paid in this country than anywhere else on the globe, and a skilled workman can always command a handsome remuneration for his services. The relations of labor and capital are bound up in three words—they are identical—and they should work together for mutual advantage.

A TOUR AMONG THE IRON-CLADS.

A recent tour of inspection made in one or two of the largest ship-yards, where iron-clads are now being built for Government, reveals the fact that they are in a forward stage of progress, and likely to be entirely completed at no very distant day.

THE "DUNDERBERG."

So much has been said about this vessel, that it seems almost supererogatory to add anything more; nevertheless it may be interesting to know that the work of plating is going forward with dispatch, and that, from present appearances, the ship will be ready long before her engines. The carpenters' work, inside and out, is finished—that is, comparatively little remains to be done; odd jobs here and there not being taken into account. The engine kelsons are all laid, and massive ones they are, too; the coal-bunker and bulk-head surrounding the boiler compartment are also in place; and so far as the carpenters are concerned we presume the vessel might be launched in a week. The below-water-mark plates are being fixed on the side, a layer of sheathing paper being placed between the plates and timber. The plates themselves are being laid vertically, not horizontally as usual, and are 4½ inches thick in the middle, tapering to 3 and 3½ inches at the extreme ends.

The casemated fortress on deck is also completed, so far as the main structure is concerned. The plating is not applied, and only the massive timbers, which constitute the casemate proper, are erected on deck. The port-holes for the guns are about the size of an ordinary window-sash—say three feet square, a few inches more or less; they are ten in number: three on each side, two forward and two aft. In one of them a rough template of what we took to be a 9-inch gun was placed on a temporary carriage, for the purpose of seeing what depression could be given to the weapon.

The *Dunderberg's* stern aft projects monitor-fashion about 25 feet, we should say at hazard; not having measured it we cannot speak by the rule. To protect this from the force of the sea, the under side of the tail is laid with narrow joists some three inches apart. Seas on striking these joists will be broken into spray, and the shock of impact much weakened; the main timbers of the tail are above these slats, and exert their full strength in supporting the structure. The engines of the *Dunderberg* are building at the Etna Iron Works. They are to be horizontal cylinders, 100 inches in diameter by four feet stroke of piston, having slide valves; from appearances it will be a long time before they are finished. No day is fixed for the launch of the ship.

Mr. Webb is also building two other magnificent steamers for the Pacific Mail Steamship Company; one of them is 340 feet long, 44 feet beam, and 31 feet deep; and is to have a beam engine of 105 inches cylinder by 12 feet stroke. The vessel will be, in all respects, similar to the *Constitution*. The other ship is to be 300 feet long, 43 feet beam and 27 feet deep, intended to run on this side of the Isthmus. When these ships are finished, the Company will possess a fleet which, for speed and comfort, cannot be surpassed in the world.

At Greenpoint, we found

THE "PURITAN" AND "ONONDAGA."

The first is the consort of the *Dictator*, and the latter a monitor battery of two turrets, contracted for by Mr. George Quintard. The outlines of the *Puritan* are still covered by the scaffolding upon her sides; the armor on the hips or shelves is not yet in place, although the carpenters are busily engaged in preparing the way for it. The deck is not completely laid, although in a forward stage of progress. The lower parts of the ship are still in an unfinished condition; the engine room is in a state of chaos, and only the cylinder bolts, pillow blocks and some other parts, are in place. This part of the ship has been much delayed by the strike of the machinists, and also an accident which happened to a cylinder of the *Dictator*; one of these being smashed last winter, necessitated the substitution of one intended for the *Puritan*. Mr. Rowland informed us that, so far as he was concerned, the ship might be launched in forty days.

The *Onondaga* has a large force of mechanics employed on her, and will soon be ready for sea. The turret bolts do not go clear through, but a jacket two inches thick is slipped over the main part of the turret; between the jacket and the turret a rust joint is driven—that is, cast-iron borings mixed with sal-ammoniac and borax, or urine—this is driven in tightly between the jacket and turret. The whole structure is of the same thickness as the ordinary turrets. No shot can drive bolts into the turret with this arrangement, as they do not go through the outer jacket. The *Onondaga* has two 15-inch guns and two 200-pounder Parrotts. One of the 15-inch guns is turned off at the muzzle, and the port is enlarged two inches; by this means the piece can be run out of the port, as is ordinarily done. In a short time it is hoped that the vessel will be able to take her place in the fleet.

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:—

Gun Chassis.—This invention relates to chassis working on center pintles and to the application to the traverse wheels of such chassis of a system of toothed gearing operated by a hand crank or its equivalent, for the purpose of producing the traverse movement. In all previous applications of gearing in connection with the traverse wheels, the gearing has been applied only in connection with the wheels in the rear or with those in front of the chassis, generally with the former, and in case of the setting of the platform, and from other causes, the wheels to which the gearing has been applied have been liable to a failure to bear upon the traverse circles or segment rails, *in* which case the gearing would be useless, and the use of handspikes would have to be resorted to to produce the traverse movement. This invention consists in applying a system of gearing to both the front and rear sets of traverse wheels, in such a manner that both sets are caused always to operate together so that whether both sets or only one set has a bearing on the traverse circles or segment rails, the gearing will not fail to produce the traverse movement. S. J. Ashley, of San Francisco, Cal., is the inventor of this improvement.

Working Gun Carriages.—The object of this invention is to enable heavy guns, placed in turrets or otherwise, to be worked with the least possible number of hands and to reduce the recoil in the greatest possible degree. The invention consists, first, in the employment for controlling and checking the recoil of a gun carriage and for holding the same stationary while loading and at other times, of a self-acting friction brake or clutch detached from the carriage but geared therewith by a suitable system of toothed gearing. It consists, secondly, in the employment of the same system of gearing by which the gun carriage is geared with the aforesaid friction brake or clutch, for the purpose of running the carriage out for firing or of moving the carriage in or out for any other purpose. It consists, thirdly, in so constructing and combining the parts of the aforesaid friction brake or clutch, and so applying a movable stop in combination with them, that by the mere shifting of the stop, the brake or clutch is brought either to a condition to check the recoil or secure the carriage, or to a condition to permit the carriage to be run out or in freely. Capt. John Ericsson, of New York city, is the inventor this improvement.

Fan Blower.—The principal object of this invention is to make a fan blower which will produce the same effect when worked in either direction in contradistinction to ordinary fan blowers, which work in scroll-shaped cases, and consequently act in a different manner when turned in one than when turned in the opposite direction. The invention consists in an annular air chamber surrounding a conical cavity, and communicating with the same at its apex in combination with triangular wings working in said double conical cavity in such a manner that, on imparting to the wings a rapid rotary motion, the air passing through the central openings into the double conical cavity, is forced in the annular air chamber, whence it is conducted by a suitable tube or tubes to the place or places where the blast is to take effect. William Winter, of Plainfield, N. J., is the inventor of this improvement.

Saccharine Liquid Evaporator.—This invention consists in the employment of two or more pans placed one above the other in combination with two or more furnaces, suitable flues and dampers, in such a manner that the heat from the first or lowest fire can be made to strike the first pan, or turned off from that pan and made to strike the second pan or any other pan above the first, and the heat from the second fire can be made to strike the second or any other pan above, and so on, and consequently the second pan can be exposed to the combined heat of the first and second fires, the third pan to the combined heat of the first, second and third, or of the second and third fires, and so on, and thereby the heat of each pan can be graduated to any desired extent, and the evaporation of the juice effected in a short time, with comparatively little fuel and labor and in the best possible manner. J. C. Chesney, of Abingdon, Ill., is the inventor of this improvement.

Burglar-proof Safe.—This invention consists in interposing between the walls of a safe a series of balls of cast-iron or other hard metal or material, arranged in such a manner as to be enabled to work, play, or turn freely between the walls and present a perfect barrier to a drill, router, or other burglar tool; the balls, in consequence of being allowed to turn freely, preventing a drill or router from acting upon them, and being of different diameters so as to effectually preclude a drill or router being used without coming in contact with a ball. The invention also consists in the employment of a flange or plate applied to the safe and in connection with the outer plates of the same, in such a manner as to prevent the outer plates from being wrenched or torn off from the same. The invention further consists in the application of a steel plate to one of the inner walls of the sides of the safe, for the purpose of protecting the inner plates or prevent them being broken and dislodged should the outer plates be wrenched off from the safe. Isaiah Rogers, of Washington, D. C., is the inventor of this safe.

Weighing Scales.—The object of this invention is to obtain a scale for weighing without the use of detachable weights, and one which will admit of being readily counterpoised or balanced at any time, when not properly in a balanced state, so as to insure perfect accuracy. To this end the invention consists in attaching, by means of a rod, a plunger to one end of the scale beam, said plunger being immersed in quicksilver or other fluid or semi-fluid contained within a suitable vessel, said fluid or semi-fluid serving to buoy up the plunger and causing the latter to serve as a counterpoise of varying capacity according to the size of the articles to be weighed. H. W. Catlin, of Burlington, Vt., is the inventor of this improvement.

Rice-polishing Device.—This invention relates to a new and improved machine for polishing rice after the same has been divested of its hulls. The object is to obtain a machine of the class specified which will be more efficient in its operation than those previously devised, by admitting of the free discharge of the dust or flour from the screen, so as to prevent the choking or clogging of the same; also by preventing the wire-cloth of the screen from being bent or getting out of proper shape or form; and further, by having the polisher arranged so as to be capable of being adjusted, and giving the screen a rotary movement as well as the polisher. Silas Dodson, of Bloomsburg, Pa., is the inventor of this improvement.

Port Closers for Forts and War Vessels.—This invention consists in the employment, for the purpose of closing the ports of vessels-of-war or the embrasures of forts, of two rollers, each being made to rotate independently of the other and provided with a cavity in one side, so that by turning the rollers in such a position that the cavities face each other an opening is obtained which is not wider than the muzzle of the gun and allows of giving to the gun any desired elevation or depression, and at the same time said rollers allow of training the gun to an angle of 45 deg. or more with the beam, and if the rollers are both turned in such a position that the cavities face the interior of the vessel or fort, the port or embrasure is firmly closed. The invention consists also in the application of semi-circular flanges embracing