

beyond the broad wheels, turns round and digs up the stiffest clay soil to the actual depth of from six to twelve inches, stirring the earth, of course, deeper than the points of the claws, and leaving the surface in a fine tilth. From the manner in which the cylinder is attached, and the angle at which the claws enter the ground, bricks, stones, and roots are either divided or thrown out of the soil, or passed over without injury to the machine. The cutters are of wrought iron; under ordinary circumstances they sharpen themselves; and, if broken, they can readily be replaced, as each is secured separately by bolts to the outside of the cylinder. The steering apparatus is very ingenious. The large wheels only are driven by the steam engine. When the machine has to be turned round, one large wheel is left stationary, and the other being driven while the front wheels are guided by the driver, the engine can be turned round in its own length.

"The first public trial of this machine in its present improved shape took place on the 11th September, near Beverley. It commenced operations at one end of a field of strong clay stubble, and traversed the entire length, transforming a breadth of 6½ feet into a perfect seed-bed, equal, as some said, to what could have been produced by twice ploughing and harrowing, or clod-crushing. On its arrival at the headland it turned round in less space than a plough with a pair of horses, and returned, leaving, after an hour's work, no vacant space except two small headlands, which could easily be finished when the rest of the work was completed." It will be observed that the wheels never touch what has been once cultivated, and the cultivator perfectly obliterates the marks of the wheels. The strength of this machine lies in its slow motion and the great breadth it cultivates.

A flywheel it will be observed, is attached to the machine, and when stationary, with the cultivator thrown out of gear (which can be done in an instant,) it may be used for all the ordinary purposes of a portable agricultural steam-engine—to drive a thrashing machine, to grind corn, to pump water, &c.

Some enthusiastic writers in the Yorkshire papers suggest that the "Romaine" may also be used to supersede farm horses, and take corn to market; but we do not believe that the inventor or manufacturers have any such notions, which, in the opinion of the first engineers of the day experienced in attempts at road engines, are perfectly illusory. Horses are cheaper machines for traction on common roads than steam-engines—that was proved twenty years ago.

The machine now open to the examination of any agriculturist, and at work every week near Messrs. Crosskill's works, is the fourth that has been built, each being an improvement on the last. The idea of the machine occurred to Mr. Romaine in 1850. The first machine was built at Mr. Mechi's expense, 1853, and led that enthusiastic gentleman to write to the *Times* that "the doom of the plough was sealed;" the second was built in Canada, under the encouragement of Lord Elgin, who is fond of mechanics, and sent, at the expense of the Provincial Government, to the Great Exhibition of Paris in 1855, where the inventor, Mr. Romaine, was one of the Canadian Commissioners. This machine, like Mr. Mechi's was to be drawn by a pair of horses, the steam being employed turning the cultivator. In Paris Mr. W. Crosskill saw it, and thought so well of it, that he took it up, and the firm have spent two years and some thousand pounds in bringing it to its present state of efficiency. The third machine would not steer or travel until the wheel arrangements had been changed to the present form and proportions. The fourth machine is the subject of our illustration. The expense of working is estimated at 70c. to \$1 an hour; the work done at from three-quarters to one acre an hour, according to the depth and consistence of the soil. By lengthening the cylinder a steam engine of the power now used can increase the work done without accelerating the speed."

All this sounds very plausible, and for Mr. Romaine's sake, we hope his machine may prove acceptable to English farmers. But there is a fundamental objection to the *mode* of cultivation which this machine undertakes to perform, which must prevent it from taking the place of the plough to any considerable extent. We pointed out this objection to Mr. Romaine before he took his machine to England,—it is this: his rotating claws may tear up, aerate, and comminute the soil, but they will not *invert it*. Now, the inverting of the soil, the turning *under* of the stubble, grass, and other vegetable growth of the surface, in order that by its decomposition