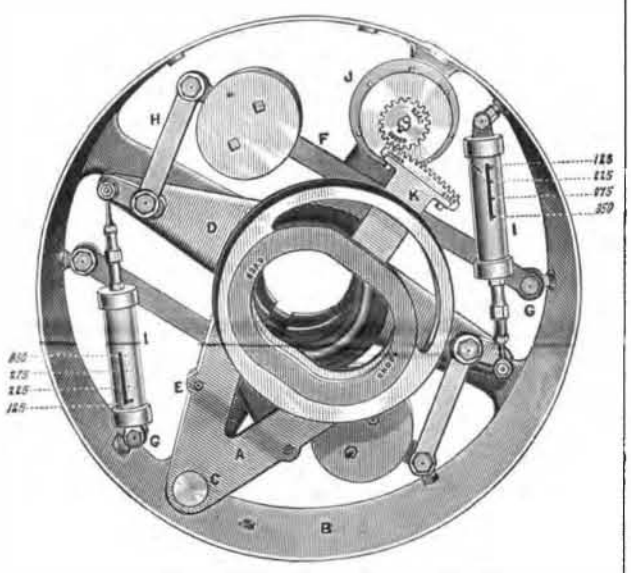
THE TAYLOR NEW AUTOMATIC STATIONARY ENGINE.

The competition among builders of stationary engines since electricity has attained such wide use is something almost phenomenal, and the improvements that have been made to secure a higher efficiency, more exact regulation, and smooth action at high speed mark a wonderful advance in steam engineering during the last ten years. The old fashioned cut-off has been almost entirely superseded by positive motion mechanism, and improvements in the governor have necessarily followed in rapid succession, and with these modifications there has also been a decided gain in simplicity, compactness, and working economy. One of the latest examples of improved stationary engines of this class, as made by the Taylor Manufacturing Company, of Chambersburg, Pa., is shown in the accompanying illustration. Its good proportions, both in general dimensions and arrangement of parts, and the proper form and sizes of details for the best uses of the forces developed, at once indicate its probable high efficiency for a large variety of work.

The primary elements of a good engine, accurate workmanship and the use of the best material, are points especially attended to, all parts being worked from carefully made templates and gauges, making them thoroughly interchangeable, and lessening the work of fitting to a minimum when the parts are brought together. The bed is heavy and rigid; its peculiar shape provides ample metal and strength above and below the central line of strain. The guides and head of frame are bored at the same time, thus insuring perfect alignment. The bearing for crank shaft is cast solid with the bed, and cannot spring out of line; it is lined with anti-friction metal, and being very long, will not heat. The base of the bed is designed to catch all oil from engine, and prevent its running down over foundation. The cylinder is secured to



THE TAYLOR ENGINE GOVERNOR.

end of bed, and overhangs; it is cast solid with steam chest, which is at the bottom of cylinder, so that all condensation passes off from bottom of steam chest.

The steam chest has steel bushings, in which the piston valve works. Should they become worn so as to affect the proper action of the valve, and leak steam, it only requires a short time to take them out and put new ones in. The valve is of the hollow piston type, fitted with packing rings. The edges of the rings are made to serve for the proper distribution of the steam, instead of the solid end of the piston. The valve is surrounded in the center, between the packing rings, with live steam, and exhausts through the inside, and, with the packing rings working in the steel bushings, will run without loss of steam from leakage. The steam ports are large and direct. Crank shaft and crank pin are of forged steel, and bearings are large and proportioned to work under the heaviest duty the engine can perform without heating. Crank disk is cast with counterbalance to balance weight of crank pin and connecting rod. Connecting rod is of best hammered iron fitted with gun metal boxes lined with anti-friction metal, and adjusted by a wedge inside the strap, which is operated by two bolts, so that when key is set the bolts secure it against working loose while running, and the straps surrounding the boxes are securely bolted to the rod. The crosshead has liberal bearing on guides, and is adjusted by sliding gibs. Piston rod is of steel, and secured to crosshead by a threaded end jam nut and key. Crosshead pin is of forged steel, set directly central of gib bearing on guide. Piston is fitted with two self-adjusting packing rings. All valve rods, eccentric rods, and pins are of forged steel. The eccentric rod is provided with a gun metal connection to rocker arm that can be quickly released, and valve operated by hand to keep engine off center. Rocker shaft is of steel working in a half box that is lined with anti-friction metal.

The governor of this engine is of novel construction, its action on the valve being instantaneous and positive. In the illustration, A is an eccentric pivoted to the arm of wheel, B. At D is sleeved arm that revolves on hub of wheel, B, and is connected to eccentric by links, E. The weighted lever, F, is pivoted to rim of wheel, B, at G, and by means of link, H, to arm, D. The weights are secured to lever, F, and by means of their centrifugal force act on the eccentric through the arm, D, and links, E, which links being connected close to the pivoted point of eccentric at C, there is only a small movement of weights required to produce full throw on or off eccentric. J is a paddle wheel or vane case, secured to arm of wheel, B, with toothed wheel in position, and connecting the paddle wheel directly to the eccentric by the toothed arc, K. The springs, I, act by compression, and when speed of engine is lessened, they overcome the centrifugal force of the weights, and increase the throw of the eccentric, which admits more steam, and restores the engine to its proper speed. The paddle wheel or valve revolving in the closed case, J, which is filled with oil or other liquid, is intended to act to prevent racing caused by sudden change of load, the movement of the weights propelling the wheel so that a slow movement is imperceptible. and will not be resisted by the oil, as would be a rapid one. A change of size of gear that propels the paddle increases or decreases its motion, but its action can only be coincident with that of the weights. The eccentric is connected directly to the valve, so that its action is instantaneous. The regulator can be adjusted for any speed of engine, and is independent of the fly wheel.

The company has a 16x24 engine of this type at the New Orleans Exposition, rated from 125 to 200 h. p., and has also sixteen other engines and two saw mills there, making one of the largest and finest displays in this line of any one firm at the exposition.

Patents on this engine were granted May 5 and May 26. For further particulars address the Taylor Manufacturing Company, Chambersburg, Pa.

Echoes from the Pulpit.

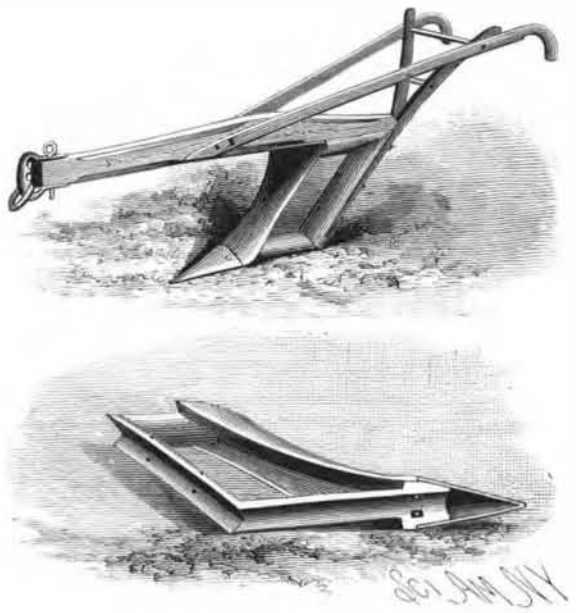
On Sunday, May 17, two of the widest known, and Brooklyn's most celebrated, divines made the following remarks during their morning discourses:

Mr. Beecher said: "I shall not be with you many more of the fast-going years. Steadily for more than fifty years I have been under the influence of the great doctrine of evolution. In my early preaching I discerned that the spirit of true religion was represented by the leaven of the mustard seed. Then I found that science had a larger view, and that this was only one application of a great doctrine. Now there is not an educated man under fifty years who is not substantially an evolutionist. The application of the fruits of evolution to all forms of doctrine—this will be the closing work of my life. I propose to discuss the questions of the Divine nature, human sin, the atonement, from the standpoint of evolution, and in the light that falls from that philosophy. I wish I could write it out, but I am beyond that."

Mr. Talmage said from his pulpit: "There sprang in Yucatan, on this continent, an herb that has spread throughout the world. In the fifteenth century it crossed the Atlantic, and captured Spain and afterward Portugal. Then the French ambassador took it to Paris, and captured the French empire, and Walter Raleigh took it to London, and captured Great Britain. Nicotiana is the name ascribed to that herb by the botanists, but we all know it as the exhilarating, elevating, paradising, nerve-shattering, dyspepsia-breeding, health-destroying tobacco. He could name at least five ministers whom he had known to die from cancer brought on from the use of tobacco. Over many a minister's grave the epitaph might with truth be written, 'Here lies a good and pious servant of God who died from too much Cavendish.' (Loud laughter.) In all the churches—Episcopal, Presbyterian, Congregational, Baptist, Methodist—there was need for reform. Tobacco was to be denounced also because of its cost. Give him the $15,000,000 a year, and he would clothe and feed all the poor in the country."

IMPROVED PLOW.

In the plow herewith shown, the point is detachedly connected by any suitable means. That section form-



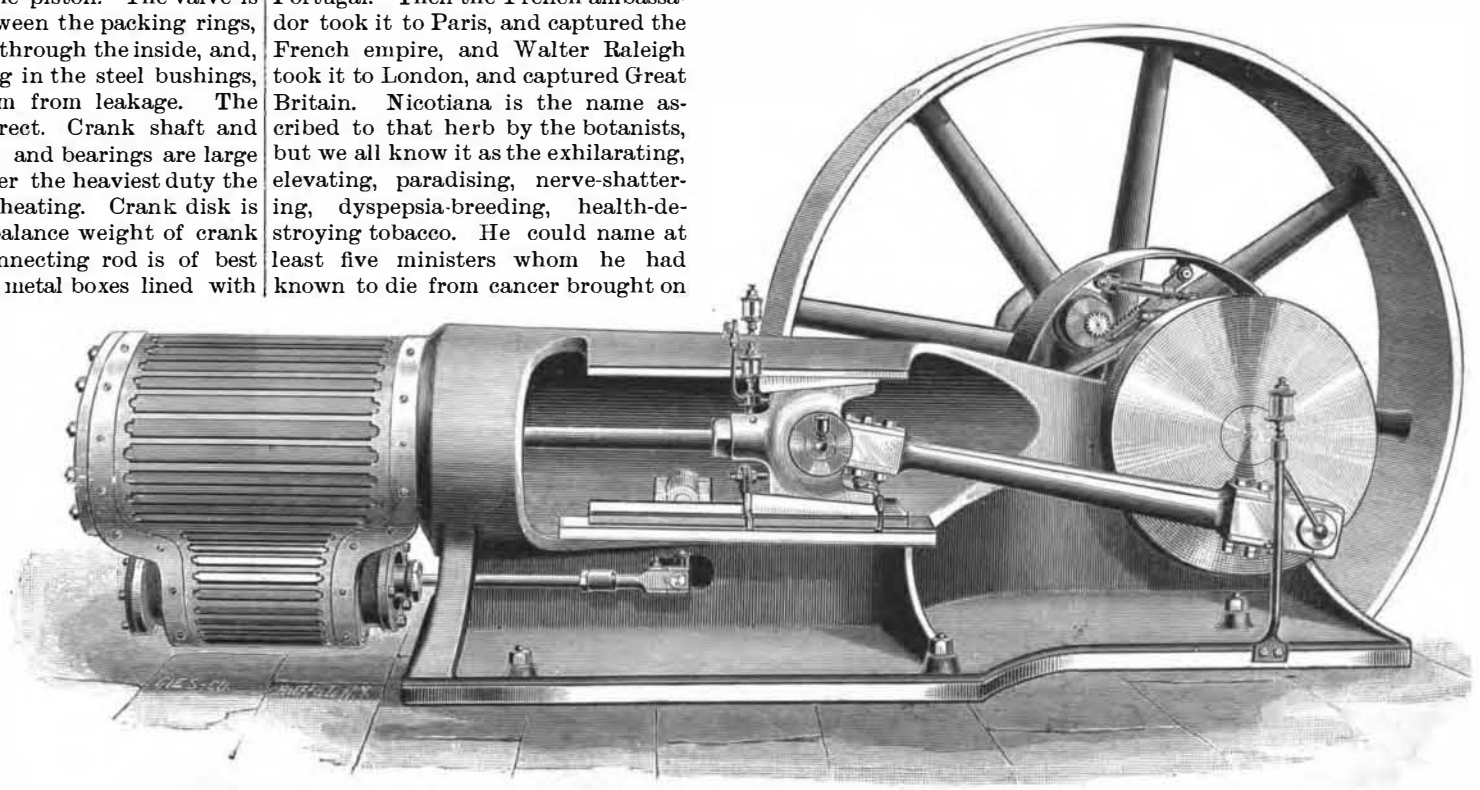
THE CLEVELAND PLOW.

ing the front of the plow has angular sides to cut and split the earth to be broken, also subsoiling and disintegrating the ground without simply turning it over. The effectiveness of this section is materially increased by its being curved inwardly. The frame is formed with a top groove and rear groove, which not only decrease the weight, but permit of the wooden attachments being held more securely and firmly in position, with the aid of screws or rivets. A groove is formed in the bottom of the frame, to enable the plow to be more easily and effectively guided in ground that is stony or otherwise difficult of management. This frame may be cast in one piece, with the front curved portion of the plow, or made in sections and afterward connected together in any approved way.

This invention has been patented by Mr. N. A. Powell, of Lenoir, N. C.

Tapering Holes.

Some of the best bolt fitting is being done with tapering holes instead of straight holes. The holes are drilled straight, but are reamed with a reamer that is slightly tapering. The bolts are turned by fixed gauge to fit. The taper is really more than one one-hundredth of an inch—or on three inches, three one-hundredths of an inch—but is just sufficient to make a perfect fit when the bolt is home, and is enough to allow a slight tap of a hammer to start it back. Better fits can be made in this way than by straight holes, and work can be put together and taken apart much more rapidly.



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