E. H. MORTON.

Mole-Plow.

No 45,735.

Patented Jan 3, 1865.

Fig. 1.

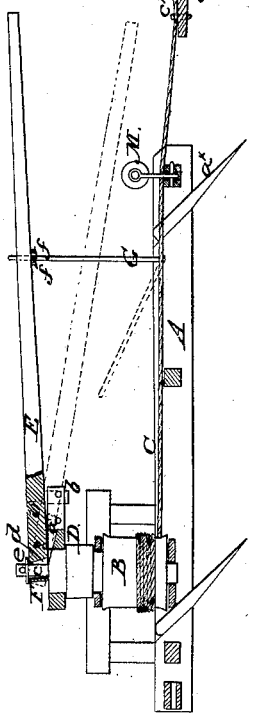


Fig. 2.

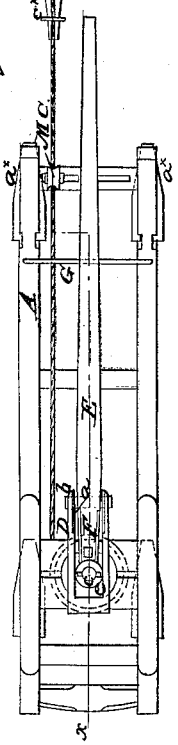
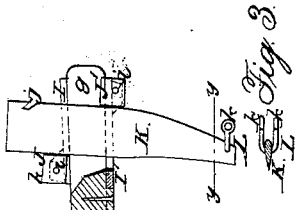


Fig. 3.



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UNITED STATES PATENT OFFICE.

E. H. MORTON, SR., OF OXFORD, IOWA.

IMPROVEMENT IN DITCHING AND MOLE PLOWS.

Specification forming part of Letters Patent No. **45,735**, dated January 3, 1865.

To all whom it may concern:

Be it known that I, E. H. MORTON, Sr., of Oxford, in the county of Johnson and State of Iowa, have invented a new and Improved Ditching or Mole Plow; 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, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same; Fig. 3, a horizontal section of a portion of the same, taken in the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to a new and improved plow of that class which are commonly termed "mole-plows," and are used for forming subterranean drains.

The invention consists in a novel mode of attaching the sweep to the capstan, whereby the former is rendered capable of being adjusted so as to be readily connected with and disconnected from the capstan, and admit of the latter being turned when the plow-beam is drawn forward without turning the sweep and without removing it from the machine.

The invention also consists in the employment or use of a sheave or pulley attached to the capstan-frame to serve as a guide for the plow-beam rope, as hereinafter set forth.

The invention also consists in an improved manner of attaching the colter to the beam, whereby the former may be made to work at different angles relatively with the latter, as may be desired, and the colter and mole readily drawn out of the earth.

The invention further consists in a novel attachment applied to the plow-beam, whereby the latter is more readily turned than heretofore.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a frame in which a capstan, B, is placed vertically, and around which the plow-beam rope C is wound. On the upper end of this capstan there is fitted and permanently secured a horizontal bar, D, the outer end of which has a slot, *a*, made longitudinally in it, the inner surfaces of the sides of said slot being faced with metal, and the outer end of the bar rendered strong and durable by a transverse metal bar, *b*. In the upper end of the capstan there is driven an upright journal, *c*, on which the inner end of a sweep, E, is fitted, said sweep having a metal strap, F, on its inner end to form an eye, *d*, which is fitted on the journal *c*, the latter having a pin, *e*, passing horizontally through it above F to retain the sweep on the journal. The eye *d* is internally of conical form to admit of a slight vertical play of the sweep on the journal *c*, so that the former may be adjusted into and out of the slot *a* of the bar D, the sweep, when out of said slot *a*, resting on a bail-shaped support, G, the lower ends of which are fitted in the frame A and allowed to work or turn freely therein. The upper part of this support has an indentation made in it to receive the sweep, and in the under side of the latter there are two pins *f f*, between which the upper part of the support is fitted. These pins prevent the support from casually falling or dropping, and the latter is turned up to support the sweep and keep it free from the bar D when it is not designed to have the sweep connected with the capstan. When the sweep is to be connected with the capstan the support G is turned down out of the way and the sweep fitted in the slot *a*. Thus by this simple arrangement the sweep may be readily connected with and disconnected from the capstan.

H represents the plow-beam, one end of which has a slot, *g*, made vertically and longitudinally in it, and to the upper and lower surfaces of the slotted portion of the beam there are attached metal bars, I I′, which are also slotted longitudinally, corresponding to the slot *g* in the beam. At the back end of the upper bar, I, there are two lugs, *h h*, between which a square plate, J, is fitted on a horizontal pin, *i*, the bearings of the latter being in the lugs *h h*, and at the front end of the lower bar, I′, there are two similar lugs, between which a plate, J′, precisely like J, is fitted in the same way. These plates J J′ are placed eccentrically on their pins *i*, and said plates are in line with the slot *a* in the beam H.

K represents a colter, which is fitted in the slot *a* of the beam H and between the two plates

J J′, the latter serving as bearings for the colter, and in consequence of the plates being placed eccentrically on the pins *i i* it will be seen that by turning said plates so as to bring different sides of the same in contact with the colter the angle of same relatively with the beam may be varied as required. The back edge of the colter, near its upper end, has an oblique notch, *j*, made in it, and when it is desired to draw the colter from the earth the lower plate, J′, is removed, its pin *i* being replaced and the back end of the beam H raised, and the pin *i* of the lower plate, J′, will catch into notch *j* and cause the colter and mole to be raised out of the earth.

The mole is not represented; but it may be of the usual or any proper form, and it is attached to the lower end of the colter K by means of a clevis, L, which is simply a rod bent in U form, with an eye, *k*, at each end for a bolt or pin to pass through, said pin also passing through the front end of the mole. The clevis L passes through a hole in the colter, and it, while firmly connecting the mole to the colter, prevents the former from turning out of a proper working position.

To the back end of the capstan-frame A there is attached a sheave or pulley, M, underneath which the beam-rope C passes. This sheave or pulley serves as a guide for the rope C, and keeps the latter down nearly parallel with the base of the frame A and still allows it sufficient play. The sheave or pulley obviates considerable friction and keeps the rope C in such a position that it will not have a tendency to upset the capstan-frame while the latter is settling down and the stakes penetrating the earth at the commencement of each operation.

The colter and mole are drawn along under the operation of the capstan B, which is turned by animals attached to the sweep, the beam H being placed at a suitable distance from the frame A, and the latter provided with stakes $a^{\times}$, which penetrate the earth and hold the frame firmly while the beam is drawn toward it and the colter and mole perform their work. When the frame A is again set for a succeeding operation the frame is drawn out from H, the rope C being consequently unwound from the capstan, which is rotated thereby, and the sweep E, during this unwinding of the rope, is disconnected from the capstan, so that said sweep cannot rotate with it.

N represents a shoe, which is formed of a piece of plank, secured by a pivot-bolt, $b^{\times}$, to the under side of the front part of the beam H. This shoe is made of taper form, as shown clearly in Fig. 2, and a metallic ring, $c^{\times}$, is placed on its front part, through which the rope C passes, said rope being attached to a clevis, $d^{\times}$, at the front end of the beam H. This shoe N, in consequence of turning freely on its bolt $b^{\times}$, admits of the beam H being freely turned when an angle is made, or when the course of the colter or mole in the earth is changed.

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

1. Attaching the sweep E to the capstan B by means of the journal *c* and slotted bar D on the latter, and the eye *d* on the sweep, substantially as and for the purpose set forth.

2. In combination with the sweep E, the adjustable bail-support G, constructed and applied to the capstan-frame A to operate as and for the purpose described.

3. The securing of the colter K to the beam H through the medium of the slot *a* and adjustable plates J J′, arranged substantially as herein set forth.

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