Again, take the same quality of oil and paint in cold weather, when the oil is thicker, and instead of turpentine, use some good dryer; mix to the consistence of common paint, then put on three coats, and it dries with a gloss and looks better at the end of four years than the other when first done, and will preserve the wood well for many years, simply because the proportion of oil to the dry paint is greater.

But all painting cannot be done in cold weather, and the question occurs, can it be done by using very thin paint, and putting on more coats, but the best way is to boil the oil; boiled oil is best at all times, but should be boiled more in warm weather than in cold. It can be boiled in an iron, copper, or brass kettle, and should be done over a slow fire out of doors, as there is danger of it taking fire; to every gallon of oil put in a quarter of a pound of litharge, which will make it dry. For hot weather, keep it boiling two or three hours; for cold weather, half an hour is sufficient; stir it frequently. A little prussian blue ground in oil, and put in white paint, improves its appearance. Sufficient time should be given between coats to let the paint dry well, and no outside painting is well done until it has a good even gloss.

For chair and other painting, where you want a hard body to rub down, or wear well, grind dry paint with a small proportion of oil, and reduce to the proper consistence to spread with a brush; use driers in proportion to the oil; if the oil is boiled as directed, for out-door painting no drier is needed. Put on coats sufficient to make as good a body as you require, giving time for each coat to dry well. If it has a gloss when done it is from using too much oil, and will not rub well. There is not much danger of using too little oil for this kind of work, give it the gloss with varnish.

Spanish whiting and water, with a little glue, make a good and cheap priming for chairs; it should be put on warm. Persons wishing to paint their own chimney-pieces or carriages black, should put on one coat of lead color, made of white lead and lampblack, using some turpentine and a drier; when dry, sand paper well, and finish with copal varnish and a little lampblack.

DRIERS—White lead has a drying effect on linseed oil, and paint made of white lead and oil, will always dry on new wood. Burnt Turkey umber, litharge, red lead, and sugar of lead, will all dry paint when ground with or in any way incorporated in it. But the best drier I have ever seen used is made as follows:—Take one gallon linseed oil, one pound red lead, one pound litharge, one pound Turkey umber, burnt nearly black and pulverized, and half a pound ground shellac; it is best to run the whole except the gum, through a paint mill, put into an iron, copper, or brass kettle, and boil slow until it will not show a grease spot through brown paper when dropped on it hot; keep it well stirred. When done, set it off and let it cool until the spirits of turpentine can be poured in without taking fire; pour in about two gallons of turpentine slowly, stirring all the time, more or less will do, as the thicker the drier the less will be necessary in paint; a half pint is sufficient for a gallon of oil in the paint on any new wood, but on old inside painting a little more will sometimes be necessary. It takes three or four hours boiling. A. W. H.

Platte City, Mo.

How to Build Safety Ships.

MESSRS. EDITORS—Since the matter of providing greater security for human life on steam vessels, has come before the present Congress, I desire to call your attention to the wisdom of adopting the life-boat principle of construction, viz: securing greater strength in combination with water-tight compartments, in a similar manner to that projected by John W. Griffiths, for the six-day steamer now in the hands of Capt. Graham.

Let every steamer carrying passengers or the mails, be obliged to have at least two transverse bulkheads of plate iron, and one center longitudinal bulkhead or kelson, also of plate iron, thus dividing the hold into six compartments, to be kept water-tight. The coal bunkers should also be made in the same manner. It would require five transverse bulkheads to divide the hold into six portions, and they would add no strength in the direction in which steamers most require strengthening, viz., in the longitudinal center. This would give them backbone, and it is notorious that this line is the longest and weakest in the whole fabric, as at present constructed. It will do more injury than good to put nothing but the transverse bulkheads in, because in the event of filling one of those, the ship requires the necessary strength to carry this enormous tank of water until she can reach a port for repairs. Let us also have an amendment of the tunnage laws, so that vessels may be built with sufficient beam to stand up in a gale of wind. Almost any cockle shell can be ballasted to maintain an equilibrium in calm weather, but a gale of wind soon rolls the life out of the four story wreck. Give us strength, stability, and the life-boat compartments. PRACTICAL OBSERVER.

New York, Dec. 29, 1854.

Interesting on Whiskers.

MESSRS. EDITORS—Being troubled with what in these parts is called a spotted beard, and wishing to have a good crop of facial hairs, I have concluded to write to you in the hope of receiving some information as to what I might use to cause my beard to grow in those places where it has hitherto refused to come out. Any information through the columns of your truly valuable paper, will be thankfully received and gratefully remembered. You will please state whether such remedies would have a tendency to discolor the hair or not. T. J. FARMINGTON.

Blairsville, Pa.

[We are really sorry that we cannot afford any relief to our correspondent; some of our readers, however, may be able and willing to do so. But were we in his place we would not seek the relief he is so desirous of obtaining; the very oddity of the spots would make us cling to them with tenacity, knowing that but few possess the same inestimable facial distinction.

(For the Scientific American.)

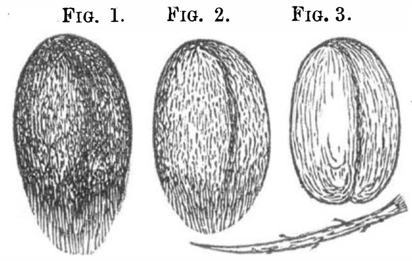
Wheat as an Article of Human Food.

This product of the vegetable kingdom is the most important, perhaps, of all the crops of the agriculturists. The perfect grain contains from fifty to seventy per cent. of starch, and from ten to twenty per cent. of gluten and from three to five per cent. of fatty matter.

The fatty matter and starch afford the carbonaceous portions of our food, the gluten furnishes the real nourishment for the muscle and nerve. The value of food, therefore, for human consumption, depends not upon the quantity of starch which affords material for the accumulation of fat, but chiefly upon the quantity of gluten contained in the grain. Any course of preparation, therefore, which tends to waste this important element, (gluten) must be objectionable.

It is a singular fact that in all the seeds of wheat and other grains, the principal part of the gluten lies near the skin or bran or berry, it should therefore be a desideratum in the preparation of wheat for food, to preserve as much of this nutritious quality as possible.

FIG. 1. FIG. 2. FIG. 3.



The present mode of preparing flour by refining it to its utmost possible extent, diminishes somewhat its value for food. In addition to the gluten, the phosphates, (an important ingredient in human food,) lie near the surface. The epidermis or outer covering of the berry of wheat, is composed principally of silex (flint) which is indigestible in the stomach of a person, and will even withstand the action of concentrated nitric acid. The *setæ* or hairs seen in the lower end of the wheat berry is also of a silicious structure, and therefore indigestible.

It therefore becomes a question of no small moment how wheat may be best prepared for the purposes of food.

For the purpose of exhibiting this subject in its clearest possible light, we introduce a series of figures, showing by figure 1 a grain of wheat in its natural state highly magnified. Figure 2 shows a grain of wheat, also magnified, after it has been passed through a common smut machine. Figure 3 shows a grain of wheat after the silicious coating has been removed, leaving the whole of the gluten, and other important elements, which are serviceable as food. Immediately above this figure (3) is shown a single *setæ* or hair more highly magnified, with which the ends of figures 1 and 2 are studded, but which are entirely removed in figure 3. In this case, all the indigestible portion of the grain is removed, but nothing is removed that is nutritious. Flour manufactured from wheat from which the silicious coating has been removed, is much more valuable than that prepared by the common method. This improved process also saves much of the nutriment which is wasted in the bran by the common method of grinding.—[By PROF. BRAINARD.

Cleveland, Ohio.

[Our food has a most important bearing in our health. We need a great deal of the phosphate of lime in our food, for supplying bone and tooth material, consequently, if from choice or habit we use food which does not supply the necessary amount of this substance, some part of the body must suffer. It is believed by many that our people would have sounder teeth and more robust health if coarser flour and meal were more generally used for food, for the reasons specified in the above communication. This, therefore is a subject of special interest to every person in our land. We understand that O. P Stevens, of Cleveland, Ohio, has invented a machine that will hull any kind of grain for making hominy, &c., and it is the opinion of some persons that it will hull rice without breaking. The object of the invention is to prepare grain for food in such a manner that it will retain all its nutritious material, and remove only that which is indigestible.

Models for the Patent Office.

MESSRS. EDITORS—I am pleased to see that you have brought about a correction of errors in the Patent Office as relates to the arbitrary rule of requiring all models not to be larger than twelve inches square. Inventors ought to thank you for what you have done for them in that respect, and will no doubt do so.

As to requiring models for all new inventions, I think, perhaps, that is well enough, but at the same time I think the models of rejected claims might be returned to the applicant. And that models belonging to inventors, where the patent has expired, should either be sold or taken away by the parties interested after so many days' notice from the department. A course of this kind would soon rid the office of an immense amount of useless rubbish that now encumber the rooms. And to save time and expense of inventors, would it not be better for the applicant to make out a full and accurate description of his claim with drawings, and present that, and if his claim is allowed, then for the Commissioner of Patents to require a model before letters patent be granted.

The foregoing ideas suggested themselves to me after reading your remarks in the SCIENTIFIC AMERICAN on the subject.

H. DUNCAN.

Montgomery, Ala., Dec. 14, 1854.

[The suggestions of our correspondent merit attention.

A Large Gun.

MESSRS. EDITORS—Allow me to correct a statement in regard to the largest gun in the United States at Washington. There is at the present time, and has been since 1847, lying in the government yard at South Boston Point, the largest in the United States, and I think I might safely say in the world. It was cast in the foundry of Cyrus Alger, in 1846, and weighs 25,520 lbs. Its bore is 12 inches. The gun you spoke of in the SCIENTIFIC AMERICAN of the 9th, was also cast by Cyrus Alger, and was exhibited in the streets of Boston at the Railroad jubilee.

T. J. COVELL.

South Boston, Mass.

Cure for Felons.

Boil up in any iron vessel of sufficient capacity (say four or six quarts,) enough yellow dock root to make a strong liquor, when sufficiently boiled, and while the liquor is as hot as can be borne by the hand, cover the kettle with flannel cloth to keep in the heat and steam, and hold the hand or finger affected under the cloth and in the steam, and in five minutes the pains will cease. If it should return after a time, heat up the same liquor and do as before. In a cure performed in this way, the joints of the fingers will always be preserved. This receipt has been abundantly verified here. A. M. C.

Lyonsdale, N. Y.

A Chemical Error

At Copperas Hill, Strafford, Vt., there is annually manufactured three millions pounds of copperas. Thirty men are employed in making copperas, and twenty in raising the copper ore. To melt the copper ore two thousand five hundred cords of wood are annually burned.—[Exchange.

[The common name "copperas," for the correct name "sulphate of iron," we infer from the above, has led many into the belief that it is made from copper ore. It is made from the sulphuret of iron, and does not contain a particle of copper.

The tunnage of vessels built in Boston last year amounted to 69,559. In New York it amounted to 63,490.

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New Inventions.

Improvement in Saw Mill Dogs.

The annexed figure is a perspective view of an improvement in saw mill dogs, for which a patent was granted to T. H. Russell, of Taftsville, Vt., on the 29th of last August. The log, A, is represented as resting at either end on steps, *a*, which project from the inner sides of the fixed and movable blocks, B C; these blocks rest on the side rails, *c*. By changing the position of the moving block, C, on the rails, the distance between it and the fixed block can be adapted to logs of different lengths. The movable block is held in place by a pressure shoe, *e*, which may be made to bite against one side of the rail by a turning eccentric, *f*. The movable block, C, has the usual saw race, *g*, cut in it, and is provided with a stationary dog, D, placed on one side of the said race; this dog is furnished with projecting teeth that bite into the end of the log on the outside of the saw. This dog is hinged to the carriage to admit of its being driven forward or thrown back according as it is required to clamp the log while sawing, or to release it during the operation of setting the log, after one board is sawed, into proper position to saw the next. A similarly hinged and toothed dog, E, is connected with the same carriage on the opposite side of the saw race, and serves to clamp the log on the inner side, or that at which the sawing terminates. This dog is mounted on a slide, F, which has motion given it along the block in either direction as required.

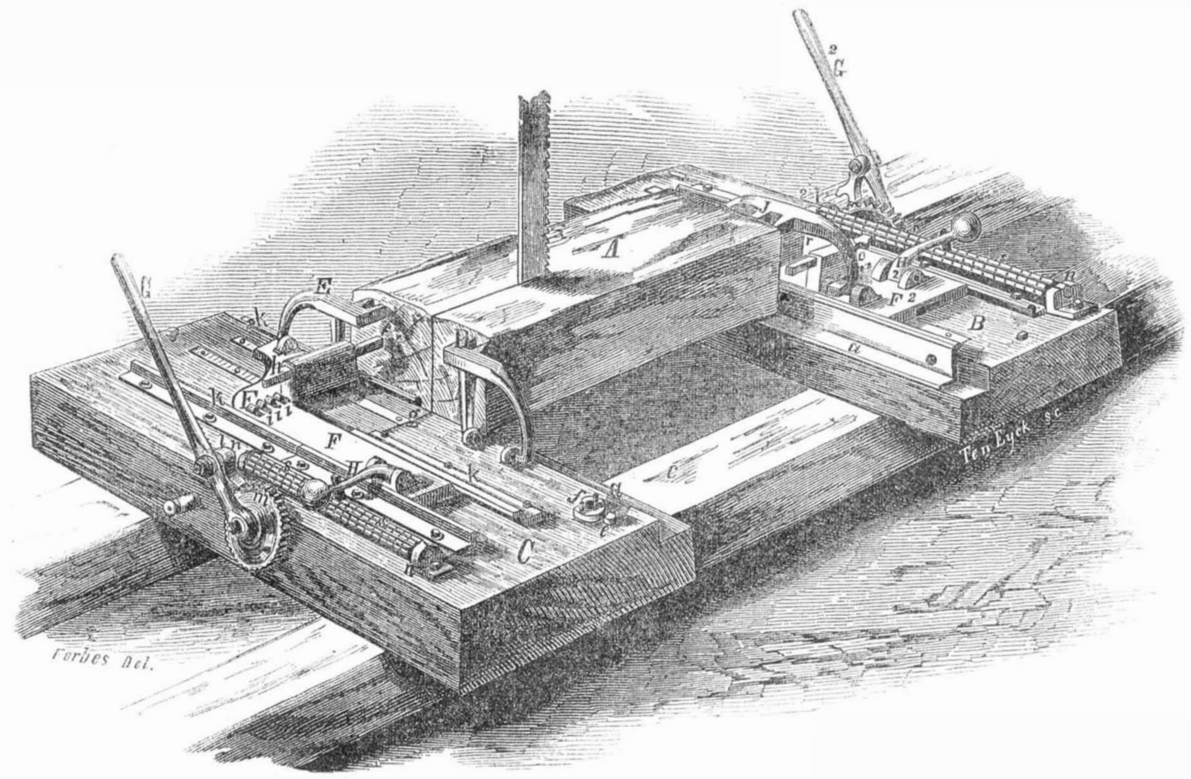
This sliding dog not only serves to clamp the log, but also communicates the requisite transverse feed to the log to set it to be cut up into lumber; a supplementary sliding dog, *h*, is driven into the log below the hinged dog, E, it is fitted loosely through a box formed on a standard on the slide on which the hinged dog is mounted. This horizontal or sliding dog has a head at its back, and a chisel at its front end. The head being hooked, furnishes a hold for the lever by which it is drawn out of the log. The lever which thus hooks over the head of the clamp, has for its fulcrum any one of a series of teeth, *i*, which projects from the face of the the slide, F. The slide, F, works between guides or rails, *k*. These guide rails are three in number, one extending nearly the whole length of the block, and the other two are placed parallel to it, but one, k^2, at a much greater distance than the other. The wide space between the guide rails admits the wide end of the slide, F′, which supports the dog, and gives it a firm footing, while the narrow space between the rails receives the narrow end of the slide, which passes the saw race, and thus has the necessary length to hold the dog firmly and steadily, which could not be done in slides arranged to move on one side only of the race.

The slide, F, is moved in either direction as required, by a pinion working into a rack cast, or otherwise secured to the under side of the slide; rotary motion is communicated to the pinion that operates the slide by means of a hand lever, G, that has a pawl, *l*, that takes into a ratchet wheel, *m*, keyed on the shaft of the pinion; this pawl, *l*, is pivoted to the lever, and made with a double clip, so that it may be swung over, or reversed to drive the ratchet wheel in opposite directions, according to the required movement of the slide. The slide, F′, is fitted with a weighted catch or detent, H, that acts as a stop to arrest the motion of the slide by dropping into one of a series of notches made in a stationary gauge bar, I; this gauge bar is supported at either end in polygonal bearings, *n*, its own ends being made of corresponding shape to fit therein. The bearings are open at their top to admit of the ready removal of the gauge bar. The gauge bar has a series of longitudinal ribs on its surface, in the same line, or thereabouts, as the angles formed by the meeting of the sides of the polygonal bearings; each of these ribs has a series of equi-distant notches, S, made in it throughout its length, each series commencing at a common ring of notches at the inner end of the gauge, and the distance of the notches in each rib differs; the distance between these notches correspond to the several thicknesses of lumber into which it is usual to cut logs, and the catch, H, as it drops into the several notches consecutively, of the uppermost rib, arrests the transverse feed of the log, and holds it at the point required for sawing off a board of the proper thickness.

The stationary tail block is nearly similar to C, except it has but a single hinged dog, J, and two small sliding wedge dogs, but dispenses with the supplementary bale dog. The pitch of the notches in the gauge bar of the block is the same as that in the moving block.

The log to be cut is placed upon the saw blocks, B C, in proper relation to the saw, each gauge bar is so seated in its bearings as to present the row of notches uppermost whose divisions correspond to the thickness of the lumber to be cut, the weighted drop catches, H H^2, being raised out of gear with the gauge bars, the sliding dogs and clamps at either end are then adjusted to the proper position and driven into the ends of the log, as represented; the weighted catches, H H^2, are then dropped into gear with the ring notch in either gauge bars.

SAW MILL DOG.

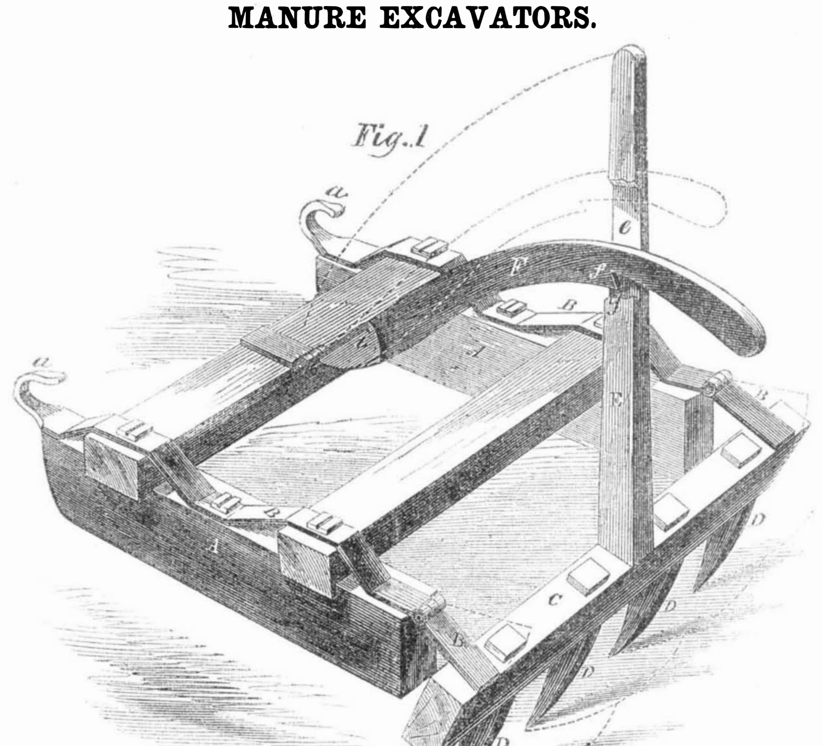


Motion is now given to the carriage, and the saw—a part of which is shown—is put in motion in the usual way when the slab on the outside of the log will be cut off, the log is then run back, and set by a transverse movement of the sliding dogs along the blocks, the detents, H H^2, being previously lifted, and the fixed dog, D, withdrawn from the log. As soon as the transverse movement of the log begins, the detent is allowed to rest upon the notch rib of the gauge bar, and will drop into the first notch it meets; this being done at both ends of the log, the setting is complete, the sawing again resumed and continued, until the log is divided from end to end, when it is again run back, and the setting repeated.

To vary the set or transverse movement of the log according to the thickness of lumber required to be cut, the gauge bars are lifted out of their bearings, turned so as to present those ribs uppermost which have notches in them corresponding to the required thickness of board, and are then re-inserted in their bearings, and the ends of the gauge bars where they enter their bearings being polygonal, the gauge is prevented from being changed by accidental turning, to which, as heretofore constructed and arranged, it is very liable. The N.Y. State Agricultural Society granted Mr. Russell a medal in 1853.

More information may be obtained by letter addressed to the patentee.

MANURE EXCAVATORS.



On the 29th of August last a patent was granted to Abraham R. Hurst, of Harrisburg, Pa., for the improvement in manure excavators represented by the annexed figure, which is a perspective view. The object of the implement is to loosen the manure to allow of its being easily shovelled.

The nature of the invention consists in attaching a strong durable implement, very similar in construction to an ordinary pitch fork, to the hindmost part of a sled, having suitable attachments to render the implement effective in its operation, by hinge joints, in such manner that its teeth can be adjusted so as to be caused to take a strong hold on the manure as the sled is drawn forward; and consequently to loosen and separate its particles in the most effectual and speedy manner, and when not excavating, can be adjusted so as not to come in contact with the surface of the ground.

A represents the sled, strongly braced by the iron straps, B B, each of which terminates at its front end in a hook, *a*, to which the power is attached; C is the swinging cross bar, which has the excavating or separating teeth, D, secured in it. This bar is hinged to the sled by joints, *c c*, and is capable of swinging on said joints, when necessary. The teeth, D, may be placed at any suitable distance apart, and may extend from one side of the sled to the other. E is an upright lever for throwing the teeth in operation—it is attached to the swinging cross bar, *c*. *e* is a slot cut through said lever. F is a curved swinging stop bar, for keeping the lever, E, in place, while the excavating operation is being carried on. The bar, F, moves in the slot, *e*, of the lever, E, and holds the said lever in the position shown in full lines, by means of the stop, *f*, which fits in the recess, *g*, in the lever. By means of this lever, it may be seen, that when the resistance is greatest on the teeth the operation of the bar as a stop is the most effective. The lever, E, can be depressed and the teeth thrown out of operation by moving the end of the bar, F, to the position shown in dotted lines; this operation drawing the stop, *f*, out of the recess, *g*. The position of the teeth when elevated, or out of operation, will be seen in the lower dotted lines, and their position, when in operation, in full lines. The lever, E, rests on the shoulders, *i i*, of the bar, F, when the teeth are not in operation. The teeth of the implement are forced into the manure, and the sled is drawn over the same by hand or horse power—the former, as the latter is drawn forward, taking a firm hold upon a large portion of the manure, and loosens and separates its particles ready for shovelling.

The patent says, it will be evident that a much greater quantity of manure can be effectually loosed and separated in a given time, with less expenditure of labor, with this implement than by others in use. More information may be obtained by letter addressed to the patentee, New Cumberland, Pa.

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Scientific American.

NEW YORK, JANUARY 6, 1855.

The Old Year and the New.

The year eighteen hundred and fifty-four is now with the eternity of the past, and its months, days, and hours are never to return. But although this is true as it regards time itself, the transactions of the past year still vibrate through all the avenues of life, and will go down to other generations. No man lives for his own day, nor his own generation. Every event of life pulsates through society, and according to its intensity, affects numbers of our fellow beings for weal or woe. This consideration should inspire every man to perform no act, without counting the cost and calculating the effects. If all men, and especially those placed in circumstances of great power and influence, were guided by such views, our hearts would not be pained every few weeks, as they have been for the past six months, with accounts of bloody struggles between men and brethren, according to the flesh, seeking one another's lives on the battle field. It is the natural duty of men to do good, and not evil to their fellows, and if a spirit of honesty, peace, and charity were to take up its abode in every breast—to reign in the legislative hall, the mart, the factory, the workshop, and the family—there would not be, as there now is, at the commencement of a new year, so much distress among the nations, nor suffering among so many of our population.

The year that is past will long be remembered for striking and peculiar events. The battles between the Allies and the Russians in Europe will never be forgotten for their terrible ferocity, and the end is not yet. At home, our country has suffered severely from the pestilence, the fire, the stormy sea, and the failure of the earth's fruitage; but peace dwells in our borders, and the sword has not been added to our other afflictions. At the present moment the fountains of business seem to be dried up—thousands of hammers that sent forth their merry chimes from as many anvils, a year ago, are now silent as the tomb; the hands are still strong to wield them, and the workers' hearts are still willing, but business—that potent word—is prostrated, and there is no demand for their toil.

These times have no doubt tried the character of many men, and honesty will, we think, be more appreciated hereafter in the individual, than rank or station. Such times try and polish the genuine metal. The charitable spirit exhibited by so many of those in better circumstances, especially in christian churches, in this and other cities, to relieve the poor, at the present trying juncture, does them great credit: verily, they will have their reward. This good spirit affords evidence for believing that the sufferings of the poor and unemployed among us will be greatly mitigated this winter, if not wholly removed; and trusting in the well-known energy and perseverance of our people, we have good grounds for hoping that business will ere long resume its wonted sway; and with such hopes we cannot but wish our readers a "Happy New Year."

Fitch, Fulton, and Livingston—A Disputed Point.

A correspondent of *Putnam's Magazine*, January number, signing himself "A former Member of the Legislature," criticises Fulton's claims as an inventor rather sharply, and controverts the common opinion that he first interested Chancellor Livingston in the project of steam navigation. He asserts that the Chancellor first directed the attention of Fulton to this subject, and furnished the pecuniary means to prosecute his experiments. This may be so; and as, he says, he has a knowledge of the matter from personal participation, we will not offer a word against his assertions on this point. He makes a statement, however, respecting John Fitch, which is far from correct, and if we take this as a standard of his knowledge of the matter, his opinion respecting the claims of Fulton and Livingston may be very little worth.

On page 104, he says, "Fitch afterwards repaired to Europe to avail himself of the improvements made in that machine (the steam engine) both in England and France, and having gained the information he sought, he was about to embark on his return home when he was taken sick, and died at L'Orient. His papers, plans, models, and drawings fell into the hands of Mr. Moses Vail, U. S. Consul at that port, of which Mr. Livingston was informed, who sent Fulton with authority to receive them, and they were delivered to him accordingly by Mr. Vail." This is roundly insinuating that Fulton obtained all Fitch's plans, drawings, and models, from which we are to infer he used them without credit. He also asserts that Mr. Livingston procured from the New York Legislature, in 1798, an act transferring an exclusive grant, formerly made to Fitch, upon representation that the latter had gone abroad and *died*, without performing the condition upon which his right was granted."

These assertions are certainly damaging to the reputation of both Chancellor Livingston and Robert Fulton; but history informs us that although John Fitch went to Europe, he returned safe and sound, and died at Bardstown, in Kentucky, in 1796, not in L'Orient in France, as the correspondent referred to has asserted. Every biography of John Fitch that we have read is plain on this point, and this we conceive removes a stain attempted to be fixed on the characters of Fulton and Livingston; for although we believe Fitch to be the older inventor, we believe these gentlemen were honorable and upright.

Boston Water—the Chemical Reports.

We alluded in No. 14 to the report of T. Wetmore, President of the Boston Water Board, relative to the evil inflicted upon the people of that city by bad water; and we also stated, that samples of it had been placed in the hands of Prof. Horsford, of Cambridge, and Dr. Charles T. Jackson, of Boston, State Assayer, for chemical analysis. These two distinguished chemists have made their reports. That of Prof. Horsford, as published in the Boston *Daily Advertiser*, gives no account of experiments made with the water; it merely sets forth the state of the lake which supplies the water, and the influences—atmospheric and others—which operated to produce the effects mentioned, and then concludes as follows: "the recent peculiar taste of the Cochituate water is, in the judgement of the undersigned, due chiefly to extracts more or less volatile, from decaying minute aquatic organisms, for the most part vegetable, which during the late prolonged drought have been produced in extraordinary quantity upon the low meadows, marshes, bog and peat lands, which supply the surface drainings to Cochituate lake."

The report of Dr. Jackson is more complete; he describes part of his method of analysis, but not all. He found that one gallon of water, after being evaporated, left 3·4 grains of solid matter, which he concluded contained only vegetable and mineral matters—no animal. It was supposed that decayed fish, such as eels, had in some manner entered the water pipes and given the water its peculiar taste, but Dr. Jackson asserts that the lake itself was the source of the evil. He affirms that the water of Boston is more pure now than it was in 1845; if so, we pity the people of Boston. It is stated in these reports, that the cold weather will soon purify the water, but those who have charge of the Boston Water Works must not rest satisfied with this; they must remove the causes, and not suffer the Boston people to drink the drainings of peat bogs and marshes any longer.

A Retrospect for Inventors.

In looking over the accounts and transactions of the Scientific American Patent Agency, we find that during the year just ended, we have paid into the treasury of the U. S. Patent Office, and to foreign governments, more than thirty thousand dollars. This large sum of money has been disbursed by us in liquidation of official fees on account of applications for patents confided to our care by inventors.

During no period of our business experience has there ever existed so much successful activity among inventors as at present. The above statement in regard to the outgoes of our single agency is a significant fact. It shows that the genius of improvement is not asleep, and that patented inventions are encouraged more than they ever have been; nay, sought for and demanded by the great mass of our people. Unless there actually existed a growing call for new inventions, patent rights would never sell for such large sums as we know that many of them do; neither would capitalists and others who have money to invest ever assist inventors, as they have done the past year, in developing discoveries.

America at the French Exhibition.

A recent number of the London *Illustrated Crystal Palace Gazette*, contains an article under the above heading, in which an apology is offered for Americans "cutting a rather sorry figure in some circumstances, where other nations are weak enough to desire to appear to advantage." It asserts that our government acts niggardly with respect to its resources in assisting its citizens to appear more respectable in the eyes of the world, and refers to the small salaries paid our foreign ministers. In reference to the London Exhibition of 1851, it says, "had it not been for the generous patriotism of an American merchant of London, not a shilling would have been forthcoming for any purpose whatever connected with the American display. The private generosity which thus came to the rescue of American credit, has been so entirely forgotten by the people and Government of the United States, that not a pound of the money thus opportunely advanced has ever been returned to the patriotic lender.

Our American friends were fertile in excuses for the meagreness and poverty of their display. The shortness of the notice, the want of Government aid, and a hundred equally valid apologies were offered, and urged with apparent good faith."

In reference to the French Exhibition to be held in Paris this year, it says:—

"America has now a second opportunity of measuring her industrial strength against the world. She will find the public better informed with regard to her than before, and more prepared to look for good things, particularly in the departments of machinery and manufactures. The New York Exhibition, and Messrs. Wallis and Whitworth, have done her this service. She can have now a fair, we might almost say a partial, trial. But if, from motives of false economy, or from any other cause whatever, she fail to be justly represented at Paris in 1855, she must be content to sink industrially in the estimation of the world.

We sincerely hope that the Americans may retrieve the mortifications of 1851, and add well-earned laurels to those which, in spite of the general poverty of their department, they won on that occasion."

These remarks, couched in gentlemanly language, are truthful and just, and deserve attention. Excepting what has been done by the Commissioner for this State, no special effort has been made to have the United States well represented in Paris. We are afraid there will not be one American Exhibitor in Paris for one French Exhibitor in the New York Crystal Palace.

Metropolitan Mechanics Institute.

The second annual exhibition of this Institution, for the encouragement of commerce and the mechanic arts, will be opened in the city of Washington on Thursday the 8th of February next, in the fine hall of the Smithsonian Institution. Mechanics, artists, and manufacturers in different parts of our country are invited to become exhibitors. Thos. C. Connolly, of Washington, is Superintendent, and will give further information respecting the exhibition to any person applying to him (post paid).

All articles for competition must be of American manufacture, and the name of the maker, and inventor (if known,) and the name of the depositor, conspicuously labelled on each.

Awarding of Our Prizes.

We here present the names of the successful competitors for the prizes we offered, their places of residence, and the number of subscribers obtained by each.

I.	Ky. MECH.'S INST.	Louisville, Ky.	181,	$100
II.	M. KELLOGG,	Batavia, N. Y.,	104,	$75
III.	W. D. WHALEN,	Northville, Mich.	72,	$65
IV.	A. N. NEWTON,	Richmond, Ind.	60,	$55
V.	J. LANE, Jr.,	Lockport, Ill.,	57,	$50
VI.	O. B. WATTLES,	Waddington, N.Y.,	50,	$45
—	H.B. NIGHTINGALE,	Doyelstown, Pa.,	45,	—
—	W. HART,	Philadelphia, Pa.,	45,	—
IX.	T. P. ROBINSON,	Detroit, Mich.,	31,	$30
—	J. GARST,	Dayton, Ohio,	30,	—
—	C. DAVIS,	Troy, N. Y.,	30,	—
—	S. M. BULLARD,	Boston, Mass.,	30,	—
XIII.	J. LYMAN,	Quincy, Ill.,	28,	$10
XIV.	J. INGER,	Waterford, N. Y.,	25,	$5

It appears from the figures given above, that Messrs. W. Hart, and H. B. Nightingale, have each sent in 45 subscribers, and Messrs. Bullard, Davis, and Garst, 30 each; therefore we cannot now declare the 7th, 8th 10th, 11th, and 12th prizes, but will leave the time open until February 1st. It must be understood that the 7th, and 8th prizes will be due to the first named gentlemen, as they are entitled to them according to our terms. It would gratify us very much if the competitors would decide the issue by increasing their lists of subscribers, but if they prefer to compromise the matter among themselves by corresponding, we have nothing to say. We only urge them to attend promptly to the matter, as we are anxious to pay over the cash. If there are any errors in the above lists we shall feel bound to rectify them upon being informed. *Immediate notice must be given of the errors if any have occurred.*

We cannot withhold our congratulations from those who have obtained these prizes, and upon the receipt of their orders, we will forward the sum to which each is entitled.

The amount which we offered this year for prizes exceeded that of the last and we naturally expected an increase of subscribers on the prize list, but the number is not so large. This is to be attributed to the prevalence of so much sickness among our friends in the South and West during the past summer and fall, and the stagnation in manufacturing operations generally. But we have no fault to find, and we sincerely thank our friends for the efforts they have made. It will be observed by some, however, and no doubt with much regret, that they might easily have secured some of the prizes which are here awarded to others, if they had only exhibited a little more energy and perseverance. A number of those who obtained prizes last year, labored afterwards with good will to extend our circulation among their friends, and we have no doubt but those who have gained prizes this year will do this also.

The Scientific American has many very kind friends, who year after year endeavor to maintain and extend its circulation, and look for no reward beyond the pleasure of sustaining a paper which they love, and disseminating useful information among our people. To such we again take this opportunity of returning our thanks for their favors. There is no other paper of the same character, and devoted to the same objects, now published in our country, and although its circulation is very respectacle, still, when we consider how many mechanics there are in our land who should be subscribers, for their own sakes, and yet are not, we hope and trust that all those who wish well for the progress of science and art, and the spread of solid useful information, will try, even in these hard times, to extend its circulation among our people. One dollar per six months—two dollars a year—is but a small sum to save from useless expenditure, which might be profitably expended on a paper that contains matter which is standard for all time, and applicable to the arts of every day life.

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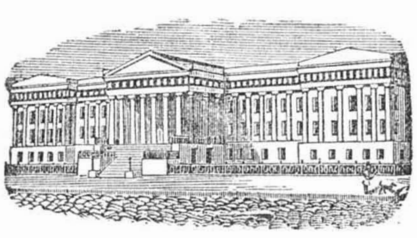


Patent Claims.

The Patent Office does not issue patents during holiday week. This is the reason why the usual list of patent claims is absent this week from our columns.

The Examiners of the Patent Office have done well this year. They have examined more applications, and issued more patents than during any other year since the Patent Office was organized. The Commissioner's staff has been greatly increased, and for this our inventors are thankful to Judge Mason. His efforts to clear up the back business of the Office, so as to place its affairs in such a condition as to examine every application within a few weeks after it is made, deserves the commendation of every inventor. The Examiners, too, appear to be more fair and generous than heretofore; the gullotine has not been quite so freely used the past year. Every doubt should be given to an applicant. There is still room for improvement, but we feel gratified for every one made in this respect.

Workings of the New Steamboat Law.

Annexed to the report of the Secretary of the Treasury is one of the Board of Supervising Inspectors appointed under the new steamboat law, and if ever we had cause to congratulate our people upon the workings of any new measures for the public preservation of life, we have it presented here.—Only three steamboat explosions occurred during the whole year, and only one from collapsing of flues. Two explosions were the *Kate Kearney* and the *Timour No. 2*, in the Fifth District. Fifteen lives were lost by the former and nineteen by the latter. It is stated in the report that the engineer of the *Kate Kearney* was suspended, but on the *Timour* no decision had yet been had. Our readers, however, have already been made acquainted with that decision on page 118—the second engineer being deprived of his license in that case also. In the Sixth District the flues of the *Reindeer's* boilers collapsed, and thirty-eight lives were lost, and in this case also, the engineer's license was revoked. Quite a number of accidents occurred from burnings and collisions, and running on snags. One accident from burning took place on White river, whereby the steamer *Caroline* was nearly consumed, and fifty lives lost. The pilot, John R. Trice, run her to the shore, and was burned to death at his post; he was a true hero. In the Eighth District the boilers of the steamer *Van Ness Barlow* exploded, killing two of the hands; the investigation of this case is not yet concluded. The whole number of lives lost by these explosions and the collapse of flues, is 73; and from the collapsing of the *Reindeer's* flues, we perceive that three more lives were lost than by the three explosions of boilers. Explosions are not the most dangerous kind of accidents; we find that eighty lives were lost by vessels which had been burned, seven more than by all the explosions and the collapsing of flues. The whole number of lives lost from the steamboat accidents of all kinds for last year, amounts to 156. This is truly cheering, both as it regards the law itself, and the manner in which it has been carried out. Mr. Guthrie, of Chicago, who may be said to be its author, must feel gratified with its benefits and workings, and he will no doubt commence a Happy New Year with the consolation of witnessing such good fruits of his labors.

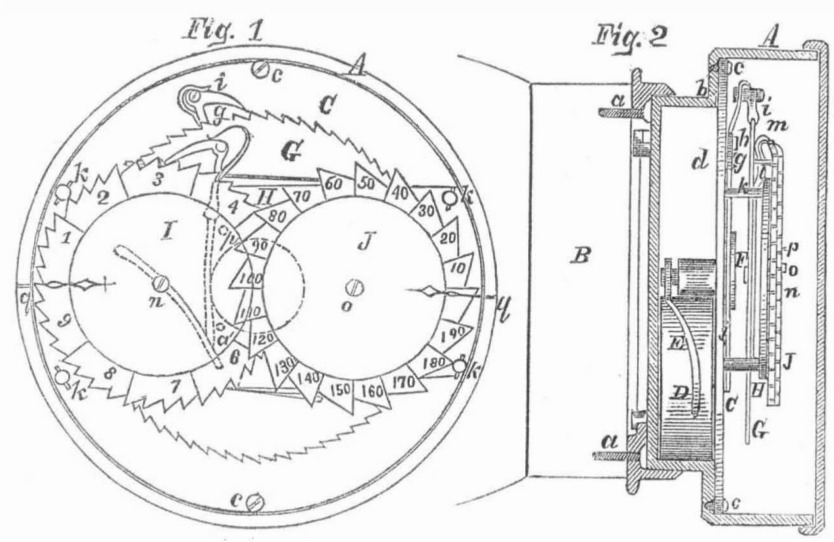
It is a great pity that sea-going steamers and ferry boats are not embraced in this law. We understand they were in the draft of the original Bill, but by the influence of some large companies in this city they were struck out. We regret this; as we have no doubt but, had they, like our river steamers, been embraced in the Bill, the disaster of the *San Francisco* (and perhaps the *Arctic*,) would not have occurred.

We hope the new steamboat bill will be so amended by this session of Congress as to embrace all kinds of steamers, ships, river and ferry boats. The latter class of vessels more than all others, should be under rigid inspection, but they are not, because Congress, in passing the new bill, was swayed by powerful parties, who have great interests at stake in steamships and steam ferry boats.

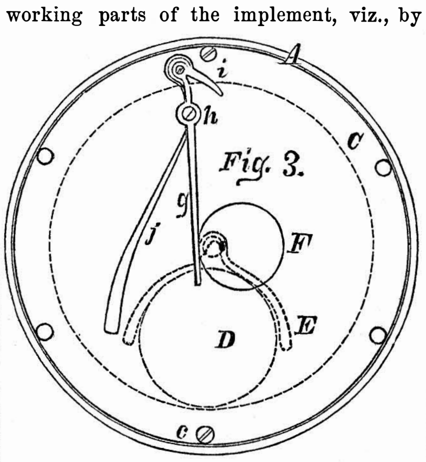
Steam vs. Gunpowder.

Mr. Perkins, the son of Jacob, the eminent American inventor, who invented and exhibited in London a steam gun, has, through a contemporary, made the following offer. He says, "I am prepared to undertake to supply the government with a steam gun capable of throwing a ball of a tun weight a distance of five miles. If such a gun were fixed in Brunel's large ship of 10,000 tuns, I venture to say that Sebastopol would be destroyed without losing a man."

THOMPSON'S ODOMETER.



The accompanying engravings are views of an improvement in odometers, for which a patent was granted to Julius Thompson, of Middleboro', Mass., on the 31st of last October. The odometer is an instrument for telling the distance or space of ground over which a vehicle—such as a wagon or carriage—has traveled. Its character is that of the "Tell Tale" of a steam engine, which records the number of revolutions the wheels of a steamship has made in its passage between New York and Livepool—or between any two ports. Such instruments have been long known, but from some defects in their operation, do not seem to have come into general use. The nature of the improvement of this odometer consists in the peculiar means employed for communicating the motion from the wheel of the vehicle to the working parts of the implement, viz., by



having a cylidrical weight placed within its case, said weight being detached, and from its gravity remaining stationary (not revolving with the wheel) and thereby giving motion to the working parts, as the wheel revolves.

Figure 1 is a front view of the odometer with the outer plate removed, showing the dials and other portions of the working parts; figure 2 is a transverse vertical section of the instrument attached to the hub of a vehicle's wheel; figure 3 is an internal view of the case showing the stationary circular plate which covers the weight and the eccentric pawl, by which motion is given to a ratchet wheel.

A represents a cylindrical metal case secured to the outer face of one of the hubs, B, of a carriage wheel, by means of screws, *a a*. One portion of the case, A, is larger in diameter than the other, and consequently a shoulder, *b*, is formed at about its center. Against this shoulder a circular plate, C, is secured by screws, *c c*, is the plate dividing the case, A, into two compartments. Within the compartment, *d*, a cylindrical weight or wheel, D, is placed, said weight or wheel being detached and resting upon the lower end or side of the case, A. This circular weight is much smaller in diameter than the compartment, *d*. Through the center of the plate, C, there is an opening in which a small shaft or arbor fits, said shaft arbor having on one end a fork, E, which embraces or fits over the weight or wheel, D, and on the opposite end there is an eccentric, F, which acts against a lever, *g*, secured by a pivot, *h*, to a plate, C, the upper end of said lever, *g*, havin a pawl, *i*, attached to it, which catches into the teeth of a ratchet wheel, G. The lever, *g*, and pawl, *i*, are fully shown in figure 3, and the ratchet wheel in figure 2. The lever, *g*, is acted upon by a spring, *j*, which keeps the lower end of said lever at all times against the periphery of the eccentric, F, as in figure 3. The ratchet wheel, G, has its axis secured to a plate, H, which is connected by small braces or arms, *k*, to the plate, C, some space being thereby allowed between the two plates, C, on the inner side, and some space is allowed between it and the plate, as also shown in figure 2; on the outer side of the wheel, G, there is a pin, *a'*, figure 1. On the inner side of the plate, H, there is a lever, (see dotted lines, figure 1,) precisely similar to the lever, *g*, on plate C. This lever is also provided with a pawl at its upper end, which catches into teeth formed in the periphery of a dial plate, I, said dial plate working on a pivot, *n*, as a center; J is a dial plate by the side of the dial plate, I, and working on a pivot, O, as a center, the dial plate, J, overlaps the plate, I; it is also provided with teeth on its periphery, On the dial plate, I, there is a pin, *p*, which, as the dial plate, I, rotates, comes in contact with the teeth of the dial plate, J, and causes it to rotate a certain distance, one-twentieth of a revolution, during every revolution of the dial plate, I. The dial plate, I, is graduated or divided into ten equal parts, and the dial plate, J, into twenty equal parts.

OPERATION.—The implement is secured to the outer end of one of the hubs, B, and the dial plates are set so as to bring the zero marks or points opposite notches, *q*, cut on the edge of the case, fig. 1. When the carriage is drawn along, the cylindrical weight or wheel D, being detached will not rotate with the case, but will remain at all times in the position as shown in figures 2 and 3, viz., at the lower part of the case, A, the weight or wheel merely rotating on the bottom of the case, and the fork, E, and eccentric, F, will also remain stationary, and the plate, C, rotates of course, as it is secured to the case, A. The lower end of the lever, *g*, consequently moves around the edge or periphery of the eccentric, F, and is vibrated, and the pawl, *i*, at its upper end moves the ratchet wheel, G. As the ratchet, wheel, G, rotates, the pin, *a'*, operates the pawl lever, figure 1, and its pawl rotates the dial plate, I, and the pin, *p*, on the dial plate, I, turns the dial plate, J, a certain distance at every entire revolution of the said dial plate. The relative size of the wheel of the carriage to which the implement is attached, as represented, and the ratchet wheel, G, and dial plates, are such that one revolution of the dial plate, I, indicates a distance of ten miles, and one revolution of the dial plate, J, a distance of two hundred miles. The relative size of the ratchet wheel and dial plates may be varied as occasion may require.

The advantages claimed for this invention are, that the working parts are perfectly protected from dust and moisture, and the operation is sure. The device is simple, not liable to get out of repair, and may be applied to any vehicle in use.

Mr. Thompson writing to us respecting this instrument says:—"I have tried it thoroughly on a carriage wheel and find it all that can be desired. It will not get out of order; is safe to indicate, and cannot be interfered with by those who hire the carriage."

For more information see advertisement, page 111, this volume, SCIENTIFIC AMERICAN, or address the patentee.

The Unemployed in New York.

Owing to the great number of workmen out of employment in our city at the present time, a great amount of suffering has been experienced by many, and various meetings have been held by them, for the purpose of devising measures to obtain relief, and making the public acquainted with their condition. At some of these meetings a speaker inveighed against the rich, counselled the tarring and feathering of the officers of a certain bank, and went in for mob law—the forcible seizure of the property of others. Such counsel is more fitting a brigand than an American citizen. In our country submission to law is the only safety, and the demagogue who counsels otherwise is not a true republican. We know something of our mechanics, and we know they repudiate and spit upon such sentiments. We remember the disgraceful flour riots in this city in 1837; we never wish to see the like again, and we have no fears of them this winter, hard though the times are; no thanks, however, to such pretended friends of the mechanics.

Thousands of our wealthy citizens are now doing nobly for the poor; their hearts and hands are wide open to the calls of distress, and it comes with a very bad grace from any man to give such counsel as that we have mentioned, in view of the noble charity which has been so generally exhibited. Our mechanics and working men, in view of these things, have too much good sense to be led astray by such bad advisers.

Tanning Composition.

In examining our list of claims last week, there is one for a new composition for tanning, which consists of the muriate of soda (common table salt,) alum (sulphate of alumina,) and sulphuric acid. Now it strikes us that if the sulphate of soda and alum alone were used, the same effect would be obtained; for the soda of the common salt will leave the chlorine and combine with the sulphuric acid, and thus form glauber salts, setting the chlorine gas free—the water taking up a little of it.

Loss of Patent Office Money.

The Commissioner of Patents, it is reported, had $10,000 of the funds of his office in the bank of Selden, Withers & Co., which it is feared will be lost to him. Mr. Forney, Clerk of the House, had $9000 of public money on deposit. It is thought that he is secured.

The Artesian Well in Charleston, S. C.

Since our last number was issued, we learn by the *Mercury*, that the patience and perseverance of the people of Charleston have at length been rewarded by a copious supply of water now issuing from their artesian well.

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TO CORRESPONDENTS.

H. W., of Mass.—The sewing machine ground is now so fully covered, both as respects the method of producing the stitch, feeding, &c., that it will require great ingenuity to find out anything usefully new. Robertson's invention, patented a few weeks since, accomplishes what you suggest; only one patent on a stitch exists that we know of.

J. N. L., of N. Y.—Your boiler apparatus is not new.

H. D. W. B., of Mass.—We do not discover anything patentable in your match splitter. Not acquainted with the recipe you desire.

G. G., of Mich.—Atmospheric brakes are well known, and the principle is therefore not patentable.

C. O., of N. Y.—We do not see any advantage to be obtained from your registering thermometer; in fact it could not register changes between the two indexes at all.

N. P. S., of Mass.—We do not think there is any ground for a claim on your improved brick. Perforated brick for ventilation are well known: a double flanged car wheel is not new.

R. E. M., of N. Y.—Your alledged improvement in sewing machines is almost precisely the same as Howe's Patent of 1846, wherein is described the needle and shuttle performing the same functions and operating like yours. You are probably not familiar with the history and developement of this class of machinery.

L. G., of Texas—Your idea of a motive power is erroneous. It is on the same principle of a man's attempting to lift himself by the waistbands of his pantaloons. If you will reason with yourself on the other side of the question, you will be convinced of the fallacy of your theory.

C. T., of Me.—We have every assurance that the French Industrial Exhibition will be a splendid affair. It will be a good time for you to visit France.

W. H. K., of Miss.—We cannot tell you the cost of machinery for making paper. You had better address Goddard, Rice, & Co., Worcester, Mass. We note your remark about the harvester. Send on the model.

N. E., of Ind.—You will bear in mind that an American citizen cannot secure a patent for his invention in Canada. The laws there exclude all except resident inventors.

C. C., of N. J.—Inventive genius has been extremely prolific in churns and washing machines. The reason is obvious—almost every family has need of such machines, therefore the field of speculation is very broad and inviting. The chances, however, now are rather dubious, and the man who can bring out a novelty in either class may be set down as a genius. We will examine your sketches at any time.

S. W., of N. Y.—Your hand screen, if the inner plate is made adjustable, would, we think, be patentable. Rotary screens are in common use for the purpose you name. We have none of the numbers you refer to. Price of Volume 1 People's Journal, $1.

S. W. R., of Mass.—Your substitute for the crank is as good as any plan that we remember. The principle upon which your device operates, viz: by means of an upper and a lower rack, is not new. But your combination of parts we think is new and patentable.

J. B. T., of N. Y.—The combination of parts employed by you for the prevention of boiler explosions, we regard as patentable.

R. H. B. M., of Me.—We cannot advise you to commence sawing with two engines, the cylinder of the largest being only four inches in diameter, and the smallest three. You can no doubt obtain sufficient power for ripping boards into laths, but we do not advise you to try it on logs. A tubular boiler fifteen feet long and three in diameter will answer your purpose. Your small engines will not drive a common run of stones. A saw hung in a gate would be the most suitable.

A. A., of Ohio—Send on your sketch and we will examine it. We are pleased to notice your zeal in attempting to improve the mowing machine. There is still a field open for improvement in almost every branch of mechanical contrivance.

H. & A., of N. Y.—Your secoud model has come to hand and we have sent it to Washington.

M. C. M., of D. O.—We have received your communication and will give it early attention.

C. E. A., of Mass.—The improved floating dock to which you refer, was patented about three years ago; it is formed by two cylinders on either side of the vessel; these are raised as usual by pumping out the cylinders, but the elevation is obtained by an apparatus for rotating these cylinders.

M. A., of Ct.—In the manufacture of bats and felting a good deal has been done. Bats are hardened on an exhausted cone, which has a rotary motion, and the fiber is blown on to it by appropriate machinery. There seems to be some novelty in your arrangement, and we would advise you to make and send us a model of it.

R. D., of Ohio—You have certainly hit upon a very useful subject to improve, viz., the umbrella—a most convenient apparatus for rainy weather; but the idea of constructing a cane hollow, so as to receive the umbrella, is very common, and no patent could be secured for it.

J. M. C., of Vt.—Moving a crank pin to and from the center while in motion, is not a new idea—we have seen the same thing.

J. R. M., of Ohio—You cannot patent a serpentine flue for applying heat more effectively to boilers. The same principle is carried into effect in Baker's improved furnace. The idea is a very good one, no doubt.

J. J. B., of Ky.—We note your remark about the advertisement. It was inserted twice, our mistake, not yours.—We take bills on specie-paying banks on account of patent fees. It would be as well for you to send a draft on New York payable to our order.

S. C. T., of Geo.—We do not think a patent could be secured on the device you propose as an improvement on cannons.

G. S. M., of Mass.—In Vol. 4, Sci. Am., we described an apparatus for carrying off the smoke and cinders of a locomotive by means of tubing connected together by flexible joints. This idea is well known and could not be patented.

W. F., of R. I.—We do not see any chance for a patent on your gauge for ruling music. The novelty is not apparent, and for fear we are misunderstanding the essence of it, we would recommend you to send a model.

R. B., of S. C.—By reference to the Sci. Am., Volume 6; you will find very useful information upon the voltaic battery. You can procure the volume bound for $2,75.

A. W. C., of Ala.—Your crushing mill is a very ancient device and not patentable.

G. C., of Mass.—The hardening of gear cutters depends upon the skill of the eye, as much as anything else, and cannot be taught by words; it requires practice.

G. B. S., of Baltimore.—We would be glad to receive the oxy-hydrogen blow-pipe and apparatus to fuse platinum, and would feel thankful to you for the gift.

O. F. R., of N. Y.—A gutta percha tube filled with water, would be a poor substitute for a telegraph wire cable. An iron wire covered with copper would answer for a conductor, but it would not answer so well as one entirely of copper.

A. McQ., of Geo.—Yours will receive attention soon.

W. P. R., of Pa.—We have heard about experiments being tried by heating the roots of plants with steam, but do not know any of the particulers.

H. R., of C. W.—Yours has been received and will meet with attention.

P. E. S., of Canada—There is no chance for a patent on a bedstead having a roller for tightening the cord by means of a pawl and ratchet. Such bedsteads have been in use here for many years.

E. L., of Pa.—You can procure a copy of the Steam Engine, by the Artisan Club, of Messrs. Appleton & Co., 346 Broadway, N. Y.

M. A., of Conn.—We have received your documents describing thirteen different inventions; it is hardly fair to suppose that we can undertake so large a contract upon our time, all at once, without some remuneration, therefore we shall defer giving opinions at present on all but two of your devices. We will write you in a few days and send a circular of instruction.

A. H. R., of ——.—We do not, for reasons apparent to all editors, make any use of communications not signed by the writer. We cannot preserve such letters as they are not in condition to be filed. You will please bear this in mind in future.

E. S., of New York—Ure's Dictionary will give you the information about gunpowder.

C. W. K., of Mass.—We thank you for the information respecting fusible plugs.

L., of Texas—Yours about snake bites will soon receive attention.

J. M. S. B., of Mexico—Yours about the snake bird will soon appear.

M. W. L., of Mass.—Limebrick will soon harden if exposed wet to carbonic acid gas. Handles of cutlery have been made of enamelled cast iron. We saw such thirty years ago. Try alum and the sulphate of copper in tanning glue. Your rasp appears to be good. We have seen a life-boat that could fold up like yours, but yours may be differently constructed. We thank you for your kindness in extending the circulation of the Scientific American.

Money received on account of Patent Office business for the week ending Saturday, Dec. 30:—

R. K., of Mass., $20; V. P. C., of N. Y., $250; M. C. L., of O., $30; U. B. V., of Pa., $25; L. M., of Wis., $25; W. S., & Co., of Mass., $30; E. H. B., of Mass., $25; J. H., of O., $30; W. C., of N. Y., $30; N. C. S., of Ct., $100; J. H. B. & Co., of N. Y., $400; I. J. W. A., of Md., $25; J. T. P., of O., $10; W. L. B., of Ga., $25; C. I., of Ct., $30; T. A. C., of Mass., $30; R. Mc D., of N. J., $30; J. S., of L. I., $55; C. E. S., of O., $30; H. & M. B., of Vt., $55; A. M., of Ct., $45; G. A., of N. Y., $25; J. H. B., of Vt., $25; L. R., of N. Y., $30; H. W. P., & Co. of N. Y., $175; M. & C., of N. J., $55; B. & W., of Me., $32.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 30:—

J. H. B., of Vt.; J. S., of L. I.; C. H. B., of Mass.; W. L. B., of Ga.; J. B. H., of N. Y.; I. J. W. A., of Md.; W. G., of Mass.; V. P. C., of N. Y.; A. B. B., of N. Y.; J. F. M., of Pa.; I. M., of Wis.; U. B. V., of Pa.; B. X. B., of Pa.

Important Items.

Back Numbers and Volumes—We have the following numbers and volumes of the Scientific American, which we can supply at the annexed prices:—Of Volume 5, forty numbers; price in sheets, $1; bound, $1,75. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Volume 7, all; price in sheets, $2; bound, $2,75. Of Volume 8, none complete, but about 30 numbers in sheets, which will be sold at 50 cents per set. Of Volume 9, complete in sheets, $2; bound, $2,75.

☞ We are able to furnish all the back numbers of the present volume of the Scientific American, and to new subscribers we shall continue to send the back numbers as long as we have them, so as to render their volumes complete.

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 for fees for copying.

Patent Laws, and Guide to Inventors—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office Price 12½ cents per copy.

Receipts—When money is paid at the office for subscriptions a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgement of the receipt of their funds.

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8 " " "	2,00
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Advertisements exceeding 16 lines cannot be admitted, neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

THE AMERICAN "PICK."—Fourth Volume.—This illustrated comic weekly, published in the city of New York, every Saturday, is about to commence its fourth year. It has become a favorite paper throughout the United States. Besides its designs, by the first artists, it contains witty editorials of character, and will carry cheerfulness to the gloomiest fireside. Its variety renders it a favorite in every family. It contains each week a large quantity of tales, stories, anecdotes, scenes and witticisms.—The "Recollections of John C. Calhoun, by his private Secretary," will be continued in the *Pick* until finished, and then a copy will be sent free to every subscriber whose name shall be upon our mail book. Each yearly subscriber to the *Pick* will receive the double-sized Pictorial sheets for the Fourth of July and Christmas, without charge. Each of these Pictorial sheets contains over 200 splendid designs. The subscription price to the *Pick* is $1, cash in advance. Six copies $5. Thirteen copies for $10. Letters must be addressed to JOSEPH A. SCOVILLE.
1 No. 26 Ann street, New York.

STEAM ENGINES AND BOILERS FOR SALE. One second hand five-horse engine, with tubular boiler. One second-hand two horse portable engine and boiler. THOS. PROSSER & SON, 28 Platt street, 14tf

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—MESSRS. MUNN & CO., Publishers and Proprietors of the Scientific American, continue to prepare specifications and drawings, and attend to procuring patents for new inventions in the United States, Great Britain, France, Belgium, Holland, Austria, Spain, etc., etc. We have constantly employed under our personal supervision a competent board of Scientific Examiners, which enables us to despatch with great facility a very large amount of business. Inventors are reminded that all matter intrusted to our care are strictly confidential, and hence it is unnecessary for them to incur the expense of attending in person. They should first send us a sketch and description of the invention, and we will carefully examine it, state our opinion, and the expense of making an application, if deemed new and worthy of it. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps toward making an application.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

It is very important that trustworthy and competent agents should be employed in securing patents, as great care is necessary in the preparation of the papers, as well as integrity in taking proper care of the case until the inventor is duly invested with his legal rights. Parties intrusting their business in our hands can rely upon prompt and faithful attention. Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that the largest proportion of patents applied for in the U. S., go through our agency.

The offices of Messrs. Munn & Co.'s American and Foreign Patent Agency are at 128 Fulton Street, New York; London, No. 32 Essex st., Strand; Paris, No. 29 Boulevard St. Martin: Brussels, No. 6 Rue D'Or.

United States Patent Office,
Washington, December 9. 1854.

ON THE PETITION of Moses and Samuel Pennock, of Kennett Square, Pennsylvania, praying for the extension of a patent granted to them on the 12th day of March, 1841, for an improvement in "seed drills," for seven years from the expiration of said patent, which takes place on the 12th day of March, 1855:

It is ordered that the said petition be heard at the Patent Office on Monday the 26th day of February next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 16th day of February, 1855; depositions and other papers relied upon as testimony must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Penn.; Scientific American, New York; and Enquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the 26th day of February next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 17 3

REMOVAL.—McALLISTER & BROTHER Opticians, Philadelphia, have removed from the old stand, (established in 1796,) 48 Chesnut street, to the new and spacious building which they have recently erected 194 Chesnut st. (sign of Franklin's Head,) below Eighth street. With increased facilities they will continue to conduct the Optical, Philosophical, and Mathematical Instrument Business in all branches.

MATHEMATICAL DRAWING INSTRUMENTS—Separate and in cases. T Squares, Ivory Protractors, Surveyors' Chains, Tape Measures, Microscopes, Spy Glasses, Spectacles, Thermometers, Barometers, Magnets, Hygrometers, Compasses, Lightning Rod Points, Camera Lucidas, Hydrometers, Camera Obscuras, Air Pumps, Electrical Machines, Rain Gauges, Magic Lanterns &c. &c. &c. A priced and illustrated Catalogue furnished on application, and sent by mail free of charge. McALLISTER & BRO. 194 Chestnut street, (below Eighth street, opposite Masonic Hall,) Philadelphia. 17 2

CIRCULAR SAW MILLS—The undersigned manufacture for sale Child's Patent Circular Saw Mills for cutting lumber from logs of any size, with 40 and 24 inch, to 48 and 54 inch saws. Also single mills with 36 inch to 72 inch saw. These machines are warranted capable of cutting more lumber in a given time than any other saw mills in use. H. WELLS & CO., Florence, Hampshire Co, Mass. 17 4*

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Size of stone, - - - -	20 inch.	30 inch.	3 feet.	4 feet.
Cash price of single geared mills - - -	$100	$200	$300	$400
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Bush. they grind in 10 h	50	150	225	350
Horse power required	1 to 4	6 to 12	12 to 18	50 to 30
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Hight of do. with hopper	2 ft. 9 in	2 ft. 9 in.	4 feet.	5 fe3t.

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Science and Art.

Application of Essence of Coal as a Substitute for Oil of Turpentine.

M. Pelouze, the son of the distinguished chemist of that name, proposes to use an oily fluid consisting of a mixture of carbo-hydrogens, especially of benzoine, &c., as a substitute for oil of turpentine in painting. He obtains this fluid, which boils from 100 to 168° Centigrade, by the distillation of cannel coal, by means of sur-heated steam. This liquid is colorless, very fluid, and completely volatile, leaving no stain upon paper, and is not altered by exposure to the light. It has a penetrating smell, which reminds one of common coal gas; but this entirely disappears when it has evaporated. A number of comparative experiments have been made with the object of comparing it with oil of turpentine, by a committee of the Societe d'Encouragement of Paris, all of which have resulted in showing that walls, wood-work, &c., painted with the essence of coal, dried far more rapidly, and the smell disappeared sooner, than where essence of turpentine was employed. For example, in one case where the coal essence and oil of turpentine were respectively mixed with three times their volume of oil, and employed under exactly similar circumstances, the smell of the essence of coal was completely dissipated at the end of three days, while that part painted with the turpentine mixture had still a strong smell, and was not completely dry. The introduction of such an oil would be of great importance, not only in a commercial point of view, but in a hygienic one also.—[Bulletin de la Societe d'Encouragement.

New Plastic Material from Peat.

MM. Delettre-Gras, who are well known in connection with the applications and preparation of peat, have patented a peculiar kind of plastic material, applicable to a great many industrial and artistic purposes. It consists of a mixture of carbonized peat reduced to powder, and liquid tar more or less purified, according to the objects which it is proposed to execute in it. Thus, for objects having very delicate or complicated forms or contours, the charcoal is reduced to an extremely fine powder, and mixed with the tar perfectly purified, in the proper proportions, according as it is intended to make a more or less compact mass, or a sort of thick liquid. In the first case the material may be molded by pressure; in the second, by pouring it into the molds, as plaster of Paris or different metals are cast. The material may be employed cold or warm, but it is better to heat it to a certain degree. In the case of very small objects, such as cameos, several successive coats may be laid on with a brush. In making large objects it is not necessary to make the charcoal very fine, nor to employ purified tar, as common tar, and that even of an inferior quality, will answer when mixed with the proper quantity of charcoal, some glue being added if required. Any gelatinous, gummy, or resinous materials may be substituted for the tar, and may accordingly be often advantageously used in certain cases, according to the nature of the object to be formed. Other carbonaceous matters may also be substituted for the peat charcoal. MM. Delettre-Gras have been able to produce casts of very delicate and fine objects, such as statuettes, architectural ornaments, and even small ornamented buttons. They have also executed several large objects, and have no doubt but that all objects cast in iron, bronze, plaster, wax, or carton-pierre, or those cut or chiselled, may be formed with perfect truth in this very durable material. The mass may be made of different colors by mixing up colored materials with the fused mass.—[Le Genie Industriel.

Colt's Pistols.

The American revolving pistols of Col. Colt are used in the Crimea by all the officers of the British army, and they are spoken of in the most glowing terms.

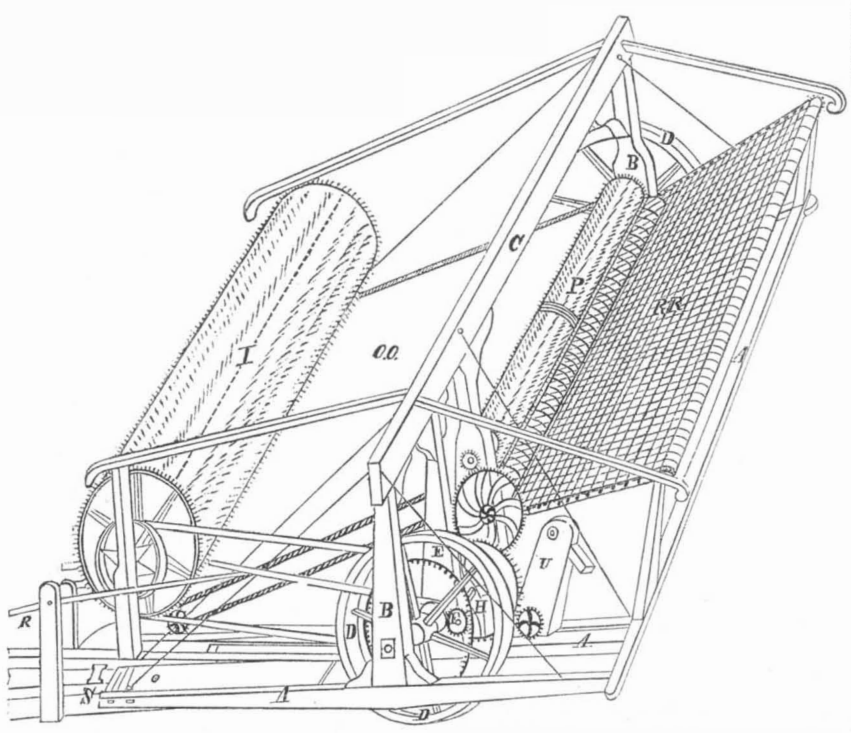
History of Reaping Machines.—No. 13.

None of the four patents granted in 1836 for reapers were published owing to the destruction of the Patent Office by fire during that year. One was granted to Henry Allen, of Fayetteville, Tenn., on June 2nd; one to Moore & Hascall, of Kalamazoo, Mich., June 28; one to John Drummond, of Waterford, N. Y., June 30th, and one to Wm. Greenleaf, July 1st. We have, however, obtained a description and drawings of Moore & Hascall's patent, and they are here presented as follows:—

This machine accomplishes the threefold operation of mowing, thrashing, and winnowing the grain, simultaneously, by the force exerted by the animals drawing the machine over the ground. Figure 40 is a view in perspective of the entire machine.

A is the frame or platform, and B uprights braced by a cross tie, C; J is the draft pole or perch to which the cattle are hitched, and which projects at one side in front from a frame piece or truck having running wheels, L; these form the fore-running wheels of the machine, which is supported in the rear by

FIGURE 40.



large carrying wheels, D. One of these carrying wheels, D, acts as a driving or propelling wheel in its rotation produced by the draft, to the several operative portions of the machine, by means of spur gear, E F, and belts or bands in any suitable manner; the pinion, F, which communicates the power from the spur wheel, E, attached to the driving wheel, being thrown into or out of action at pleasure by a clutch lever, G.

In figure 40 of the engravings, the fingers and cutter of the machine for holding and securing the grain, are concealed from view by the gathering cylinder, I, which is studded with rows of small spikes that, in the rotation of the cylinder, bend the heads of the grain downward and carry or direct them underneath the cylinder, and between' the holding fingers, M, to their proper position for the action of the cutter on the grain. The cutter is of the sickle-edged description, and has a reciprocating movement across the machines; it may be arranged either to work through, over, or under the fingers, M. The gathering cylinder, I, is provided with a concave underneath, from the back of which an endless traveling belt or apron, O O, serves to carry the grain to a thrashing cylinder, P, from which the thrashed grain and straw is precipitated at an angle of about 45° on to a traveling net or sieve-built apron, R R, which deposits the larger refuse on the ground in the rear, and through the meshes of which the grain, &c., passes into a concave trough beneath, a fan blast serving to winnow the grain as it passes, and revolving spiral scrapers inside the trough, causing the grain to be worked towards one end of the trough, from whence the grain is raised by elevators to a delivery opening near the top of a box, U, on one side, through which it is received into a sack or sacks by an assistant stationed on the platform for that purpose.

To prevent damage to the machine by obstacles on the ground, and to adapt the gathering cylinder and cutter, &c., to different hights of grain, these several parts are made capable of being raised or lowered by operating a lever, R, in front. The gathering cylinder, I, and its concave, were contemplated by the inventors to make subservient to the thrashing of the grain, in place of employing a separate cylinder for that purpose.

The claim of the patent was to the gathering cylinder in connection with the sickle-edged cutter operating as described, also the same in connection with cutting, thrashing, and winnowing devices of any suitable form or construction, all operating together in the one machine, &c.

[The patent of Moore & Hascall has become not a little famous, not on account, we think, of its great originality, for, as has been set forth in this history of reapers, quite a number of patents had been previously granted for machines embracing devices to accomplish the same objects, viz., cut, thrash, and clean grain at one continuous operation. The distinction which it has earned is due to unparliamentary action of the U. S. Senate, for entertaining the petition, and allowing the introduction of a Bill to extend the old patent as here presented, with additional improvements. This took place in January 1853. It was a deliberate attempt to make use of the whole of the present patent laws to light the cigars of interested Senators, as if they were no better than a piece of crumpled paper. We directed attention to the gross attempt to impose such a Bill upon other inventors who had patents for reaping machines, and its passage in its original shape was defeated. On page 141 and 214, Vol. 8, SCIENTIFIC AMERICAN, the nature of this Bill, and the action of the Senate thereon, were discussed. All those interested in patents for reapers should be acquainted with the facts relating to this case, as they are of great importance.

Fire Extinguished by Steam.

In a fire which recently occurred at Peoria, Ill., in Friedly & Lincoln's factory, the proprietors ordered the safety valve of the steam engine to be opened. In a few minutes the building was filled with the steam, which penetrated every corner where fire could burn, and completely subdued the flames.

California Platinum.

The California *State Journal* says:—" We were shown a few days since, by Dr. T. B. Trask, several ounces of this valuable metal, procured by him from the miners on the north fork of the Trinity river. Although platinum has been discovered at several places in the mines, it has never heretofore, we believe, been found in sufficient quantities to cause the miners to save it. Dr. Trask informs us that it is found in such abundance at several locations on the Trinity river, that the dealers in gold dust are beginning to pay considerable attention to its purchase. The miners informed him, that of the average proceeds of their work daily, eighty per cent. in weight would be gold, and twenty per cent. platinum.

California wheat weighs 70 lbs. to the bushel, this is six pounds more than New York wheat, thus showing that our New Pacific State is great in more things than gold.

The Cotton Crop.

Prof. McCay, of South Carolina, estimates that the cotton crop of this year will exceed that of 1854 by 270,000 bales.

LITERARY NOTICES.

SPLENDIDLY ILLUSTRATED.—GLEASON'S PICTORIAL for the new year is already issued, and for sale by S. French, of 121 Nassau street, New York city. We have never seen a handsomer illustrated paper, either European or American. On the first page is an admirable original design illustrative of Winter; a fine series of six views follow, representing interesting and striking scenes in the Orkney Islands. Next comes a large, original, double-page engraving, covering an entire opening of this royal octavo sheet, representing all the steamers and sailing vessels of the United States navy, now afloat, each being a likeness and drawn from life. This engraving alone is worth a year's subscription. Following this we have an admirable original portrait of Donald Mc Kay, the great shipbuilder, with an original sketch of the new Cambridge Bridge, a fine view of Harvard University, Cambridge, Mass., including a correct representation of Gore Hall, attached to the institution. On the last page is given a large full sheet original drawing, forming a natural history illustration, grouped with exquisite taste, and admirably engraved; all making eight illustrated pages, and being one more than has ever before been given, an addition which will be continued throughout the year. Add to all this the fact that the Pictorial contains its usual freight of excellent reading matter, miscellaneous, editorials, news, wit, and humor, and we are led to wonder how such a publication can be afforded for SIX CENTS. Let those who would procure a valuable and interesting weekly journal, which will carry amusement, instruction, and delight into their family circles, subscribe for Gleason's Pictorial, and procure the work regularly.

PUTNAM'S MONTHLY—This able magazine for January is the first number of volume 3. This periodical has won for itself a very high literary character during the two years of its existence. The leading article is on the Ocean and its Life; it is well written and full of interest to the lovers of nature and men of science. It also contains an article on the Unity of the Human Race, the second which has appeared since the work of Nott and Gliddon was published. The first article was in the last July number, and contained a spice of Swedenborgianism, Nottism and what not, in favor of the theory that all men are not sprung from one pair, but from a great number of Adams and Eves. The present article takes quite the opposite grounds, and although not very profound, is still much better than the last on the opposite side. This is a good time to subscribe for this sterling work.

Inventors, and Manufacturers

The Tenth Volume of the SCIENTIFIC AMERICAN commenced on the 16th of September. It is an ILLUSTRATED PERIODICAL, devoted chiefly to the promulgation of information relating to the various Mechanic and Chemic Arts, Industrial Manufactures, Agriculture, Patents, Inventions, Engineering, Millwork, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

Its general contents embrace notices of the LATEST AND BEST SCIENTIFIC, MECHANICAL, CHEMICAL, AND AGRICULTURAL DISCOVERIES,—with Editorial comments explaining their application notices of NEW PROCESSES in all branches of Manufactures; PRACTICAL HINTS on Machinery; information as to STEAM, and all processes to which it is applicable; also Mining, Millwrighting, Dyeing, and all arts involving CHEMICAL SCIENCE; Engineering, Architecture; comprehensive SCIENTIFIC MEMORANDA: Proceedings of Scientific Bodies; Accounts of Exhibitions,—together with news and information upon THOUSANDS OF OTHER SUBJECTS.

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