J. W. HUMPHREYS.

Ditching-Machines.

No. 198,983. Patented Jan. 8, 1878.

Fig. 1.

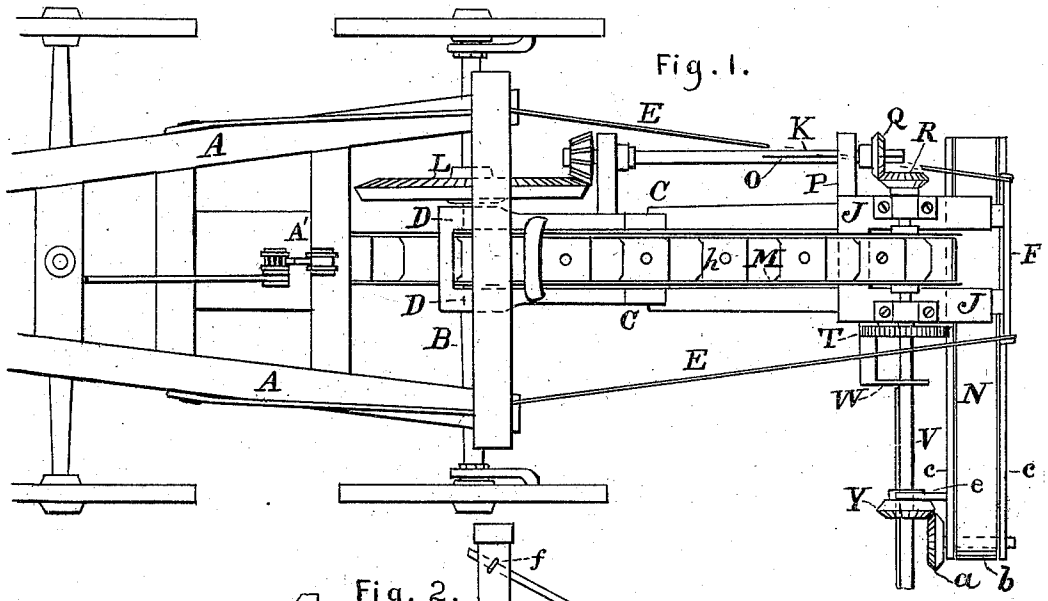


Fig. 2.

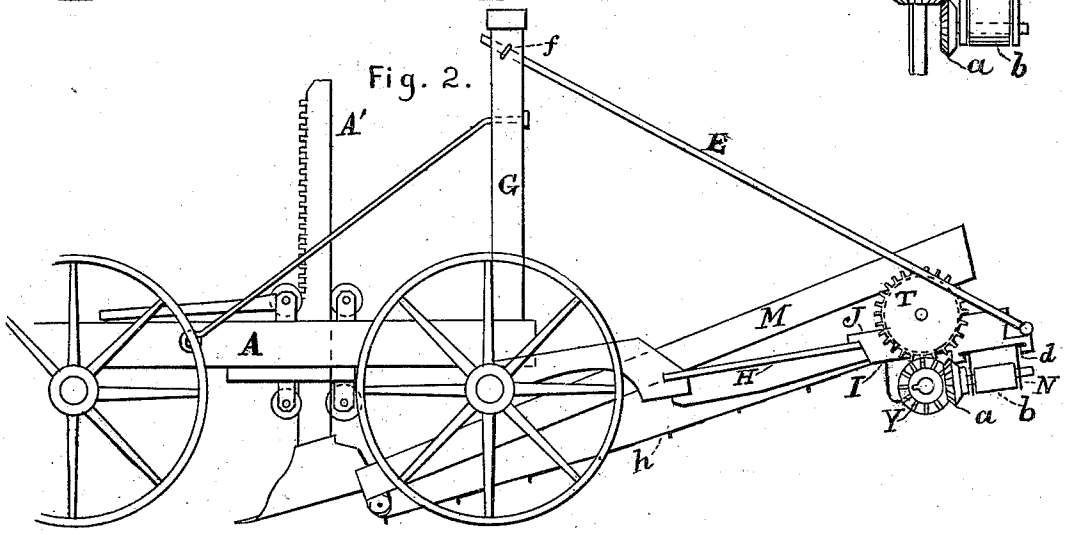
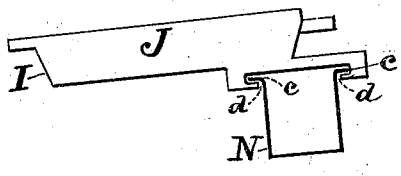


Fig. 3.



Witnesses:

W. Burris

H. A. Daniels

Inventor:

James Wm. Humphreys,

by Theodore Munzen

Attorney.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES W. HUMPHREYS, OF LA FAYETTE, INDIANA.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. **198,983**, dated January 8, 1878; application filed September 1, 1877.

To all whom it may concern:

Be it known that I, JAMES WM. HUMPHREYS, of La Fayette, in the county of Tippecanoe and State of Indiana, have invented certain new and useful Improvements in Ditching-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a plan view of a ditching-machine having my improvements. Fig. 2 is a side view of the same. Fig. 3 represents, in side view, the sliding seat, showing its connection with the side carrier.

This invention relates to an improvement in that class of ditching-machines in which a side carrier is employed to receive the earth as it is taken from the ditch and deposit it at the side thereof; and it consists of an endless belt in an adjustable chute, the sides of which are provided with flanges, which enter ways in the rear portion of the frame of the machine, to bring the side carrier beneath the discharge end of the elevating-chute, in combination with a shaft supported in bearings, and provided with bevel-gearing keyed to the shaft, so as to slide thereon, and always engage with the bevel-gear wheel that drives the endless belt in the adjustable chute, and with driving-gearing to operate the shaft that connects with said endless belt.

It further consists of a pair of parallel beams, articulated at their front ends to the main driving-shaft of the machine, and supported at their rear ends by articulated braces, connected at their front ends to uprights secured to the main frame, in combination with a sliding seat, and a keyed shaft for carrying the mechanism which operates the endless belts in the elevating-chute and side chute of the machine, to permit the rear end of the frame of the machine to be elevated or depressed at the will of the operator, all of which will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawing, A is the main frame of the machine, supported on four wheels, the two rear ones being connected to the main shaft B by pawls and ratchets, to permit the machine to be moved backwardly without setting the operative mechanism in motion.

A′ is the rack and its connections for raising and lowering the front end of the elevating-chute.

Parallel beams C C are secured by boxes D D to the main shaft B, and are supported at their rear ends by adjustable hinged braces E E, connected to a rod, F, secured to the ends of the beams C C, and also by pins *f* passed through holes in the front ends of said braces to the uprights G G, secured to the frame A, to permit the rear end of said beams to be elevated or depressed at the will of the operator. The beams C C have flanges H H, which enter ways in the depending flanges I I of the sliding seat J, to permit said sliding seat to move upon the parallel beams C C when the latter are being elevated or depressed.

The connecting-shaft K, through which motion is communicated from the main gear-wheel L to the mechanism which operates the endless belts in the elevating-chute M, and the side carrier N, has the groove O, to permit the arm P and the gear-wheel Q keyed thereto to slide thereon when the beams C C are being elevated or depressed, and to permit the gear-wheels Q and R to engage one with another at all times.

The shaft which carries the gear-wheel R carries also the sheave which operates the endless belt *h* in the chute M, and a spur-gear wheel, T, upon its opposite end. The wheel T engages with a smaller spur-gear wheel, U, upon the shaft V, supported in bearings in arms W and X, secured to the depending flanges I I of the sliding seat J. This shaft V is feathered, and receives a bevel-gear wheel, Y, which slides thereon, and engages with the bevel-gear wheel *a*, which operates the endless belt *b* in the side carrier N, which latter has the edges of its sides flanged, the said flanges *c* entering ways *d* in the depending flanges I I of the sliding seat J, so as to bring the adjustable side carrier directly beneath the discharging end of the elevating-chute M, to receive the dirt therefrom, and to deposit it either near to or at a distance from the ditch, as may be desired.

A stay-spring, *e*, is secured to the side of

the chute N, and bears against the bevel-gear wheel Y, to move said wheel Y toward the end of the shaft V, and keep it engaged with the wheel *a* when the discharging end of the side carrier N is being moved away from the parallel beams C C.

In the case of a tile-ditch, where the dirt is to be filled in again, it is desirable to have it quite near to the ditch, in which event the side carrier N is so adjusted as to deposit the dirt conveniently for filling in; but in the case of an open ditch the dirt should be deposited sufficiently far away to prevent it from being washed into the ditch by rains, and by properly adjusting the chute N the dirt may be deposited entirely outside of the wheels of the machine.

The adjustable side carrier may be successfully used where no sliding seat J is employed by simply making the ways in which the flanges C travel in the under side of the parallel beams C C.

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

1. The adjustable chute N, provided with the gear-wheel *a* and stay-spring *e*, in combination with the keyed shaft V, provided with the sliding gear-wheel Y, substantially as and for the purposes set forth.

2. In combination with the elevating-chute M, the adjustable chute N, working in ways in the under side of the sliding seat J, arranged to move upon the parallel beams C C, substantially as and for the purposes set forth.

3. The adjustable chute N, provided with the endless belt *b*, stay-spring *e*, and flanges *c c*, working in ways in the sliding seat J, in combination with the feathered shaft V, working in bearings W and X, and provided with the bevel-gear wheel Y, and spur-gear wheel U, the latter engaging with the gear-wheel T, substantially as and for the purposes set forth.

4. The parallel beams C C, articulated to the main shaft B, and supported at their rear ends by the adjustable braces E E, connected to the uprights G G, in combination with the sliding seat J and suitable adjustable gear for operating the endless belts *b* and *h*, all constructed and arranged substantially as and for the purposes set forth.

In testimony that I claim the foregoing improvements as above described I have hereunto set my hand and seal this 20th day of August, 1877.

JAMES W. HUMPHREYS. [L. S.]

Witnesses:
S. W. DODD,
R. P. DAVIDSON, Jr.