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NEW SERIES.

Improved Horse Rake.

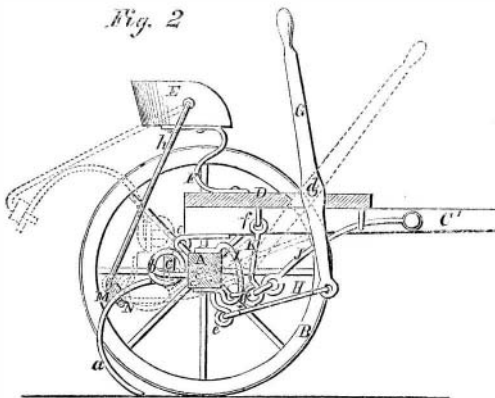
The horse rake here illustrated is kept in position while in operation by the combined action of the driver's weight and the power of the horse when exerted to draw the machine. The construction will be understood from an examination of the drawings, of which Fig. 1 is a perspective view, and Fig. 2 is a vertical section. Similar letters refer to the same parts in both figures.

The axle, A, forms the rake head in which the wire teeth, *a*, are inserted; the teeth having a coil to increase their elasticity as usual, and the wheels, B, running loosely upon the ends of the axle. The driver's seat, E, is supported by an elastic rod, F, which is secured to the platform, D; this platform being bolted firmly upon the thills, C. The thills are attached at their back ends to the upper-back corner of the axle by hinges, *c*, and it will be seen that this position of the hinges causes the weight of the driver to prevent the axle from turning and releasing the teeth from their hold upon the load of hay which they may have gathered.

The turning of the axle is also prevented by the mode of attaching the horse to the machine. The whiffle tree, I, is connected with the axle by the rod, through the medium of the link, *g*, and long clevis, L; this clevis being secured firmly to the front side of the axle at its middle. As while the hay is being gathered the link, *g*, is at the lower end of the clevis, L, and below the level of the axle, the strain of the horse upon the rod, J, tends to prevent the axle from turning.

When the load of hay is gathered by the teeth and the driver wishes to deposit it in a windrow, he gives a turn to the axle by means of the lever, G. This

Fig. 2



lever is pivoted to the platform, D, at *d*, and is connected at its lower end by the long link, B, with the pendant, *e*, which is firmly inserted into the axle at its lower side and near its middle. This turning of

the axle carries the parts into the positions represented in the dotted lines in Fig. 2; raising the teeth and depositing their burden of hay.

To prevent any portion of the hay from being carried up by the teeth as they rise, a bar, M, is supported by rods, *h*, from the driver's seat, and this bar carries an iron loop through which all but the two outermost teeth pass. As this bar and loop retain their position, while the teeth rise up between them, they scrape the hay from the teeth and hold it down upon the ground.

As soon as the windrow is past, the driver draws

will be paid out. Further negotiations are in progress, the result of which will, undoubtedly, lead to facilities for raising the additional capital necessary to complete this enterprise, the want of which has of late been so seriously experienced by both England and America.

A NEW IRON-CLAD TURRET SHIP.

The keel of a large new turret ship, on the *Monitor* principle, was laid on the 17th inst. in Jersey City. Its extreme length of armor will be 200 feet, extreme

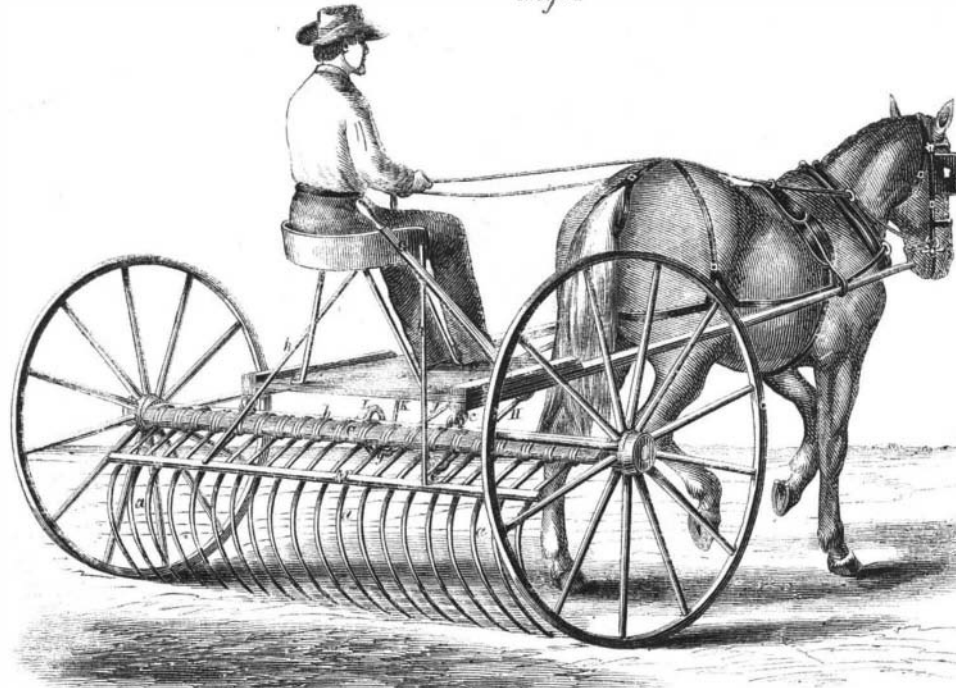
length on water line 190 feet, extreme breadth over armor 46 feet, breadth of molded beam 37 feet. The bulwark armor timbers are to be oak no less than 17 inches in thickness. The plating of the bulwark will be 5 inches in thickness, in layers of 1-inch plates planed at the edges and breaking joints. This armor will extend 3½ feet below the water line, and project 3 feet 8 inches beyond the hull proper. The deck beams are to be of oak 12 inches thick covered with pine planking 7 inches thick, and over these two courses of ½-inch plates will be fastened.

She will be provided with one revolving turret of 21 feet internal diameter and 9 feet high, and covered with eleven courses of 1-inch plates. The turret will rest on a flat ring of gun metal, and revolve on a central shaft 1 foot in diameter. This turret is

to be armed with two 15-inch Dahlgren guns—such as those which have been described in our columns as now being manufactured at the Fort Pitt Works, Pittsburgh, Pa. The pilot house is to be round like the gun turret, and in this respect is an improvement over the square pilot house first built for the *Monitor*. The smoke pipe is to be shot-proof—another good improvement; it will be 8 feet in height, 6 inches in thickness, telescopic in shape, and covered on the top with a grating to keep out shells. This vessel is to be propelled by a pair of horizontal engines, each having a cylinder 40 inches in diameter, with a stroke of 22 inches. Ventilating blowers will be used, and the cold air is to be drawn through the top of the turret. The propeller will be 12 feet in diameter with a pitch of 16 feet, and two of Martin's tubular boilers will be provided. She will be of prodigious strength and capable of resisting the most powerful guns yet made.

This large turret war ship is to be made entirely of American materials—no foreign iron must be used. Her cost is to be \$400,000, and she is to be completed in five months, to do which between 400 and 500 men are to be employed upon her in day and night squads. The contractors are Secor & Co., but the work is to be done by J. Colwell, of the Fulton Foundry, and the entire supervision of it will be under Mr. George Birbeck, Jr.

Fig. 1



MELLINGER'S HORSE RAKE.

back the lever to the position shown in full lines in Fig. 2; thus turning the axle and bringing the teeth again to the ground, ready to resume their operation of collecting the hay as the machine proceeds across the field.

This machine is easily operated, and it has no gears to become obstructed by catching the hay.

The patent for this invention was granted, through the Scientific American Patent Agency, May 13, 1862, and further information in relation to it may be obtained by addressing Mellinger Brothers, Mount Pleasant, Penn.

The Atlantic Cable Again.

The British Admiralty have granted to the Atlantic Telegraph Company the services of the ships and crews necessary for revising and extending the former surveys of the route along which the cable is intended to be submerged. The route westward from the Irish coast, for a distance of some five hundred miles, will be sounded at distances of about a mile apart, the previous soundings having been some thirty miles asunder. A good map of the bottom may, in this manner, be obtained, and thus facilitate the operation of laying the cable. Careful examination will also be made of the Newfoundland coast, and the English government have consented to send, free of cost, the ships necessary to attend as pilots, and assistants generally to the ships from which the cable