

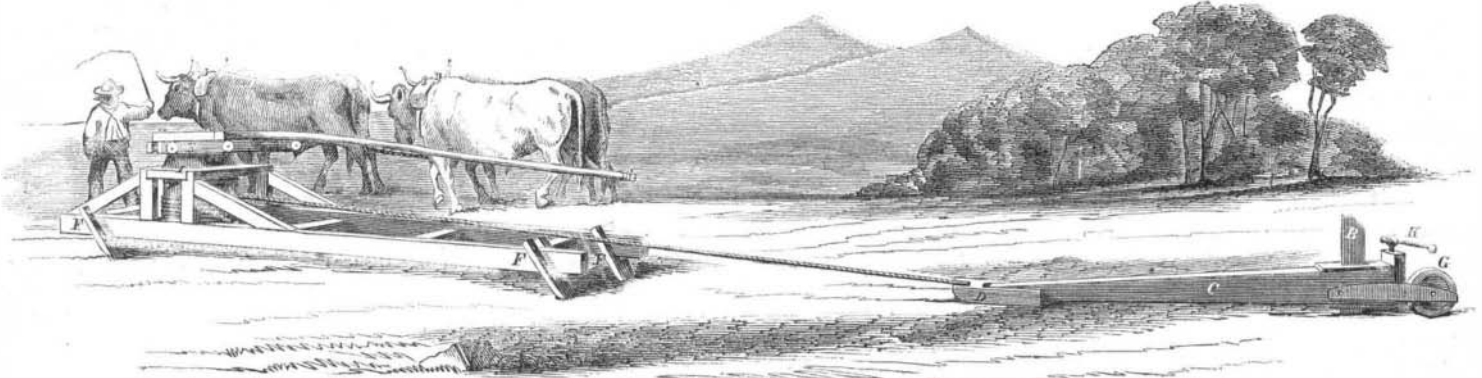
**IMPROVED MOLE FOR DRAIN PLOWS.**

Evidence of the wide-spread and rapidly-increasing interest in under-ground draining pour in upon us from every direction, and in the nature of things this interest can hardly diminish, for the land in the country capable of being enormously increased in value by this process is to be reckoned, not by acres nor by hundreds of acres, but by thousands of square miles. For many years to come, most of this work must be done by the mole plow, for in a very small portion of the country is land

by the knife, and sealing the top of the channel with hard compressed clay, and thus leaving it in condition to be far more durable than if made by a mole without these square projections. The roller, G, follows the knife on the surface and there closes the slit made by the knife. The screw, H, is provided for the purpose of regulating the depth of the mole beneath the surface.

When the windlass is wound full of the rope, the team is removed from the sweep and attached to a staple at the forward end of the frame, when a stout pull draws

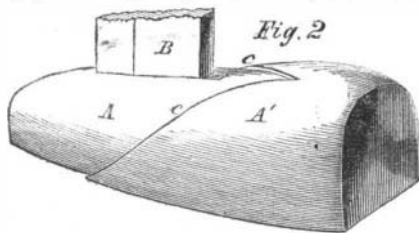
a revolving rake which throws the hay into the air and leaves it turned up to the sun in the lightest manner possible. The stationary rake, A, has a slight rocking motion, by which the ends of the teeth may be turned up from the ground to avoid any stone, stump or other obstacle which may be encountered, or to be out of the way in transporting the implement to and from the field. This tipping motion is effected by means of the handle, C, Fig. 2, operating the rod, D. The same motion of the handle, C, which drops the teeth of the stationary



**LANE'S IMPROVED MOLE FOR DRAIN PLOWS.**

yet sufficiently valuable to justify the enormous expense of laying drain tiles. Hence, the great amount of attention which our inventors are giving to this subterranean implement.

The annexed engraving gives a very clear idea of the process of forming under-ground drains, by means of the



mole plow. The windlass, E, which is turned by the team attached to the end of the long sweep, is securely fastened to a frame which is provided with the anchors or stakes, F F F, which enter the ground at an inclination towards the plow, so as to hold the frame securely in place while the plow is being drawn up to it. A stout rope, say 120 feet in length, connects the plow with the windlass so that as the rope is wound-up the plow is drawn along. The plow is secured to the long timber, C, the forward end of which rests upon the sledge or stone boat, D. In the back end of the timber, C, the upright post or cutting-knife, E, is firmly mortised, the joint being strengthened with heavy irons. At the lower end of the knife, E, some three feet below the surface, is the mole which forms the drain. This mole is a conical or semi-conical mass of iron, and by being forced forward through the ground forms a long channel or pipe for the passage of the water, which in certain soils remains open for a surprising length of time.

The particular improvement which we now illustrate consists in the form of the mole, and is shown in Fig. 2. A is the forward point or edge of the mole, and B the vertical knife to which it is secured. In order to close the upper part of the drain more perfectly than has hitherto been done, the square projections, c c, are made sloping upward and backward from the bottom of the mole and coming together about midway from the knife to the back end of the mole. These projections cut off the clay which has been compressed against the sides of the channel and carry it to the top, closing the opening made

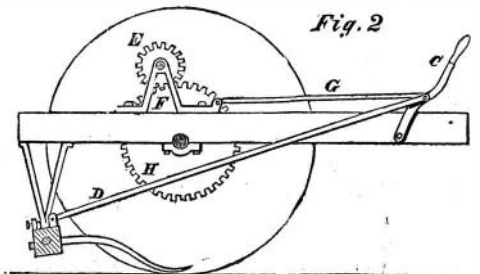
the anchor from the ground, and the frame is drawn forward the length of the rope. The team is now again attached to the windlass and the effect of the first strain upon the rope is to sink the anchors again into the ground and secure the frame, after which the plow begins to move and the work proceeds as before.

The patent for this invention was procured through the Scientific American Patent Agency, Jan. 10, 1860, and any further information in relation to it may be obtained by addressing the inventor, John Lane, at Lockport, Ill.

**IMPROVED HAY-MAKER.**

Of all the operations of haymaking the prettiest is the tedding. It is a pleasant sight, as the dew is off in the morning, to see the boys follow the mowers with their own light forks (for what boy never had a favorite fork to which he applied the rub stone with the mowers?) knocking the grass to the right and left from the swaths, and spreading it evenly over the ground to dry. The labor, too, of turning the hay after dinner is light and

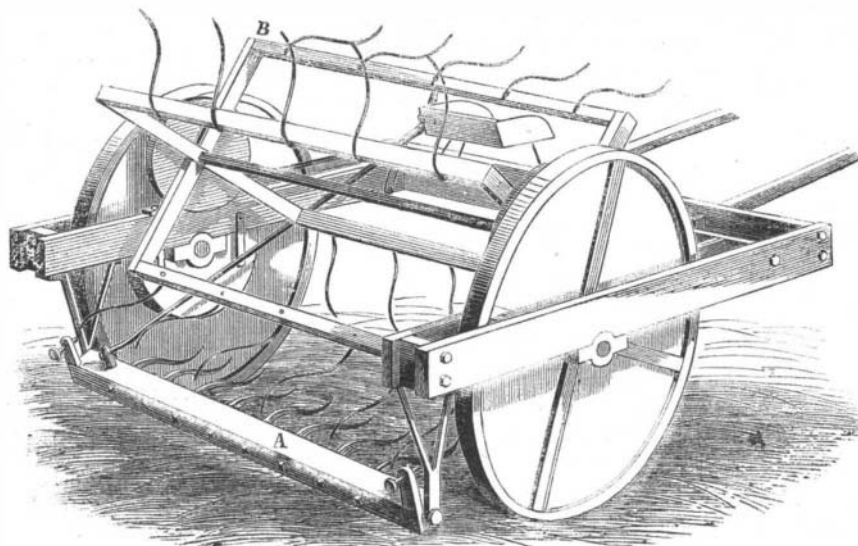
rake ready for operation also throws the revolving rake, B, into gear by drawing forward the pinion, E, which is fastened upon the axle of said rake, into the position shown in the cut; this axle having one of its bearings in the slide, F, which is connected with the rod, G. The



pinion, E, meshes into the gear wheel, H, on the axle of the driving wheels, and may be thrown into or out of gear by sliding the slide, F, through the rod, G, and handle, C, as shown. Thus, when it is not desired to operate the machine, the labor and wear of turning the rake are avoided.

The patent for this invention was obtained, through the Scientific American Patent Agency, June 14, 1859, and persons desiring further information in relation to it will please address the inventor, Thomas I. Goff, at Warren, R. I.

*Fig. 1*



**GOFF'S PATENT HAY-MAKER.**

agreeable work, but it seems that even these easiest and cleanest operations in farming are destined to be done by machinery, and the tedding boys are to be promoted into comfortable seats, and will ride about the field in ease, making actual sport of the labor. Are not our inventors absolutely ushering in the very dawn of the millennium?

The graceful machine represented in the engravings consists essentially of two rakes—one stationary near the ground for slightly lifting the grass or hay, and the other

foundations. They generally fall down. It is not long ago that a whole row of buildings in London came down with a crash; and it is thought that the whole city will one day tumble in ruins, crushing its inhabitants into a mass of jelly. This will probably be the grand finale of the last experiment in aristocratic government, and the world will immediately return to absolute despotism!

We see by the London *Engineer* that our manufacturers of portable engines find it an object to advertise their machinery in England.