

Improved Ditching Machine.

The invention herewith illustrated is intended for a subsoiling and ditching machine, and consists of the steel teeth, A, secured in the frame, B; these teeth have square shoulders below the frame, and are fastened in their places by keys or their equivalent, on top of it. They are so disposed in the frame as to make a wide thoroughly-drilled track or furrow, equal in width to the lateral distance between the teeth on the opposite sides of the frame, and not a number of narrow single drills or furrows. The team, either single or double, as circumstances require, is attached to the draught chain, C; when a side draught is desirable the chain is detached from the central hook and connected with the clevis, D, and the direction of the apparatus is controlled by the laborer from the plow-handles. The whole machine is only four feet long, and weighs about 270 pounds. The teeth are about 12 inches long below the plate.

The inventor says that this implement is used in subsoiling by following in the furrow of a common plow. It loosens the ground 12 inches deep and wide, and leaves it finely pulverized. In the work performed, the inventor states that it is far superior to any similar machine, and is much easier for a team. In ditching it will loosen the soil or hardpan, and in one day it will perform more work than fifty men could in the same time. This invention was patented on March 31, 1863; for further information apply to the inventor, W. D. Strowger, Oswego, N. Y. (where the machine can be seen in operation), or to Eben Mason, 101 Water street, New York.

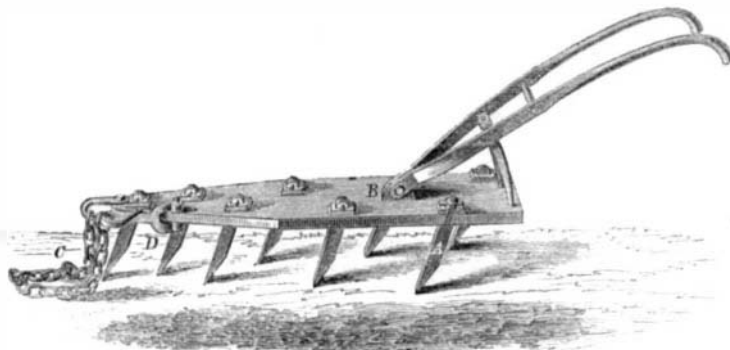
Naval On-dit.

The Navy Department has received the following proposals from responsible ship-builders for the construction of the new ocean iron-clad navy. The plans, however, will not be ready for months to come, and some three years will have to elapse before the vessels can be fit for use, thus rendering it certain that 1866 will come before the formidable craft can be ready for service. Although the bids were to close on the 18th of April they are still open, and will base for some days. The parties who are willing to build are:—Messrs. Merritt & Sons, Philadelphia, one vessel; Archibald and Reany, Chester, one vessel; Thomas F. Rowland, Greenpoint, one vessel; Romeo Underhill, New York, one vessel; the Atlantic Works, Boston, one or two vessels; H. M. Figaro, Philadelphia, one vessel. A Mr. Tufts offered to build one on his own plan. The price put in for these vessels ranges from four millions one hundred thousand to four millions four hundred thousand dollars; the estimate of Mr. Underhill, of New York, being the highest. If ten of these vessels were built, at two and a quarter millions each, they would cost nearly a year's navy estimate—over sixty millions—before their armament and general wants could be supplied. The dimensions of this fleet proposed for will be greater than those of any iron-clad yet conceived. It was learned in the engagement with the Charleston forts and that with Fort McAllister that the chief danger caused to the *Monitors* in both those fights arose from the bolts, which secured the iron plates, being driven inward by the force of the impact, thus occasioning the serious wounding of the inmates. Aside from these defects the *Monitors* have been proved invulnerable to the heaviest metal yet thrown against them. The remedy for this defect has already been discovered, is patented, and has received the approval of many scientific men. Mr. Maximilian Wappich is the inventor of a method of fastening iron plates upon vessels, turrets or forts, by a process which entirely obviates the use of bolts extending through the outer plate of the armor. Each corner of the outside plate is turned at an acute angle, and forms a bolt of length sufficient to extend to the interior of the vessel or turret, where it is secured by a key. In the center of the plate are two similar bolts, which secure the middle of the plate. The iron forming the inner sheathing is secured by means of those bolts, and thus the external surface is unbroken and not weakened by bolt holes. The

joints of the plate are made to fit perfectly, and when all are keyed together, the union is more perfect and stronger than could be effected by riveted bolts.—*Philadelphia Inquirer*.

Photographic Paper at High Altitudes.

Mr. Glaisher and Mr. Cox, aeronauts, made another ascent lately in England, reaching the height of four miles and a half. They were nearly carried out to sea, and only saved themselves by a rapid descent—falling the last two miles in four minutes. The most curious fact elicited by this ascent is, that the action of the sun's rays upon "sensitized" photographic paper is much less at great altitudes than near the earth's surface! Mr. Glaisher took with him slips of such paper, and arranged that similar slips should be exposed at Greenwich Observatory, and the amount of coloration noted simultaneously



STROWGER'S PATENT DITCHING MACHINE.

every five minutes. The report tells that the paper in the balloon was exposed to the full rays of the sun, with this extraordinary result—that, at three miles high, the paper did not color so much in half an hour as in the grounds of the Royal Observatory in one minute! This would seem to indicate that the chemical effects of light are largely due to its passage through the atmosphere, or at least to the density of the atmosphere through which it has recently passed.

MISCELLANEOUS SUMMARY.

The New Orleans *Picayune* states that 14,151 sacks of rice were sent from Plaquemine parish to New Orleans in 1862 and 1863, against 13,864 in 1861 and 1862. A sack holds 100 pounds of clean rice. A bushel weighs from 45 to 58 pounds of clean rice. The weight of a barrel of rough rice is 160 pounds. An acre of land planted with rice, on a general average, yields about fifteen barrels of rough rice. Two barrels of rough rice make one barrel of clean rice, weighing 200 pounds, net. For the last three or four months the consumption of creole rice in New Orleans has averaged 500 sacks per week. April prices—6½ @ 8c. for No. 1; 5½ @ 6c. for No. 2; and 2½ @ 3c. for No. 3.

We learn from the *Mining Gazette* (Houghton, L. S.) that several rich lodes of copper have recently been discovered in the Portage district. The editor says: "At every point where it has been uncovered, the rock broken out is well filled with shot copper, and in fragments of the outcrop pieces of barrel-work weighing ten and twenty-five pounds have been found. Experienced men, who examined the vein, pronounced it the richest show they have ever seen in the district, not even excepting the splendid appearance of the Pewabic lode, when first opened."

The St. Louis *Republican* states, as one of the facts illustrating the magnitude of the war, that 31,184 horses and 19,727 mules were purchased in that city for the army during the year ending March 31, 1863; they cost \$5,911,000. Most of the animals were brought from Illinois and the northern parts of Indiana and Ohio; Missouri having been exhausted early in the commencement of the rebellion.

The gunboat *Penobscot*, Commander De Haven, is now nearly ready for sea again. The propeller of the *Penobscot*, as with some others of her class, has proved too small for her engines. The fact that her fires were out less than ten times, and that her screw made five millions six hundred thousand revolutions, shows the exhausting wear and tear to which our blockaders are subject by the nature of the service.

COUNTING CHICKENS BEFORE THEY ARE HATCHED.—The Charleston *Courier* is in trouble as to how Charleston can get lumber to rebuild the Palmetto city. The Confederate Government must monopolize all the railroads for many months after peace is declared and independence secured, to get cotton to the seaboard, to send to Europe to pay Confederate loans, says this learned scribe, and in the meantime Charleston must suffer for the want of lumber. If Charleston is not to be rebuilt till the independence of the Southern Confederacy is established, the *Courier* man need not worry about lumber.—*Sunday Dispatch*.

SEVERAL more of those machines for removing torpedoes in channel-ways have been despatched South, and Commodore Dupont has now the means at hand for destroying the torpedoes. The length of each machine is about fifty feet.

INCREMATION.—The human body is, in general, so little prone to combustion, that it requires a very considerable time, with even an abundant supply of fuel, to reduce it to ashes. Dr. Christison (the eminent medical jurist) states that the quantity of wood required to burn the body of an adult is about two cart-loads. The last man burned at the stake in Europe (except one in Spain) was in Normandy, and it required two large cart-loads of faggots, and several hours to effect complete combustion. Among the Romans, so much wood was required to consume a body, that it was too expensive a mode of disposing of the dead to be adopted by the common people.

"We learn from an Eastern exchange that ten thousand cows are required to supply Boston with milk;" so says the *Sunday Atlas*, which also facetiously remarks: "The number of hydrants required to furnish New York with the same material does not seem to be mentioned."

The Lynchburgh *Virginian*, commenting upon the statement that tenpenny nails are passing as currency at five cents each in the upper part of North Carolina, remarks: "We have no such metallic basis for our currency here. Our circulating mediums are grains of corn, representing five cents, and quids of tobacco, representing the decimals."

ABOUT 20,000 dozens of spools of "ivory-finished" spool-thread are manufactured weekly by Green & Daniels, Pawtucket, R. I. Their numbers range from 16 to 100. All the fine numbers above 60 are made from Sea Island cotton.

Maple Sugar.

We recently questioned the legality of selling maple sugar as confectionary and taxing it as a necessary article. We find the following item in reference to this subject from the Revenue Office:—

TREASURY DEPT., OFFICE INTERNAL REVENUE, WASHINGTON, April 11, 1863, }
The production of maple sugar is a manufacture, and liable to a duty of three per cent *ad valorem*. Maple sugar, when compounded with other sugars or wrought into confectionary, is liable to the same tax as is imposed by the amendment to Section 75 (see Act of March 3d) upon other confectionary. EDWARD McPHERSON, Deputy Commissioner.

COMPLIMENT TO MR. ALBAN C. STIMERS.—Mr. Alban C. Stimers, the naval engineer who was in charge of the *Monitor* at the time of her memorable attack on the rebel steamer *Merrimac*, has been presented with a service of silver in consideration of his efforts on that occasion, by some of the principal men of this city. Many prominent names in the community were subscribed to the fund; among them we notice Wm. H. Aspinwall, John Ericsson, Howard Potter, and others. Mr. Stimers responded to the compliment in a brief note, expressing himself as highly flattered and pleased by the compliment.

THE WATERBURY BRASS MILLS.—We have recently made the tour of some of the principal brass-working manufactories in Waterbury, Conn., and shall devote a considerable portion of our space, for some time to come, to the various branches of the business, and the operations by which buttons, lamp-burners, metallic business cards, percussion caps, thimbles, &c., are produced. These articles will be found to contain popular information and will repay perusal.

Improved Patent Governor.

Since the days of Watt up to the present time inventors have sought, and are still seeking, for an apparatus which shall effectually control the movements of the steam engine or water wheel. A machine at once complete and simple in all its parts, is the first requisite. The number of such appliances is almost countless; the field for invention is still open, and chances exist for further improvement. No matter how good a governor may be, some other inventor thinks he can devise a better one, and it is owing to this very spirit that so many improvements have been made. The governor here-with illustrated is, we are informed, an extremely efficient one; and is of that class wherein a piston is balanced by a column of liquid, either oil or water; and the changes caused by the unequal supply afforded it, are distributed to a suitable apparatus for increasing or diminishing the supply of steam to the cylinder.

Fig. 1 is a perspective view. The case, A, contains a fan wheel driven by the spur wheel, B, through the pinion, C. This wheel and its shaft are in turn driven by a belt passing over the pulley, D. The vibrating lever, E, is fastened at the bottom to the bed-plate, F, and has a slot in the middle, through which the shaft, G, passes. On this shaft there is an eccentric, H. (See Fig. 2.) This shaft and its eccentric run in the bearings, I L. Let us now return to the case, A; the upper portion of this has a chamber, J, which communicates by a port, L, (contained inside of the casting) with the cylinder, K. This cylinder is not of the full diameter indicated by the outside diameter of the casting, but a part of the space is occupied by another port, L', just mentioned. The slotted crosshead, M, is attached to the piston rod of the internal cylinder, and has a pin, N, working in it; said pin being fastened to the notched lever, O; the small rod on the right is simply a guide for the piston. On the bed plate is bolted the upright bar, P, having a slotted head, in which the plate, Q, also slotted, slides freely. These constitute the principal details of the machine. The operation is as follows:—The case is filled with oil until it completely surrounds the fan. Motion being transmitted to the fan through the gearing, a portion of the oil is forced up the covered passage, L, (see Fig. 2), to the piston, S, in the cylinder, K. The supply of oil to the under side of the controlling piston is, of course, limited by the speed of the fan; the fan is driven directly from the engine. It will, therefore, be apparent that when the speed of the engine decreases, that of the fan will also slacken, and the piston in the cylinder will fall. The notched lever receives a vibrating movement from the eccentric on the shaft, and as the piston falls it carries the lever down with it, while the eccentric thrusts it forward until the notches strike the slide, Q, to which the throttle valve is connected, and open the same, consequently admitting more steam to the cylinder. Should the engine run too fast, the reverse of these operations takes place, decreasing the speed of the engine. The motion of the piston in the cylinder is very free and even, and any oil that is forced past it runs through an aperture in the cylinder down the port, L', to the receiving tank, J, again (indicated by dotted lines in Fig. 2), and is thus worked over and

over. The lever is balanced by the counter-poise at the opposite end. This governor has been attached to many water wheels and steam engines, and is now working on them, giving great satisfaction.

They are also much used in a large number of factories and workshops throughout the country, and the proprietor of the patent is now actively engaged

A patent was procured on January 7, 1862, by James E. Gillespie, of Trenton, N. J.; further information can be had by addressing him as above, or Todd & Rafferty, 13 Dey street, this city.

Gardens of Mechanics.

We want to encourage our mechanics as much as possible to cultivate small garden-spots, for the production of table vegetables; they will also find much satisfaction in the growth of some choice varieties of flowers. These two things combined give to the dwelling and the grounds adjacent a home-like appearance, besides adding to the luxuries of the table. A person in our employ, who owns a snug place near New York, raised, last year, 76 bushels of excellent potatoes on a piece of ground measuring only just $\frac{3}{16}$ ths of an acre. In addition to this useful esculent, he cultivates choice fruits and flowers; the latter in great profusion. We often find, upon reaching our desk in the morning, a fine bouquet of beautiful flowers—such as Shenstone might covet—plucked from vines and shrubs grown in his garden. In addition to the floral produce of summer culture, we are often greeted with choice bouquets in mid-winter from the same source. Our friend has a skillfully-arranged greenhouse attached to his dwelling, which is kept warm in winter by the waste heat from the cooking-range. It has required some years to arrange all these things—they have been done gradually, and they are now more than paying all outlays of time and money.

PROSPEROUS MECHANICS.—If we look around within the circle of our acquaintance, we shall find that many of our most respectable citizens have learned mechanical trades. Some of the first merchants of this city were once mechanics; and many of our professional men, when in their youth, belonged to the same honorable fraternity. How did they achieve success? It was by the cultivation of their minds in useful knowledge—by a proper feeling of self-respect which led them to form habits of industry and frugality, and thus they have secured the respect and confidence of their employers and risen to affluence and high social positions. The same path of honor and usefulness is open to every mechanic in our republic, and we hope these examples will stimulate them to strive to be respected for their own worth and usefulness.

THE Tycoon of Japan has sent a present to President Lincoln, consisting of a coat of mail. An umbrella-like helmet, of fabricated sheets of steel and copper, shields the head, while a vandyke of interwoven silk cord and lacquered net-work falls gracefully upon the shoulders. The outside of the helmet is profusely ornamented with chrisanthemums of gold, in beautiful open-work, upon black lacquer, with now and then a trimming of purest silver. The visor is of copper, lacquered in scarlet and brown. The armlets are of the finest copper chain work. The breastplate is of copper intersected with parallel strips of lacquer, and woven together with delicate wire and golden cord. A sort of kit accompanies the armor, and with lacquered leggins grotesquely formed completes the set.

GILLESPIE'S PATENT GOVERNOR.

Fig. 1

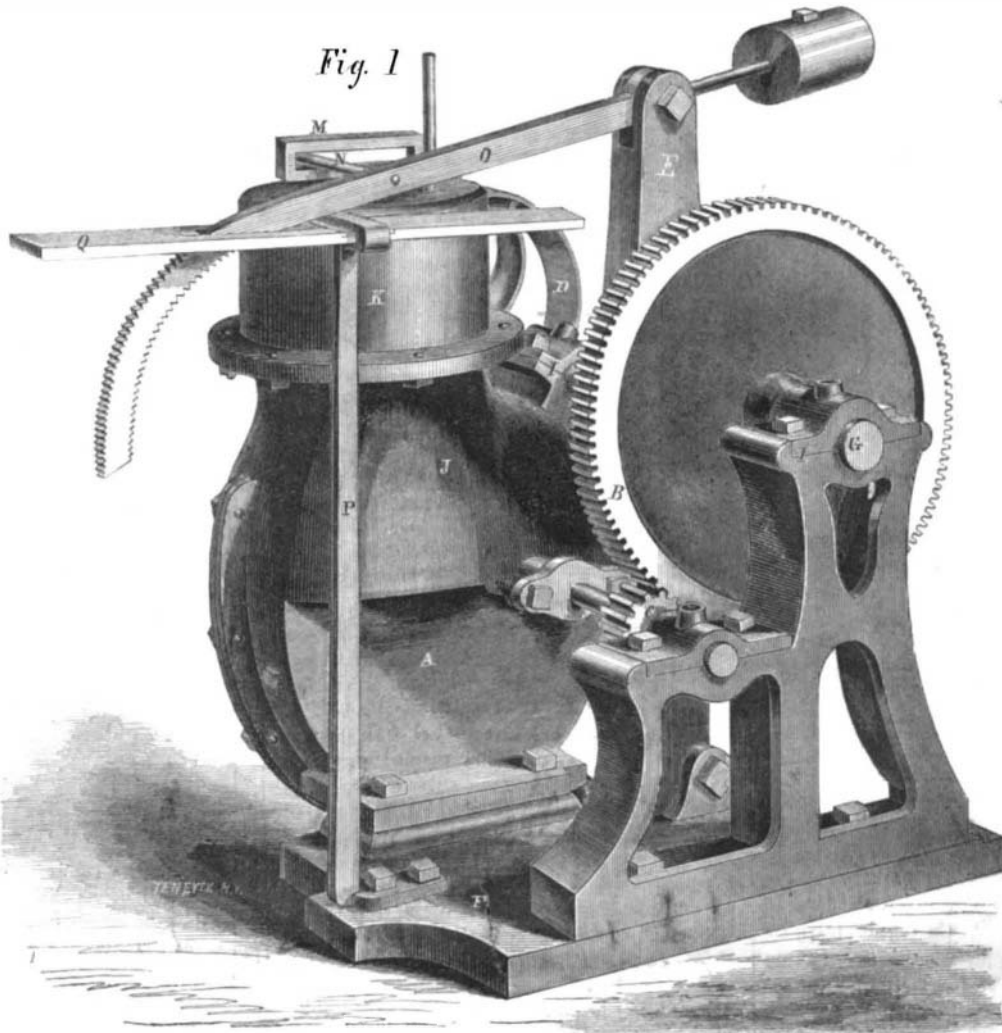
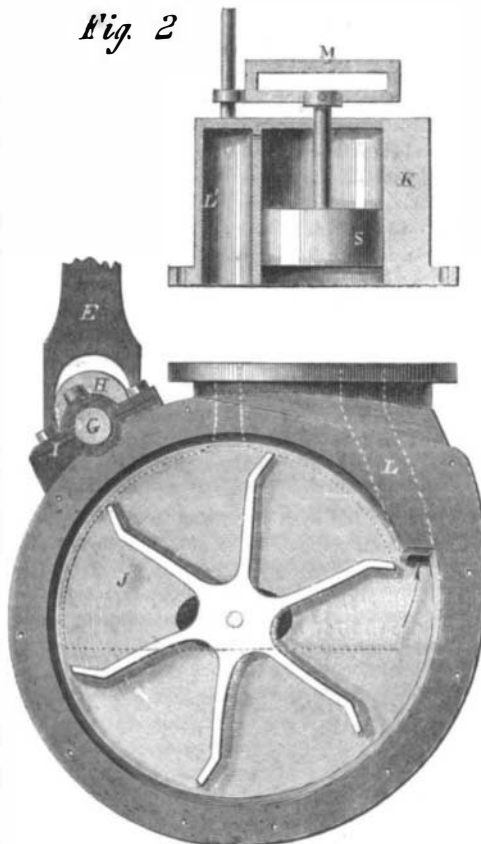


Fig. 2



in manufacturing them at Trenton, N. J. We have been assured that no complaints are heard from them. Valuable improvements have been already made in the machine, which, not being secured by patent, we have refrained from illustrating.