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Profitable Subjects for Leisure Moments.

Winter is approaching with its long evenings of comfortable leisure—a harvest time for mental and personal advancement, to those who choose to avail themselves of its golden opportunities. Fortunate are they who, in early years, enjoyed the precious privileges of education, for they have always at command, in literary pursuits, a pleasing and useful employment for the vacant hour. But much the largest number of people—sons of honorable toil—have never been able to cultivate their tastes for books very fully, and find no solid relish in them. They would be glad to find some subject for their leisure time, in which they could interest their minds to profitable advantage, without the necessity of previous preparation by research and long continued study.

To such individuals we would open the door of Mechanical Invention, believing that from its hidden but inexhaustible stores they are quite as likely to bring forth useful treasures, as any others who have gone before them. The secret of invention lies not in learning, or profundity of intellect; the most brilliant mechanical discoveries have always, as a general rule, been produced by unlettered men. Arkwright, when he invented that wondrous spinning frame, by which means all nations are now clothed, was a poor barber; Whitney, whose magic cotton gin keeps Arkwright's frames in motion, and gives vitality to the whole commerce of this western world, was an indigent son of a Yankee farmer.

We might mention many other equally illustrious examples, but space forbids; we might also cover our pages with accounts of other inventors, who, by the lucky concentration of their minds, perhaps for a single evening, have produced inventions which, while they have less signally benefitted the world, have brought large personal rewards to their originators, and raised them almost at once, from circumstances of laborious dependence, to ease and comfort. No man knows, without *trying*, what he can accomplish. In the matter of invention, this is particularly true. One of its chief requisites seems to be perseverance—that happy faculty of the mind which ever urges the individual on rather than fail of a final triumph. We are persuaded that many of our readers who now suffer their leisure evenings to pass away in unprofitable idleness, might, if they would but try, produce more than one valuable discovery.

The Cabalistic Society.

We have a circular now before us being a manifesto from the Grand Central Council of the above named Society, the head quarters of which are located at Albany, N. Y. It is a precious document, and sets forth that the great secret of alchemy, of turning base metals into gold, is in possession of its leader; also a plan for converting all the world into a republic, and of changing the whole face of living nature into an earthly paradise.

We consider it to be a grand humbug.

NOYES' IMPROVED NAIL HAMMER.

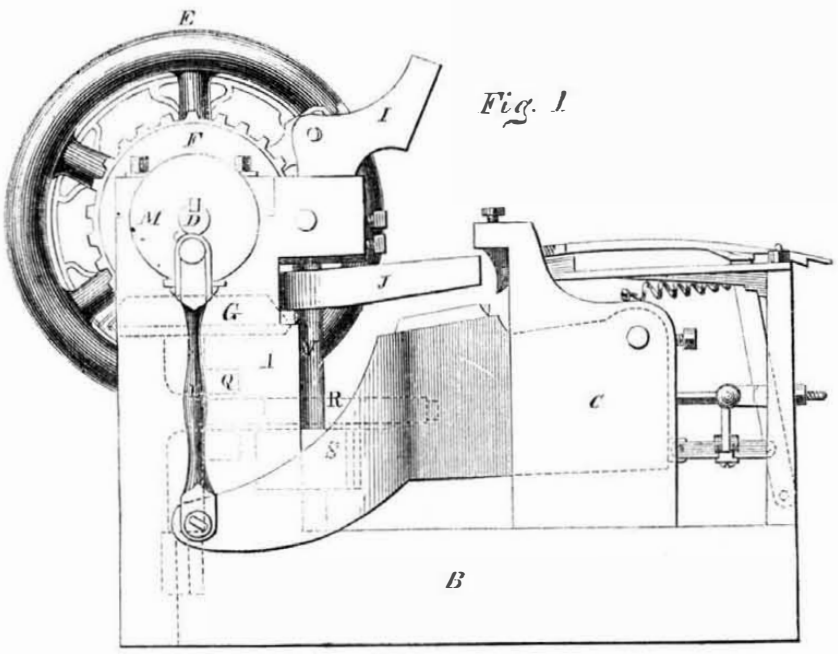


Fig. 1

The accompanying engravings are views of an improvement in machinery for forging nails, &c., for which a patent was granted to Daniel Noyes, of Abington, Mass., on the 23rd of October, last year. This invention relates to a peculiar arrangement of hammers, and of the devices by which they are actuated for forging iron into nails, spikes, &c., whereby the metal can be brought into the desired form or shape with greater regularity, and in a superior manner than by common trip hammers. By this invention the metal is forcibly struck on two sides by two side hammers moving horizontally, and on the top by a vertical hammer. The anvil also receives a certain movement to enable the side hammers to strike the two sides of the metal to be forged a true fair blow. Figure 1 is a side elevation of the machine; fig. 2 is a top view, and fig. 3 is a plan of side hammers, gears, connecting rod, and a section of cranks. The same letters refer to like parts. A is the end frame, B the bed plate, and C is a standard. The feeding machinery in this machine is the same as that commonly employed, and does not require to be described, but in a general manner. The metal to be forged into a nail is fed in on a guide way, to the action of the hammer above the top of anvil, K. D is the main driving shaft, with a fly-wheel, E, on one end. M is an eccentric plate on the main shaft; it is connected by a rod, L, to one end

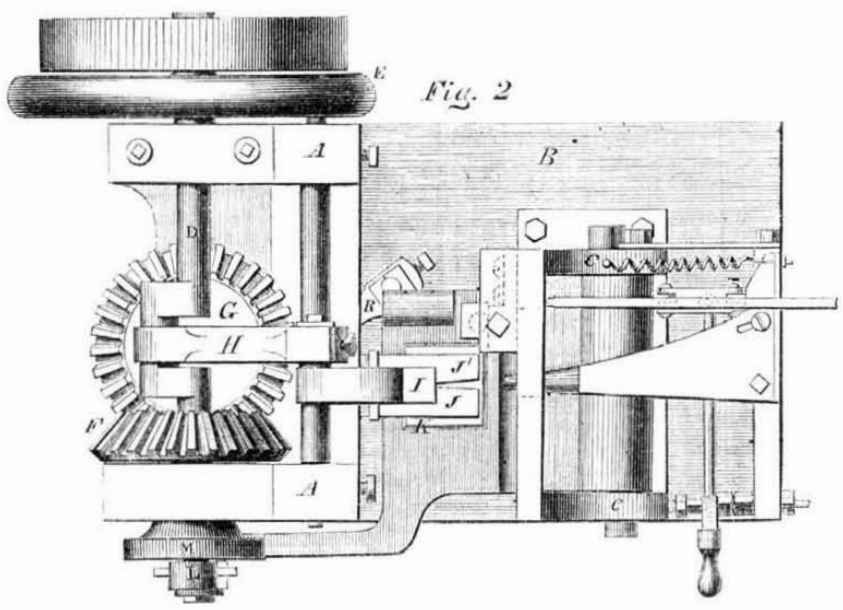


Fig. 2

of the anvil, K, by a pin, and this anvil is secured on a pivot in the standard, C. F is a bevel wheel on shaft D, gearing into another, G, on the head of a vertical shaft, (fig. 2). I is the top hammer, now shown in fig. 1 as being raised, its arm is secured on a fulcrum shaft, which is actuated by the rod or strap, H, of the crank of the main shaft, D, as shown in figs. 1 and 2. It will therefore be observed that the throw of the said crank will give the hammer, I, its up and down motion to raise it from the anvil and to strike the metal to be forged, the latter act being performed when the anvil is brought into the proper position by the throw of the eccentric, M, of the rod, L, to which one end of the anvil is connected. The hammer fulcrum is so placed with regard to the ends of the connecting strap, that it (the hammer) descends with the greatest rapidity, and consequently gives a very powerful blow. This explains the action of the top hammer.

J J′ are the side hammers. Their inner ends are secured on the top of vertical spindles, N N, which carry toothed sectors, S S, gearing into one another, for the purpose of giving them both unity of action from one connecting rod. On the vertical shaft which carries the bevel wheels, G, there is a crank, Q (see dotted lines fig. 1,) which is secured to the connecting rod, R, by a pin, P. This connecting rod is secured at the end to a pivot or fulcrum, on the sector. It therefore has a rocking or vibratory motion given to it by the crank, Q, and makes the hammers, J J′, rapidly approach one another to strike the two sides of the nail, and then throw them apart again, as shown by the dotted lines fig. 3. The connection of the rod, R, with the crank, Q, is such relatively with respect to the side hammers, that the latter has the greatest velocity imparted to them just as they strike the blow, thus assuring the greatest applicable force at the moment required.

The top hammer strikes the metal (which is heated and fed forward on the anvil,) and at the moment when it is raised the side hammers rapidly strike, and the anvil is as rapidly depressed by its connecting rod, L, to allow the side hammers to embrace the sides of the piece of metal truly. In fig. 1, the anvil is shown depressed, the hammer, I, raised, and the side hammers acting on the piece of metal. This describes the action of the hammers. One of the most essential features of the machine consists in the relative positions of the ends of the connecting rods, and fulcra of the hammers at the time of giving a blow. The fulcra are so placed as to be at the time of giving the blow nearly in a straight line with the connecting straps or rods, from which they derive motion. Just before giving the blow, in consequence of the relative position

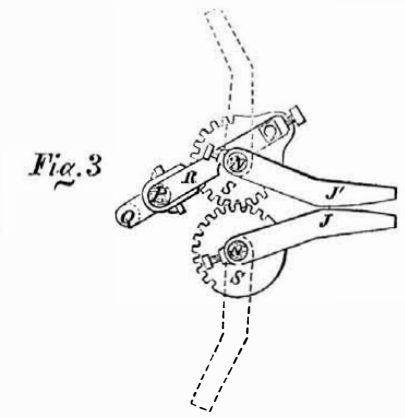


Fig. 3

of the ends of the connecting rods, and the fulcra of the hammers, one end of the connecting rod or strap is traveling in one direction, while the opposite end attached to the transverse arm is moving in the opposite direction, which necessarily gives a rapid motion to the hammer when about to strike.—When the hammer is rising and the side hammers opening, the ends of their respective connecting rods are moving in nearly the same direction, which thus gives them a slow motion at such a time. The connecting rods also, when in a straight line with the fulcra of the hammers, allow the hammer arms to turn freely forward or back on their journals at the time of giving the blow, which is essential, in order to give a swinging elastic blow.

The action of the hammers after each other—the top ones and then the side ones, is rapid and accurate. The faces of any or all of the hammers can be furnished with dies, so that any desired shape may be given to the iron, and thus various kinds of forged nails and spikes may be made by it with great facility. In some kinds of forging the upper hammer may be dispensed with, and the two side hammers used, or the two side hammers left idle, and the top one used alone. The peculiar swinging blow described, of the top hammer, renders it superior to the common trip hammer, as the anvil can be brought into position for the hammer to strike a perfectly square blow.

This machine is especially adapted to the hammering of wrought-iron nails, and obviates the well-grounded objection to rolled nails, which lack tenacity. If we mistake not it is a most valuable invention, and must soon supersede all other methods for making horse-nails, especially, as they can be forged very rap-

idly, and are more tenacious, and are smoother on their surfaces than the best English hand nail so generally used by blacksmiths. Having seen a machine in operation, we can speak unreservedly in favor of its action and the work which it executes. The claims embraced in this patent may be found on page 59, Volume 9 Scientific American. Patents have also been secured through our agency in foreign countries. For additional information in regard to machines, rights, etc., address James L. Leete, 130 Broadway, N. Y.

New York State Fair.

The Annual Fair of the New York State Agricultural Society having been advertised to be held at Hamilton Square—in the vicinity of this city—last week, it was expected that it would be no small affair, and this expectation did not end in disappointment.—The grounds were well selected, being dry, airy, rolling, and romantic. The fields everywhere gave forth the sweet breath of new mown hay, and after the first day—which was rainy—the weather was delightful.

Live Stock—The inimitable Barnum, under whose management the live stock was placed, had made ample arrangements for their reception. The whole field of eighteen acres was squared with sheds, laid out into stalls for horses, hogs, and sheep; and running transversely through one quarter of the field were ten rows of sheds for neat cattle. The show of horses was fine, although the number was limited. The greatest attraction among them all was the celebrated racing mare Fashion, with her colt. The show of mules was excellent; about forty teams were on the ground, some of them being by far the finest we ever beheld.

The number of hogs was not great, but the samples were good. Sheep of every description, Saxony, Merino, South Downs, Beckwell's, &c., made a respectable appearance. The most of them were exhibited for their wool-bearing qualities. It is a fact, that those which have the finest wool make the poorest mutton, while the coarse wooled sheep make the best; both kinds therefore should be raised with an eye to their separate qualities.

The greatest curiosity exhibited in this class of animals was three Cashmere goats, with their long silky fleeces, white as the snow on the lofty Himmalays. There were two kids of a month old, and their dam.—The kids appeared to be spiritless, and we are afraid that our climate is not adapted for them. We hope, however, they may be thoroughly acclimated, as there can be no doubt of their great value, in regard to their fleeces. Some shawls made in Cashmere from the wool of these goats sell for $500 and $1000.

The number of milch cows was very small but we did not see an indifferent one in the lot. The bulls seemed to reign masters of the field, both in respect to numbers and weight of metal. Two Durhams were perfect mountains of flesh, and were white as the foam of the torrent. We cannot say that we like these light colored animals, and we have heard it asserted that they do not stand our rigorous winters so well as the dark Devons, a number of which were on the ground, and made a fine appearance. The white Durhams, it appears to us, are a cross with the old native wild cattle of Deucaledonia; they resemble them in color, but are much larger.

There was a great quantity of geese, ducks, and Shanghai bipeds exhibited, and they attracted a great deal of attention, especially that of the ladies.

Machinery—The most conspicuous machine on the grounds was the adjustable Wind Mill of D. Halliday, which was illustrated in the last number of the Scientific American. It was continually surrounded by a crowd of visitors, and was much admired.

Reapers—The Reaping and Mowing machines engaged more attention from those present than any others. We counted nine different machines exhibited by as many owners, but some had three, four, and five machines of the same kind.

The first in a long line of such machines was that of H. Waterman, of No. 114 South st., N. Y. It embraces three new features, 1st, the action of the cutting knives; 2nd, spring fingers in which they work, and 3rd, the gathering of the cut grain into bundles of a certain weight. The knives have a slanting cut motion, being hung on vibrating arms. The spring teeth always keep them clear, and the manner of making the bundles allows of smaller ones for damp and heavy grain, than for dry and light grain. A new Reaping Machine by Fisk Russel, of Boston, has knives which have a slanting cut like that of Mr. Waterman's, but each is hung separate, so that they can be changed at pleasure. They receive a reciprocating motion from a rotating wheel with a fan edge which plays between two rollers on the knife shaft. These two machines from their novelty were continually surrounded by large crowds. The Self-Raking Reaper of J. Atkins, of Ill., manufactured by J. S. Wright, of Chicago, appeared to excite profound attention. The ingenuity displayed by the inventor in designing this machine, entitles him to rank with the greatest inventors of the age. This reaper was illustrated on page 41, Vol. 9, Scientific American. Manny's Reaper and Mower, with Woods' improvement, was exhibited by W. A. Wood, of Hoosick Falls, N. Y.; Ketchum's Reapers and Mowers, made by Howard & Co., of Buffalo, N. Y., were the most numerous, and were all well made. Thomas D. Burrall, of Geneva, N. Y., had excellent Reapers and Mowers on the ground. Week's Mower and Reaper, by Mayer & Co., 197 Water street, this city, and one by J. Adriance, of Po'keepsie, N.Y., were admired for their excellent construction. A machine by D. Fitzgerald, of this city—the inventor of fire-proof safes, and termed "Fitzgerald's Grain Cradling Machine," has a peculiar feature for gathering and discharging the grain. Instead of a horizontal revolving reel, as on McCormick's and other reapers, he has two vertical barrels revolving towards each other centrally, and these have long crooked fingers which gather in the grain towards the center of the machine, and discharge it in swaths from a channel at the rear. We also noticed one of Forbush's reaping machines. We may have overlooked some reaping machines, but we think not. There was much confusion, however, and it was somewhat difficult to make a thorough examination.

Hay Press—A large parallel lever press of Deering & Dederick, of Albany, N. Y., which was illustrated on page 384, Vol. 9, Scientific American, was on the ground, and applied to pressing hay. Its good qualities were readily acknowledged by all who saw it operate.

We noticed three "Horse Powers," one being new and never before exhibited, viz., McCord's, which was illustrated on page 316, last volume Scientific American, and which has been patented recently. It is a very compact power, and must be very durable, the very qualities which our farmers require. We counted no less than eighteen straw cutters, which afford evidence to us that such machines are of deep interest to agriculturists. A number of them have been illustrated in our columns, likewise some of the Grain Drills on exhibition; want of space prevents us from specifying these, but they are now generally known. A number of good grain winnowers graced the Hall of Manufactures, among which was one by J. Keech and S. Stillwell, of Waterloo, N. Y., which could be converted into a grain separator by closing a lid, and into a simple fanning mill by opening it. A machine for rolling out tubes of sheet metal with great rapidity, was exhibited by Mr. Webster, of this city. J. L. Mott, the well known inventor and manufacterer of cast-iron vessels, exhibited quite a variety of his wares, especially his cauldrons, which are very serviceable for farmers to boil feed for their cattle, &c. Thompson & Munsell, of this city, exhibited a number of McGregors' excellent cauldrons, which are adapted for the same purposes. A rotary machine for cutting ditches, made at Canandaigua, N. Y., by Mr. Pratt, was looked upon favorably.

The machines and manufactures on exhibition were neither great in number nor variety; other State Fairs have been better in this respect, but not in character. On the whole, the Fair was good; we are sure that for the number of visitors, and the display of live stock, it was the best ever held. Flora Hall was a scene of gay attraction for the lovers of fruits and flowers. Hovey, of Boston, took the lead for fine pears. The display of grapes was tolerable; we suppose our Cincinnati friends will consider it in this respect a meagre show. In one tent were two cheeses, each 524 lbs. weight, made at Rome, N. Y. The art of cheese making is not yet so generally understood as it should be. With the same quality of milk one farmer makes cheese which sells in the market for two cents per lb. more than another's, but from the opportunities we have had of examining cheese, we believe that a vast improvement has been made in the art within the last ten years.

The Fair closed on Friday last week, having been kept open for three days. The officers of the State Agricultural Society, we understand, are pretty well pleased with the results; it paid well, and it really deserved this.

Fraud in Coal.

The manner of selling and delivering coal in our cities is a matter that is exciting some attention. As the custom is, the purchaser possesses no means of determining whether he has good weight or measure, having to rely entirely on the honesty of the seller and the employers. The Boston *Advertiser*, speaking on the subject, says:

"It is the practice, we understand, in England, to send the coal to the purchaser in large bags made of some stout material adapted to the purpose. The bag is intended to contain a given weight, say 200 pounds; a pair of scales is sent with the load of coal, and the purchaser, if he pleases, can weigh every bag; but he generally contents himself with weighing one or two taken at a venture out of the wagon load."

We do not see why this excellent plan of preventing coal dealers from defrauding purchasers could not be carried out in other places as well as London. Such a law is as much required in New York as in that city. At every police station in London, there is also a pair of scales for weighing coal, to which the purchaser can make the carter drive his wagon to be weighed, if he is dissatisfied with the dealers' scales.

Counterfeit Coin.

The New York *Journal of Commerce* calls the attention of the public to a counterfeit quarter of a dollar, which is the closest imitation in appearance of the genuine coin, which ever fell under notice. It was taken at the post office, and paid into the sub-treasury, where it was detected by Mr. Edward H. Birdsall, the weigher and tester of coin. This counterfeit appears to be made of zinc, or other bright metal, is cast to resemble exactly the genuine coin, and is afterwards "galvanized" with pure silver. It is dated "1853," is about ten grains lighter than the genuine, and is very brittle. By the latter characteristic, it may easily be detected, as it will readily break by a blow from a hammer; the specimen referred to was broken by Mr. Birdsall between his thumb and fingers. There are probably but few now in circulation, and receivers of money will do well to be on their guard against them.

Colt's Patent Case in England.

The report of the Committee of the House of Representatives, on the Colt Patent Case, has found its way across the Atlantic, and has been made the subject of what is intended to be a profound criticism of American political practices, by the *Manchester Examiner*.—Strange to say, however, the author of the article commits the astonishing blunder of calling Horace H. Day, (the manufacturer of India rubber goods) "a professional letter writer," and he therefore attempts to throw odium on the integrity of those connected with the American press. Throughout the whole of the investigation in this case, no evidence was elicited to implicate a single person connected with the press. Our English cotemporaries, before commenting on American affairs, should well consider old David Crocket's advice, "be sure you're right, then go ahead!"

Draw Bridges.

An improvement in draw bridges for railroads and other purooses has been made by H. B. Perry, of Bridgeport, Conn., which consists in making the bridge double, of a hollow ellipse, with a basin of water between the two parts to contain a vessel, each having a swing or draw, and so arranged that when one is open the other will be closed.—The ends of the draws are provided with metallic arms, which in operating or closing the draws, operate switch levers at the ends of the bridge, which move the switches of the rail track, whereby an advancing train is always made to pass on the track which runs along the closed draw. This will prevent trains from running into the water of river crossings, because the draw of the track on which the train is running will never be left open.

Beautiful Silver Plate Gift.

We were shown yesterday, a beautiful silver tea set, consisting of a coffee urn, a tea urn, a water pot. a slop and sugar bowl, cream cup and salver, and twelve silver forks and spoons, which is to be presented to E. W. McGinnis, by a number of the citizens of Pottsville. The different pieces are chased in beautiful style. The salver has upon it the following inscription:—

"To Enoch W. McGinnis, from gentlemen interested in the Schuylkill Coal Basin, as a testimonial of their high appreciation of the intelligence and energy, that surmounting all obstacles, whether of prejudice or of theory, have established the fact of the accessibility for practical working of the White Ash coal measures throughout the entire basin."—[Philadelphia Gazette.

The Ohio Baby Convention.

We have been informed upon the best authority respecting the National Baby Convention at the Fair grounds, Springfield, O., that the Ohio Agricultural Society had nothing to do with it. We are happy to be informed of this, for we think that such a convention affords proof of the want of good sense in those who originated and conducted it.

To Mariners.

Professor Bache, of the Coast Survey, announces the discovery of a very dangerous sunken ledge, in the neighborhood of the "Minot Ledge," in the approaches to Boston bay, which has only ten feet of water on it at low water, spring tides. The rule for avoiding it, is *not to pass to the southward of the "light-boat,"* where strangers have no excuse for going at any time.

A Huge Pan.

The New York Novelty Works have completed an immense copper vacuum pan, weighing five tuns, for the Boston Sugar Refining Company. It is 7 feet and 6 inches deep, and is welded together in the most substantial manner. Its entire cost will be about $8,000, and it is one of the largest in the world.

Castor Oil in Cholera.

The cholera patients of King's College Hospital, in London, were successfully treated, as Dr. George Johnson says through the London *Times*, by castor oil administered in half ounce doses until the bowels re-act. He says, that in fifteen cases taken after decided collapse, twelve recovered.

Professor Morse is said to have discovered the skeleton of a mastodon near Poughkeepsic, and is now at work excavating it. It is spoken of as the most perfect specimen ever yet found. The bones are partially petrified

A pumpkin vine spreading out of a manure heap at Pittsfield, produced 34 pumpkins whose aggregate weight is 592 pounds.—These must be what some people call "some pumpkins."

Practical Chemistry.

[Concluded from page 27.]

Cold alcohol or ether have no action on murexide-purple; the former liquid destroys it at boiling temperature, without being colored purple as is water. Alkalies, especially in a caustic state, are very destructive to it; if a piece of cloth dyed with murexide be dipped into a solution of caustic soda, it assumes a violet-blue color, and is then decolorized. Soap, acting as a weak alkali, after a time alters it. Chlorine has no immediate action upon it, at least not in weak solutions. Acetic and oxalic acids are not sufficiently energetic to immediately discharge the color. Hydrochloric, nitric, and sulphuric acids acts as decolorizers; nevertheless the latter acts less quickly than the first two, and what is singular, the color almost destroyed by sulphuric acid re-assumes a rose-violet by immersing the tissue in ammonia.

Bi-chromate of potash, chlorate of potash, acetate of lead, acetate of alumina, are without action upon murexide. This is not the case, however, with reducing compounds, such as protochloride of tin, sulphuret of ammonium, protosulphate of iron, which destroys the rose tint very rapidly; the protochloride of tin produces a blue tint before it decolorizes it. The reduction of the murexide gives birth to a new substance, which, in its turn, may reprodnce that substance by a properly conducted oxydization.

From these re-actions it is evident that the rose, amaranthus, and purple shades produced with the murexide, and which exceed those produced by all other means, in richness and brilliancy of tints, have also the advantage of being the most solid and durable, an advantage which will no doubt be soon appreciated.

We have now to speak of the sources from whence the supply of uric acid may be obtained, should the employment of murexide become general. At present the price of that substance, which has never hitherto become an article of commerce, would be so high that the murexide-purple would be far more expensive than that produced with cochineal; but if we recollect, that, independent of the excrements of serpents, from which hitherto uric acid has been made, those of pigeons, and especially of all carnivorous birds, silkworms, &c., and above all Peruvian guano, which may be obtained in immense quantities, are very rich in uric acid, and it may be produced from them at a very moderate price as soon as it becomes an article of commerce. No doubt, if necessary, fowl might be so fed as to produce it in much larger quantities than they do naturally.

Connected with this part of the subject, we may mention, that in the making of the alloxan from the uric acid, a considerable quantity of the former remains in the acid mother-liquid, from which the crystals of alloxan separate. This portion could not be used to impregnate tissues, in consequence of the nitric acid present, and would cause a considerable loss of material, and a considerable enhancement of the cost of the dye, unless it could be utilized. If a piece of zinc be introduced into the acid mother-liquid, alloxantine will be formed, which may be recovered by evaporating the liquid and allowing it to separate out. This substance, as we have before remarked, will also produce the purple color, and a mixture of it with alloxan will afford the best conditions for its production.

M. Schlumberger has indulged some curious speculations relative to the existence of this coloring matter ready formed in nature, which it may be interesting to notice. M. Sacc has found that poultry, and especially birds with very brilliant plumage, such as the different parroquets, do not produce sensible traces of uric acid during their period of molting, whilst the quantity is very large when their feathers are fully developed. The question naturally suggests itself, what becomes of the uric acid in the former case? May it not be transformed by some as yet unknown metamorphosis in the animal body into a substance like alloxan, capable of coloring the feathers? Murexide, as we have observed, is green by reflected light; a substance then which gives violet (red and blue) and green (yellow and blue) can undoubtedly produce all shades of colors, which are made up of those three colors. How curious if it should hereafter be found that murexide was indeed the source of all the varied hues of birds' plumage! Still further, it is chiefly those animals which have but one means of exit for their excrements, and who produce large quantities of uric acid, that exhibit a display of coloring. Thus, for example, we have the skin of the serpent and lizard, the scales of fish, the wings of butterflies, often colored in the most gorgeous manner, whilst the skins of the mammalia are dull, and without the iridescence and metallic luster which is so characteristic of the coloring of some of the classes of animals mentioned. These are, however, mere speculations, but they nevertheless lead to a very unexpected supposition. The ancients were acquainted with a process for dyeing wool of a fine purple, which has been lost to our days, or at least is only practiced in the East. Tradition however tells us that this beautiful purple tint was produced by pounding a quantity of small shell-fish, and adding to the mass either a quantity of urine in the state of putrefaction, or water in which some of the same shell-fish has been allowed to putrefy. The cloth soaked in the liquid produced by these mixtures only developed the beautiful purple color after long exposure to the air, and probably to heat. This mode of producing the color so strikingly resembles that by which the new color of murexide is produced, that one is tempted to believe that the Tyrian purple was produced by that substance; and that many centuries before the beautiful discovery of Liebig and Wohler, murexide was formed by the action of ammonia in the putrid matter employed upon substances derived from the uric acid which must exist in the intestines of the shell-fish pounded up.

A Reminiscence of the First Ocean Steamer.

In an out-of-the-way nook in the New York Crystal Palace, quietly reposing beneath the shelter of a glass case, the antique object which forms the subject of our engraving may be found.

It is the identical silver tea-kettle presented to Captain Moses Rodgers, of the American Steamship *Savannah*, by one of his first passengers, Lord Lyndoch. In the same glass case may also be seen the original "log-book" of the *Savannah*, which contains the usual nautical record of weather experienced, ports visited, and business on ship-board, during the whole of her eventful career.

Few objects in the whole Exhibition possess greater interest, to our minds, than the above named. They lay before us at a glance the particulars of the birth and paternity of that grand enterprise of modern times—*Ocean Steam Navigation.* They afford proofs direct and unmistakable, that the progenitor of all those swift, iron-muscled leviathans, which with foaming track and breathless speed, now bid defiance to the billows of every ocean, here saw the light, and from these shores first sailed.

The *Savannah* was a vessel of 380 tuns burden, ship rigged, and furnished with an inclined steam engine placed between decks, with boiler in the hold. Pine wood was the fuel. She was built in this city, by Messrs. Crocker & Fickitt. Her first voyage was from New York to Savannah, and thence direct to Liverpool, where she arrived after a passage of eighteen days, using steam only seven. She was provided with side paddle-wheels, which were so arranged as to be easily taken off from their shafts and hoisted on deck. The following extract, which we have copied from the log-book, shows the facility with which the wheels were shipped and unshipped:

"REMARKS ON BOARD, JUNE 16th, 1819.

Hour.	Knots
1.	3.—Course of wind S. E. by E.—W. N. W.
2.	3.—
3.	3.—These 24 hours begins with light
4.	3.—breezes and cloudy.
5.	2.—
6.	2.—
7.	2.—
8.	0.—At 8 P. M. calm and heavy sea. Got
9.	4.—steam up, and set the wheels to going,
10.	5.—took in all sail.
11.	5.—
12.	5.—
1.	5.—
2.	5.—
3.	5.—
4.	5.—
5.	5.—
6.	5.—
7.	5.—At 8 A. M. saw Mizen Head, on Ire-
8.	5.—land, bearing East, 6 leagues distant.
9.	5.—At 9 took in the wheels and set sail.
10.	3.—At meridian, light breezes and pleas-
11.	3.—ant. Variation 2½ westerly.
12.	3.—Lat. by obs. 51° 22′ N."

The above record, it will be observed, was made four days prior to the arrival of the steamer at Liverpool. It would appear that the vessel's average speed with fair wind, without steam, was three knots an hour, and that with steam alone, sails furled, five knots.—Captain Rodgers seems to have been careful of his fuel, and to have used steam when the wind failed.

We make another extract from the log-book, showing the record made on the day of her arrival at Liverpool, as follows:

"Remarks on board Sunday, 20th June, 1819.—Wind N. W. These 24 hours begins calm and clear; at 8 P. M. the Bardsey Islands, in Wales, bore East by compass, 5 leagues distant.

At 4 A. M. see Holyhead Light, bearing N. E. by compass, 6 leagues distant.

At 8 A. M. took pilot on board out of boat No. 10. At meridian pleasant.

At 2 P. M. hove-too off the bar for the tide to rise. At 5 P. M. shipped the wheels and furled the sails, and run into the river Mersey.

At 6 P. M. came to anchor off Liverpool with the small bower anchor."

It appears rather questionable whether any of the newly invented propellers which have come into vogue since the days of Captain Rodgers, have proved of greater convenience, or are more easily handled, so far as shipping and unshipping them is concerned, than the paddle-wheels of the *Savannah.* We are inclined to think that an examination into their arrangement would be serviceable to those who are interested in steam as an auxiliary in navigation.

The arrival of the *Savannah* at Liverpool appears to have created considerable excitement. As she drew near the city with sails furled and American banners flying, the docks were lined by thousands of people, who greeted her with vociferous cheers. A Liverpool editor said, "among the arrivals at this port on the 21st, we were peculiarly gratified and astonished by the novel sight of a fine steamship, which came around at half-past seven, without the assistance of a single sheet, in a style which displayed the power and advantage of the application of steam to vessels of the largest size, being 350 tuns burthen."

After remaining at Liverpool for about a month, the *Savannah* sailed to St. Petersburgh, touching at Stockholm, where Lord Lyndoch took passage for the former place.—This English nobleman was so much pleased with the trip, that he presented Captain Rodgers with the silver tea-kettle represented at the head of this article. The gift was accompanied with the following etter, which we copy from the original at the Crystal Palace:

"ST. PETERSBURG, 15th Sept., 1819.

DRAR SIR.—I trust you will do me the favor to receive the small tea-kettle (or coffee-pot) which I take the liberty of sending, as a slight token of my regard, and which may be useful at Mrs. Rodgers' tea table. I beg, too, that you will believe me most sincere in assuring you of the great satisfaction I had in making the passage from Stockholm on board the *Savannah.*

It gave me the opportunity of coming here in the most agreeable manner possible, and of admiring the successful efforts of your powerful mind.

With best wishes for your future welfare, in which Mr. Graham desires to join, I remain, dear Sir, most truly and obediently yours,

LYNDOCH.

Capt. Rodgers, of the *Savannah.*"

The following is the inscription on the tea-kettle:

"Presented to Captain Moses Rodgers,
of the Steamship *Savannah.*
Being the first steam vessel that had
crossed the Atlantic.
By Sir Thomas Graham,—Lord Lyndoch,
a passenger from Stockholm to St. Petersburgh,
September 15th, 1819."

The testimonial may by described as having a beautiful false bottom, supported by three carved legs with ornamental claw feet, with a small vessel in the form of a lamp, on the top of which is a silver guard for the support of the kettle; the whole lined with gold and standing ten inches high.

The company owning the *Savannah* had despatched her to St. Petersburgh with the expectation of selling her to the Emperor, but in this they were disappointed, and the ship returned to America. Owing to the great bulk of the wood fuel, it was found impossible to run her with profit, and her engine was removed. She ran as a sailing packet to the West Indies for a time, till at last, striking the Long Island shore, she became a wreck.

The engine was long used for manufacturing purposes, but has finally ceased its labors.—The cylinder is still preserved, and the curious may look upon it in the machine-room of the Crystal Palace, where it is exhibited by the proprietors of the Allaire Works, of this city.

A New War Steamer.

The *Daily Times* states that George Steers has entered upon his duties as naval constructor at the Brooklyn navy yard, and has commenced laying down his lines for the new war-steamer Niagara, which is to be the largest ship ever built in this country. The extreme length of the Niagara will be 345 feet; depth of hold, 31 feet; breadth of beam, 55 feet; draught when loaded, 22 feet 9 inches; displacement, 5,500 tuns. Mr. Steers has contracted to give her a speed of seventeen nautical miles per hour under sail alone, and a velocity of sixteen nautical miles per hour under steam alone, in case the engines are constructed by Messrs. T. H. & E. Faron.—The Secretary of the Navy and the Executive at Washington have given every opportunity requisite to enable the constructor of the Niagara to make a fair trial of his system and skill. The Niagara is to be a propeller, and carry guns of 11-inch bore, or of the largest calibre used in our navy.

Glass Casting.

The New England Glass Company, at East Cambridge, have just erected a beautiful brick tower near the main entrance to their establishment. The structure will be surmounted by a beautiful silvered glass globe, ten feet in diameter, supported by an iron shaft sixteen feet in hight, above the top of the tower.

Some experiments have recently been made in England in sending telegraph messages across streams of water without wires.

It is reported that the Italian inventor of the electro-magnetic harness loom, is about paying a visit to this country.

New Inventions.

Lyon's Copper Lightning Conductor.

The annexed figures represent an improvement in Lightning Conductors, for which a patent was granted to Amos Lyon, of Worcester, Mass., on the 11th of July last.

Figure 1 is a perspective view of a section of the conductor; figure 2 is a like view of one of the glass insulators employed, and figure 3 is a perspective view of a conductor secured in position.

The nature of the invention consists mainly in the use of sheet copper (or other metal to produce the same result) made in such form for a lightning rod as to present to the electrical atmosphere a proportionably large amount of surface with a smaller amount of metal than is ordinarily used. The conductor is made of thin sheet copper like that used for making common kettles. A sheet of this copper, say about five feet long, is cut into strips of about three-fourths of an inch wide, or more as may be desired, and is bent or locked up to form a ledge on each side, like a square gutter of two sides and a bottom, but no top; two of these are rivetted together back to back, as shown by B B, figure 1, forming the conductor, which therefore is made of these strips of copper thus united together, and rivetted so as to form it of any length required.

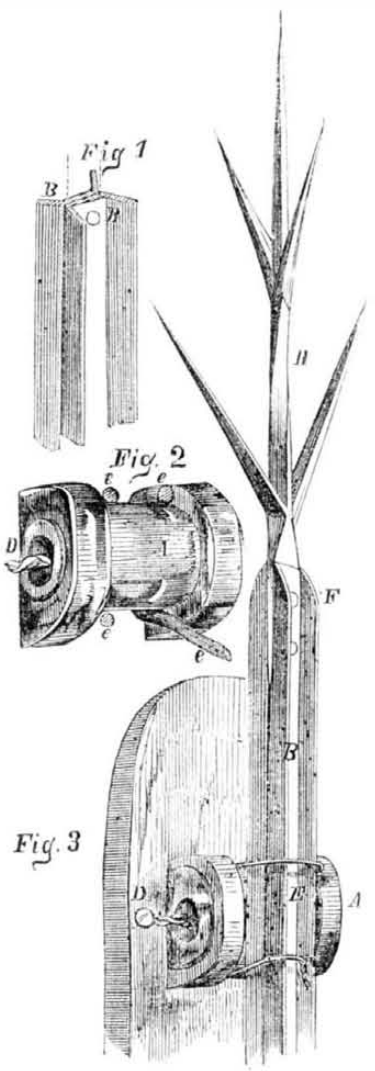


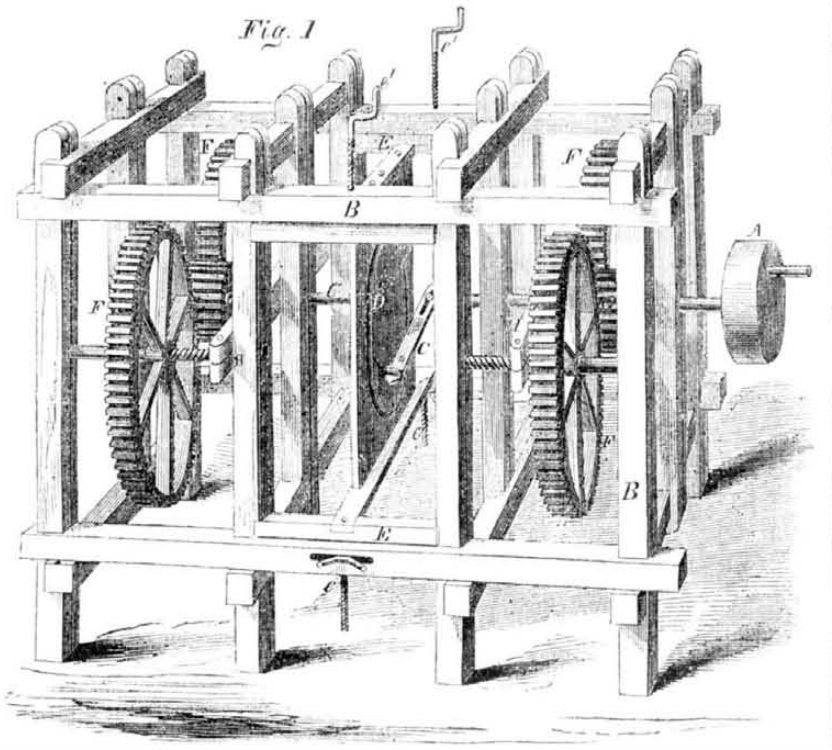
Figure 2 represents an insulator, A, which is used to bind the conductor to a building. It is made of glass with an opening through its center, is flattened on the side, D, next to the house to fit snug to it, and has its middle part formed outside with a groove to receive the conductor between its two raised ends. A double wire, *e e*, is passed around the conductor above, and fastened below the insulator as at E, figure 3, to clasp it firm in its groove; another wire is passed through the interior of A, and secured by screws or pins to the building to hold the insulator to the house. Other insulators may be used, but this is a very good one. The upper part, H, of the conductor is formed with a number of points, and its lower end is flattened and rivetted between the two middle sides of the conductor, as at F. This method of forming copper conductors is exceedingly simple. Copper is eight times as good as iron, (of the same section) in conducting power, and therefore to be preferred to iron. This conductor allows of a better continuous connection than by links, and it is of great importance to have the connection as perfect as possible.

In the erection of lightning rods, great care should be exercised to have the lower end buried in the ground some distance beneath the surface, where the soil is always moist, or to have it run into a well. If the lower end of the rod be buried in dry charcoal, as has been the practice with some who were ignorant of the principles of erecting them, it will fail to perform its offices. A lightning rod is simply a road to transmit the electricity from the surcharged atmosphere into the earth—to establish an equilibrium, and to do this the earth must form part of the circuit. Dry earth is a non-conductor, especially dry sand, hence the necessity of having the lower end of the rod buried in moist earth.

For the information of all those who desire to become fully acquainted with the merits of lightning rods, their offices and nature, Mr. Lyon has published an interesting pamphlet, in which he discusses with philosophic ability the deep and intricate questions of "man's free will," "fore-ordination," and "the works of Providence." We had no idea that these questions were so intimately blended with lightning conductors, until we read Mr. L.'s pamphlet.

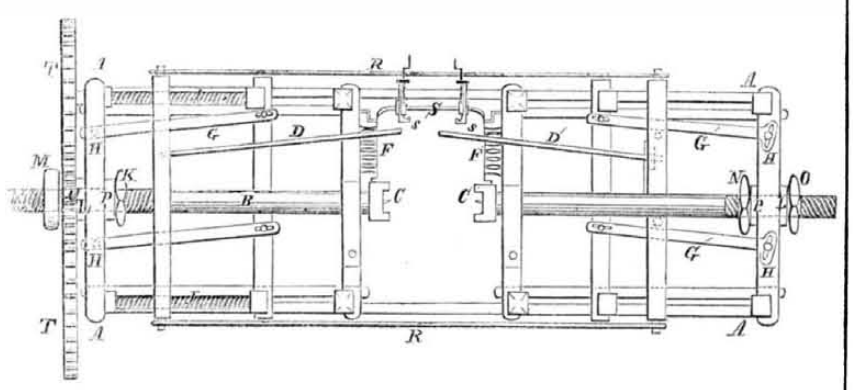
More information may be obtained by letter addressed to the patentee, at Worcester, Mass.

CUTTING BARREL HEADS.



The accompanying fig. 1 is a perspective view of a machine for cutting out the heads of barrels, &c., invented by J. P. Osborn, of Staunton, N. J. A is the driving pulley, and B B is the frame. On the shaft of the driving pulley is a broad pinion, G. F F F F are four toothed wheels, the spindles of which have threads cut on part of their length. On the off-side of the frame the spindles of the wheels, F F, are in one piece, while on the right side the spindles are separate, to allow the wood to be put in to be cut into barrel heads, and then taken out when cut. It will be observed that the pinion, G, on the shaft of pulley A, will give motion to the two wheels, F F, on the right hand side, and the spindle of wheel F on the off-side, (being the same as that of the left hand off-wheel, F,) will give it the motion, and as it gears into the left hand pinion, G, it will give motion to its shaft and the other nigh wheel, F. The cutter knives are secured on the ends of the central shafts of the pinions, and are represented by C C. They are secured on cross arms, and are adjustable to cut large and small circles or barrel heads. The piece of board or plank to be cut into circular form is placed in the center of the machine, in a vertical position, represented by D. It is secured in place by head and foot cross gates, E E, which slide in guides up and down in the sides of the frame; they are moved by the setting screws, *e' e'*, (top) and *e e* (foot) so as to clamp the plank, D, firmly, and hold it secure to the action of the cutting knives, C C. There is a cutter at the extremities of both arms, and and these cutters are so formed and set as to cut the lids or barrel heads with the requisite bevel to fit into the croze of the barrel. One set of cutters cut into the one side, and the other the opposite side, approaching towards and receding from one another, alternately. The spindles, therefore, of the cutters must be fed forward as they cut into the plank. This is accomplished by bars, H H, which have threads cut in the openings which encircle the same parts of the spindles of the wheels, F F. They also clasp the spindles or shafts of the cutters; therefore, as the pinions, G G, of the cutters revolve, one feed bar is moved forward, cutting into the plank, while the other is moving backward; and the latter is moved forward while the former is reversed, thus keeping up the alternate reversing and cutting action of the cutters, C C. A few revolutions of each cut a barrel head. The shafts of the cutters slide back and forth in their bearings, and the pinions, G G., are of such depth as to slide the length desired and gear with the feeding wheels, F F. This machine is exceedingly simple in its construction and operation, and forms part of a complete set of machinery for making barrels, &c., with that represented by figure 2.

TURNING CASKS FROM SOLID PIECES OF WOOD.---Fig. 2.



This figure is a top or bird's eye view of Mr. Osborn's machine for turning barrels, casks, tubs, &c., out of blocks of wood, without injuring the cores, and for which a patent was granted on the 20th of last June. In this machine, instead of the cutters revolving they are only moved laterally, while the carriers which hold the block are revolved. A A is the frame; B B are the carrier revolving spindles. C C' are the carrier heads for holding the block of wood. D D' are longitudinal tool bearers or stocks, the butt ends of which are secured in cross feeding bars. F F are guide rests for the cutters, and G' G' are guiding bars. H H are screws for setting the guide bars of the cutters, and I I are the feed screws, which move the cross feed bars that hold the cutter stocks, D, forward and backwards in the same manner that the feed bars in the barrel head machine are moved in both directions. The cutters in this machine act alternately in the same way, but do not revolve. L L are bearings of the spindles, B B. M N O K are nuts, P is a bearer, and R R are rods which connect the feeding or sliding bars, so that when one bar is moved forward, the other (when the motion is reversed) moves back, and vice versa. T T are two gear wheels, and U is a central pinion into which they mesh. These wheels give motion to the pinion which revolves the spindle, B. The feed screws, I I, being on the spindles of T T, move with them, and give a longitudinal motion to the cutter stocks. The butt ends of the cutter stocks are secured to slides, which can be moved in grooves to give them any set desired.

The block out of which the barrel or tub is to be turned, is sustained by the carriers, C C', and screwed up, and relieved by means of the nuts, K, M, N, O. Motion being communicated to the gear wheels, T T, the cross feed bar of the tool stock, D, is fed forward, and the cutter on the end of the said tool stock enters the end of the block, and cuts in as fast as the tool is fed forward by the screws, I I, to the center of the block, when the motion of the gear wheels is reversed and the cutting tool is withdrawn. Owing to the rods, R, connecting the tool stock feed bars, the other cutter on D' enters the opposite end of the block of wood, when the first begins to move back, and it then cuts into the center of the block, thus turning out a complete core, forming the shell into a barrel. The cutter stocks are then set to cut another smaller barrel, from the same block in the same manner, until the whole block is turned into a series of barrels and kegs, from the largest to the smallest diameter possible, of the block. The guide rests, F F, are divided by oval shaped partitions to guide the tool stocks, so as to cut out barrels with bulges, for straight sided vessels, the separations in the guides are made straight. The chimes of the barrel are formed by means of a suitable tool, *s s*, resting upon the bearer, S. The cutter stocks, D D', can be set to cut in a straight line, or at any angle. This plan of making barrels, tubs, &c., is believed by the patentee to be superior to making them of staves. After the bodies of the barrels are thus made and the chimes cut, the heads are fitted in, and they are hooped in the usual manner; there is one thing certain, that barrels made in one piece must be very tight. The same machinery will make all kinds of hollow wooden vessels, from a barrel to a butter firkin. Mr. O. has a machine in operation, which he assures us works well. More information may be obtained by letter addressed to the patentee.

Clover Gatherer.

A good machine for gathering clover and other seed, has long been desired by many. To meet this want, J. S. Gage, of Dowagiac, Michigan, has invented one which consists in having a cylinder provided with a series of toothed bars, so arranged that as the cylinder rotates, the teeth are projected forward in front, and the seed is combed from the standing stalks and conveyed into the interior of the cylinder. This machine is well adapted to secure the seed of clover fields, which are intended to be plowed in for fertilizing,—a very good practice for light soils.

Scientific American.

NEW YORK, OCTOBER 14, 1854.

Use of Fuel.

As the time is at hand when large fires must be supported in Northern dwellings, in order to maintain a cheerful warmth during the severe cold of stern winter; and as coal forms a very heavy item of domestic expense, it is important to inquire if fuel is generally used in the most economical manner. We believe it is not; indeed, we are confident that more heat is wasted—passed up the chimneys of the houses in New York—than is obtained and used for warming and cooking purposes. This is especially true respecting grates that are merely set into the wall. It was demonstrated by Count Rumford, many years ago, that a grate sends five-sixths of the heat up the chimney, and only one into the room; it may at least be safely calculated that there is a waste of three-fourths of the fuel by burning it in a common grate. We do not know how many grate fires are maintained in this city for four months in the year, but they cannot be less in number than ten thousand. It may be safely calculated, we think, that in this city alone, ten thousand fires send off three-fourths of their heat unused into the clouds every day during the winter. A grate fire is very cheerful and pleasant to look at, but it is far from being economical.

Stoves give out a far higher per centage of the heat of fuel under combustion than grates, but many of them are so set and arranged as to squander the heat by sending it half unused into the chimneys. It is a very common plan in many houses in New York, to have the stove placed a very short distance from the wall, the pipe running in a horizontal line into an opening in the fire-board.—This is a very unwise plan for using fuel, although it may be considered a more snug and neat method of arranging the stove and pipe, than by setting the former well out into the room, running up the latter some distance above the stove, and then directing it horizontally—old fashion—into an opening made for its reception in the chimney. The heat obtained from stoves in rooms is by radiation from the metal; that is, the air absorbs the heat of the metal of the stove, with which it comes in contact, and communicates the same from particle to particle throughout the room. It is therefore evident that the more radiating surface there is in a stove, and in its smoke conductor or pipe, the more heat will be communicated to the surrounding atmosphere. And it is also evident, that the nearer a stove is placed to a chimney, and the shorter its smoke pipe, the nearer it approximates to the character of a grate in respect to its waste of fuel. Here then we have positive data with regard to the most economical method of using fuel for domestic purposes, and our people would do well to profit by its application.

Railroad Mismanagement Illustrated.

In our last number we published an article upon railroad mismanagement, without attempting to specify any particular one as an example. As a general thing it would scarcely be proper to pick out a single road, and hold up its management to the public gaze, unless some circumstances seemed to render it necessary, but here we have the confession of President Ellis, of the Madison, Indianapolis, and Peru Railroad, as contained in his first Semi-annual Report, and truly it shows a very lamentable state of affairs.

For some years the Madison road was a favorite with Eastern capitalists, and its stock commanded a premium of 14 per cent. In the midst of its prosperity, there is no doubt of the fact that its earnings were squandered upon "airy nothings," which had scarcely a "local habitation or a name," and in order to retrieve its lost advantages, a consolidation was entered into with a one horse railroad running from Indianapolis to Peru. The reckless old management was superseded and Philo Hurd, Esq., of Bridgeport, Ct., was imported "out west" to superintend it. And here let us say that Mr. Hurd has scarcely a superior as a good manager; Mr. Ellis bears testimony to his untiring devotion to the interests of the road, but owing to the quarrels of the consolidated companies, and their Killkenny-Cat propensities, he no doubt became disgusted, and has returned home to the field of his former successes. We should be glad to see Mr. Hurd transferred to the superintendency of the New York and New Haven road—a fair proportion of the enormous earnings of the road would no doubt find their way into the stockholder's pockets under his prundential care.

One of the most serious difficulties in the way of success in railroads, is the want of sound practical sense in management. An other obstacle is the conflict of interests and the tendency to "run opposition" for passengers and freights—thus cutting down tariffs below living prices. In the jolly old days of stage coaching, opposition was sometimes put up for the purpose of teaching monopoly good manners. We have seen splendid steamers floating away to Albany with a load of passengers at twenty-five cents a head under the same spirit of rivalry, but we never expected to see the day when opposition railroads would be put on at a cost of twenty-five or thirty thousand dollars per mile. In this fast age, (it is not quite so fast just now, however,) easy capitalists in Wall street have sent out their money bags to the great, teeming, thrifty West, and railroad after railroad has been run across, and up and down the States, until the whole business has run into the ground. The railroad fever has reached its highest point. The learned Dr. Schuyler has arrested the disease, and now comes the re-action, and it must be a healthy one too, because it will check the expansion of credits, and open the eyes of the public to the astounding fact that *railroads don't pay*, and must be built only where urgent necessity demands—this is not all—it will teach stockholders, if it has not already, to be careful upon whom they impose their responsible trusts—induce a more thorough and rigid system of management, and unfortunately it will prevent the completion of many roads upon which much progress has been made, and which seem necessary to meet the exegencies of business.—Money being the great lever, there can be no progress in internal improvement without its active intervention. Out of the confused mass we have no doubt much good will proceed, and if the Madison and Indianapolis, or any other railroad, will only study economy in management, and devote its earnings to the liquidation of debts, (instead of attempting to pay dividends) abolish the dead-head system, charge living prices for freight and passengers, success will attend it if it has living resources. Every stockholder, in the end would be better satisfied with his investment.

The Peru Company, it appears from Dr. Ellis' Report, is now dissatisfied with the consolidation, and has obtained an injunction which serves it temporarily. In looking at the receipts and expenditures on each branch we are surprised at this movement of the Peru Company. Having got the lion's share of the earnings, the company now faces down the Madison Road with an injunction looking to a dissolution of co-partnership.

If the facts and figures do not lie in this case, it seems an extraordinary piece of nonsense on the part of the Peru Company to attempt to break the consolidation. The facts connected with the management of this road are valuable—as suggestive hints to others—let them be heeded.

Ideas not always Correct.

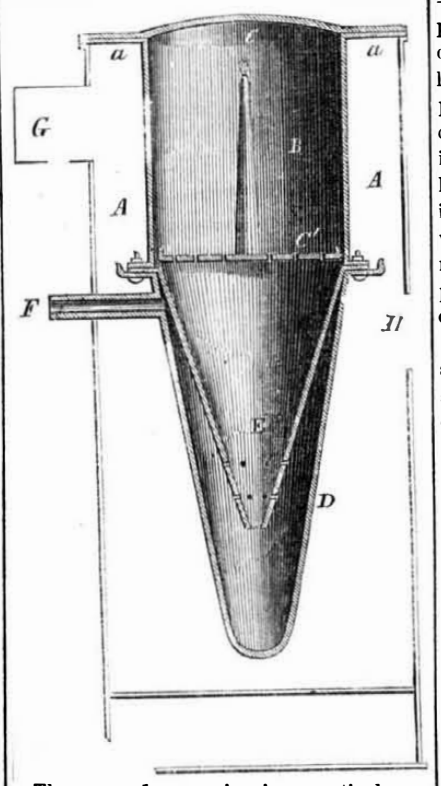
We wish to correct an idea which has been entertained respecting the manner of sending subscriber's names, while competing for a prize. They supposed that all the names of the subscribers they could obtain had to be sent in at one time. Our rule is, that if any person sends us a list of ten names at one time, he can add to that list by ones, twos, threes, or any other number, until the time is up which has been specified for competition.

Names can also be sent from any Post Office. We do not design to limit competitors to one locality—our object is to extend the interest in the prizes as much as possible.

There is a good chance for some one to take the highest prize offered, as there is very little competition this year.

The opportunity presented for acquiring the prizes we have offered are worthy of being very generally embraced. Every subscriber to the Scientific American receives the full value of his money, and those who exert themselves to secure prizes, not only labor to secure a respectable reward. but, at the same time they assist in the circulation of the only weekly paper devoted to American inventions, discoveries, and the progress of science.

Wood Gas Generator.



The annexed engraving is a vertical section of a still for making gas for illumination, from wood, for which a patent was granted to Lieut. W. D. Porter, U. S. N., of this city, on the 22nd of August last.

The object of this invention is the construction and use of an apparatus for the production of gas from resinous wood, wherein is combined economy of fuel, simplicity of construction, and efficiency of operation, and where, from the sale of the residium, viz., the charcoal, the expense may be materially reduced.

In this apparatus the wood is subjected to the action of heat in a still, by which the resinous products are eliminated and permitted gradually, that is drop by drop, to fall upon a highly heated portion of the lower vessel, attached to the one in which the wood is placed, and are thus converted into carburetted hydrogen gas, as well as all the volatile constituents of the wood, such as water, pyroligneous acid, &c., &c., are commingled and subjected to the same violent heating. It has been found, says the specification, "that the production of gas from wood with the same number of retorts, in a given time, is six times more than from coal, and that it does not affect the health, and is in so pure a condition as to require little or no purification before it enters the burner.

The arrangement is so simple, that the still may be placed in an ordinary stove or fire place used for heating dwellings, in the furnace of a steamboat, or galley of a vessel, and by suitable pipes be distributed to the burners.

In the engraving A represents an ordinary stove, in it is placed the still in a vertical position; it consists of an iron cylinder, B, provided with flanges, *a*, at its upper and lower edges; the upper end after being charged with wood is closed by a cap luted and bolted on the flanges, *a*; the wood rests on a perforated diaphragm, C', and by a rod or handle the diaphragm is drawn out, and with it the charcoal. This diaphragm separates the cylinder from the gas-producing portion placed below the cylinder, viz.: a conical-shaped tight vessel, D, within which is a smaller sized vessel, E, also conical, perforated with holes near its bottom, or pointed end, both these cones are provided with flanges, and by bolts and lute are united thereto, and made air-tight; F is the escape pipe of the gas from between E and D, and is situated directly under the flanges of the cones. The stove is provided with dampers, fire grate, &c., of the ordinary construction, and the heat of the fire chamber after acting directly on the bottom and sides of the still, rises and circulates around the cylinder, B, and escapes into the smoke stack through G; as there is no tar formed in this operation, no provision for its collection is considered necessary, the resinous portion of the wood being decomposed on dropping from the cylinder.—The resin of the wood is melted, and permitted to fall upon the inner cone, E, drop by drop, (as the production of it in large quantities, without immediate decomposition, would produce tar,) through this cone it passes by the small holes or openings in the sides of the cone, E, and falls upon the highly heated inner surface of cone, D, and is instantly decomposed into resin gas. The watery, spirituous, and other gases first eliminated in the cylinder, B, instead of being permitted to escape on the upper part thereof, descend through the perforated diaphragm, through the cone, E, and are exposed to D, as the crude resinous portions, and are mixed and commingled, and decomposed, and ascend with the resin gas between the inner, E, and outer cone, D. In this way the watery portions, as well as all the products of decomposition of the wood, except the charcoal, are subjected to further decomposition in the gaseous state. H is the door of the stove.

The claim is for the construction of a gas apparatus or still, consisting of a metallic or other cylinder, B, the cones E and D, diaphragm plate, C', and exit pipe, F, substantially as described and shown.

In the manufacture of gas from wood, the patentee calculates that the charcoal will pay all the expenses of the manufacture. This is an important consideration, as wood charcoal is very dear in our cities, and it is well known that in the common way of manufacturing charcoal, it is found to pay well enough to gain nothing but the charcoal as the resultant of the process. Lieut. Porter says that he could obtain the best pine wood very cheap if there were a large demand made for it, and that he can make as good, if not better gas from wood, at less expense than that now made from bituminous coal. We have held a different opinion; it is a simple question of economy, however, which experiment alone can settle. We hope it may be so, for any improvement that will reduce the cost of artificial light will be a general benefaction to the community.

Improved Press.

A very convenient and useful percussion press is made by C. F. Hall, No. 14 West Fourth street, Cincinnati. We have had one in use for nearly a year, for stamping our business card upon specifications, checks, drafts, etc., and consider it invaluable. Its cost is very trifling and is too simple to get out of order easily.

$570 IN PRIZES.

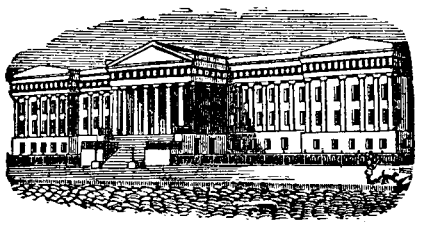
The Publishers of the Scientific American offer the following Cash Prizes for the fourteen largest lists of subscribers sent in by the 1st of January, 1855.

$100 will be given for the largest list,
$75 for the 2nd, $35 for the 8th,
$65 for the 3rd, $30 for the 9th,
$55 for the 4th, $25 for the 10th,
$50 for the 5th, $20 for the 11th,
$45 for the 6th, $15 for the 12th,
$40 for the 7th, $10 for the 13th,
and $5 for the 14th

The cash will be paid to the order of each successful competitor; and the name, residence, and number of subscribers sent by each will be published in the Scientific American, in the first number that issues after the 1st of January, so as to avoid mistakes.

Subscriptions can be sent at any time and from any post town. A register will be kept of the number as received, duly credited to the person sending them.

☞ See new Prospectus on the last page.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING OCTOBER 3, 1854.

PADDLE WHEELS—Abner Chapman, of Fairfax. Vt.: I am aware that paddle wheels, with zig-zag buckets having sharp quick turns, have been made. These I do not claim.

But I claim a paddle wheel composed of a double series of segments, curved in opposite directions, and so arranged as to form continuous waved lines, when this is combined with the unbroken open space between said series, the whole being arranged as set forth.

GAS RETORTS—Chas. M. Cresson, M. D., of Philadelphia, Pa.: I do not claim the construction of a retort with an interior diaphragm, that having been done before, and used both by myself and others.

Nor do I claim the use of a movable or fixed case within a common retort, which is also in common use.

Neither do I claim connecting a retort or generator with any other retort or retorts or generators, as that has also been done by myself and others.

I claim the construction and use of a gas retort with a cellular shell or exterior wall instead of the usual solid shell or wall, the cells being made to communicate with each other and with the interior, as described, so as to form either one consecutive series, or several collateral series of communicating cells.

STEAM GAUGE—Victor Beaumont, of New York City: I do not claim the elastic metallic disk or combination of several of them, as it has already been used.

But I claim the peculiar variety of the shape of the so-called flattened spheres, consisting in conical surfaces combined together, so that when the pressure is extending the one it is compressing the other.

MACHINES FOR MANUFACTURING FRAMES OF WOOD SAWS—Thos. Batchelder, of Candia, N. H.: I claim the arrangement and combination of the series of rotary chamfering cutters, the bridge or bottom rest, the side rest, the back and fore stops, the same being for the purpose of enabling a person to perform the operation of chamfering each edge of a bar and forming the chamfer with two tapering ends of a determinate length, as specified.

BRICK MACHINES—P. S. Devlan, of Reading, Pa.: I am acquainted with the brick machine of S. Ustick, patented July 10, 1847, and therefore do not wish to be understood as claiming any device or arrangement, or combination of devices therein embraced.

Nor do I claim to be the first who has employed the toggle joint for the pressure of bricks, as that mechanical device has been used in many varieties of brick presses.

But I claim the described mauner of actuating a number of plungers, to wit, by the cranks, attached to the eccentric pin upon the stationary journal or axis, by which I am enabled to adapt the well-known toggle joint pressure in a simple and yet effective manner, to a number of molds in a revolving brick press.

CIRCULAR STONE SAWS—Richard Deering, Sen., of Louisville, Ky.: I claim constructing a circular stone saw of sectors of a circle, cut out of rolled or sheet metal, in such manner and in order that the fiber of the metal may be made to run radially through the center, or thereabouts, of each sector, and thus present an end fiber cutting edge all around its periphery, as specified.

WARMING HOUSES BY STEAM—S. J. Gold, of New Haven, Conn.: I claim, first, the combination of generator, radiator, and condenser, as described, for the purpose of heating buildings, when the connection between the generator and condenser is perforated, as specified, so as to admit of the formation of a hydrostatic column, balancing the pressure of steam on the valve, and permitting the water from the condensation of the steam to return to the generator, as specified.

Second, the mode of regulating the quantity of steam admitted to the radiator by means of the valve and tubes, as set forth.

Third, the described method of producing a steam-tight connection between the plates of the condensing and radiating chambers by means of a cord packed between the edges of the plates, as set forth.

Fourth, the securing of the thin metallic sheets forming the chambers, by depressing and riveting, as shown, for giving the requisite strength to withstand the outward pressure of the steam in a simple and economical manner.

The mode of securing the sheets by stays, as used by Watt and others, being expressly disclaimed, as also the employment of thin metallic sheets as radiators.

DRYING CLOTH.—R. L. Hawes, of Worcester, Mass.: I am aware that woolen and other goods have been stretched and dried, by endless chains of tenter hooks, passing round a drying cylinder, said endless chains approaching and receding from each other by means of cams, slides, &c., which make such machine both intricate and expensive. This I do not claim.

But I claim the combination of the steam cylinder with the hoops of tenter hooks, when said hoops, after being adjusted to any desired width of cloth, on the cylinder, shall move with and have no motion independent of said cylinder, as described.

FASTENINGS FOR GARMENTS—T. J. Harris, Jr., of New York City: I claim the new manufacture of button described, viz., a button having an eye capable of being conveniently opened and closed, as set forth.

DUMPING CAR.—John Kimbel. of Zanesville, Ohio: I do not claim the use of rollers for dumping cars; neither do I claim the employment of inclined planes generally as a means of effecting the discharge of the load.

But I claim supporting a single body by bearers depending from the same, and resting on opposite faces of double inclined planes, as described, so that the load may be discharged on either side at pleasure, and the bed returned to a horizontal position, as set forth, without the aid of windlasses, chains, or other mechanical devices.

KNITTING MACHINES—J. Y. Leslie, of Cincinnati, Ohio: I claim the combination of the lifting pins with the teeth provided with grooves for receiving the lifting pins, that the range of loops may be pushed over the pins, and with hooks to hold the crimped thread whilst the range of loops are lifted up and discharged over the said hooks, the said lifting pins and teeth being constructed and operated for the purpose specified.

I also claim the bar termed the presser, operated as specified, in combination with the range of teeth and lifting pins, as specified, and for the purpose of forcing the range of loops over the said lifting pins, after they have been let down into the grooves of the teeth, as specified.

And I also claim, in combination with the hooked teeth and the lifting pins, substantially as described, the discharging bar, substantially as described, for discharging the range of loops from the lifting pins after they have been lifted up over the hooks on the teeth, as specified.

I also claim, in combination with the hooked teeth, the employment of the thread layers having a motion downwards and forwards, as described, for the purpose of crimping the thread between the teeth and forcing it under the hooks by one and the same motion, as specified.

I also claim the employment of movable and adjustable stops in combination with the thread carrier or carriers, as specified, for the purpose of determining the width of fabric to be knitted and narrowing and widening, as specified.

PEN AND PENCIL CASE—Jacob J. Lowuds, of New York City: I am aware that pencil cases with slotted tubes have been previously used, although differently arranged from the one shown. I therefore do not claim the slotted tubes irrespective of the precise arrangement described.

But I claim the slotted tubes and pencil tube and penholder, arranged as shown, viz., the tubes, B C, having enlarged or expanded ends, and the tube, E, and pen holder having contracted ends, for the purpose of causing the tubes, pen holder, and pencil slide to work snugly and without unnecessary play or looseness, as set forth.

BRICK MACHINES—F. H. Smith, of Baltimore, Md.: I claim the flat, square, or triangular bar for pulverizing the clay, as described.

I also claim, in contradistinction from a metallic step, a step composed of wood and iron combined, as set forth.

I also claim the open portable mold frame with a projecting flange, said mold resting on a single detached plate for a bottom, and so that when the mold is thrown on the floor, the brick does not at the same time come in contact with the ground because the flanges interfere—the concussion being just sufficient tc give it a start, when it easily slips afterwards from the molds, as described.

MACHINES FOR DRESSING STONE—Wm. H. Robertson, of Hartford, Conn.: I do not claim the invention of a series of cutters or chisels applied respectively to levers operated by a set of cams.

But I claim, in combination therewith, the turning stop or adjustment bar applied to the chisel carriage, and made to operate as specified.

I further claim, in combination with the movable frame, the chisels and the mechanism for imparting to them their up-and-down movements, a sliding carriage, and mechanism for imparting thereto short and reciprocating endwise or lateral movements, as specified, in order that the chisels may be made to cut the stone without producing ridges between the parts, as specified.

I further claim the combination of the series of catch springs, or bars, with the chisel levers and t eir carriage.

SELF-ACTING MULES—Wanton Rouse, of Taunton, Mass.: I claim communicating rotary motion to the spindles and governing the said motion in backing off and winding on the yarn during the progressive stages of the building of the cops, through the agency of a double inclined table, having either a rectilinear motion or a circular motion with every portion of its face moving in a plane, as described; the said table transmitting motion to the shaft which drives the spindle through any mechanical means, whereby the desired result can be produced.

MAKING HAT BODIES—Andrew Rankin, of Newark. N. J. I claim, first, the combination of the bowing apparatus, as described, with the picking cylinders, as set forth.

I also claim the hurdle formed as set forth, having layers of silk or other material between the upper and lower perforated material around the edges, as described.

I also claim the employment of the transparent cone for setting up and stopping off hat bodies, as specified.

CURTAIN FIXTURES—S. S. Putnam, of Boston, Mass.: I claim my improved self-fastening curtain roller bracket, as made with a spur, or its equivalent, projected from below the axis of the curtain roller in combination with a rest or arm extending above the same, and so that said spur and arm may be applied to the opposite sides of a sash groove, and be made to hold the curtain roller in place, as specified.

DAGUERREOTYPE CASES—Samuel Peck, of New Haven, Conn.: I am aware that boxes have been made of paper or pasteboard glued or cemented to their surfaces. I therefore do not claim the mere application of paper by such means.

I claim the improvement in the manufacture of picture cases or articles from a composition of shellac and fibrous materials, as described, the same consisting in making said case or article of the said composition, and one or more sheets of paper, and pressing and combining the whole together in a press or between dies, as described, so that the paper shall combine or connect itself directly with the composition without the aid of any cement interposed between them, and serve to add great strength to the article so made.

And I claim the improvement of ornamenting the surfaces of the impression of the die with burnished gold, as set forth, the same consisting in appiying the gold to the surface of the sheet of paper, or its equivalent burnishing it while on said surface, and laying the said burnished surface in contact with the surface of the die, and pressing said paper and the plastic composition together and into the die, so as to force the burnished gilding, paper, and composition upon it, and produce the result specified.

I also claim the extension of the paper up the inner surfaces of the sides of the case, and by means of pressure in the mold, the same being for the purpose of enabling me to affix to the side the velvet covered frame for the support of the picture, the mat, and the glass thereof.

APPARATUS FOR STARTING RAILROAD CARS—Wm. Palmer, of New York City: I claim the apparatus for starting cars, as set forth, consisting of the ratchet wheels attached to the car wheels acted upon by the spring pawls situated within the slotted bars, which are connected by suitable framework with the draw bar, the whole being so arranged that, on starting, the traction of the said draft bar shall be directly upon the top part of the wheels until the pawls are thrown out of gear, and on stopping the car the draft bar shall be pushed back, thereby setting the pawls for starting again, as described.

BRICK MACHINES—Z. M. Paul, of Alexandria, La.: I do not claim the device of pressing blocks, or projections on the periphery of one wheel to compress the clay into bricks in molds which are formed in the periphery of the second, as this has been done before.

But I claim the described construction and arrangement of the two mold cylinder which work in close connection one with the other, to wit, forming the intervening blocks between the molds of quicker convexity than is due to the circle which would circumscribe them, and so arranging the said blocks and molds of the two cylinders, that they alternately mesh one into the other, whereby the outer face of the brick will be left straight, and the brick be hard pressed in the molds of either cylinder alternately, in continuous succession, as specified.

I also claim ejecting the brick from the mold by percussion or sudden jerk, as applied to the platen by means of the releasing frame, as specified.

FEEDING HOPPERS OF THRESHERS AND SEPARATORS OF GRAIN—Spencer Moore, of Central Bridge, N. Y.: I do not claim the cylinder and concave, for they have been previously used.

But I claim the employment or use of the flap or swing blind, guard board, and shoulder, arranged in the manner specified.

PEN AND PENCIL CASE—John Mabie, of English Neighborhood, N. J.: I do not claim operating the pencil slide by a single spiral slot cut in a movable or rotating tube; neither do I claim operating the pen slide, as shown, for they have been previously used.

But I claim operating the pencil slide, as described, viz., by having the pencil slide fitted within a tube, which is secured permanently within the case, the tube having a spiral slot cut through it at its upper end and encompassed by a tube also having a spiral slot cut in it in a reverse direction to the slot in the tube, the pencil slide being provided with a pin which passes through the two slots, and which is operated upon by turning the tube, so that the pencil slide is forced into or out from the case.

RAILROAD DRAW BRIDGE AND SWITCH TELEGRAPH—W. C. McRea, of Philadelphia, Pa.: I claim the giving of a signal on a car or locomotive by the arrangement of an electromagnet upon said car or locomotive, in such a manner as to constitute part of a galvanic circuit when the wheels of the car or locomotive touch an insulated portion of the track, while the train is in motion, thereby causing the electromagnet to be acted upon by a distant battery for giving said signal, for the purposes set forth.

I also claim attaching the wires of a galvanic circuit at railroad drawbridges or switches in such a manner that the opening of the draw or changing of the switch may separate a part of the wire of said circuit, and closing the draw or replacing the switch shall again complete the connection of that part of the wire which was so separated, when used in connection with the before specified arrangement for signalizing on the car or locomotive when in motion, the completion of the circuit, for the purposes specified.

MOSQUITO CURTAINS—Benj. B. Webster, of Boston, Mass.: I do not claim the combining a musquito curtain with a window.

I claim to so combine it therewith, that it may be attached to the sash of the window, and a roller applied to the window frame, and be operated by said sash, and so as to close the opening produced by the raising of said sash, as set forth, the said curtain being wound upon the roller by the action of a spring or its equivalent, when the sash is in the act of being closed.

PRINTING PRESS—E. B. Tripp, of Concord, N. H.: I do not claim separately the nipper bar, with the nippers thereon, for they are old and well known.

Neither do I claim any parts of the press, irrespective of the means employed for producing the feed motion and the inking device.

But I claim, first, giving the necessary feed motion to the press, by means of the reciprocating tympan, frisket, nipper bar, cylinder, and guides, the above parts being constructed, arranged, and operating substantially as shown and described.

Second, I claim the employment or use of the endless belt, with oblique rollers placed thereon, and arranged with the ink fountain and rollers, as shown, for the purpose of equally distributing the ink upon the rollers.

PROCESSES FOR PURIFYING FATTY BODIES—R. A. Tilghman, of Philadelphia, Pa. Patented in England Jan. 9, 1854. I claim the manufacturing of fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure.

MOVEMENTS OF GAS METERS—Joseph Thatcher, of Philadelphia, Pa.: I do not claim the modification of the index gearing, nor the extension of the sealed tube, nor the foot index.

I claim operating the index of gas meters by means of the lever adapted to move or slide against a controlling pin or fulcrum, or its equivalent, the measuring wheel and index movements, being connected with the lever by means of the cranks, or their equivalents, as described.

LOOMS—Joseph Welsh, of Philadelphia, Pa.: I do not claim the devices nor their arrangement for giving the necessary motions to the stopper, as described, as these may be constructed and applied in various ways.

But I claim the application to the lay of those looms, requiring or having a moving shuttle box, a periodically moving shuttle stopper, which receives its motion from any suitable part of the loom and independently of the picker and shuttle box or either of them, and continuous, so to act as to arrest or stop the motion of the shuttle (without injury to the same or to the box) on its arrival within the said box, and then immediately turns or moves from the same, so as to allow a perfectly free and independent motion of the box, and also of the picker, during the working operation of the loom, as described.

SEWING NEEDLES—John Wilcox and S. H. Whitridge, of Philadelphia, Pa.: We claim a sewing needle, the stem or body of which is made of gold, and the point of iridium, the two metals being reduced and united, as described.

HOT-AIR FURNACES—J. E. Grant, of Charlestown, Mass. (assignor to Cyrus Carpenter & A. D. Shaw, of Boston, Mass.): I claim the deflecting plate with its saddle flange, when interposed in the combustion chamber between the products of combustion and exit pipe, as described.

PIANOFORTE STOOLS—Levi Van Hoesen, of New Haven, Conn. (assignor to the New Haven Iron Railing Co.): I claim the combination of the part, with its serrated or notched edges, with the double acting dog, when the dog is operated by the bar, and the whole is constructed, arranged, and combined, as described.

RE-ISSUE.

SEWING MACHINES—Isaac M. Singer, of New York City. Original patent dated Aug. 12, 1851: I do not wish to be understood as limiting myself to the special construction and arrangements specified, but I claim the right to modify them as long as I attain the same ends by equivalent means.

But I claim giving to the shuttle an additional forward movement after it has been stopped to close the loop, as described, for the purpose of drawing the stitch tight when such an additional movement is given at and in combination with the feed motion of the cloth in the reverse direction, and the final upward motion of the needle, as described, so that the two threads shall be drawn tight at the same time, as described,

I also claim controlling the thread by what I have termed the friction pad between the seam and the bobbin, or any equivalent therefor, substantially as described, and for any or all of the purposes specified.

I also claim placing the bobbin from which the needle is supplied with thread on an adjustable arm attached to the frame, substantially as described, when this is combined with the carrying of the said thread through an eye or guide attached to and moving with the needle carrier, as described or the equivalent therefor, whereby any desired length of thread can be given for the formation of the loop, without varying the range of motion of the needle, as described.

And I also claim in a sewing machine, feeding the cloth or other substance, to determine the space between the stitches by the friction of the surface of the periphery of the feed wheel, or any equivalent feeding surface substantially as specified, in combination with a spring pressure plate or pad which grips the cloth or other substance, against such feeding surface as specified, and for the purpose set forth.

DESIGN.

FRANKLIN STOVE—William Reser, of Cincinnati, Ohio.

Exportation of Anthracite Coal to England.

A correspondent of the *Record of the Times*, Wilkesbarre, Pa., of the 27th ult., takes exception to our remarks respecting the absurdity of the arrangements said to be in progress for the exportation of anthracite coal from Pennsylvania to London, as stated in the *Mining Chronicle*. We asserted that there is plenty of anthracite coal in England—and it can be obtained at a lower price than that at which Pennsylvania is selling in New York. The correspondent of the *Times*, who signs himself "Anthracite," addresses his letter to us, and says, "he knows from a London merchant, that the idea of importing anthracite coal originated in a business circle there." This does not affect the correctness of our remarks. There are merchants in London who it appears are ignorant of the fact that Welsh anthracite coal is sold now in that city for less per tun than the American anthracite; and we might go further and say that we have no doubt some of them are ignorant of what anthracite coal is. Some of our merchants in New York are no better informed, and entertain the opinion that there is no anthracite coal in the world but that of Pennsylvania. "Anthracite" says, "the consumption of English anthracite is yet extremely limited." In this he is mistaken; its consumption is very great for smelting ores, and steamship fuel, but not for domestic purposes; large quantities of it are exported annually from South Wales to London. "Anthracite" says," let me give you a sum in the rule of three. If a tun of bituminous coal from the present English mines nearest London, costs $10 18 cents in that city, what will a tun of anthracite cost from the anthracite mines of Wales? I should like to see you prove that it will cost less than their bituminous coal, for that is the mining question." Ah, Sir, that may be the question for Welsh miners, but not for "Anthracite" and others in Pennsylvania. The question for them is, if Welsh anthracite can now be purchased in London for $6 per tun, what would a tun of Pennsylvania anthracite cost exported to London, when the shipping price at Philadelphia is $5 75 cents? The price of bituminous coal in London was very high last winter, but that is no guide for our friends in Pennsylvania to enter into a speculation to export coal to that city, as bituminous coal can be purchased at the wharfs of Newcastle, or Leith—and the best Ruglen coal at Glasgow—for one dollar less per tun than anthracite at Philadelphia. "Anthracite" quotes as follows from the London merchant's letter, "The Londoners, I am convinced, will give the thing a fair trial, and it only wants this to make them give up revolving in their own smoke." This shows that the London merchant is not aware that Welsh anthracite coal can be found in London; perhaps he does not know that there is such a thing as anthracite in all the Island; we are sure that tens of thousands in London never saw a bit of it, and yet it has been used as fuel for steamships sailing from London for a number of years. The Welsh anthracite coal fields embrace a far larger area than the Pennsylvania anthracite field; quite a number of mines have been opened and in operation for a long time (of which "Anthracite" does not seem to be aware), and we see no reason why anthracite cannot be carried from Wales to London at as little expense as from central Pennsylvania to New York. Some of the merchants in this city have been talking about importing English bituminous coal, and obtaining it for less per tun than anthracite; they are as wise as those who have formed the idea of exporting American anthracite to London. Let wisdom and intelligence guide our coal miners and merchants, and both themselves and the community will be mutually benefitted.

(For the Scientific American.)

To Workers in Wood.

A residence of considerable time on public works in this part of Indiana, viz.: at Fort Wayne, leads me to bring the following facts to the notice of mechanics and manufacturers:—

In this part of the State is a region embracing several counties abounding in many varieties of choice timber. Among these are white oak, black walnut, white walnut, cherry, white ash, white wood, (called poplar here,) beech, and hard maple.

Fort Wayne—a place of 7,000 inhabitants—is the chief market town of the district. It has at this present moment ready communication with the country about, by means of the canal and numerous plank roads. In a month the Ohio and Indiana Railway will open through to this, its terminus. This will give unbroken rail connection with every part of Ohio, Pennsylvania, and the East. In the course of next season, the Lake Erie, Wabash, and St. Louis Railway, will also be opened, giving a second trunk line route to the East. The W. and E. Canal has been in use for many years.

An excellent chance therefore exists for undertaking, at this point, the getting out in the rough, of a large variety of articles for the use of Eastern manufacturers. I would specify the following:—

Ship and boat knees and plank, wagon and carriage stuff, oars, flooring, furniture stuffs in very great variety and unlimited quantity, Any manufacturer can for himself add to this list many articles not named.

In brief, the raw material is plenty and easy to get, and the manufactured articles can be distributed to the various markets with ease and speed. I would also suggest that this is a good place for the manufacture of all sorts of farming tools.

There are in operation here, one machine shop, and one large establishment for making cars and other railway furniture.

CIVIL ENGINEER.

Gold Fish.

MESSRS. EDITORS.—I noticed an extract in a recent number of the SCIENTIFIC AMERICAN, copied from the Portsmouth, N. H., *Journal*, in regard to the naturalization of the golden carp in the cold waters of the North. This has also taken place in the river Schuylkill. Twenty years ago some of these fish escaped from a pond near Philadelphia during a freshet, and since that time they have yearly increased in numbers until they have become very common. I have seen some of them caught in our river quite large—from eight to nine inches long, and three broad.

H. C. H.

Norristown, Pa.

TO CORRESPONDENTS.

Cobb, Hilton & Co., of Kingston, N. C., wish to obtain the best machinery for sawing out the crooked timber used for making carriages, buggies, &c.

W. P., of N. Y.—We are much obliged to you for your kindly office. We have had access for some time to perhaps the same work as yours, on madders, but have not been able to give it much attention.

G. W. L., of Va.—Make the prussiate of potash into paste by reducing it to powder and mixing it with water; have the iron or steel you wish to temper of a clean surface, cover it with this paste, and put it carefully into the fire and keep it there till the metal attains to a cherry color, then withdraw and dip it in water.

R. D,, of ———.—We think pig iron could be made with profit and to advantage under the circumstances specified by you. Overman on the Manufacture of Iron, is the work we recommend you to peruse. It is published by Henry C. Baird, Philadelphia.

A. H. P., of Ohio—The double engine ought to use the same amount of steam as a single one, unless you mean to use a high pressure cylinder combined with a large expanding cylinder, when it would use less, just in proportion to the expansion. We do not know who makes the best mills for grinding corn in the ear.

R. D., of N. J.—We gave you an opinion for which any lawyer would have charged $5, and instead of thanking us you have the impudence to complain because the postage on our letter was unpaid. If you ask us to do you a favor and expect we shall pay for the privilege of doing it, you are insane.

J. S. D., of Tenn.—Your method of straining saws without a sash seems not to possess anything new or patentable: we had a model of the same thing in our office four years ago. We cannot use the odd numbers which you mention.

J. M., of Ohio—We do not know that there are any special objections to the use of a smoke conductor for a locomotive. We are not aware of its having been tried, it is not new.

L. L., of Vt.—We need a sketch and description of your stave cutter before we can decide upon its novelty. The written description is not sufficient.

A. J. C., of N. Y.—It is barely possible that you may be able to get a patent on the boot-jack, but we cannot advise you to make an application.

H. P., of Ind.—We cannot give you the information requested.

D. W. M., of N. Y.—We do not know of any lathe better adapted to turning chair rounds than Alcott's.

F. J. M., of Mass.—Yours, about Winter's engine, will receive attention next week.

Money received on account of Patent Office business for the week ending Saturday, Oct. 7 :—

D. W., of Mass., $25; H. H. O., of Ct., $25; A. M., of Ind., $15; J. C. E., of Ct., $30; W. C., of Mass., $55; J. S. of N. Y., $60; E. G., of Vt., $30; S. T., of Ind., $20; C. W. B., of Me., $30; G. C., of Me., $50; J. K., of N. Y., $30; J. W. B. & Co., of Ark., $20; C. H., of Mo., $15; B. & W., of Mich., $25; G. W. G., of Pa., $30; J. L., of N. Y., $30; W. E. B., of Ala., $20; P. C., of Pa., $30; E. M., of Va., $55; J. J. D., of Ct., $50; G. M., of R. I., $30; T. & W., of Mo., $25; M. C. M., of D. C., $20; H. C., of N. Y., $25; C. M., of N. Y., $55; A. R., of N. H., $57; G. F. A., of Wis., $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 7 :—

J. G. S., of Mo.; A. M., of Ind.; D. W., of Mass.; P. Y. of Wis.; S. P. S., of N. C.; B. P. H., of Ind.; H. H. of Ct.; H. C., of N. Y.; W. G. H., of Pa.; C. M., of N. Y.; A. R., of N. H.; G. C., of Me.; T. & W., of Mo.; B. & W., of Mich.; G. F. A., of Wis.; S. T., of Ind.

UNITED STATES PATENT OFFICE,
Washington, Sept. 6, 1854.

ON THE PETITION of Henry Burden, of Troy, New York, praying for the extension of a patent granted to them on the 10th day of December, 1840, for an improvement in "machine for rolling puddle balls or other masses of iron, in the manufacture of iron, for seven years from the expiration of said patent, which takes place on the 10th day of December, 1854.

It is ordered that the said petition be heard at the Patent Office, on Monday, the 27th of November 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 17th of November; depositions and other papers relied on as testimony, must be 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.: Evening Argus, Philadelphia, Pa.: Scientific American, New York, and Post, Boston, Massachusetts, once a week for three successive weeks previous to the 27th day of November 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. 3 3

UNITED STATES PATENT OFFICE,
Washington, September 19, 1854.

ON THE PETITION of Aaron D. Crane, of Newark, New Jersey, praying for the extension of a patent granted to him on the 10th February, 1841, ante-dated 22d December, 1840, for an improvement in "the method of constructing clocks," for seven years from the expiration of said patent, which takes place on the 22nd day of December, 1854—

It is ordered that the said petition be heard at the Patent Office, on Monday, the 4th of December 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 24th of Dec.: 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, Pa.; Scientific American, New York, and Post, Boston, Massachusetts, once a week for three successive weeks previous to the 4th day of Dec. 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. 4 3

Science and Art.

New Whale Fishing Ground.

YANKEES AHEAD—The London *Times* gives an account of a new whaling ground in Davis' Straits and Baffin's Bay, which has led to a very successful enterprise.

It appears that whalemen, some years ago, learned from the Esquimaux, with whom they held intercourse, that large numbers of whales resorted to certain inlets in the bays in Davis' Straits and Baffin's Bay, where they remained during the winter for shelter.—This information suggested to Captain Penny, (one of the officers who distinguished himself among the searchers for Sir John Franklin,) the idea of fitting out parties to winter in the Polar Regions, near the places where the whales resorted, to secure as many as possible in the fall and spring, and to boil the oil out during the winter. Two vessels were accordingly prepared for the purpose, with iron tanks fitted to them, and so arranged that the oil, when boiled, could be conveyed by gutta percha and other pipes to every tank in the hold. Boilers and a supply of coal for boiling the oil on land, while in winter quarters, were also taken, as well as a plentiful supply of provisions, and the necessary comforts for the long Arctic winter.

Two ships thus equipped and manned with thirty-three men and three boys, sailed from Aberdeen on the 13th of August, 1853, and reached the fishing ground in Baffin's Bay on the 17th of September, where they found an abundance of whales, ten of which they killed and secured before the 1st of November.—They then went into winter quarters in Hogarth's Sound, erected their boiling house and set to work to boil their oil. In this work they were assisted by fifty Esquimaux engaged for the purpose.

Their efforts were entirely successful, notwithstanding the cold was 40° below zero.—The active duties of the men tended to preserve their health, and none felt time to hang heavily. But, singular as it may seem, that dreadful scourge, the cholera, broke out among the Esquimaux, and swept off many, while the crew escaped with slight premonitory symptoms.

Early in the following spring, (the present year,) the fishing was resumed with great success, although the edge of the ice was twenty miles from the ships. Seventeen more whales were killed, and after being cut up were transported by the Esquimaux on sledges drawn by dogs over the ice, to the ships, where the oil was boiled as before. One ship was soon filled with boiled oil and whalebone, when Captain Penny sailed for Aberdeen, leaving the other ship to continue the fishing and boiling.

The captain is of opinion that, with a large commercial company, the fishery could be prosecuted along an extensive coast line, and with great advantage. Two American ships had anticipated the English expedition, and had been equally successful. No traces of Sir John Franklin were found. Deer and other wild animals abounded. Captain Penny still holds to the belief, in common with many scientific men in England, that further North there is a milder climate and a polar basin yet to be discovered, and those who cling to the hope that Sir John Franklin and his crews still survive, believe him to be within the open sea or polar basin referred to.

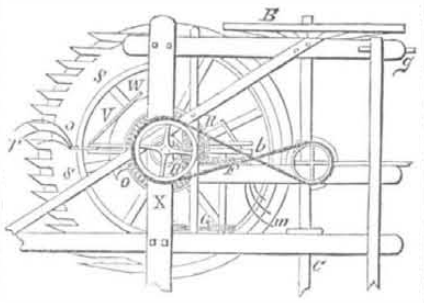
Foreign Scientific Novelties.

Dr. Tyndall has been examining the subject of tones emitted by masses of heated metal while cooling. He proved by repeated experiments the correctness of the explanation hitherto received, but was still unable to assign the phenomena to their true cause.—Another was on some most extraordinary effects of motion. One is this,—let a beam, free to turn in all directions, be balanced horizontally on the top of a standard; then put a small wheel on one end, cause it to rotate rapidly, and the beam will still retain its horizontal position, notwithstanding the weight of the wheel. It is as though motion nullified gravity. Another interesting subject is that brought forward by Professor Edward Forbes, who has started an inquiry as to the depth of primeval oceans, and who believes it possible to throw light upon it by a study of the color of fossil shells. The shallower the water the more intense the color, is the experience gained by dredging in the seas of the present period; and, reasoning from analogy, we may infer the same law prevailed in earlier periods. Ehrenberg, too, contributes something more to our knowledge of ocean life; he has examined specimens of the mud brought up from the depth of six thousand fathoms, and finds them to contain living infusoria. The astronomers, also, have been somewhat excited, not by the discovery of a new planet, but by a book on a Plurality of Worlds, written to prove that there is no such plurality. The author, a learned doctor of Cambridge, contends that this globe of ours, and this only, is inhabited.—All the others are lifeless.

History of Reaping Machines.—No. 3.

The Edinburgh *Encyclopædia*, Vol. 1, p. 262, gives a description of a reaping machine, having an arrangement for gathering grain and delivering it in small sheaves, produced in 1806 by Mr. Gladstone, of Castle Douglass. In this machine the horse goes in front, beside the uncut grain. The cutter, like that of Plucknett's of the year previous,

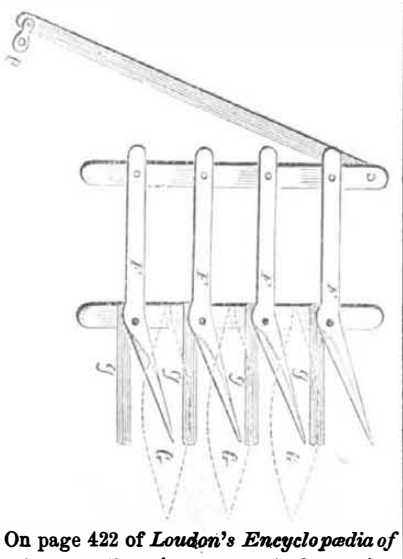
FIG. 11.



was a smooth edged circle, acting upon the grain confined against strong wooden teeth which projected forward and above the blade. The cutting edge was kept sharp by means of two small circular pieces of wood, coated over with emery, placed below and above it, and made to revolve rapidly against it. The gatherer completes the main features of this machine. A plan view of which is given in figure 11.

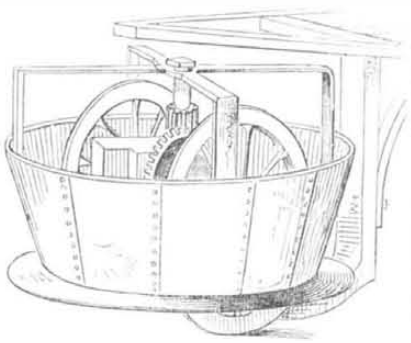
There are shafts to which the horses are attached; B are large cog wheels acting upon a pinion not shown, which ultimately drives the breast wheel, H, and the cutting apparatus; *m* is the cutter wheel; X is a cast-iron bar around which the cutter and gatherer revolve with different velocities; O is the large gathering wheel; C is the gatherer; S is the circular table of wood, with strong wooden teeth notched below all around in front of it, the table being suspended upon the iron bar, X. The cutter works immediately below and between the wooden teeth, as seen at *r*. W is a spindle upon which the gatherer turns; G are the cutter sharpeners; *g* are handles, by means of which the cutter is elevated or depressed; there is a handle to a screw which ungears the wheel, D, from the pinion.

FIG. 12.



On page 422 of *Loudon's Encyclopædia of Agriculture*, there is an account of a reaping machine designed by a Mr. Salmon, in 1807. The cutting operation is like that of a pair of shears, (in figure 12) to which power is transferred from the driving wheels by gearing, similar to that very generally adopted in reapers at the present day. *e* is a crank of pinion shaft which moves the tails of the shears, F, which are covered by G, pieces of iron plate that protect the fixed blades of the shears, *g*, and direct the grain to the shears. An upright rake moved by a crank passes at regular intervals over the shears, and delivers the cut grain upon the ground clear of the machine.

FIG. 13.

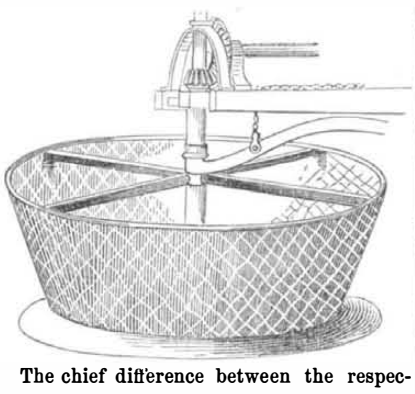


In 1811, Kerr, of Edinburgh, and Smith, of Deanston, Scotland, were rival claimants to the priority of invention of a new feature in reaping machines. The two implements were similar in principle; fig. 13 being Kerr's, and fig. 14 Smith's.

This invention (for the two machines are one in principle) consists of a conical drum, made of tin plate or basket work, two feet deep and five in diameter at its lowest part, to which a circular cutter, projecting about five inches, is attached.

The cutters are formed in segments, and are readily sharpened or removed. Motion is communicated to the drum and cutter by the main wheels, through the intermediate action of a horizontal shaft. The grain being cut by the rapid motion of the cutter, the heads come in contact with the drum, while the lower ends rest upon the cutter, and the whole is carried round and laid regularly by the side of the machine.

FIG. 14.



The chief difference between the respective machines consists in that of Kerr's having the main wheel and gearing enclosed within the conical drum, there being a third wheel beneath the frame work behind; while in Smith's the wheels are placed behind the drum and cutter, which are put in motion by a horizontal shaft and spindle.

It appears that Smith's machine was capable of cutting down, with two horses and a man, an acre of grain an hour, during which it required to be sharpened four times. The "Highland Society of Scotland" awarded Mr. Kerr a premium of twenty guineas for his model, in 1811, and to Mr. Smith a piece of plate of fifty guineas value, for a successful trial of his machine in 1815.

A Splendid Present.

The Emperor of Russia has presented to Chas. H. Haswell, the well known engineer of this city, a magnificent diamond ring, in consideration of his professional labors in the furnishing of drawings of steam machinery, including the engines of the steamer *Powhatan*, which Mr. Haswell had designed for the United States Navy.

The Crystal Palace.

The Exhibition in the above-named building will close at the end of this month; the building is advertised for sale, but it will be difficult to find a purchaser. We were mistaken in stating that it had been intended at one time to close the exhibition in the early part of this month.

LITERARY NOTICES.

THE WORLD OF ART AND INDUSTRY, AND THE PROGRESS OF SCIENCE AND MECHANISM—These are the titles of the two handsome volumes published by Putnam & Co., of this city, illustrating and describing the articles on exhibition in the New York Crystal Palace. The engravings are certainly the finest ever presented in any work published in our country, and are worth the whole price of the volumes, especially those relating to the works of art. One volume is a gem for the parlor, as it contains no less than 500 illustrations, embracing all the conspicuous works of art exhibited, such as Powers' Greek Slave, Eve, &c. There are full descriptions of all the illustrations, thus throwing a historic charm around each. We conceive that no library, public or private, can be considered complete without these volumes. The Editor, Prof. C. R. Goodrich, and his assistants Professors Hall, Silliman, Blake, &c., have done their duty well, especially in all relating to mineralogy and geology—the natural resources and products of the United State. The amount of useful information which they have presented does them great credit, it is original, varied, and solid, and cannot be found in any other work with which we are acquainted. We earnestly recommend these volumes to the attention of our people.

THE KNICERBOCKER MAGAZINE—For September, is promptly on hand, with a full cargo of good things, among which is one of the sweetest gems in our literature, "Kitty Lee." The editor's table is running o'er with wit and humor. Published by Hueston, No. 348 Broadway.

ILLUSTRATED MAGAZINE OF ART.—A beautiful work is the *Illustrated Magazine of Art*; the October number is richly embellished with engravings, done in the very highest perfection of wood cutting—an art which has achieved wonderful progress within ten years. The advantages of illustrated publications are too well known to require elaboration, and it would be supererogatory to say that this beautiful magazine stands at the head of its class in America. T. L. McElrath, publisher, New York City.

HALL'S JOURNAL OF HEALTH—For October, contains very judicious articles upon food and drink, and also several useful receipts for the family. This excellent health magazine abounds in original thought, and attests to the ability of Dr. Hall, its Editor. Publication Office, 42 Irving Place. Terms $1 per annum.

KANSAS AND NEBRASKA—This is the title of a respectable volume, published by Phillips & Sampson, Boston, and J. C. Derby, this city; its author is Edward E. Hale. The object of this work is to present, in a compact form, a great deal of information respecting the above Territories, so far as it relates to climate, soil, natural resources, and the Indians now inhabiting them. It appears to be a useful work; the information is principally collected from traveler's accounts of those countries.

THE OHIO CULTIVATOR—Says the SCIENTIFIC AMERICAN "is one of the most worthy of our Institutions for the diffusion of knowledge among men,—more worthy and efficient than some other *imposing* national institutions, with all their patronage and endowments." We do not know of any publication in our country more worthy of the same remark than the *Cultivator*. It is published semi-monthly in Columbus, Ohio, by M. B. Bateham, at $1 per annum.

LESLIE'S LADIES' GAZETTE—This Magazine, of the London, Paris, and New York fashions for October, is beautifully illustrated with bonnets, collars, and dresses of wonderful variety, flounce upon flounce, in terraces of lace and silk. Published by F. Leslie, No. 6 John st.

HOUSEHOLD WORDS—October number. T. L. McElrath & Co., publishers, 17 Spruce st. It contains the closing chapters of "Hard Times," a new story of considerable power, by Charles Dickens. It also contains several other well-written articles. The present number closes Vol. 9.

☞ For LIST OF PRIZES see Editorial page.