

Scientific American

NEW-YORK, AUGUST 13, 1853.

Reaping Machines.

There is a great amount of competition this year, in reaping and harvesting, power machines. We have seen, in all our excellent agricultural cotemporaries, and have heard from many eyewitnesses, accounts of various trials, to test the qualities of different machines. Last year we presented detailed statements of a number of such trials, but such experiments have been so numerous this year, and have been spread over such a vast extent of our country, that we cannot do so without taking up too much space in our columns. These trials are interesting to us; they afford us useful matter for reflection and instruction. Mowing and reaping machines have been known in this country since 1833, and yet very few of our people—even those most interested personally in such machines—cared very much for them, or gave them the least attention until within the past four or five years. The public also appears to have been supremely callous respecting either their use or necessity, until their utility and benefits were fully displayed in the presence of Royalty, in a country 3000 miles distant from the native place of the two original American inventors—McCormick and Hussey. Thus once again was the truth of that saying confirmed—"a prophet hath no honor in his own country." Even in Britain it has been discovered that a reaping machine was invented many years ago, and its inventor (Patrick Bell) also was no exception to the above saying.

Our agriculturists seem determined to make amends for past neglect in relation to power reapers; we judge so because of the numerous trials to which we have alluded, and not only from such experiments, but also from the many modifications of such machines which have recently been brought before the public. In the Crystal Palace no less than ten reaping and mowing machines are on exhibition. There is McCormick's, patented in 1834, improvement patented in 1847, and re-issued in 1853. [No less than 2000 of these machines have been sold in the West.] Obed Hussey's patented, in 1834, and with which its inventor is now in England, astonishing the people there by exhibiting one of his latest improvements; Ketchum's, of Buffalo, patented in 1847; Many's, of Freeport, Ill., patented in 1851; Adkins', of Illinois, patented in 1851; Seymour & Mogan's, Brockport, N. Y., patented in 1852; Forbush's, of Buffalo, N. Y., patented in 1852; Longett & Griffing's, 25 Cliff street, N. Y., and Burrall's, of Geneva, N. Y., patented in 1853, and C. Denton's, illustrated two weeks ago in the "Scientific American." All these machines are on exhibition in the gallery of the American Department; there is not much difference between some of them, and in our opinion, there is still room for improvement. The motion given to the cutter is reciprocating in all of them, and this is derived from the rotary motion of the wheel as the machine is drawn forward. The motion of the cutters and various movements of all the machinery are given by gearing connected with the rolling wheel, some of which is exceedingly clumsy. The reels and parts of these machines look as if they were intended to be driven by fifty horse-power steam engines, instead of a team of horses. Every good harvester should rake and lay down the grain in proper bunches for binding, at least lay it down in proper rows. We understand that some patent rights for reaping machines have been sold within the past month, for very large sums, one whole patent, we have been told, was sold for no less than \$120,000. This may be true, but we cannot help paying a just tribute to the original inventors of these machines—McCormick and Hussey. They took out the first patents, and it was their machines—McCormick's at least—which first gained so much honor for our country at the World's Fair in London, and which has been the means of so deeply interesting our farmers at home.—Great good must result from the competing experiments of such machines, and we have no doubt but some of our Eastern mechanics may strike a new vein by a comparison of

the merits and defects of those on exhibition at the Crystal Palace; we would direct their attention to this subject. To our Southern and Western mechanics is due all the honorable credit, so far, which belong to the inventors and improvers of Reaping and Mowing Machines.

History of our Steam Navy.

In 1813 Robert Fulton proposed to the President of the United States to construct a steamboat which would carry heavy guns, and move at the rate of four miles per hour. In 1814 a law was passed authorizing the President to cause to be built and equipped, one or more floating batteries for the defense of the waters of the United States. The harbor and coast defence was committed to a committee, who employed Fulton as engineer, and who laid down the keel of our first navy steamer on the 20th June, 1814. This was at the shipyard of A. & N. Brown, in this city; in four months this vessel was launched, and, was named the "Demologos" and "Fulton the First." It was not until June, 1815, that her engine was put in and fitted up completely; on that day she made a short trial trip; but on the 4th July succeeding she made a trip of 26 miles out into the ocean. This ship was totally unfit for navigation, and was laid up at the Brooklyn Navy Yard as a receiving ship until 1829, when, in a most unaccountable manner she was blown up, killing 24 men, 1 woman, and wounding 19; our first naval steamer was an unfortunate one—as nearly all its successors have been. In 1838 "Fulton the Second" was built for the defence of New York Harbor; she was made strong and carried a heavy battery, but she too was totally unfitted for the purpose of ocean navigation. She had two horizontal engines, with cylinders of 50 inches diameter, and 9 feet stroke, which were built at the West Point Foundry, and cost \$40,198 57. Her boilers were of copper, and cost \$93,396 06—an enormous amount of money. Her total cost was \$299,649 91. This vessel lay at the Brooklyn Navy Yard a useless hulk, until 1851 when Chief Engineer Stuart was directed to re-construct it entirely. The old engines were taken out, also the copper boilers. A single inclined engine built by H. R. Dunham & Co., along with iron boilers, were put in at a cost of \$75,909. By statistics of this vessel's performance, obtained from Stuart's splendid work on Naval Steamers, it appears that she made as high a speed as 20 miles per hour. For this extraordinary speed we cannot account—her engine and model would not lead us to believe that she could make such time as, upon good authority, it is stated she has made. The three "Fultons" had paddle-wheels.

In 1842 Lieut. Hunter, U. S. N., took out a patent for a new submerged wheel for the propulsion of steamers, and upon the strength of some experiments made with a small boat on the canal, at Washington, the Government ordered a vessel named the "Union," of 1000 tons burden, to be constructed at the Norfolk Navy Yard; to test this wheel on a large scale. This wheel was a submerged paddle-wheel, revolving horizontally in a case under water. This vessel was employed for about 18 months in the Gulf of Mexico—had two sets of engines put in her, and had a number of alterations made in the wheel, and yet never made over 4 knots per hour. In 1846 this vessel was laid up in the Navy Yard at Philadelphia, her machinery and boiler taken out, and was turned into a receiving vessel, after costing \$172,477 60.

In 1843, a small iron steamer, named the "Michigan," was built for cruising on the northern upper lakes, and has done good service since.

The "Mississippi," the flag-steamship of Commodore Perry, in the Japan Expedition was built in 1840, at the Navy Yard, in Philadelphia, and her engines were constructed by Merrick & Town, of that city, from designs by Charles W. Copeland, of this city. Her cost was \$550,254; repairs in 1852. \$94,954. This vessel has side wheels, and has done great and good service to the country; it is believed that she has steamed a greater distance than any war steamer afloat, and has required but little repairs, and she will last quite a number of years yet. The "Missou-

ri," was built at the Brooklyn Navy Yard, in 1841, from the same lines as the "Mississippi," and her engines and machinery were constructed, at West Point Foundry, Cold Spring, from designs by Mr. Copeland, Chas. H. Haswell being then engineer in Chief of the U. S. N. Her cost was \$593,483 78. On the 23rd of Aug., 1843, this fine steam frigate, was destroyed by fire, at Gibraltar. She was a fine sailor, and was, in every respect like the Mississippi, only she had a 10 feet stroke, with 62½ inches diameter of cylinders, while the cylinders of the former are 75 inches diameter, and the stroke is only 7 feet. The "Princeton" was also built in 1843, with Ericsson's engines and propellers. This vessel was a failure, so far as the quality of her hull was concerned, and lasted about six years; her speed was about six miles per hour with steam alone. Two small steamers (paddle-wheels) named the "Spitfire" and the "Vixen" were purchased by the government during the Mexican war. They have undergone many repairs since, and are of a very inferior character.

The "Allegheny" was constructed of iron at Pittsburgh, from plans by Lieut. Hunter, in 1847, and fitted with two of the designer's submerged wheels. She was 1,000 tons burden, and 33 feet broad. Her whole cost was \$292,053,72, including \$10,000 for the patent right of the wheel, a most enormous price indeed, for a small iron steamer. This vessel was sent on a trip to the Mediterranean, and on her return in 1849, the Hunter wheel was condemned; side wheels were recommended, but she was not fit to go to sea again. During 1852 she underwent great alterations, and a propeller designed by Engineer Isherwood, was substituted for the Hunter wheel. One of Pirron's condensers was also applied, but none of these changes can bring it up to six knots per hour.

In 1850 the "Saranac" was built at the Portsmouth Navy Yard, N. H., with engines built by Jabez Coney, of Boston, from designs by Charles W. Copeland. This vessel has paddle wheels, maintains a respectable speed, is very efficient, and a credit to the service.

The "San Jacinto" was constructed on the same lines as the Saranac, at the Brooklyn Navy Yard. Her engines were designed by C. W. Haswell, Engineer in Chief U. S. N., and were built in 1850 by Merrick & Son, Philadelphia. She was to be fitted with a propeller by Mr. Haswell, which was to be placed at the one side of the centre line. Before the propeller was put in, Mr. Stuart superseded Mr. Haswell, and got a different propeller placed in her. His work says that she run at the rate of 18 miles per hour, in New York Harbor, but these miles must have been exceedingly short. This vessel cost \$205,593,77, and on the whole is considered to have done no credit to the service as yet.

The "Susquehanna" was launched from the Philadelphia Navy Yard in 1850. The engines were designed by C. W. Copeland, and were built by Murray and Hazlehurst, of Baltimore. Her whole cost was \$710,408,00. She has paddle wheels, but has not matched the Mississippi.

The "Powhattan" was built at the Norfolk Navy Yard, and was ready for sea in 1852. Her machinery was built by Mehaffy & Co., Norfolk, under the charge of engineer Sewell, from designs by C. H. Haswell, Engineer in Chief. This is a large steam frigate a fine sailer, and had the San Jacinto been constructed like the Powhattan, with paddle wheels, she would no doubt have done credit to the engineer who designed the engines.—The cost of her engines and machinery was \$383,213,68.

A "Water Witch the Second" has also been built, using the old engines, but employing Morgan's Paddle Wheel, from designs by Engineer Isherwood. These wheels do no credit to our engineering genius; they are more expensive, and are no more effective than the old-fashioned radial kind. Three or four other steamboats have belonged to the Navy—mere tug boats not worth naming.—At the present moment there are only three efficient steam frigates in our Navy, and considering the advancement and improvements made in our mercantile steamships, it is a disgrace to our government. We also assert

that we have not a truly respectable steamship in our Navy—one worthy of our country. Our government engineers have been peculiarly unfortunate with the propellers which they have built. While the French and English have very fine, large, and swift propeller line of battle ships, we have not a propeller-frigate worth the name. We would advise our government to get their steamers built entirely by contract; they pay too much for them. One of the Collins' line cost \$736,035, only \$25,627 more than the Susquehanna, and is about one third larger. There is something rotten in the system, for there are able engineers in our Navy; where the fault is we cannot tell, we can only direct attention to it, hoping that we may do "the State some service."

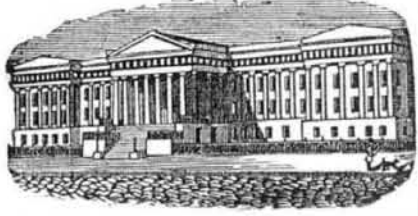
Reverend Inventors.

Having been asked, a few days ago, "Who was the inventor of percussion caps?" Our answer was "we cannot tell." On the very next day after this question was asked, we saw it stated, in a short article on the subject "Progress of Fire arms," in the "Philadelphia Ledger," that the Rev. Mr. Forsyth invented the percussion lock in 1807. This is nearly correct; we have been aware of it for a number of years, as the Rev. Mr. Forsyth's patent has become a standard subject of reference in many of our patent law suits, and it we are not much mistaken—as we quote from memory—Judge Kane referred to it in the reasons given for his decision, in granting an injunction against the Barnum Planing Machine three years ago. The allusion to this clergyman's invention, puts us in remembrance of what clergymen have done in the line of invention.

The inventor of gunpowder was Constantine Anelzen, a monk of Friburg, and the Rev. Mr. Forsyth, a Presbyterian clergyman, invented the application of detonating powder to fire-arms; thus two "men of peace" were confessedly war-like inventors, and their discoveries have had a most important effect on the destiny of nations. The Rev. Dr. Cartwright, an Episcopal clergyman in England, was the inventor of the power loom, another invention which has produced most wonderful results in benefitting man, and which like the radical and republican doctrines of Major Cartwright—the divine's brother—has had a tendency to level the comforts of a large class upwards. The Rev. Enoch Burt, of Ct., a congregational clergyman, was the inventor some of the best improvements ever made on gingham and harness looms. The Rev. Dr. Nott, of Union College, N. Y., a Presbyterian clergyman, is the inventor of a number of excellent improvements in stoves, and was the first to apply the waste heat of smelting furnaces to economical purposes—an invention which has been re-vamped abroad, and become famous, as a re-importation, within a few years. The Rev. R. Stirling, another Presbyterian clergyman, was the inventor of the Hot Air Engine, and the invention of balloons is ascribed to Francis Lana, a Jesuit. We have no doubt but the list of Reverend Inventors, could be extended to a considerable length, were we in possession of the means to explore into the occupations of those who have been granted patents in our country. What they have done in advancing the useful arts, affords an instructive lesson to those—and the number is not small—who entertain the opinion that none but practical men—meaning thereby "tradesmen" alone—have produced useful inventions. We are well acquainted with two clergymen, active pastors and excellent preachers, who spend many useful hours in mechanical pursuits, and who can plan and construct machinery and cabinet work with a skill equal to that of many reputable practising mechanics.

Canada Patents.

There are no general laws by which patents can be secured in Canada by American citizens. The power invested in the Canadian government is restricted to resident subjects, who must be inventors. Some change ought to be made so as to enable all to secure patents in Canada and other colonies, as the English Government has denied its own jurisdiction in this respect,—therefore the door is shut against all who are not bound to that Government.



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUG. 2, 1853

REED MUSICAL INSTRUMENTS—By J. A. Bazin, of Canton, Mass.: I claim, in the construction of organs, reed, and other similar instruments of music, first, flattening the third, sixth, and seventh of the scale by means of the regulating cylinder, constructed as described, or by any other analogous contrivance, as set forth.

Second, the valve, constructed, as described, of the two parts, with the two springs or their equivalents, in combination with the perforated plate, for the purpose of sounding the note flat or sharp, as set forth.

Third, the combination and arrangement of the sliding bar, the buttons, the bent wires, by which means the key board may be unlocked and moved in either direction by one hand, as set forth.

Fourth, I claim the use of two or more wind-chests in the same instruments, for the purpose of providing a separate supply of air for the bass and treble notes, as set forth.

Fifth, the peculiar arrangement of the bellows and wind-chests, the latter being placed below the former, and communicating with the reed box by means of flexible passages passing up through the bellows, as described, which arrangement of parts enables me to make use of two wind chests, as set forth.

Sixth, hanging the pedal with a movable fulcrum to prevent friction upon the foot, and to enable it to be operated with more ease and convenience, as set forth.

Seventh, the construction and arrangement of the air passages above and below the reed as described, for the purpose of admitting the air, and permitting it to escape at the butt end of the reed, as set forth.

Eighth, the presser bar, so constructed and arranged, as to keep down the rear portion of all the valves, while their front portion is left free to be operated by the keys, thereby modifying the tone of all the notes of the instrument, as set forth.

SEED PLANTERS—By G. W. Brown, of Tylerville, Ill. Ante-dated Feb. 2, 1853: I claim, first, the oscillating horizontal wheels, or distributors, in the bottom of the hoppers, having slots and holes of various sizes, in combination with the stationary caps and pins for the discharge of different kinds and quantities of seeds, as set forth.

Second, I also claim the arrangement of the covering rollers, mounted as described, and performing the purpose of covering the seed, elevating the cutters, in turning around, and also in adjusting them to different depths, as set forth.

SEED PLANTERS—By Lebbens Caswell, of Harrison, Me.: I claim placing the axle of the gauge wheels on a fulcrum, in an adjustable slide, as described, so as to plant at any desired, and at the same time a uniform depth, as set forth.

WATER REGULATOR FOR STEAM BOILERS—By S. R. Clime, of Philadelphia, Pa.: I claim the water chambers described, and the contrivance and machinery, by which their action is aided and facilitated.

ABDOMINAL SUPPORTERS—By H. B. Conant, of Geneva, Wis.: I claim constructing the supporter with two encompassing springs, attached respectively at their centers to the front and hind pads (the hind spring being slightly curved upwards in the middle, and the front spring correspondingly curved downward, and both springs straight on their flat sides, as described, and uniting said springs at their adjacent ends, with straps of adjustable lengths, whereby its pressure may be varied at pleasure, and the same supporter worn by persons of different sizes, as set forth.

RAILROAD CAR WHEELS—By T. J. Eddy, of Watertown, N. Y.: I claim a cast-iron car wheel made in one piece, in which one end of the hub is united to the rim by means of a disc, and the other by means of a series of spokes, as set forth.

PAPER RULING MACHINE—By C. S. Boynton, of New York City: I claim, first, the employment or use of the guides, by which the paper may be properly adjusted upon the apron, and fed underneath the pens.

Second, I claim the guides or stops attached to the selvage of the endless apron, for the purpose of elevating the pens from the paper, at required distances, according as the guides or stops are adjusted upon the apron, and thereby causing the paper to be ruled in lines of the desired length, and having the requisite spaces between them, as described.

[This is an excellent improvement on such machines, and has been in successful operation, in this city, for some time.—Ed.]

SUBMARINE TUNNELS—By J. R. Miller, of Jersey City, N. J.: I claim constructing submarine avenues by casting them in short manageable sections, sinking each successively to its place, and uniting their ends successively, by means of flanches, bolts and packing, as described, when these are combined with a lip or lips at the end of each section to ensure the bolt holes, and other corresponding parts to come and rest opposite to each other, as each succeeding section is sunk to its place; and when the structure is made to rest upon a graded bottom, as the work progresses, and is held thereto by superincumbent weight, when completed. I do not claim any one, or any number of the elements specified, except in combination with all the others, nor when used for any other purpose than that specified.

TEMPLES FOR LOOMS—By J. A. Schofield, of Westerly, R. I.: I claim the application of a stationary spur plate, to the temple, with the pins in said plate inclined at an angle to the breast beam, so as to allow the cloth to be drawn down over the tops of said pins, as the lay beats up, and from their inclination, preventing the cloth from receding, during the backward motion of the lay, as described.

STEAM BOILERS—By John M. Reeder, of Memphis, Tenn.: I claim the application to steam boilers of a stem and the two valves, and the mode of their operation, which will, at any given pressure, allow the water in the boilers, to pass freely on the fire underneath them, thereby retaining the steam and preventing explosion, as described.

MACHINES FOR MAKING SPIKES—By J. R. Rich-

ardson, Jas. Waterman, & Ebenezer Wilder, of New Castle, Pa.: We claim, first, the manner of forming the point of the spike, as described, viz., by means of the combination of the wide dies, resting on the discs of the rollers, and the pointing rollers, arranged as set forth.

Second, we claim slightly withdrawing the header, after the head is completed, for the purpose of relieving the jaws from its pressure, before they begin to open, and holding it in that position, with the spike head therein, until the jaws are opened, and the movable jaw and die are nearly or quite withdrawn from the spike, then withdrawing the header to its farthest position from the dies, allowing the spike to fall, thus causing the header to perform the duty of a clearer, as described.

Third, we claim the combination of the cutting guide loop, the cutter and the holder, as constructed and operating with the movable jaw and movable die, for the purpose of cutting off the blank at sufficient distance from the ends of the dies to leave material for the head, and carrying it over to the stationary jaw, at the same operation, as described.

Fourth, we also claim attaching the gauge firmly to the carriage of the pointing rollers, so that it will be withdrawn as the point is drawn out by the rollers, and returned to its position, when the pointers are withdrawn without any other mechanism to actuate it, as described.

[See description of this excellent machine on page 188, Vol. 8, Sci. Am.]

ATMOSPHERIC TELEGRAPH AND RAILWAY—By I. S. Richardson, of Boston, Mass. Patented in England Dec. 7, 1852: I claim, first, the check plate, consisting of three pieces, two being stationary, and the third or middle one, revolving between them, air tight, constructed as described, or in any manner substantially the same, and for the purposes set forth.

Second, the turn-table constructed as described, of the ring and its station box, in combination with the two rings, or their equivalents, as set forth.

Third, the method of announcing the arrival of the plunger, by means of the compression of the air within the cylinder at the instant of the arrival of the plunger, operating through the orifice in the cylinder, the valve, and the hammer, as described, or in any other manner equivalent thereto, the compressed air being the agent.

Fourth, I claim the combination of the pendant lever with the valve and spring, or analogous devices, by which means the valve is drawn up to its seat when no longer kept open by the pressure of the atmosphere, and firmly locked in that position, until the lever is again tripped by the passing plunger or load.

[See engravings of this invention on page 265, Vol. 8.]

PRINTING PRESSES—By S. P. Ruggles, of Boston, Mass. Ante-dated Feb. 2, 1853: I claim the combination of the adjustable gauge with the diverging springs for catching and guiding the edge of the sheet when it is sliding to its position, as described.

INDICATING THE HEIGHT OF WATER IN STEAM BOILERS—By Nathan Thompson, Jr., of Williamsburgh, N. Y.: I do not claim either floats or valves, or chambers or levers as my invention, nor the combination of a float within a boiler, with indicators or alarms.

I claim the method, as described, of slowing and stopping the main engine, by means of a float, or its equivalent, which is governed in its position by the height of the water in the boiler, whereby I am enabled to furnish a reliable and not to be disregarded intimation of the level of the water in the boiler.

Secondly, I claim a hook and pin, or their equivalents in combination with a boiler float, whereby said float is prevented from acting during ordinary fluctuations of the water level, as specified.

[The boat is made to work the throttle valve.—Ed.]

MACHINERY FOR MAKING RAILROAD CHAIRS—By Wm. Van Anden, of Poughkeepsie, N. Y.: I claim the combination of rollers with adjustable shear stocks for cutting and shaping the lips of wrought-iron railroad chairs, as set forth, and their combination with the dies for that purpose.

I also claim the use of a movable drop, upper half or female die, in combination with a stock, as set forth, and their combination with the discharging apparatus operated as set forth.

I also claim the use of adjustable and removable benders, in bender stocks, in combination with the levers and cams on the main shaft, for operating the same in an oblique and downward direction, and their combination with the dies and cutters for making wrought-iron railroad chairs.

OBVIATING THE DANGER FROM STEAM BOILER EXPLOSIONS—By Stephen Waterman, of Williamsburgh, N. Y.: I do not confine myself to placing the cold water reservoir on the top of the safety-chamber, as it may be placed in other positions, and instead of communicating with the safety chamber, may communicate with the steam space of the boiler; nor do I confine myself to the particular mechanical means by which the tearing apart of the safety plate is made to open the communications between the water reservoir and the boiler, and safety chamber.

But I claim the combination with the safety-chamber and safety plate of a cold water reservoir, which has means of communication at the lower part with the safety chamber or steam space in the boiler, and at the upper part, with the steam space in the boiler, which said means of communication are closed when the boiler is in proper operation, by cocks, or their equivalents, which are caused to open by the tearing apart of the safety plate in any manner as described, for producing the effect set forth.

[See notice of this invention on page 204, Vol. 8, Sci. Am.]

ARRANGEMENT OF PIPES FOR HOT BLAST FURNACES—By Jesse Young, of Franklin Furnace, Ohio: I claim the arrangement of a series of angular horizontal pipes, three short vertical connecting pipes, which also serve as supports or pedestals, and a hollow base, through which the cold air passes into the pipes, and upon which hollow base the pipes rest, by which arrangement the air is made to pass slowly through the pipes and base, and is exposed a sufficient length of time to the action of the heat to become heated with a small expenditure of fuel.

[This is a valuable invention, and one which will enhance the iron interests at the West very extensively. See brief description of this invention on page 187, Vol. 8.]

MANUFACTURE OF PAPER STUFF—By J. T. Coupler & M. A. C. Mellier, of Paris, France. Patented in France, May 7, 1851: We do not claim the use of alkalies in the treatment of vegetable fiber for the preparation of paper pulp; nor do we claim the individual parts of the apparatus employed in our process.

But we claim first, the process described, of reducing straw and other similar vegetable matters into pulp for making paper, said process consisting in applying and circulating the solution of the hydrate of soda or potash in the manner described, and at or about the strength indicated, in combination with

the apparatus, as described, by which means we are enabled to effect the reduction of a very large amount of pulp with a comparatively small quantity of liquor, and preserve the requisite strength in the liquor, and also obtain facility for its evaporation.

We do not claim the use of hypochlorites for bleaching pulp, but we claim, secondly, the employment of hypochlorites in the process of bleaching straw or similar vegetable matter, when prepared as described, for the purpose of making paper, that is to say, using them at or about the strength set forth, viz., 3 degrees Baume; and we claim this degree of strength only when employed upon such materials.

[This is a singular claim truly.]

ELASTIC TYPE FOR PRINTING ON IRREGULAR SURFACES—By Julius Herriet, of New York City, (assignor to J. Gaylord Wells, of Hartford, Ct.): I claim making by casting in moulds, or by pressure plates with raised characters or figures, the entire substance of such plates being sufficiently elastic as to adapt it to printing, as described.

HOT AIR ENGINES—By A. O. Wilcox, of Philadelphia, Pa.: I do not claim the use of renovating discs outside of the working cylinder, either when alternately travelling through the heated and cold air, or when stationary, and alternately transmitting heated and cold air, as I am aware such have been before used.

I claim placing the economizing discs within or attaching them to the driving piston itself, whereby I am enabled to effect the complete rarefaction of the heated air, while the piston is descending, and before the cold air is again let into the cylinder, as described.

[This appears to be like Stirling's Air Piston: see page 668 "Galloway History"—Ed.]

I also claim enclosing the exhaust end of each single acting working cylinder, with an air tight head, when combined with a self acting valve, which opens from said exhaust end of the cylinder into the induction pipe, in order to exclude the external atmosphere; and also for the double purpose of enabling any degree of rarefaction to take place within the exhaust end of the cylinder, without the return of air from the reservoir, and to allow the spent air finally to escape to said reservoir, as set forth.

I also claim enclosing each working cylinder within a jacket (of any suitable material), regularly increasing in thickness from the bottom to the top, in such a manner that when it is surrounded by water or other fluid, the temperature of the working cylinder will be kept reduced to a proper and nearly uniform degree (without much waste of heat), so as not to injure the lubricating fluid inside, whereby I am enabled to apply the heat of the furnace immediately under said cylinder, thus obviating the use of an expansion heater, as described.

ANTI-FRICTION BOXES—By G. T. Parry, of Spring Garden, Pa. (assignor to John Rice, of Philadelphia, Pa.): I claim making the rollers in the form of double frustrums reversed, and united at their bases, and travelling in circular grooves of nearly corresponding form of the surfaces between which the rollers are interposed as set forth.

DESIGNS.

SEWING BIRD—By A. Gerould & J. H. Ward, of Middletown, Ct.

COOKING STOVE—By Julius Holzer, of Philadelphia, Pa. (assignor to North, Chase & North.

A Complimentary Letter.

MESSRS. EDITORS—I cannot let this opportunity pass of thanking you for the able manner in which your paper has treated many important subjects of late. Its firm unyielding opposition to all forms of humbug and imposture, which come before the world under the name of "new invention," has prevented many unscientific persons from investing their property in worthless machinery. Its strict construction of such patent "claims" as have of late grown so broad as to become unjust monopolies, and threaten to retard rather than facilitate the business operations of the country has been of great service. It has very properly exposed the hyperbolic statements of the daily press in regard to the novelty and efficiency of machines and apparatus of doubtful utility, and convinced the public that Technology is a department of knowledge in which most of our newspaper editors are sadly deficient. I wish you complete and continued success in all your undertakings for the advancement of the useful arts. S. D. T. Seneca Falls, N. Y., July 30, 1853.

[The above letter is from one of our most intelligent readers; it is a spontaneous tribute—we shall always endeavor to merit such opinions.]

Flax Culture in Indiana.

Mr. R. T. Brown, of Crawfordsville, in a communication to Governor Wright, President of the Indiana State Board of Agriculture, says:—

"I send you enclosed a few samples of flax cotton presented to me by the Hon. H. L. Ellsworth, of Lafayette. Mr. Ellsworth has secured the machinery necessary for the manufacture of cotton, and will have it in operation early in the season. He has on hand the stem grown on 120 acres last season, which, from experiments already made, will, he supposes, yield about 300 pounds per acre of cotton similar to No. 2 of the enclosed specimens. The expense of reducing the fibre to this state, after the stem is produced, is about two cents per pound, which, at the usual price of cotton (10 cents) will leave eight cents per pound, or \$24 per acre for the farmer who produces it. To this must be added

the value of the seed, which will range from \$6 to \$8 per acre—giving a final result of \$30 at least for each acre. This is Mr. Ellsworth's calculation.

Recent Foreign Inventions.

BURNING AND APPLYING GAS—J. Whitchord, and S. E. Rosser, of London, patentees. This invention consists; firstly, in an improvement in the mode of burning and applying gas for lighting. This is effected by the introduction of a ventilating bell and tube, placed in a convenient and suitable position above the gas-burner. These are made with a trough or channel, to receive the condensation of any aqueous vapors arising from the combustion of the gases; the said trough or channel being so placed that the aqueous products can either be carried away by a pipe (or other means) or become evaporated, and driven off through the chimney when the gas is burning.

Secondly, in effecting such an arrangement of the globes, glasses, and chimneys of gas burners, as to introduce a current of cold air between the external surface of the ventilating bell or glass, and the interior of the globe which encloses the gas-burner; and also a second current between the external surface of the gas-chimney and the inner surface of the ventilating glass or bell. In this arrangement the pendent glass or bell above the burner dips down below the mouth of the surrounding globe, and at the same time descends externally below the upper orifice of the chimney of the gas-burner. By this means the atmospheric air, which can only enter at the top of the globe, is made to descend between the inner surface of the globe and the outer surface of the pendent bell, carrying with it the whole of the products of the combustion of the gas up the ventilating tube.

Thirdly, in an improved mode of applying gas for heating purposes. The gas burner of a stove is, in this case, placed within or under a tube or casing for conveying the heat through a chamber surrounded with water or other fluid. This chamber or casing is made with a trough or channel placed in a suitable position for conveying off the condensed aqueous vapors that may be formed inside the chamber by the combustion of the gases, and is so placed, that the aqueous products can be either carried away by a pipe, (or other means) or become again evaporated and carried up through the chimney. The tube or casing may be made similar to the worm of a still or refrigerator, and have its end turned down to carry the aqueous products off into a vessel placed to receive them.

SMELTING METALLIC ORES—T. B. Smith, of Bristol (England) patentee.—This invention has reference more particularly to the first operation in smelting sulphuret copper, and other ores; namely, their calcination, by which a portion of the sulphur is expelled, and the metals they contain are oxidized.—The inventor proposes to avoid the inconvenience and injury of the ordinary process caused by allowing the free vapors to pass into the open air; and, by condensing the gases which are evolved in the process in flues or pipes, to use the sulphurous vapors for the manufacture of sulphuric acid. For these purposes he uses nearly closed chambers, furnaces, or retorts, which are heated from without, and by passing heated air into these he does not admit the products of combustion from the fire to mix with the vapors or gases evolved in the process of calcination, as such products would render these vapors unfit for the manufacture of sulphuric acid. With the chamber, furnace, or retort employed, he connects suitable flues or pipes, to carry away the vapors, in which he condenses the volatized metals, while the sulphurous vapors are carried away to suitable chambers, and proceeded with in the ordinary manner of obtaining sulphuric acid from them.

When sulphuric acid is not needed, the process of calcination may be much facilitated, by introducing a much larger quantity of air, which will be an advantage to the smelters.

The inventor also proposes to use a portion of heated oxygenated air at times, to assist the calcination of metallic ores.

[Condensed and selected from the "London Mechanics' Magazine."]