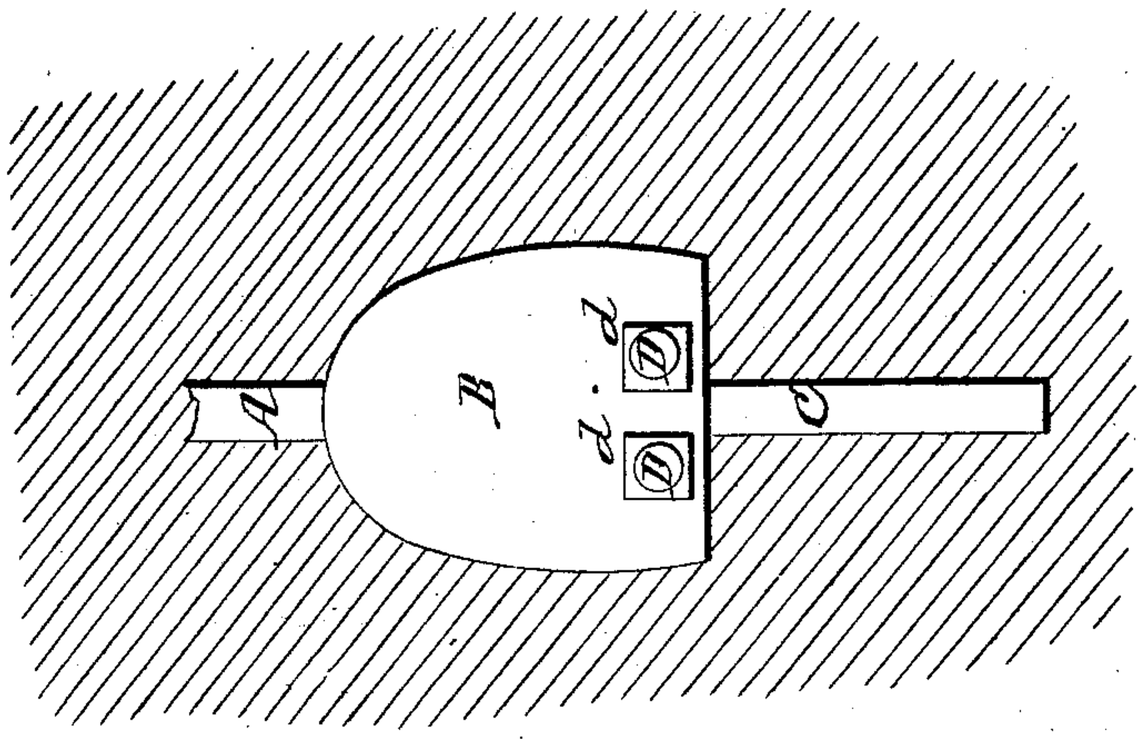
J. ADAIR.

Mole Plow.

No. 27,606. Patented Mar. 27, 1860

Fig. 3.



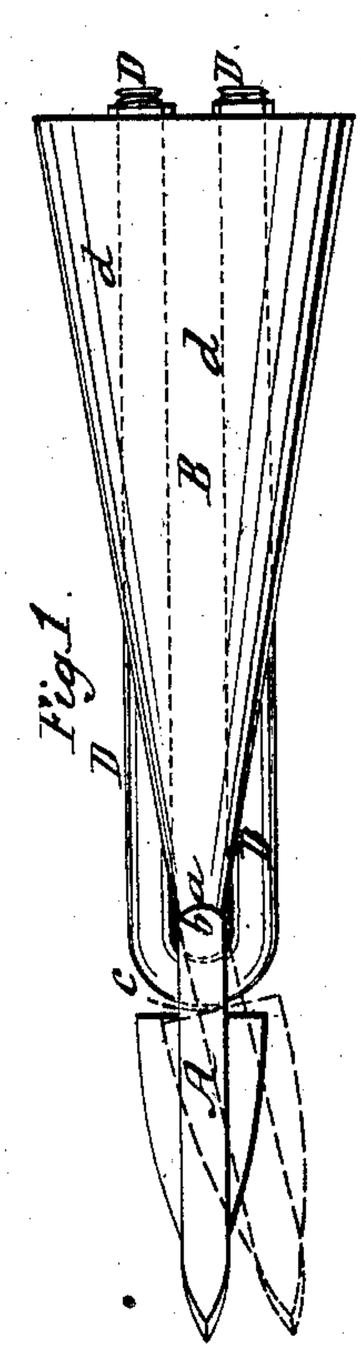


Fig. 1.

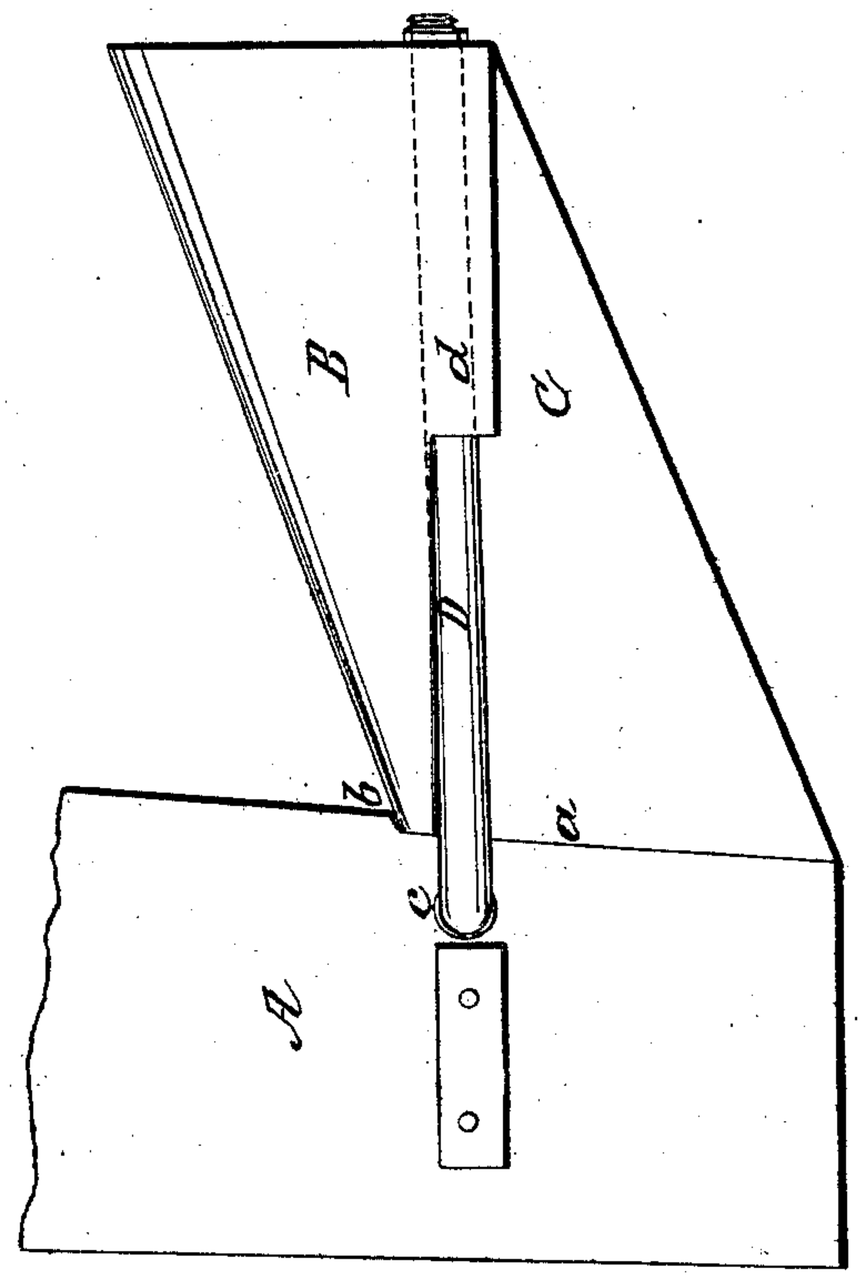


Fig. 2.

Witnesses:
G. Rourke Andrew.
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Inventor.
James Adair.

UNITED STATES PATENT OFFICE.

JAMES ADAIR, OF MENDOTA, ILLINOIS.

IMPROVEMENT IN MOLE-PLOWS.

Specification forming part of Letters Patent No. **27,606**, dated March 27, 1860.

To all whom it may concern:

Be it known that I, JAMES ADAIR, of Mendota, in the county of La Salle and State of Illinois, have invented a new and useful Improvement in Underground-Draining Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan or top view of my machine. Fig. 2 is a side view of the same, and Fig. 3 is a rear view of the same.

Similar letters of reference in each of the several figures indicate corresponding parts.

Before stating the nature of my invention I deem it proper to remark that I am aware several underground-draining machines have been previously to my invention patented. In one of these machines a tapering arch-shaped mole is attached fast to the bottom of the colter, so as to have no lateral or up and down motion independently of the colter. To this arrangement there is serious objection—first, because the colter requires to be very thick, owing to the mole having no lateral movement independently of it, and consequently causing great lateral strain upon it in making short turns, and thus having the colter thick makes it offer great resistance in passing through the earth, and consequently a large amount of power is required to operate the machine; second, the thick colter makes such a wide slit in the earth that the taper arch-shaped mole, while it packs the earth at the bottom of the drain, (a thing always to be avoided, as the water should rise up through the bottom of the drain and flow off,) is incapable of impacting the earth with the upward pressure produced by its peculiar shape, so as to fill up the slit in a manner to render the drain at its upper part impervious to water, and therefore drains made with this machine are liable soon to become dammed by the falling in from above. In another of these machines one-fifth of the mole is attached loosely behind and at the lower extremity of the colter, and the other portion is made in sections or links. To this arrangement a serious objection also exists, because the mole has a chance to move up and down as well as laterally, and therefore the earth is compressed as compactly at the bottom as at the top and sides of the drain, owing to their being no resisting object beside the earth to prevent its vertical descent when the upper taper surface of the mole is resisted by the soil above it. Thus compressing or impacting the earth at top and bottom and sides of the drain renders the drain impervious to water except at the top, where the earth forced into the slit formed by the colter is left comparatively loose. Thus making a drain renders it liable to fall in at the top and dam up, and if this does not occur the very object of the drain will be destroyed—to wit, the passing of the water up through the bottom of the drain and its flowing off. And in another of these machines the mole is attached loosely to the back edge and lower extremity of the colter, and a diagonal brace extends down from the rear of the colter and attaches to the top of the mole near its rear end. With this arrangement a light colter can be used, as lateral deflection of the mole is allowed, and also downward pressure against the bottom of the mole is avoided; but still the drain is but imperfectly formed, as the forward part of the mole impacts the earth above it and closes the slit formed by the colter, and then the diagonal brace divides the thus impacted earth, and owing to the earth being divided at this stage of the operation the rear portion of the mole is incapable of packing the earth at the point where it was divided by the brace, so as not to leave a crevice or a weak point in the arch of the drain for the water to percolate through and wash down the earth, so as to dam up the drain, owing to the two packed faces of the earth against which the front part of the mole acted being solid and hard, and the earth forced up between the same consequently not being any more capable of uniting with the same than would be two hard smooth-faced bricks.

The nature of my invention consists in the combination of two extensions above named and a hinge-like connection, in the manner and for the purpose hereinafter described.

It is by preventing an independent perpendicular or downward movement of the mole that I avoid the impacting of the earth at the bottom of the drain and insure the perfect upward impacting of the earth at the top and sides of the same. It is by hinging the mole behind the colter and allowing independent lateral or horizontal movement in the same, and at the same time destroying independent vertical movement thereof, that I am enabled to use a thin colter, which will make

but a narrow slit, and to perfectly close up and solidly pack said slit by the upward pressure of the mole, as the independent lateral motion allows the colter to make short turns without it being strained, and the non-vertical movement of the mole always insures a positive upward pressure as it wedges through the earth.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the colter. It is made thin and with a sharp cutting-edge, and is to be attached rigidly to the beam of a draining-plow in any approved manner.

B is the mole. It is to gradually enlarge from its point to its rear end upward and laterally, and is preferably to be in the form, from its base to its top, of a taper arch, as represented in Fig. 3, or of any other more approved form. Its sole or base is flat, and from the center thereof a V or other similar extension is to project down vertically, as represented in Figs. 2 and 3. This extension is made concave on its front edge, as shown at *a*, so as to match a convexity, *b*, formed on the rear edge of a portion of the colter, which extends down below the sole or bottom of the mole, and thus forms a knuckle-joint between the colter and itself.

D is a strong metal staple, passed laterally through an enlarged hole, *c*, formed in the colter at a point, say, about five inches above its lower extremity, and passed through longitudinal holes *d d* in the mole, and fastened by pins or otherwise, as shown. Thus it is the colter and mole are coupled together. The part of the staple which rests in the transverse hole *c* of the colter serves as the axis for the mole or the colter to swing upon in the path of a horizontal circle independently of each other, in making short or any character of turns with the plow, the proper relation between the two being at the same time always maintained by the long loose knuckle-joint between the extensions formed on the same.

It will be evident from the drawings that the colter extends down below the sole or bottom of the mole a distance corresponding with the extension on the bottom of the mole, and that consequently a support—say, of five inches depth, against downward thrust due from the taper form of the upper part of the mole and the consequent tendency of the earth to force it downward—is provided for the mole and extension thereof to rest against. This extension, while forming the drain, enters the earth below the bottom of the drain, as illustrated in the drawings, Fig. 1.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of two extensions above claimed and a hinge-like connection, whereby the colter and mole are flexible upon each other, horizontally independently of one another, and immovable upon each other perpendicularly, as and for the purposes set forth.

JAMES ADAIR.

Witnesses:
G. YORKE AT LEE,
G. W. W. HARRY.