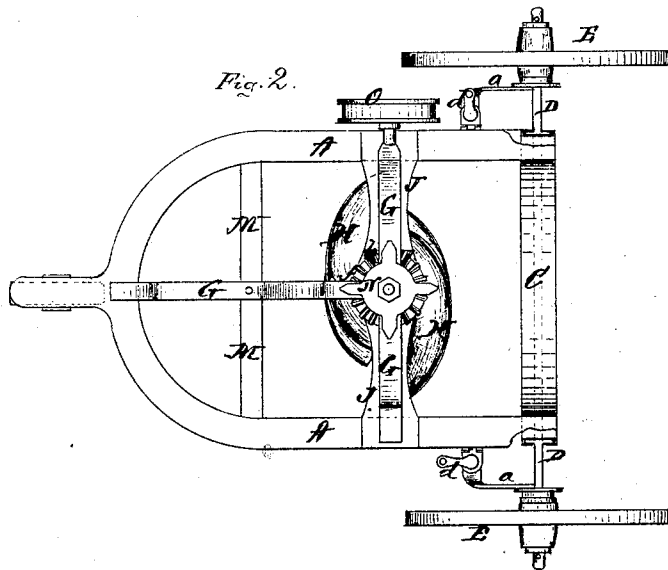
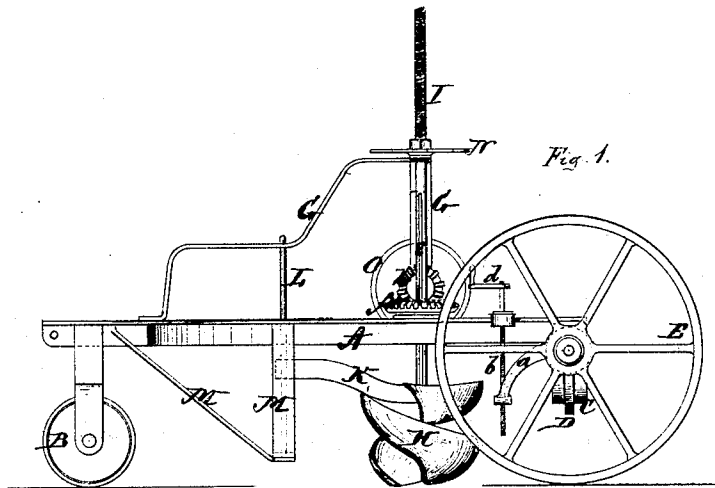


S. F. Gard,

Excavator.

No. 108248.

Patented Oct. 11. 1870.



Witnesses:

Chas. Jacobt.

J. D. White

Inventor:

S. F. Gard.

Per

J. Y. Alexander
att'y.

United States Patent Office.

SAMUEL F. GARD, OF NEW ORLEANS, LOUISIANA.

Letters Patent No. 108,248, dated October 11, 1870.

IMPROVEMENT IN DITCHING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, SAMUEL F. GARD, of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Ditching-Machines; and do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon forming part of this specification.

The nature of my invention consists in the construction and arrangement of a "ditching-machine," as will be hereinafter fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation, and

Figure 2 is a plan view of my machine.

A represents the frame of the machine, mounted at the front end upon one single wheel, B.

At the rear end of the frame A is a downward curved cross-bar, C, forming a guide, in which, or rather around which, on the under side, is placed the T-shaped axle D.

This axle corresponds in curvature with the guide C, but its ends are turned horizontally outward, and have the wheels E E placed thereon.

From each end of the axle D, inside of the wheel, an arm, *a*, projects forward, downward, and inward, and through its forward end passes an upright screw, *b*, provided with a crank, *d*, at its upper end.

This screw also passes through an ear of the side of the frame A, so that, by turning the cranks *d d*, the frame A may be placed at any angle from the horizontal that may be desired.

The ditching-tool having a fixed position on the frame, the angle at which the same is to operate is thereby easily regulated.

On the frame A are three braces, G G, which join together at a suitable height above the frame, and form the upper bearing for the upright screw-shaft I, on the lower end of which the ditching-tool H is secured.

The shaft I also passes through a cross-bar, J, on the frame which forms its lower bearing.

It is still further guided by means of an arm, K, attached to it immediately above the ditching-tool H,

the front end of said arm forming a loop around an upright rod, L, fastened in the front brace G, and in the junction of three other braces, M M, which are joined together under the frame, as shown in fig. 1.

On the cross-bar J, where the shaft I passes through, is placed a miter-wheel, *f*, which is provided with a collar passing through said cross-bar, and the shaft I passes through the center of the miter-wheel, so that in reality the wheel *f* forms the lower bearing for the shaft.

The shaft I is provided with a feather, *e*, and the wheel *f* has a corresponding groove, through which said feather passes, so that the shaft I can be raised or lowered at will by means of the screw-wheel N, on top of the braces G, without interfering with its rotating motion. It is rotated by means of a miter-wheel, *h*, gearing with the wheel *f*, and placed upon the inner end of a small horizontal shaft, on the outer end of which is a pulley, O, which is to be connected with the power desired to be used.

The ditching-tool H is formed of two concave auger-blades twisted around the lower end of the shaft I, as shown in fig. 1.

Having thus fully described my invention,

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

1. The curved T-shaped axle D, moving in the guide C, which is adjusted by means of the screw-rods *b b*, substantially as and for the purposes herein set forth.

2. The arrangement of the braces G and M, cross-bar J, shaft I, arm K, and rod L, all substantially as shown and described, and for the purposes herein set forth.

3. The shaft I, provided, at its lower extremity, with ditching-tool H, in combination with miter-wheels *f h*, pulley O, and screw-wheel N, all arranged to operate substantially as and for the purpose set forth.

4. A ditching-machine, consisting of the frame A, with wheel B and curved guide C, the T-shaped axle D, wheels E, shaft I, ditching-tool H, and mechanism for rotating and raising and lowering the same, all substantially as and for the purposes herein set forth.

The above specification of my invention signed by me this 24th day of June, 1870.

SAMUEL F. GARD.

Witnesses:

PAUL BONFONSQUIÉ,
A. PERSAC.