

English Iron-clads.

The progress of the *Royal Sovereign*, an English line-of-battle ship, cut down to be fitted with Capt. Coles' revolving shields, is thus described by the London *Engineer* :—

The *Royal Sovereign* shield-ship, being converted at Portsmouth, is making rather more satisfactory progress now than a short time since. The massive timber beds on which the towers, guns, and shields will revolve, are very forward, the foremost bed, in fact, being finished, and the manner in which it has been put together reflects the highest credit on the shipwright department of the yard. The circular rims of these beds are formed of bent strips of American white oak. The central iron cylinders, one of which will be fixed in the centre of each bed, as a supporting pivot for the guns and shields, have been commenced in the smithery, but each cylinder will take some weeks in its manufacture, owing to the want of the requisite mechanical means for carrying out such unusually heavy and peculiar work. In building up each cylinder two plates are first forged, each plate being 7ft 6 inches in length, 8ft. 7 inches in width, and 4 inches in thickness. They are bent, each longitudinally in a semicircle. After this last operation has been completed under the Nasmyth hammer, they are conveyed to the steam factory to have their edges bevelled, for welding, which is carried out in the smithery with "binding" iron. The rough cylinder thus completed, is afterwards turned inside and out in the lathes of the steam factory. No. 1 cylinder of the *Royal Sovereign* has gone through about one-half of this process. 210 hands are now employed upon the ship, chiefly on the beds for the guns and shields, fixing the iron beams of the upper deck in readiness for receiving the plating and planking, and the fitting of the main deck. The external planking round the stern is now completed, and a gang of men are employed, under the direction of the officer who has charge of the ship's conversion, working overtime to get out the molds for her armor plates as quickly as possible. The machinery for bending her plates is not yet in working order, but it has now reached such a stage that hopes are entertained of its being available in about ten days or a fortnight. The building which contains the hydraulic machinery and the annealing furnaces for preparing the plates has been built at the north end of the yard, near the shed under which the *Royal Alfred* is being converted from a 90-gun line-of-battle ship to a 40-gun iron-plated frigate. Workmen are now employed in preparing the launching ways and cradle for the launch of this ship, which is ordered for January next. Upwards of 200 hands are employed upon her, but great delay has taken place owing to the non-delivery of her iron beams and upper deck plating by the contractors. It is almost needless to say that as yet she has none of her armor plating attached to her sides.

Proposed Submarine Battery for New York Harbor.

Among the numerous plans of harbor defense which have been suggested to us, one by Mr. James Cochrane, of this city, possesses considerable novelty. This gentleman proposes to sink iron pipes between the forts at the Narrows, in New York harbor, or at other convenient points, from which charges of powder may be exploded under passing ships—the operator being within the pipe or tunnel, and informed by telegraph, or otherwise, of the position of the enemy's ships. An objection arises to this plan from the possibility which might arise of the tunnel being destroyed as well as the ship or battery. Since water is a non-elastic fluid, the force of the explosion would be severely felt, and it is doubtful whether such a plan could be safely adopted. We should like to receive plans and descriptions of other methods for protecting our cities from invasion by a foe.

Explosion of a Submarine Torpedo.

The Union gunboat *Cairo*, while ascending the Yazoo river, on the 11th of December last, ran on to a sunken torpedo which exploded, and so shattered the vessel at the point of contact that she sunk fifteen minutes afterward in forty feet of water. The character of her injuries is such that she cannot be raised even if the stage of water would permit it, and she will prove a total loss to the Government. No lives were lost by the catastrophe. The *Cairo* was one of the first fleet of seven iron-clads built for the West-

ern rivers, carried ten guns, and was one of the staunchest of the fleet. She took part in the battle of Fort Donelson, Feb. 16, 1862, and in the bombardment of Island No. 10, in the Mississippi river, in March and April. This is only remarkable as being the first instance on record of one of those machines operating successfully.

A Naval "What is It."

At the Brooklyn navy yard a queer nondescript, which was commenced last summer at the yard and left in *statu quo* ever since, is to be finished at once and launched. The New York papers state that on Tuesday the employes of the yard and a few privileged visitors were thrown into excitement by the appearance in the yard of a weapon as singular as the nondescript itself. It is a gun of the strangest aspect imaginable, and seems capable of discharging 60 pounds of shot. It is made of brass or composition, and its breech and muzzle rest on a frame or pedestal of the same material as the gun. There are none of the ordinary appliances for firing a cannon attached to it. And this irregular arm is to be the battery of the "What is It." The "What is It" is a huge box near fifteen feet high and twelve feet wide, or thereabouts. It is caulked so as to be almost air-tight, and has an internal diameter of about twenty-four feet, and looks very like a tunnel inside. The gun will be within, and although, in firing it will protrude through the port-hole, a porch or "portico" covers its muzzle. That is all that can be known of the "What is It," which may be a submarine battery, with an air-gun, or a Delano infernal machine, for all the outside public may know.

MISCELLANEOUS SUMMARY.

ARTIFICIAL LEGS DISTRIBUTED AMONG DISABLED SOLDIERS.—A Washington dispatch states that on Tuesday, for the first time, artificial legs were distributed among the soldiers who have lost their pedal extremities in the service of their country. These patients are all congregated in one hospital, the St. Elizabeth. The soldiers were much pleased with the new aids to locomotion, and many amusing scenes occurred among them while trying on the artificial legs. The first individual who tried one was lustily cheered by his companions as he paraded through the wards of the hospital. All the patients will be supplied in the course of a few days. No artificial arm and hand have as yet been adopted by the Medical Department.

OBITUARY.—We regret to learn that Mr. John Marshall, so long and favorably known as an engineer of skill and experience in this city, recently lost his life in China by the explosion of a defective boiler on board of an English steamer. Mr. Marshall had been for many years in the employ of most of our large steam lines, but of late, since the introduction of American traders in Chinese waters, he has resided wholly in those parts. Mrs. Marshall, who recently arrived out, was so much prostrated by the accident and her loss that she also was taken ill and died shortly after. In Mr. Marshall's death the country and company have lost the services of an efficient and energetic officer.

A GOOD RECORD.—The steamship *Bienville*, of the blockading squadron off Charleston, has been under steam 380 days out of 420 days, the period of time which elapsed before she left her station for repairs. This is most creditable to all of her officers, and it affords a remarkable contrast to the performance of those miserable transports which so nearly went to the bottom with all their passengers.

A CHINESE STOVE, one of the curiosities taken from the Emperor's summer palace at Peking, has been exhibited in London. It is a fine specimen of enamelling, consisting of a basin-like foundation, with a broad flat rim inclining upwards, upon which rests a dome-like arrangement formed of three bands and crowned by a brass knob, and from the lower portion of the basin three curtain or apron-like parts are pendent between elephant heads.

BEFORE the war broke out, 5,000,000 persons were supported in England by cotton, 30,000,000 spindles employed in the production of the yarn, and the capital absorbed exceeded \$750,000,000. Four-fifths of the cotton consumed in England—800,000,000 pounds—were American.

Manufacturing Items.

Manufacturing Profits.—The Everett Mills Company, Lawrence, Mass., lately held a special meeting, at which a report was read. The capital of the company is \$700,000, and the profits, up to last November, were \$138,000, or over 19 per cent. The materials and goods on hand cost \$215,000, and if sold at present prices would yield a very large profit.

New Foundry.—The *Commercial Bulletin* (Boston) states that a company has been formed, called the Boston & Fairhaven Iron Company, with capital stock of \$30,000, of which \$10,000 have been subscribed by citizens of Fairhaven. Having secured a good location, the company commenced vigorous operations last week. They purchased the old cotton factory on Laurel street, Fairhaven, known as the Acushnet Mill, which is 72 feet long by 40 wide, and 2½ stories high. To this, brick extensions are to be made on each side, viz., one story, 12 feet high and 40 feet long. A short railroad track will be laid from the rear of the works to the Fairhaven Railroad.

New Woolen Mill.—The *Kennebec (Maine) Journal* says that the erection of the new woolen mill of Colonel Thomas S. Lang, of Vassalboro', affords a remarkable instance of business energy. This mill is 200 feet long and four stories high, and required 400,000 bricks, &c. In twelve weeks from the time that Mr. Lang gave the orders for these bricks they were made, burnt and laid.

Thrifty Cotton Mill.—The Baltic Cotton Mill of A. & W. Sprague, on the Shetucket river, Conn., seven miles from Norwich, is 954 feet in length, in which there are in operation 1,334 power looms, with other machinery to match. Nine hundred and thirty-four of these looms are in one room. All the machinery is new, and comes forth from the workshop of the manufacturer with all the latest improvements. There are now employed about 900 hands, who earn \$12,500 per month, and manufacture at the rate of 12,480,000 yards a year.

A Big Shaft.—The Nashua Iron Company, Nashua, N. H., have lately forged a shaft for a new side-wheel steamer. Its length is 28 feet 8 inches; diameter 21 inches; weight 29,340 lbs. This company uses a steam hammer, the head of which weighs six tons. The shaft of the steamer *Golden Gate*, that was lately lost in the Pacific, weighed 54,000 lbs.

INTERNAL REVENUE STAMPS UPON PATENT DOCUMENTS.

UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., Dec. 15, 1862.

Notice is hereby given, that the following rules have been adopted for the purpose of conforming to the requirements of the Act of Congress of July 1st, 1862, entitled, "An Act to provide Internal Revenue to support the Government and to pay Interest on the Public Debt," and of the decisions of the Commissioner of Internal Revenue.

1. A stamp, or stamps, of the value of one dollar, will be required upon all Powers-of-Attorney dated after the FIRST DAY OF JANUARY, 1863, authorizing an attorney or agent to transact business with this office relative to applications for Patents.

2. All assignments of Patents, whether stamped or not, will be recorded, and the fact whether or not the instrument recorded is stamped will be noted upon the record.

3. No assignment directing a patent to issue to an assignee, or assignees, dated after the 1st day of January next, will be recognized by this office, unless every sheet or piece of paper, upon which such assignment shall be written, shall have affixed thereto a stamp of the value of five cents.

D. P. HOLLOWAY, Commissioner.

A Scientific Problem.

That "pioneer of the penny press," *The New York Sun*, maintains its issue at one cent per copy and with undiminished size, in spite of the high price of paper and materials. Its proprietor is evincing a degree of combined spunk and liberality for which he ought to be rewarded in the hearts of the great public, if not in his own pocket. *The Sun*, moreover, is one of the most interesting and readable papers which falls into our hands. It has the news of the day without unnecessary repetitions and prolix details. Its present daily circulation is between 60,000 and 70,000 copies.

Improved Grain Scourer.

The object of this invention is to obtain a machine which can be attached to the curb of a millstone, and which will scour and clean the grain and prevent the accumulation of moisture. It consists of a frame (Fig. 1) supported on pedestals, which contains two cylinders, A B; in these cylinders are the fan wheel and the scouring apparatus. There is also a hopper, C, through which the grain runs down to the second hopper, D, situated on the top of the frame. The lever, E, is jointed at one end, and carries a sleeve or sliding joint, a, in its center, which limits the flow of grain into the scourer below; the other end of the lever works through a slot in the pedestal. At the top of the machine are two pulleys secured to the shafts, which operate the fan and the scourers; these parts are driven by the belt, a". A rectangular box, b, forming an air passage, communicates with the scourers below and the fan above; a section of the same being shown at b'.

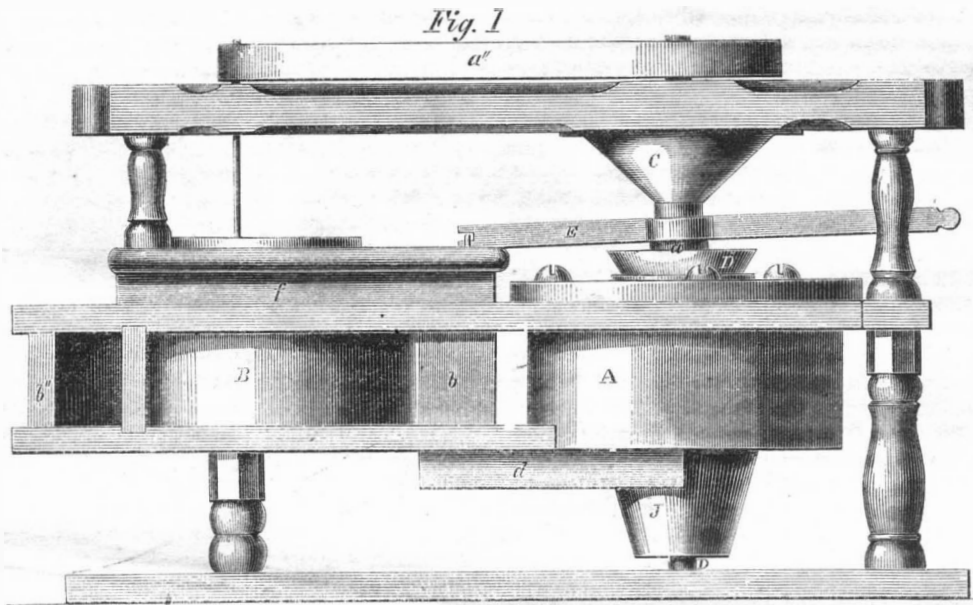
Fig. 2 shows a section of the machine, disclosing the working parts. The fan, F, in the cylinder, A, communicates, as afore-said, with the cylinder, B, by the air passage, indicated by the arrows. In the cylinder, B, are the indented plates, m, n and o, between which the

scourer, G, works; attached to its lower surface are a number of radial beaters, l, arranged similar to the furrows in a millstone. The diameter of the scourer, G, is less than the cylinder; but the beaters referred to extend beyond the scourer in such a manner as to nearly fill the cylinder. Through the plate, o, and the frame is an aperture in which a funnel, J, is inserted. There is, furthermore, an inverted truncated cone, I, situated in another funnel, J', whose sides are nearly parallel with the last-mentioned funnel, d, is merely a box inclosing the air passages leading from the scouring apparatus to the fan. The operation of this machine is as follows:—When it is attached to the curb, D" is the spindle of the stone, and it receives motion from the bail; when not so affixed, power is transmitted through an extra pulley on the shaft, D". The grain enters the funnel, C, passes down between the shaft and journal into the saucer, K; here the amount delivered to the scourer is regulated by the sleeve, a, which is raised or lowered as required; thus obstructing or permitting the free discharge of grain

from the saucer, K. The grain being thrown out centrifugally, from the last-named part, it flows down between it and the funnel D, through the apertures in L and M, on to the scouring machinery. The rapid motion causes the grain to work toward the circumference of the scourer, between the roughened plates, m and n; the upper one being stationary while the other revolves, and the grain is thus thoroughly scoured. As the grain works off the plate, m, it drops down to o, where it is caught by the beaters, l, and drawn over the last-named plate to the funnel, J, through which it falls on to the cone, I. This revolves rapidly, and throws out the grain centrifugally; it then meets, lastly, with the current of air generated by the fan, and, freed from all re-

fuse, drops into the eye of the stone. There is also a register in the box, f, which regulates the draught in the air passages. The cone, I, obstructing the funnel, J', causes the air to enter it from all directions, over the top of the stone and from the eye, thus preventing moisture from accumulating about the curb.

At the Globe Mills, Tecumseh, Mich., four of these cleaners are in use, placed over the stones. The action of the draught of air made by the fan removes the moisture about the stone, keeping it cool and dry. After the wheat is received into the mill, sticks,

**SIMPSON AND HAYDEN'S GRAIN SCOURER.**

straws and large objects in it are screened out. Next, it is acted upon by one of Shaw & Brown's improved smut machines, one of the best cleaners that has ever been brought to our notice. When this has been done, the wheat passes down into the garner, to all appearance perfectly clean; the grain is then received into the grain cleaner, and one of these will take out about two bushels of foul stuff out of every two hundred bushels that has undergone the operations of

atmospheric air, would be better; nor would I hesitate to give it in any form of disease in which the vital powers are depressed, since the cases recorded show that it relieves delirium and irritation instead of producing them."

Clean the Tools.

Nothing looks more slovenly or impairs the value of a tool quicker than the accumulation of dirt and

grease in its joints or about its bearings. The filthy oil that most manufacturers use, from a mistaken idea of economy, forms a glutinous mass outside of the bearings of lathes and other machinery, in which cast and wrought-iron dust and grit collect, to the great detriment of the working parts. Aside from this fact, the drill shavings and chips from cutters, if allowed to gather in the bed, or about the foot of the tools in question, give the shop a slovenly appearance, which greatly prejudices it in the minds of observing people. A lathe or planing machine that is clean will

do twice the work that a dirty one will, at less cost often; and over and over again we have watched some clumsy fellow wading around in chips or else catching one up every now and then just before it fell into some of the gears. Such a man cannot do good work, because his mind is distracted by side issues. In some shops there are rules which enforce the matter spoken of, but we should like to see it more generally practiced than it is at present.

The patent for this invention was procured, through the Scientific American Patent Agency, on October 14, 1862, for John Simpson and William Hayden, of Tecumseh, Mich. Further information can be had by addressing Messrs. Simpson & Hayden as above.

POSTAGE-STAMPS are now being redeemed with postage-currency at city post-offices.

BURNING CORN!—We learn that the Delzell Steam Mills, at Atlanta, are now run with corn for fuel instead of wood, that article being cheaper and more easier obtained than either wood or coal. We suggest the plan of using damaged corn.—*Lincoln (Ill.) Journals*