A. T. BOON.

Subsoil-Plow.

No. 53,559. Patented, Apr. 3, 1866.

Fig. 1.

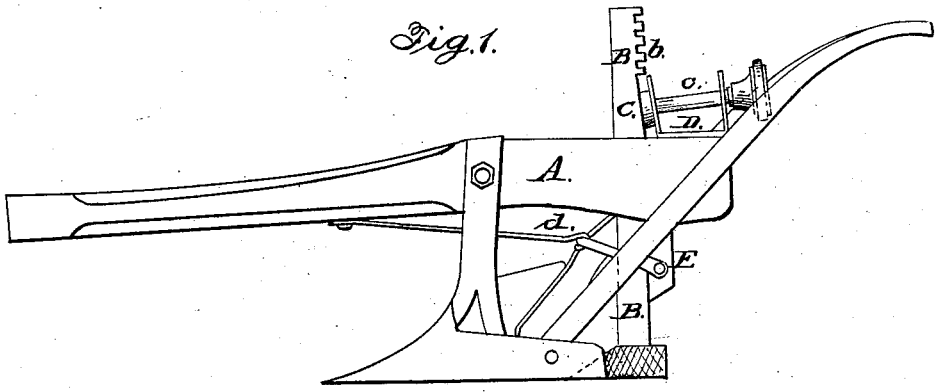


Fig 2

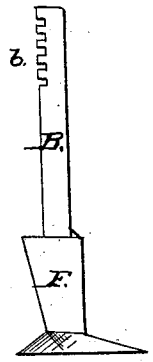
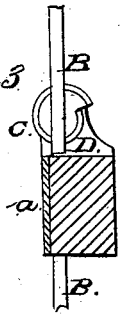


Fig 3.



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UNITED STATES PATENT OFFICE.

ALONZO T. BOON, OF GALESBURG, ILLINOIS.

IMPROVEMENT IN PLOWS.

Specification forming part of Letters Patent No. 53,559, dated April 3, 1866.

To all whom it may concern:

Be it known that I, ALONZO T. BOON, of the city of Galesburg, in the county of Knox and State of Illinois, have invented a new and useful Improvement in Subsoil or Mole Plows; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of my improved subsoil or mole plow; Fig. 2, vertical section of the beam, as indicated by line *x y* in Fig. 1; Fig. 3, view of subsoil or mole standard, showing a mold-board attached thereto, the object of which will be more particularly described hereinafter.

Like letters in all figures of the drawings indicate like parts.

The nature of my invention consists in a method of applying and regulating a subsoil or mole plow in its relative position to that kind or description of plow on or to which it may be applied to a certain desired depth by a simple and novel contrivance, consisting of a spiral cam, shaft, framing, and a rack-standard.

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

A is the beam of the plow; B, the standard, which is arranged in a square groove on the side of the beam, near to the rear end of the same. (See Figs. 1 and 3.) A suitably-constructed metallic plate, *a*, is fastened on the side of the beam over and across the standard to keep it in its proper place. The groove or opening is made sufficiently large to permit an easy ascending and descending movement of the standard.

From the top of the standard and down to a proper distance thereon, to the rear side, are a series of notches or teeth, *b*, into which the spiral cam C plays or operates. This cam is made in the form as represented in Fig. 3, being a band or rim of metal bent around, the ends nearly coming together, one end projecting out a little beyond and less curved than the other. The said band or rim is securely fastened to a plate, which plate is secured to a shaft, *c*, with an ordinary thumb-screw nut or handle at the end of the same opposite to the plate.

Supporting the shaft is a metallic frame, D, consisting of two uprights, one at each end, with a bottom plate fastened to the top of the beam by screws or bolts.

In the rear of the standard is a metallic brace-bar, E, which extends from the top of the beam down a little below the same. This bar serves as a brace to steady and keep the standard in its proper position. The brace-bar has a shackle-bar attached to its lower end, connecting with a rod, *d*, extending to about the center and fastened to the under side of the beam. The mole or subsoil tooth is attached to the standard. (See Figs. 1 and 2.)

Fig. 1 represents the mole-plow as attached to an ordinary plow, which can be withdrawn when desired by being slipped out of the groove on the side of the beam, as described, and the subsoil-plow, as represented in Fig. 2, may be inserted therein, used, and regulated by the spiral cam the same as the mole-plow.

The subsoil-plow has a mold-board, F, attached thereto, which, combined with the subsoil-tooth, serves to turn up one-half of the furrow edgewise, so as to mix it with the upper soil, and thus enrich and improve the productiveness of the same.

Operation: The effect of the spiral cam by turning the handle or thumb-screw nut on the shaft is to give an ascending or descending movement to the standard, and thus regulate the mole or subsoil plow, whichever may be used, to the desired depth. The mole-plow now in use is drawn by a capstan, or so arranged in connection with the ordinary or other kinds of plows as to be necessarily slow in its operation, particularly when it goes down below where the frost has affected the drain or hollow space made by the mole or shoe, whereas with this it need not go over two or three inches below the forward plow. The mole or shoe, as represented in Fig. 1, is intended as a drainer, and being inserted a sufficient distance in the ground, and when the plow is carried forward, forms a hollow space in its course for the water or moisture to settle in from the upper surface, and thus effectually drain the same, the space being sufficient to allow the diffusion of air therein, by which means the upper surface of the soil is kept perfectly dry, which will remain in this respect, provided the

mole or shoe be used in connection with the plow at the proper season in every year.

The subsoil-plow as herein described, having the mold-board combined with the same, may be attached at any time by withdrawing the mole-plow from the groove and introducing the standard of the subsoil therein, which is operated upon in the same manner as the other.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The spiral cam C, in connection with the shaft *c*, for operating either a mole or subsoil plow, substantially in the manner and for the purpose herein set forth.

2. The standards B B, either of the subsoil or mole plow, having a series of notches or teeth, *b*, as arranged and used in their connection with the spiral cam and groove of the beam A, substantially in the manner and for the purpose as herein set forth.

3. The arrangement of the brace-bar E in its relation to the standards, with shackle-bar and connecting-rod *d* attached to the beam of the plow, substantially in the manner and for the purpose as herein set forth.

4. The arrangement of the mold-board F with the subsoil-plow, substantially in the manner and for the purpose as herein set forth.

Witnesses: ALONZO T. BOON.

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