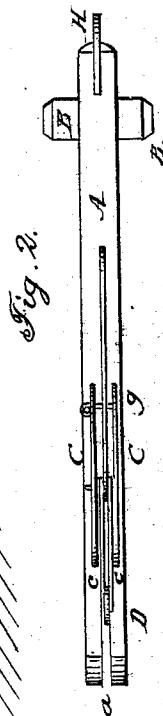
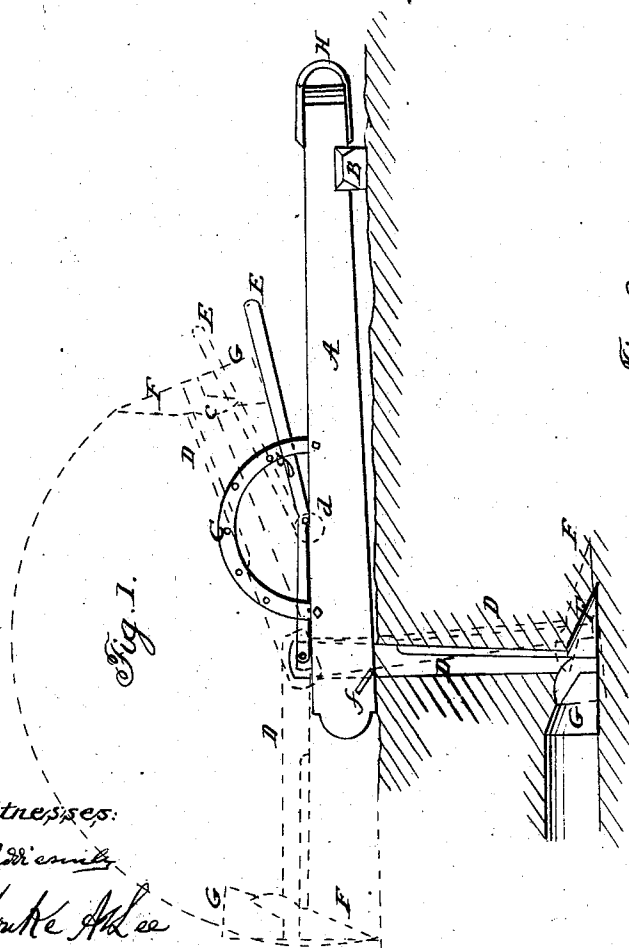
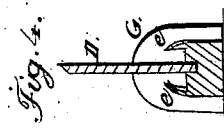
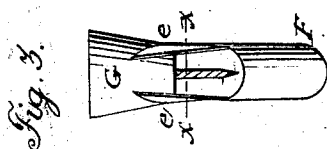


BALLARD & McCLURE.

Mole-Plow.

No. { 767. }
 { 31,771. }

Patented Mar 26, 1861.



Inventors:

H. H. Ballard

H. McClure

By their Attorney

Thomas H. Dodge.

UNITED STATES PATENT OFFICE.

H. H. BALLARD AND H. McCLURE, OF MOUNT PLEASANT, IOWA.

IMPROVED MOLE-PLOW.

Specification forming part of Letters Patent No. 31,771, dated March 26, 1861.

To all whom it may concern:

Be it known that we, H. H. BALLARD and H. McCLURE, both of Mount Pleasant, in the county of Henry and State of Iowa, have invented certain new and useful Improvements in the Construction of Mole-Plows; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a side view of our improved mole-plow, the parts being shown in three different positions, as will be hereinafter described and fully explained. Fig. 2 represents a top or plan view of the mole-plow when in use, and Figs. 3 and 4 represent detached sections.

In the drawings, A represents the beam or frame of the machine, its front end being supported by a runner-block, B, while its rear end is slotted out, as shown at *a*. On top of the frame are properly fastened and supported two curved pieces, C C, a short distance apart, as indicated in the drawings. Just under these curved supports or pieces is pivoted to the frame A a lever, E, which plays or works up and down between the pieces C C. To the lower end of lever E, and a little above its pivot, are pivoted pieces *cc*, one on each side of lever E, while their rear ends are pivoted, one on each side, to the top of colter D, which works in the slot *a* in the rear of beam or frame A. To the bottom of colter D is attached the mole F, representing the front part, and G the rear part.

The machine is represented in use by black lines, Fig. 1, a pin, *f*, being inserted in frame A to prevent the colter from drawing out of the slot in the beam A, while the pieces *cc* prevent the top from canting forward. It sometimes happens that it is necessary to raise up the point or front part of the mole, and which is effected in our machine by simply raising lever E, as shown in red lines, Fig. 1, where it can be held by inserting a pin, *g*, in one of the holes in the pieces C C. (See the drawings.) The driver, too, can operate lever E at any time, and thus work the mole up and down. This is a great convenience, since it enables the mole to be relieved very quickly when clogged. Then, again, in moving the machine from field to field, or in packing it up for stor-

age, it is desirable that it should be so constructed that it can be folded up quickly. Our machine can be thus folded up by simply taking out the pin *f*, when the colter and mole can be turned up, as shown in blue lines, the colter resting between the pieces C C, while the mole rests on the end of lever E. In this position the machine can be drawn over uneven ground without danger of injuring any of the parts; or it can be packed away in a store-house or shed. In this operation no part has to be detached at all, it only being necessary to remove pin *f*.

To put the machine in condition to work, the mole is turned back and pin *f* inserted, and all is ready again. It is also important to have the machine so constructed that the mole can be quickly drawn from the ground. This is effected in our machine by simply removing the pin *f*, when, as the machine is drawn forward, the mole will be drawn to the top of the ground, as indicated in dotted lines, Fig. 1, the rear under side of the mole being grooved out so as to facilitate the rising of the mole.

Much difficulty has been experienced in getting a mole of such shape and form that will make an even and true hole, and at the same time completely fill the cut made by the colter. We have found that when the sides of the mole are gradually tapered from the front back the earth is pressed off laterally, and consequently the cut made by the colter is not well filled. Again, we have found that when a groove commences on top, but near the point of the mole, and gradually widens back, the earth carried up is not well packed into the cut. To remedy these difficulties we make the sides of our mole nearly parallel from the point back to the rear of the colter. We also provide the sides with fins *ee*, which commence about on a line with the front of the colter, and, instead of flaring out as they extend back, they converge, as shown in Figs. 3 and 4, Fig. 4 being a section of Fig. 3 on line *xx*. The result is that as the mole is drawn forward the earth is not pressed out laterally to a great extent before the fins *ee* compress the earth together in rear of the colter, thus closing up the cut made by it, when the rear part, G, follows and presses the earth both laterally and upward, whereby a very perfect drain is made.

It will thus be seen that by our invention the

cut made by the colter is not filled up by loose earth carried up and back in a groove formed on the top of the mole, as practiced by some; but the cut is closed by pressing the solid earth together by compressing-fins which rise up on each side of the colter. The power to operate the machine is applied to a draw-piece, H, hinged to the front of the beam or frame A.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination of the curved pieces C C with the frame A and mole and colter, substantially as set forth, whereby the colter and mole can be raised and turned over above the frame and there securely held for transportation or storage.

2. The combination of lever E and curved pieces C C with the frame A and colter D and

mole, substantially as set forth, whereby the point of the mole can be raised by lever E at the will of the driver.

3. The fins or compressors *e e*, in combination with the mole and colter when arranged in relation thereto, as and for the purposes set forth.

4. Forming the sides of the front of the mole parallel, in combination with providing the middle of the mole with converging fins, as set forth.

In witness whereof we have hereunto subscribed our names.

HARLOW H. BALLARD.
HUGH McCLURE.

In presence of—

W. D. LEEDHAM,
HIRAM CHASE.