

THE NEW REVENUE CUTTERS.

The new steam vessels about to be added to the revenue service of the country will certainly be the finest ships of their class the nation has ever possessed, if they are completed according to the designs of their builders. The officials charged with their construction have taken the right course to obtain the best models for the purpose. We are informed that the Revenue Department made known their wishes to prominent ship-builders of the country, stipulating only that the load carried and draft of water of the several vessels, six in all, should be the same. In all other respects the builders were left to carry out their own ideas in respect to model, &c., untrammelled; the result is a collection of beautiful ships. A marked difference is observable by the mechanical eye in the proportions of the several hulls, and it is confidently believed that each and all of the cutters will not only prove themselves worthy of the expectations they have excited, but they will inaugurate a new era in this class of our national steam marine. Most of the vessels heretofore commissioned for this duty were exceedingly unfit for it, the *Harriet Lane* (now in the hands of the rebels) alone excepted. They are nearly all old-fashioned models, and wallow about in the most approved style in a heavy sea. The new ships will be both fast and elegant in their proportions, and will constitute a fleet which the nation may well be proud of.

Mr. Thomas B. Stillman has been indefatigable in his efforts to secure the very best ships that could be made by our ship-builders. The particulars of the hulls as regards length, depth and breadth are as follows:—Total length between perpendiculars, 130 feet; extreme width, 27 feet; depth of hold, 11 feet; and draft of water at load line, 9 feet. The vessels are all alike in this respect, are strongly fastened and are built of the best material.

The engines of these vessels are entirely new as regards their adaptation to the service in this country. Oscillating engines have been used for years, but not arranged in this particular manner. The neatness of the design, compactness of the details, and mechanical arrangement, generally, strikes the professional observer favorably, and much credit for them is due to Mr. I. V. Holmes, the superintending draughtsman at the Novelty Works, where the engines are now building. Mr. Holmes is a skillful draughtsman as well as a courteous gentleman, and we are indebted to him for many favors of a professional nature. The cylinders of these engines are 30 inches in diameter by 30 inches stroke, and are inclined to the propeller shaft, so that they work on it at an angle of 45°.

The cylinders are below the crank shaft, and on each side of it; and both piston rods are connected to one crank pin by single-ended connections; the cylinders being set slightly past each other so as to admit of this arrangement. The valve gearing consists of a double-ported slide valve, worked by eccentrics through link motion, and having a range of cutting off from three-eighths to three-fourths of the stroke: the exhaust passages being made large and free, so that little or no trouble is to be apprehended from back pressure. The air pump is worked from the end of the main shaft and sets on a bed plate outside the main frame, but close to it, and is driven direct by a crank and connecting rod from the shaft, as before stated. The bilge and feed pumps are set on the other side (fore and aft) of the frame, and are well arranged for accessibility and freedom of inspection at all times. The condenser is of the old-fashioned jet variety, and is ingeniously combined with the framing and bed plate. The whole space embraced by the machinery may be estimated at about 10 square feet. With all this compactness in the arrangement of the engines there is no confusion or complexity; no flanges cut off for clearance, pumps shorn of their proportions, columns chipped, or bolt holes half cut away, to save a sixteenth of an inch; but each part has a fair degree of freedom allotted to it, so that the machinery is at all times readily overlooked. It is a good feature to have the pistons work upward instead of down, as it avoids the nuisance of leaking stuffing boxes, which drip continually when under way or standing with steam up. The engines are geared, so as to drive the screw shaft 2½ revolutions for one that they make, and the gearing is simply a large wooden toothed spur wheel, gearing into an iron pinion. The screw

itself has a diameter of 8 feet, and is three-bladed, with an expanding pitch of from 14 to 16 feet. There are also the usual instruments attached to the engine, handsomely fitted in a frame, so that their indications can be seen at a glance. There is but one boiler, which has horizontal tubes and four furnaces. These engines, besides being artistically designed and put together in a workmanlike manner, will drive the vessels to which they are fitted rapidly through the water. It is hardly too much to expect that at least 40 revolutions of the engine shaft will be obtained, which will give upward of 100 revolutions of the screw and a little over 12 knots of 6,080 feet, minus slip of screw for the speed of the ship. This is mere speculation on our part, however, and we hope that even higher rates will be obtained. It will be interesting to notice the best results obtained by different lines in hulls with engines of similar power.

NEW WORK OF ART.

Mr. C. Schussele of Philadelphia, Pa., an artist of some distinction, has lately completed a large and beautiful painting, entitled "Men of Progress." It represents a group of some of the most distinguished American inventors, with a fidelity of portraiture which is in some respects remarkable. In order to place the work within the means and possession of the public generally, it has been reproduced on steel plate, by the celebrated engraver, John Sartain, and we now have a proof sheet before us. It is a noble picture.

In the center, upon a table, is one of Morse's telegraph machines, and grouped around are the various personages whose deeds and discoveries have rendered them illustrious in the eyes of the world. There is Morse, the father of telegraphy, conversing with Hoe of lightning press celebrity. Goodyear of rubber fame, Dr. Nott the oldest inventor and man of science now living, Ericson of iron-clad renown, Peter Cooper the benefactor, Professor Henry the scientific secretary of the Smithsonian Institute, Burden, inventor of horse-shoe machinery, Bigelow of carpet looms, Sickles of the steam cut-off, Jennings of friction matches, Blanchard of irregular lathes, Howe of sewing machines, Mott of works in iron, Baxter of mint and coast survey machinery, McCormick of reapers, Colt of revolvers, Bogardus of iron buildings, Dr. Morton of etherization—forming altogether a galaxy of representative men, whose citizenship is an honor to the republic.

It would be difficult to find a more interesting or more permanently valuable work than this splendid picture. We commend it especially to the attention of young mechanics and inventors. Nearly every one of these "Men of Progress," rose from obscure life and adverse surroundings. Their elevation was the result of their own honest study and unceasing perseverance—means which are within the reach of every one. We wish that the picture we have described could have a place in all the workshops of the land. It conveys to every beholder the most impressive lessons of hope and encouragement in all the worthy purposes of life. Mr. James M. Wattles is the agent for New York and Brooklyn.

NEW YORK WHARVES AND PIERS.

Mayor Gunther in his message, calls attention to the defective piers of the greatest shipping port on our continent. With the best water front of any city in the world, New York has perhaps the poorest accommodation for shipping. In his message, the Mayor says, respecting the wharves:—

"The condition and character of these structures are not in keeping, to say the least, with the commercial rank and destiny of the city. The present plan compels the continual outlay of large sums for dredging out the slips, that are rapidly filled by the material washed in from the streets and sewers, while the decaying nature of the timber frames causes a necessity for constant repairs. Most of the great commercial cities possess stone piers or extensive basins, constructed in the most solid manner that engineering skill can devise, while New York, second to none in importance; retains the old timber frames, filled in with rubbish and loose stones, a constant source of expense, deteriorating the harbor and affording lurking places for countless rats that infest the shipping and injure the cargoes. I would recommend the adoption of a policy gradually to replace the present

by stone piers. Solid stone walls laid in hydraulic cement might be built encasing the timber frames, increasing somewhat the breadth of the piers, and allowing a platform to be built outside and above the level of the roadway for carts. Thus in the course of a few years a complete renovation might be effected, greatly to the advantage of the city in appearance, and in the more positive benefits of sanitary improvement, the accommodation of commerce, and the saving of repairs."

These are sensible remarks. We recommended the construction of stone piers in place of the miserable wooden ones now in use, more than twelve years ago. And in conjunction with these, we have also recommended the construction of iron sheds on the wharves, for the purpose of shipping freight. Millions of dollars worth of property is damaged every year by the rains to which goods are exposed, while lying on the wharves after being discharged or before being shipped. Sheds, such as those on the Liverpool docks, should be erected on the New York wharves.

TURPENTINE AND BENZINE.

Three years ago turpentine could be purchased at prices ranging from thirty to forty-five cents per gallon, according to quality, and it was then extensively employed for mixing with paint—as a drier—and in the manufacture of a burning fluid, composed of four parts alcohol to one of camphene—purified turpentine. At present the price of turpentine is three dollars per gallon, and it is but little used. Burning fluid, which was a very dangerous substance, has happily gone out of use, and benzine—the light eupion oil, derived from petroleum—has taken the place of turpentine as a paint mixer. It is stated that it is superior to turpentine for this purpose. As its price does not exceed that of turpentine at its lowest figure, it is a subject of congratulation that it forms such an excellent substitute for it. But besides the uses stated of turpentine, it was also very extensively employed as a solvent for resins and asphaltum, in the manufacture of varnishes. In this department of industry, its place has also been supplied by benzine, which, although not quite so good, answers very well for the purpose. The oil springs of Pennsylvania have, therefore, not only been of vast benefit and advantage in supplying the cheapest burning fluid ever brought into use, but also in providing painters and manufacturers of varnishes with a cheap substitute for turpentine.

AMERICAN RAILROADS.

The number of miles of railroad completed Jan. 1, 1864, in the twenty-four loyal states is 24,926, but the total number completed and in the course of construction is 34,807 miles. The cost of their construction and equipment is \$1,025,115,742. So far as relates to the condition of the railroads in the rebel states we have but little information, yet it cannot be doubted that they are in a bad state, both as regards the permanent way and rolling stock. From apparently reliable accounts obtained from prisoners who had been conveyed over some of these lines, the tracks and engines seem to have become so depreciated, that trains cannot be run in safety at a speed over six or seven miles per hour. They will get worse before they get better while the war lasts.

Last year was the most prosperous on record for our Northern railroads. They were all taxed to their utmost capacity in carrying freight and passengers, and most of our city merchants believe that we have not a sufficient number of main lines for the business of the country.

Trow's Daily Calendar.

One of the most convenient as well as slightly calendars we have seen in a long time is issued by John F. Trow, 50 Greene street. It is decidedly novel in design, consisting of a number of slips of paper bound together, having the month, the day of the month and the week, in prominent figures and letters, also sunrise and sunset, high water, phases of the moon, time tables, &c.; these slips are torn off each morning, being arranged in regular order, so that the dates are correct. There are also historical facts under their respective dates, which are entertaining as well as instructive. In 1835, Jan. 1st, we are told that Charles Lamb died, which is all very proper indeed. In 1863, Jan. 2, Mason and Slidell were released from Fort Warren, which was decidedly improper; but on

Jan. 3d an important event occurred—Marcus Julius Cicero was born; for business, and even so far as the entertainment of the general reader is involved, the advent of Marcus might have been supplanted by some event a little nearer the present day. The calendar is a very useful one and will doubtless be extremely popular.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week: the claims may be found in the official list:—

Saw-mill Carriage.—This invention relates, first, to the employment of a dog constructed in a novel way, and connected with a lever or handle in such a manner that by a very simple adjustment of said lever or handle the log may be set to the saw, and the log-supports also gigged back when necessary to receive a fresh log to be sawed. The invention relates, secondly, to a simple and novel means for adjusting the log, so that the same may be sawed in taper form when required, and also to an improved means for holding the racks of a sliding bar, to which the log-supports are attached, in proper position and in gear with the pinions which operate them. Dennis Lane, of Springfield, Vt., is the inventor of this improvement.

Improvement in Ordnance.—This invention relates to the manufacture of ordnance of a central core or barrel containing the bore and a system of bands, hoops or rings of wrought-iron, surrounding the said core from the breech to within any desirable distance of the muzzle; and it consists in a certain novel construction of and mode of combining the several parts, whereby the fibrous character of the wrought-iron is preserved and the union of the several parts is rendered such that their proper relation will not be disturbed by the firing of the piece, or by the heating and cooling to which it is subject in use, and, in short, to so construct ordnance as to obtain the necessary strength with the least weight of metal. John Ericsson, of New York city, is the inventor of this improvement.

Ash-ejector for Steam Vessels.—The object of this invention is to obtain a simple and efficient means for discharging ashes and other refuse matter from steam vessels, whereby the labor of elevating and discharging the same overboard as now practiced, will be avoided. The invention consists in the employment of a receiver provided with a valve, so arranged as to admit of a communication being formed between the receiver and the water at the exterior of the vessel, and to admit of said communication being cut off when desired; a pump or steam pressure, one or both, being used in connection with the receiver, and all arranged in such a manner as to effect the desired end. Jefferson Brown, of No. 14 Elizabeth street, New York city, and S. R. Brooks, of St. Louis, Mo., are the inventors of this improvement.

Electro-magnetic Pendulum.—The principal object of this invention is to apply to the pendulum power obtained from an electro-magnet, to maintain and also, if desired, to initiate its motion without subjecting it to the direct attraction of the magnet, or in any way attaching to it an armature or fixed magnet, or any piece of metal subject to the attraction of a magnet. The invention consists chiefly in the employment of wedge-shaped pallets in combination with the armature of the electro-magnet, and with one or more impulse bars and springs, whereby the above result is obtained. It also consists in so applying the said pallets in the circuit in which the electro-magnet is placed, that the opening of the circuit to produce the necessary intermissions of the current takes place between the said pallets. James Hamblet, Jr., and B. F. Edwards, of Boston, Mass., are the inventors of this improvement.

Surfacing Fibrous Materials.—This invention relates to the applying of a glazing or size to fibrous substances, such as cotton wadding, &c., in such a manner that a quite thin sizing may be used and applied to the material to be sized, glazed or surfaced, as it is technically termed, and said material dried at the same operation. To this end the invention consists in the use of a smooth or polished metal cylinder, heated by steam or otherwise, over a portion of which the web to be surfaced passes and has a heated pressure roller bearing against it; the metal cylinder

having the glazing or size distributed over its exterior by means of a revolving brush or its equivalent, and at a point sufficiently distant from that where the belt comes in contact with the cylinder, that the glazing may become partially dry before being brought in contact with and applied to the web. The above parts are used in connection with a roller for cleaning the cylinder. William Fuzzard, of Chelsea, Mass., is the inventor of this improvement.

Breech-loading Fire-arm.—This invention consists in a certain novel construction and mode of applying the movable breech-block and certain means of operating the same, whereby the construction of the arm is much simplified and the use of a large number of small pieces, such as screws and pins, which are liable to be lost, is avoided, and the gun is enabled to be taken apart enough to clean all the working parts without the removal of a single screw. It also consists in certain means whereby provision is made for loading at the muzzle, when the supply of ammunition suitable for loading at the breech has been exhausted. And it further consists in certain improved means of withdrawing the discharged metallic shells of the ammunition used for breech loading. W. K. Stevens, of Worcester, Mass., is the inventor of this improvement.

SPECIAL NOTICES.

Joseph P. Pirsson, of New York City, has petitioned for the extension of a patent granted to him April 2, 1850, for an improved surface condenser for steam engines.

It is ordered that the said petition be heard at the Patent Office, Washington, on Monday, March 14, 1864.

Daniel Hicks, of Dimcansville, Pa., has petitioned for the extension of a patent granted to him on April 2, 1850, for an improved attachment of the forge hammer to its helve.

It is ordered that the said petition be heard at the Patent Office, Washington, on Monday, March 14, 1864.

Charles Perley, of New York City, has petitioned for the extension of a patent granted to him April 2, 1850, for improvements in cat head and shank painter stoppers.

It is ordered that the said petition be heard at the Patent Office, Washington, on Monday, March 14, 1864.

All persons interested are required to appear and show cause why said petitions should not be granted. Persons opposing the extensions are required to file their testimony in writing, at least twenty days before the final hearing.

TO OUR READERS.

PATENT CLAIMS.—Persons desiring the claim of any invention which has been patented within thirty years, can obtain a copy by addressing a note to this office, stating the name of the patentee and date of patent, when known, and enclosing \$1 as fee for copying. We can also furnish a sketch of any patented machine issued since 1853, to accompany the claim, on receipt of \$2. Address MUNN & CO., Patent Solicitors, No. 37 Park Row, New York.

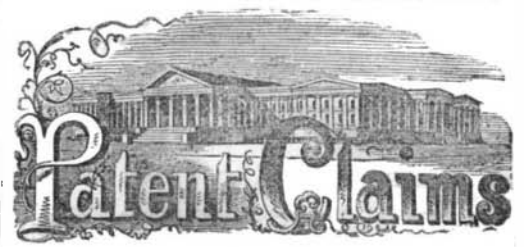
INVARIABLE RULE.—It is an established rule of this office to stop sending the paper when the time for which it was pre-paid has expired.

Models are required to accompany applications for Patents under the new law, the same as formerly, except on design patents, when two good drawings are all that are required to accompany the petition, specification and oath, except the Government fee.

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

Binding the "Scientific American."

It is important that all works of reference should be well bound. The SCIENTIFIC AMERICAN being the only publication in the country which records the doings of the United States Patent Office, it is preserved by a large class of its patrons, lawyers and others, for reference. Some complaints have been made that our past mode of binding in cloth is not serviceable, and a wish has been expressed that we would adopt the style of binding used on the old series, i. e., heavy board sides covered with marble paper, and morocco back and corners. Believing that the latter style of binding will better please a large portion of our readers, we commenced on the expiration of Volume VII., to bind the sheets sent to us for the purpose in heavy board sides, covered with marble paper and leather backs and corners. The price of binding in the above style is 75 cents. We shall be unable hereafter to furnish covers to the trade, but will be happy to receive orders for binding at the publication office, No. 37 Park Row New York.



ISSUED FROM THE UNITED STATES PATENT-OFFICE FOR THE WEEK ENDING JANUARY 12, 1863. Reported Officially for the Scientific American.

Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

41,185.—Treating Flax, &c., to produce Short Fiber for Spinning.—S. M. Allen, Woburn, Mass.:

I claim, first, The herein-described process of preparing vegetable long-stapled fiber to be reduced to suitable length for spinning and weaving on short-stapled machinery and for other purposes, by submitting the fiber to the different operations of fermentation, washing, pressing, beating, &c., before drying the same, substantially as herein more fully set forth.

Second, I claim the herein-described process of converting vegetable long-stapled fiber into fiber of suitable length for weaving and spinning on short-stapled machinery, by combining with fermentation, washing and other mechanical and chemical operations before drying, the stranding or reducing of the fiber mechanically after drying the same, substantially as herein set forth.

41,186.—Pump.—M. J. Althouse, Waupan, Wis.:

I claim the barrel, C, the screw bolt, G, and the pin, H, when constructed and applied to a pump stock, B, substantially as shown and described.

41,187.—Horse-rake.—D. W. Amos, Bedford, Pa.:

I claim the combination of the knee-lever or connecting-rod, K, and lifting lever, J, with wipers on one of the wheels, substantially as described, for the purpose of enabling the driver to elevate and hold up the rake teeth without using his hands, as set forth. I also claim the combination of the rake teeth with the bracket, I, when combined, arranged and operating as set forth.

41,188.—Grain Separator—Myron J. Barcalo, Mount Morris, N. Y.:

I claim, first, The longitudinally and vertically-adjustable separator, C, constructed of wire gauze or partly of wire gauze and partly of a metallic plate, in combination with the sieve of a fanning mill, substantially as described.

Second, The separator, C, constructed with a flat or arched surface and having the edge, c', turned up as described, for the purpose of preventing the grain which is cast upon the separator from falling over that edge.

Third, The sieve, A, and the separator, C, in combination with an adjustable discharging screen, D, which is shorter than the gains in which it moves, or of the same length, constructed and operating in the manner and for the purpose described.

41,189.—Adjusting Logs in Saw Mills.—D. C. Banghman, Adams, Ohio:

I claim, first, The shaft, D, supported beneath the head and tail blocks, A, A', upon levers, e, e', and operating substantially as described.

Second, The combination of pinions, f, f', shaft, D, spur wheels, c, c', and shaft-supporting levers, e, e', all operating substantially as described.

Third, The saw wheel, C, in combination with the shaft, D, and driving pinion, m, operating substantially as described.

Fourth, The combination of the two-pawl levers, g and d, applied and operating substantially as described, for adjusting both ends of the log at one end of the machine, obliquely to the plane of the saw.

Fifth, The vibrating, driving pinion shaft, h', and pinion, h, in combination with the lever, E, and spur wheel, C, for operating the traveling plates, B, B', substantially as described.

Sixth, The pivoted arm, h², in combination with the rods, j, j, and levers, E, H, substantially as and for the purposes described.

Seventh, The combination of the trip-staff, p, catch, s, levers, t, and v, operating substantially as and for the purposes described.

Eighth, Applying a gage wheel, J, or its equivalent to operate in conjunction with a shifting pinion, h, and such mechanism as will throw this wheel, J, out of action automatically, when the log has been moved up to the saw the required distance, substantially as described.

41,190.—Clothes-washing Machine.—W. H. Blood, San Francisco, Cal.:

I claim the stationary concave of rollers, C, placed within the ends, box A, in combination with the oscillating rubber, K, attached to elastic plates, h, and connected by pendant bars, J, J, to a rock-shaft, F, the bearings of which rest on spiral springs, D, and the ends or journals of which are connected to a treadle, I, all arranged substantially as and for the purpose herein set forth.

[This invention consists in the employment of a stationary concave of rollers fitted within a proper suds-box and used in connection with an oscillating, yielding or elastic rubber, the same being attached to a rock-shaft, the bearings of which are fitted on springs and therock-shaft with a treadle attachment, all so arranged as to enable clothes to be washed in an expeditious and perfect manner, and without injuring the same by excessive or undue friction.]

41,191.—Sleeve Button.—Seba Bogert, New York City:

I claim the sliding catch, C, guide, D, and spring, h, combined with each other and with the head, A, and the hook, a, and notch, c, on and in the tongue of the button, substantially as herein specified.

[This invention consists in a novel mode of applying a sliding catch, a guide and a spring, in combination with the tongue or shank which passes through the holes in the garment and with the head of the button, whereby the fastening is made very secure strong, and easy of operation.]

41,192.—Refuse Ejector for Steam Engines.—Jefferson Brown, New York City, and Samuel R. Brooks, St. Louis, Mo.:

We claim ejecting or discharging ashes and other refuse matter from steam vessels by means of a receiver provided with a valve, and so arranged as to be capable of being used in connection with pressure exerted by a pump, steam or other suitable agency, as herein set forth.

41,193.—Churn.—Edgar Chipman, New York City:

I claim the agitators, D, one or more, constructed of chambers, f, attached to shafts, e, in combination with the oscillating or rocking cream box, A, substantially as herein specified.

[This invention consists in the employment of a rocking or oscillating cream box provided with weights or counterpoises, and also provided with rotating agitators having cells or chambers.]

41,194.—Washing Machine.—Edgar Chipman, New York City:

I claim the combination of the seat, C, with the rocking box, A, of a washing machine, arranged substantially as shown, to admit of the rocking or oscillating of the box by a slight exertion of the occupant of the seat, as set forth.