

(No Model.)

2 Sheets—Sheet 1.

J. CREAMER.
DITCHING MACHINE.

No. 301,686.

Patented July 8, 1884.

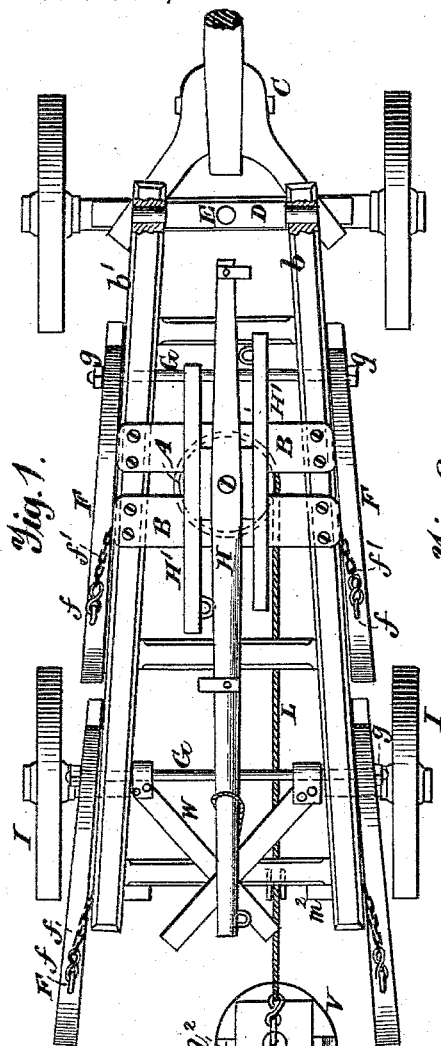
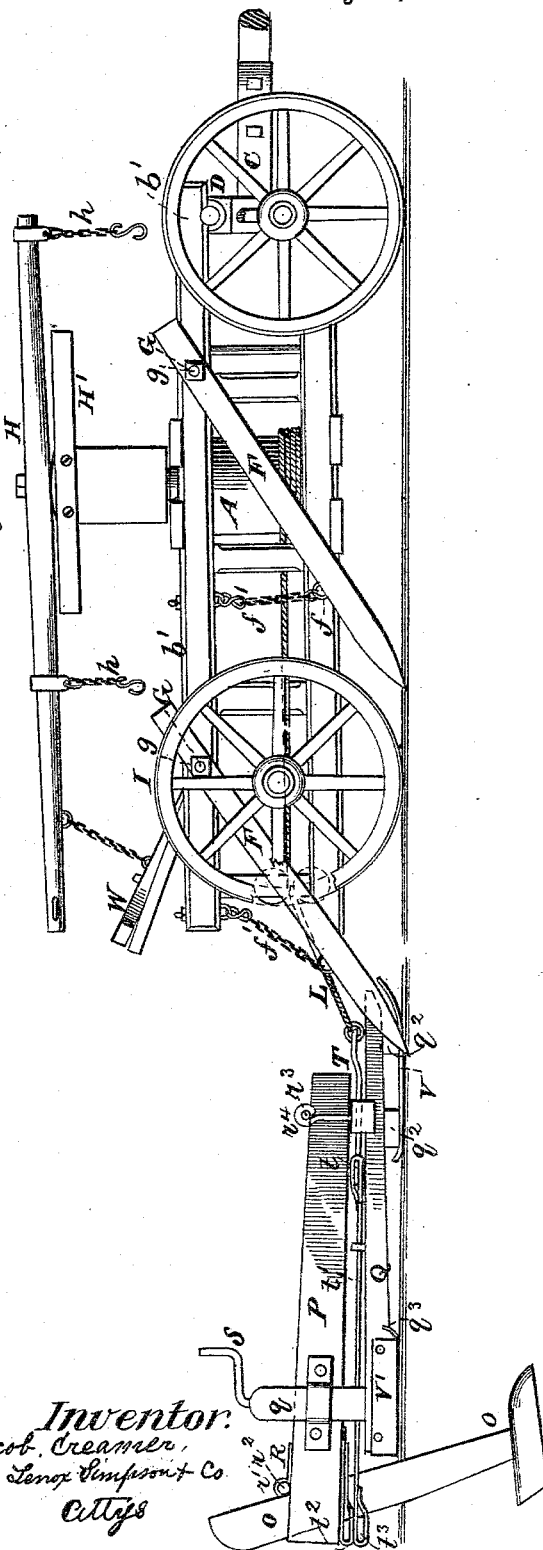


Fig. 1.

Fig. 2.



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Fig. 3.

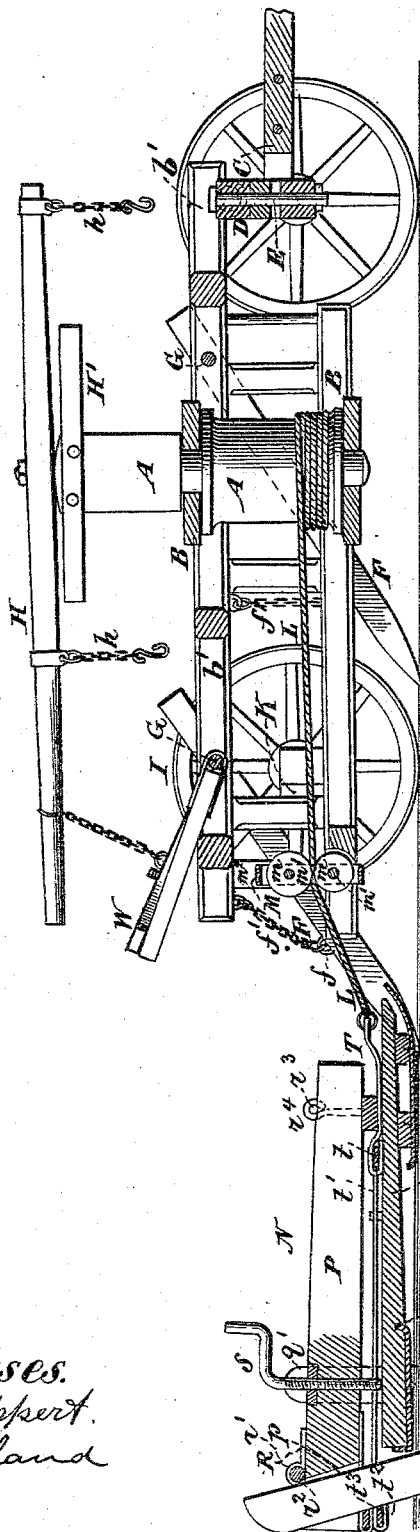


Fig. 5.

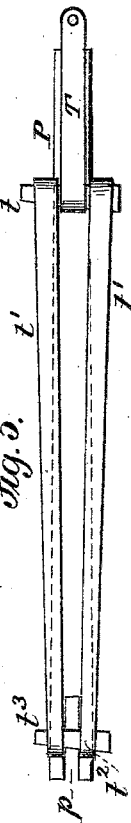


Fig. 6.

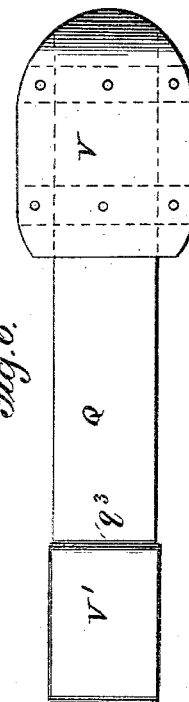
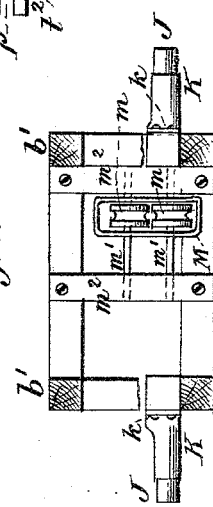


Fig. 4.



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UNITED STATES PATENT OFFICE.

JACOB CREAMER, OF MECHANICSBURG, OHIO.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,686, dated July 8, 1884.

Application filed April 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, JACOB CREAMER, of Mechanicsburg, in the county of Champaign, in the State of Ohio, have invented an Under-
5 Drain Ditching-Machine, of which the following is a specification.

The object of the invention is to facilitate the management, improve the operation, and remedy certain defects in under-drain ditch-
10 ers, all as hereinafter more particularly described, and pointed out in the claims.

Figure 1 of the drawings is a top plan view; Fig. 2, a side elevation; Fig. 3, a longitudinal vertical section; Fig. 4, a rear elevation,
15 showing the guide-pulleys for the capstan-rope, their casing, their shafts or rods, and the uprights in which the rods have their bearings. Fig. 5 is a detail bottom view of the draft devices, showing the plates with their
20 loops and wedge-key. Fig. 6 is a bottom view of the drag-slide, to exhibit the position and arrangement of the plates which take the ground-friction.

In the drawings, A represents the capstan;
25 B, the capstan-frame; C, the front running-gear, swiveled to turn laterally on a cross-bar, D, which is journaled in bearings under the front projected rails, *b' b'*, of the capstan-frame. The middle perforated cross-bar, D,
30 thus turns vertically, while the running-gear C turns horizontally, on the king-bolt E.

F F represent two pairs of anchors, the two of a pair being arranged transversely opposite to each other, and pivoted to the outside of
35 the rails *b'* by a rod, G, so that they will slip yieldingly over the ground in one direction, but catch in the other. *g* are nuts which turn on end threads of the rods G, so as to hold the anchors in place. The anchors are pro-
40 vided with stirrups *f* and chains *f'*, which connect with adjustable hooks beneath the rails *b'*. When the capstan-frame is given a forward motion, the anchors drag lightly over the surface of the ground; but when the cap-
45 stan-frame is given a backward motion the anchors F are forced into the ground to the depth allowed by the chains, and rigidly brace the frame against any farther movement in that direction. This holds the capstan-
50 frame until the mole-plow, with its connections, has been drawn up close thereto by the

rope. This is done successively until the whole length of the ditch has been completed.

H represents the sweep on the capstan-shaft, and the arms thereunder are shown at
55 H', said devices being old, together with the chains *h h* on the sweep.

I are the rear wheels, which run upon short journals J, connected with the capstan-frame by the thimble-skeins K. The latter are made
60 with flanges *k*, and bolted or otherwise fastened to the outside of the capstan-frame, as shown in Fig. 1 of the drawings. Thus I dispense entirely with the usual axle, which is found to be an obstruction to the rope L, which
65 connects the capstan with the draft devices of the mole-plow.

M represents a case, preferably made of metal, and *m m* two vertically-aligned pulleys arranged on horizontal rods *m' m'*, passing
70 through both case and pulleys and sustained in uprights *m" m"*. These rods form fixed shafts, upon which the pulleys may be held in the case, and upon which they may turn and have lateral play. Thus they form a guide
75 for the rope L, prevent it from rising, and hold it down, so that the sweep-horses can readily step over it. Its lateral movability makes it adapt itself automatically to the deviation of the plow-beam from the longitudinal
80 axial line of the capstan-frame, thus avoiding any unnecessary friction on the rope.

N represents the mole-plow, O its cutter, P the plow-beam, and Q the drag-slide which moves on the surface of the ground. The cut-
85 ter O is secured in its proper position in an open slot, *p*, at the end of the beam.

R is a fast plate, slotted at *r* and doubled at the end to form a loop, *r'*. Through this loop passes a wedge-key, *r"*, so that the cutter O
90 may be held at any part of its length, and also at any degree of obliquity to suit the desired position of the mole-plow. On the upper side of the beam may be placed a bolt, *r"*, in the parallel eye-plates *r" r"*, so as to take the strain
95 caused by the earth's resistance to the plow. The beam P is secured from lateral play on the slide Q, at the rear end, by means of the slide-standards *q q'*, while it is held at a greater or less distance therefrom by the grade-screw S,
100 which passes vertically through said beam, so as to give a regular grade to the ditch.

T represents a draft-piece connecting by a cross-plate, *t*, with the strip-plates *t'* *t'*, which are doubled at the ends to form loops *t''* *t''* and to receive a wedge-key, *t'''*, so as to bring the strain upon the cutter. Thus it will be seen that the cutter is made to carry the beam, instead of being carried by it, as is now done in those machines known to the public. My improvement takes a great deal of strain from the cutter and lightens the pressure on the fore end of the slide Q, while it allows the leverage of this fore end to be utilized in making curves, and in thus preventing the vault of the ditch from being broken and spoiled. The drag-slide Q is provided on the front end of its bottom with cross-pieces *q''* *q''*, to which is rigidly attached the metallic sled-shoe V, curved upwardly toward its front end, while it is provided on the under side of its rear end with a metallic friction-plate, V', flanged at the ends and sides. The front flange fits into a cross-slot, *q''*, while the others are arranged on the same side of the plate, so as to lap the free end of the slide, as well as both sides thereof, thus to prevent lateral or longitudinal displacement.

W represents a horse like that used in sawing wood. This is pivoted at the bottom to a rod, *w*, which is rigidly held in and across the capstan-frame. This serves merely to support the long arm of the sweep when the horses are not attached to it.

Having thus described all that is necessary to a full understanding of my invention, what I claim, and desire to protect by Letters Patent, is—

1. The combination, with the capstan-frame B and short journals J, of a skein, K, having on its inner end flanges *k*, adapted to be fastened to the capstan-frame, substantially as shown and described.

2. In a ditcher, the combination of a cutter, O, slotted plow-beam P, fast plate R, having loop *r'*, a fastening-wedge, *r''*, a bolt, *r'''*, and the eye-plates *r''''* *r''''*, substantially as shown and described.

3. The cross-plate *t*, two strip-plates, *t'*, doubled at the ends to form loops *t''*, and wedge-key *t'''*, in combination with the plow-cutter and draft-piece, whereby the lower end of the beam may be used as a lever, for the purpose specified.

4. The combination of a cross-slotted drag-slide, Q, having the cross-pieces *q''* *q''*, a sled-shoe, V, and a plate, V', flanged at the end as well as at the sides, substantially as shown and described.

5. The combination, with draft line or rope L, of a case, M, two vertically-aligned pulleys, *m* *m*, the two fixed horizontal rods *m'* *m'* in the same vertical plane, and the uprights *m''* *m''*, said rods passing through both case and pulleys, as shown and described, whereby the pulleys are allowed a lateral movement corresponding to the varying positions of the plow-beam with respect to the axial line of the capstan-frame, as set forth.

JACOB CREAMER.

Witnesses:

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