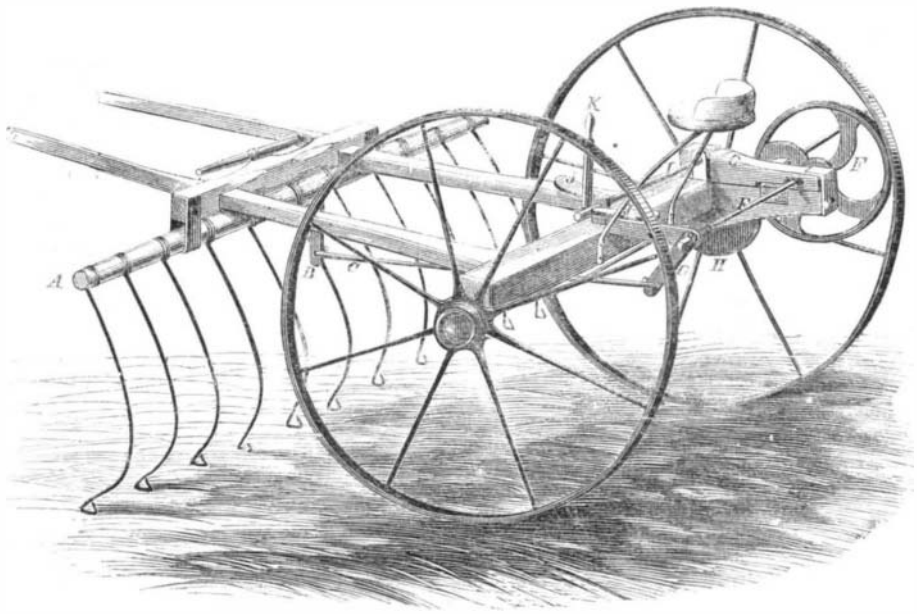
I PROVED HORSE RAKE.

The hay crop of the country amounts to more in value than that of any other agricultural product, and, with the single exception of the plow, there is probably no other agricultural implement which has saved so much manual labor as the horse rake. For a longtime our inventors seemed to rest contented with the old simple revolving rake, but within a few years, since so many brilliant fortunes have been made in the patents of agricultural implements, extraordinary attention has been given to this implement, and we have been busy in obtaining patents for inventors of improvements in this kind of machine. The most fruitful of all these inventors is Mr. Stoddard, one of whose machines is illustrated in the annexed engraving.



STODDARD'S IMPROVED HORSE RAKE.

The principal peculiarity in this improvement consists in the arrangements by which the rake is turned back to deposit the hay in the windrow, by means of the power of the horse; the muscles of the driver being required merely to throw the parts into action at the proper time.

The rake head, A, has a rocking motion by which the teeth may be turned backward and upward to a level with the axle. This rocking motion is effected by the friction wheel, F, acting through the shaft, E, crank, D, rod, C, and arm, B, which latter is rigidly secured to the rake head. The shaft, E, has one of its bearings in the sliding block, G, and when this block is pushed back the friction wheel, F, is brought in contact with the inner surface of the projecting rim of the driving wheel, but when the block is pushed forward the friction wheel is brought in contact with the outer surface of the friction roller, H, tending to turn the wheel, F, in the opposite direction. The sliding of the block, G, is effected by a crank upon the shaft, I, this shaft being rolled by the feet of the driver upon the treadles, J J. To hold the teeth down so that they will gather the hay, the wheel, F, is pressed against the friction roller, H, but when the windrow is reached, the shaft, J, is turned so as to carry the wheel, F, against the projecting rim of the driving wheel, which causes it to roll in the opposite direction, thus turning the teeth upward and depositing the hay.

In transporting the rake to and from the field, the teeth are turned upward and secured permanently in place out of the way of all obstructions by the lever, K, which has a hook upon its lower end, which hook catches under the rod, C.

The advantages of this machine are thus stated by the inventor:—

1st. "The labor usually required in holding the rake and throwing it up is absolutely transferred to the horse by means of the friction wheel, thus dispensing entirely with hand levers, and leaving both hands at liberty to guide the horse. I claim that this is the first time in the history of the country that the thing has been accomplished.

2d. "The rake can be thrown up while *backing* as well as when moving forward.

3d. "The rake conforms to the uneven surface of the ground, *independently* of the wheels.

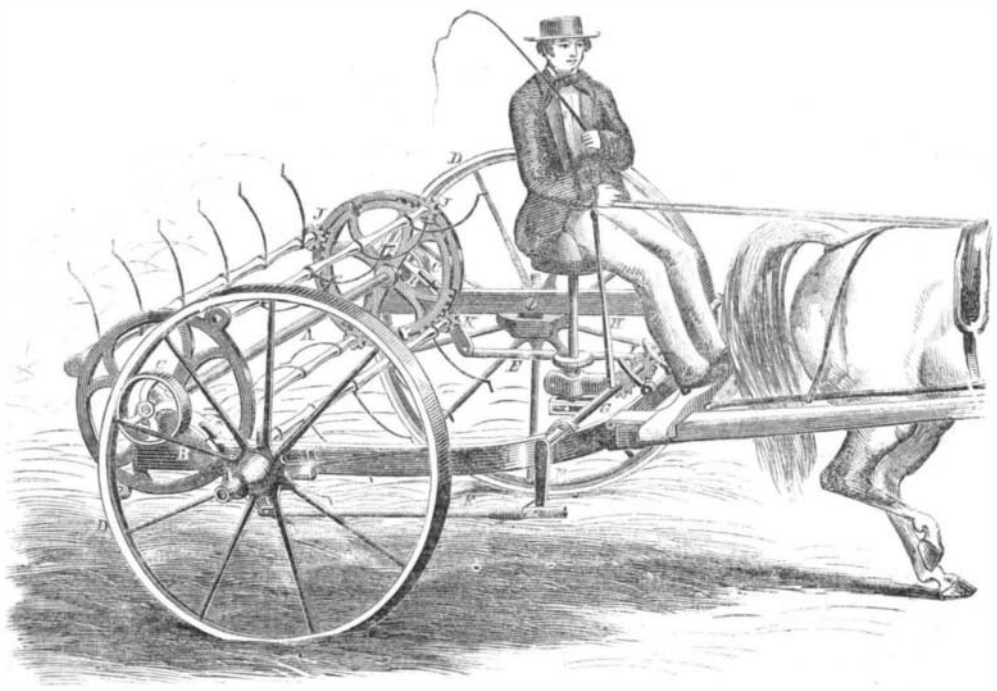
4th. "A shoe being formed of the tooth prevents the raking up of *dead* grass and raising the dust.

5th. "The rake being placed in front of the wheels, the wheels can be placed as *near* together as is desirable."

Application for a patent for this invention has been made through the Scientific American Patent Agency, and persons desiring further information in relation to it will please address the inventor, J. C. Stoddard, at Worcester, Mass.

IMPROVED HAY-MAKING MACHINE.

On page 368, Vol. I. (new series) of the SCIENTIFIC AMERICAN, we published an illustrated description of a hay-making machine invented by Mr. Stoddard, and the annexed engraving illustrates an improvement in that machine, the improvement consisting principally in the form of the teeth and in the construction of the reel.



STODDARD'S IMPROVED HAY-MAKER.

A revolving reel, consisting of four rakes, is hung upon an axle, A, as shown in the cut. This axle has its bearings in two levers, B B, which are pivoted upon the frame of the carriage with their upper ends inclined backward, so that the friction wheels, C C, may be pressed by the weight of the reel against the inner surface of the projecting rims of the driving wheels, D D, thus causing the reel to rotate, by which motion the hay is thrown over the reel, tossed in the air, and left evenly and lightly spread over the ground. The lower ends of the levers, B B, are connected with the rods, E E, which have their opposite ends pivoted to the cranks, F F, upon the rod, G, so that, by rocking this rod by means of the lever, H, the friction rolls, C C, are brought forward from their contact with the rims of the driving wheels, and thus the rotation of the reel may be stopped when it is desired to suspend the operation of the machine. A pawl and ratchet, I, are provided to prevent the shaft, G, from turning back until the operator desires.

Small pinions, J J J J, are placed upon one end of the rake-heads, and these pinions gear into segments of a partially revolving ring at the end of the reel, so that, when one rake-head is turned upon its axle, a corresponding motion is imparted to its three fellows, and the four turn in unison. This arrangement enables the teeth to be readily turned inward out of the way of contact with any external substance, or to be adjusted to any angle of inclination; a set screw being provided to secure the ring to its adjustment. The peculiar form of the teeth will be readily seen by inspecting the cut, the oulder being provided to prevent the hay from sliding down the tooth to the rake-head.

The importance of machines which facilitate the securing of the hay crop can only be appreciated by considering the immense number of square miles which have to be repeatedly gone over in this operation, and that the work has to be done in a short time, making it the busiest season of the year.

Application has been made, through the Scientific American Patent Agency, for a patent for this invention, and persons desiring further information in relation to it will please address the inventor, J. C. Stoddard, at Worcester, Mass.

FEATHERING PADDLE WHEELS.

The steamboat *Richard Stockton*, a large and splendid iron passenger vessel, belonging to the Camden and Amboy Railroad Company, is furnished with feathering paddle wheels. The buckets are pivoted to the wheel frame, and suitable cranks and arms connect the buckets with a cam arrangement at the center, so that as the wheel rotates the paddles enter and leave the water vertically.

These wheels have been in use on the *Stockton* for several years, and, we believe, are considered a success. All the parts are made of iron, put together in the strongest manner. When in motion there is but little of that tremor or jarring which is so frequently experienced on other steamboats.

On the 30th ult., while the *Stockton* was coming up the harbor of New York, from Amboy, N. J., at full speed, one of the movable buckets suddenly broke and fell out, and other parts of the wheel were so displaced as to come in contact with the guard and wheel-house, tearing the latter open and doing considerable damage, and rendering it impossible for the vessel to proceed. No person was injured.