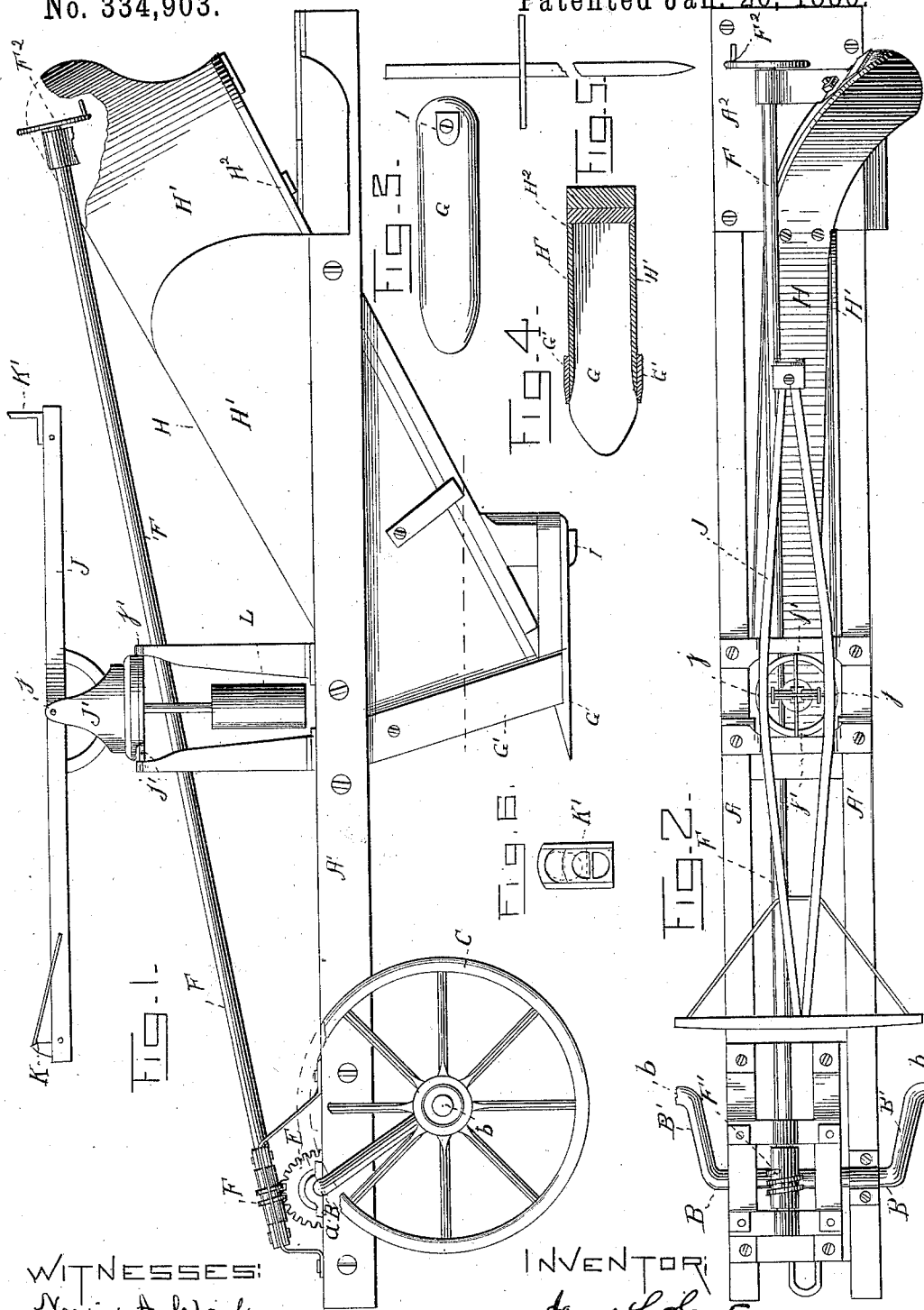


(No Model.)

J. L. SENTENEY.
DITCHING MACHINE.

No. 334,903.

Patented Jan. 26, 1886.



WITNESSES:

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INVENTORI

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UNITED STATES PATENT OFFICE.

JAMES L. SENTENEY, OF COOK'S MILLS, ILLINOIS.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 334,903, dated January 26, 1886.

Application filed March 24, 1885. Serial No. 159,994. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. SENTENEY, a citizen of the United States, residing at Cook's Mills, in the county of Coles and State of Illinois, have invented certain new and useful Improvements in Ditching-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention is an improvement in ditching-machines, and has for its object to provide simple and convenient means by which the grade of the ditch may be kept even, and also convenient means for forming a groove in the bottom of the ditch, in which to rest the drain-pipes, and also improvements in the knives or cutters for forming the ditch.

To these ends the invention consists in certain novel constructions, combinations, and arrangements of parts, which will be hereinafter more fully described and claimed.

In the drawings, Figure 1 is a side view of my machine. Fig. 2 is a top plan view of the machine, the wheels being removed. Fig. 3 is a bottom plan view of the plow. Fig. 4 is a detached section on line *x x*, Fig. 1. Fig. 5 shows the sight-rod, and Fig. 6 is a detail view of one of the sight-edges.

The main frame of the machine comprises beams *A A'*, separated to receive the guide-chute. At the front end of these frames I provide bearings *a* for the axle *B*, which is journaled therein, and has the cranks *B'* on its ends. On the wrists *b* of these cranks are the wheels *C C*. As the axle is turned the wheel *C* will be adjusted vertically. By adjusting these wheels up or down, the front end of the framing will be set higher or lower and the depth of the plow will be regulated. These wheels may be adjusted vertically in various ways, and I do not desire that the broad features of my invention shall be limited to the peculiar means shown, but I prefer the construction as shown, and which I will now describe.

On the axle *B*, I secure or form a worm-wheel, *E*, which is meshed by a worm, *F'*, se-

cured or formed on a shaft, *F*, which is suitably journaled and extends rearward, and has its rear end provided with a suitable crank, *F'*, in convenient reach of the operator, who stands on a platform, *A'*, mounted on the rear end of the framing. By turning the shaft *F* the axle may be turned and the wheels set to and held at any suitable height desired; also, by this shaft *F* the axle may be turned slightly from time to time to insure the even angle of the ditch. The plow is held below the frame, and comprises the bottom or sole piece, *G*, and the front knives or cutters, *G'*, to which is secured the chute *H*, which is formed of side boards, *H'*, and base-board *H''*. The knives *G'* are inclined forward toward their upper ends, so as to give a slicing cut, and they are fixed to the outer sides of the side boards, *H'*, of the chute, in order that the thickness of their rear ends will afford sufficient clearance to enable the machine to move easily through the ground. The chute *H* inclines upward toward the rear end of the machine and curves to one side at its rear extremity, and has the plate *H'* on such side broken away, to permit the dirt to dump to one side of the ditch. The under side of the sole-piece is provided with a groove or block, *I*, of less width than the sole-piece, and adapted to form a groove in the bottom of the ditch in which to rest the tile. This manifestly is a great convenience, as the tile-pipe will lie in said groove, and may be placed rapidly and accurately in position. This groove may be cast integral with the sole-piece; but I prefer to secure it movably by a screw or otherwise, so that different-sized grooves may be formed, as desired, for tiles of different diameter. On the ditcher I pivot at *j*, between its ends, the sight-bar *J*, provided at its opposite ends with points or edges *K K'*, over which the sight may be taken toward a fixed object. The pivots of this bar *J* are at right angles to the line of motion, and are preferably in a carrier, *J'*, which in turn is pivoted to the framing of the ditcher at right angles to the pivots *j*, so as to form a universal joint.

To the bar *J*, I secure a balance-weight, *L*, which retains said bar in proper horizontal position. While the points *K K'* may be formed rigidly on the said bar and arranged at any desired relative angle, it is preferred to form one of such points fixed and the other a

frame movable vertically in a guide-frame, so it may be set up or down to gage different angles, and it is preferred to provide the said frame with several sight-openings, to enable
 5 the sighting of a large number of angles and ones of greater variance, as will be understood. In operation, a sight-object, such as shown in Fig. 5, is fixed on the ground at the
 10 point of greatest or least depth of the ditch, and the machine is moved toward such object, sight being taken from time to time, and the wheels properly set to keep the sight uniform, and the ditch will be formed at even grade, as will be understood.

15 While I prefer to use the balance-weight on the sight-bar, it is manifest it might be dispensed with, and such bar be suitably balanced by weights on its ends; or the said bar might be provided with a spirit-level and set to a
 20 dead-level when desired to sight the fixed object.

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

25 1. In a ditching-machine provided at its front end with vertically-adjustable supporting-wheels, a sight-bar pivoted between its ends on the ditcher and weighted to always occupy a horizontal position, and provided

with a vertically-adjustable sight-piece, substantially as set forth. 30

2. The combination, in a ditching-machine, of the crank-axle journaled at the front end of the machine, and provided at or near its center with a worm-wheel, the operating-shaft
 35 centrally journaled to and running lengthwise of the frame, and provided at its front end with a worm meshed with the worm on the crank-shaft, and having its other end extended in convenient reach of the operator, and a
 40 sight-bar pivoted between the ends of the machine in line with and directly over the operating-shaft, substantially as set forth.

3. In a ditcher, the combination, with the sole-piece, of a groover removably secured on
 45 the under side of and made of less width than the said sole-piece, substantially as set forth.

4. In a ditcher, the combination of the chute, the sole-piece, and the side cutters or blades
 50 secured on the front outer edges of the side plates of the chute, whereby a suitable clearance is provided, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES L. SENTENEY.

Witnesses:

FRED MATTERS,
 J. K. BREEDEN.