3 Sheets—Sheet 1.

J. F. WOTRING.

Ditching Machine.

No. 201,474. Patented March 19, 1878.

Fig-1-

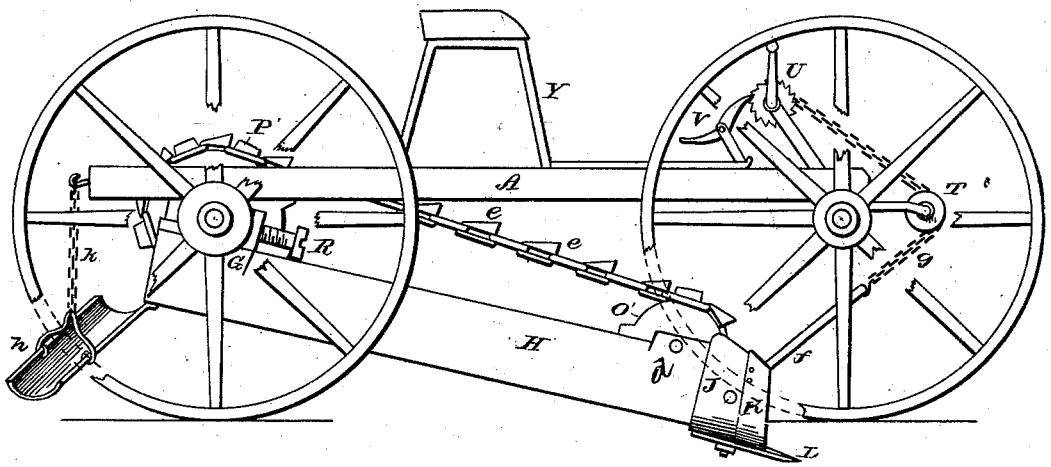
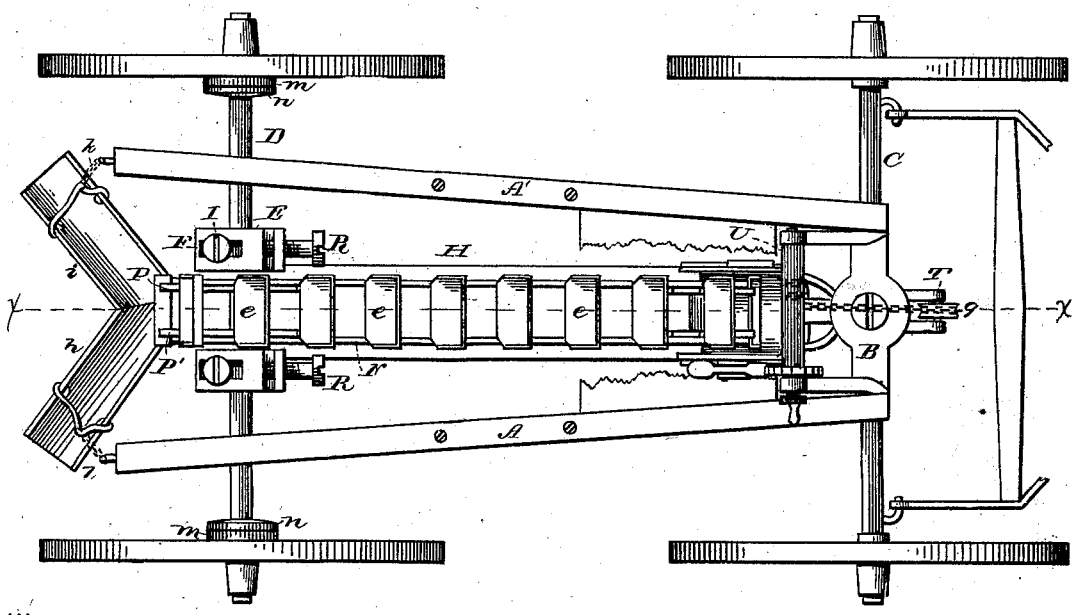


Fig-2-



WITNESSES:

Jno. F. Dushmel.

A. B. Brown

INVENTOR.

John F. Wotring.

PER

A. C. Abbott.

ATTORNEY.

3 Sheets—Sheet 2

J. F. WOTRING.

Ditching Machine.

No. 201,474. Patented March 19, 1878.

Fig. 3.

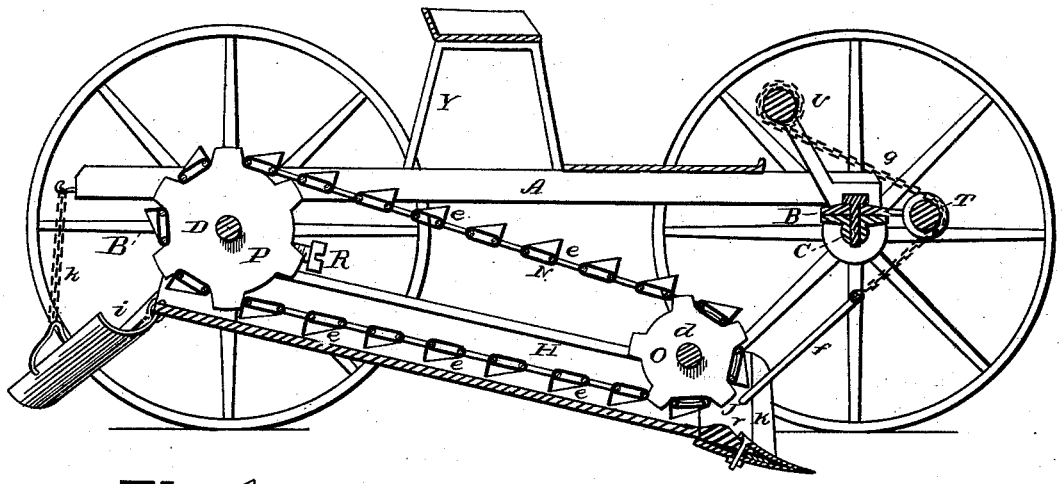


Fig. 4.

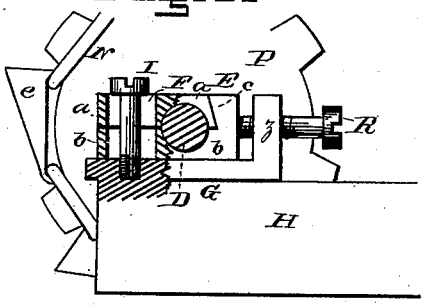


Fig. 5.

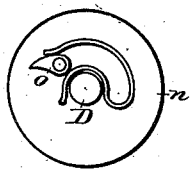
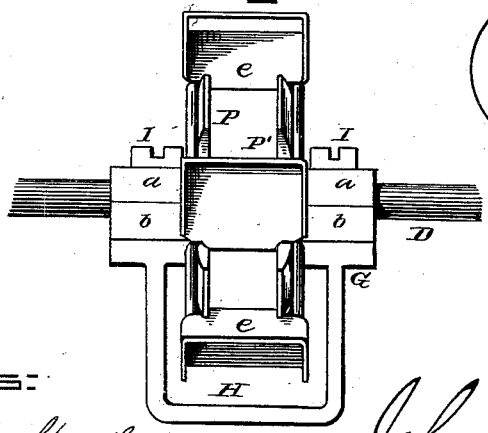


Fig. 6.



WITNESSES:

Jas. F. Dustomel.

W. B. Brown

INVENTOR:

John F. Wotring.

PER

A. C. Abbot.

ATTORNEY.

3 Sheets—Sheet 3.

J. F. WOTRING.
Ditching Machine.

No. 201,474. Patented March 19, 1878.

Fig. 7.

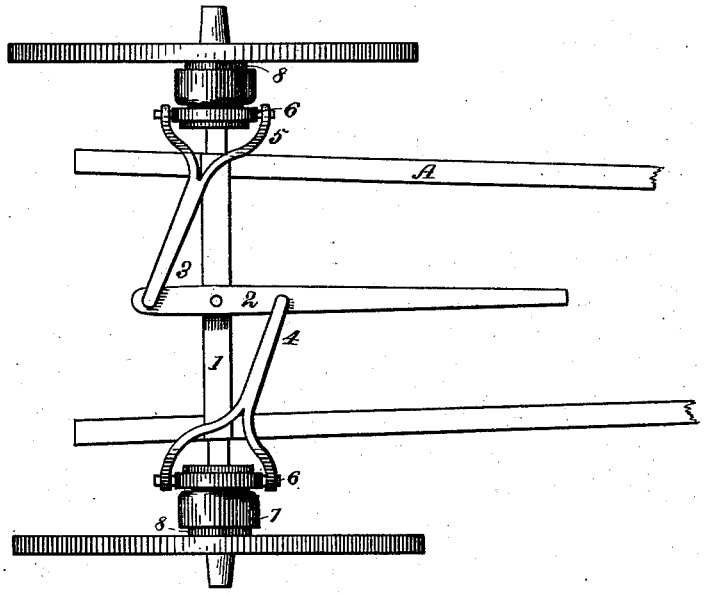


Fig. 8.

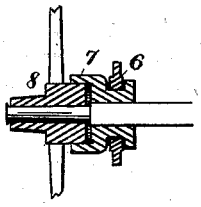


Fig. 9.

Fig. 10.

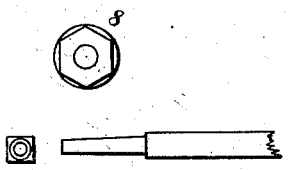
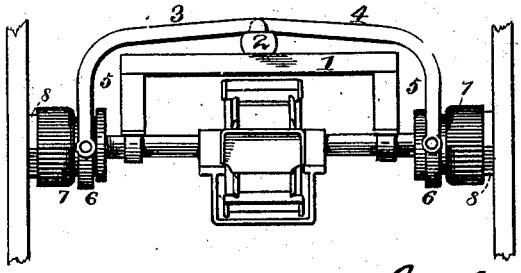


Fig. 11.



WITNESSES:

Jos. F. Dudamel

H. B. Brown

INVENTOR:

John F. Wotring.

PER

H. C. Abbot

ATTORNEY.

UNITED STATES PATENT OFFICE.

JEHU F. WOTRING, OF OGDEN CENTRE, MICHIGAN.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. **201,474**, dated March 19, 1878; application filed December 28, 1877.

To all whom it may concern:

Be it known that I, JEHU F. WOTRING, of Ogden Centre, in the county of Lenawee and State of Michigan, 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 thereof.

This invention relates to certain improvements in ditching-plows; and the invention consists in the construction and arrangement of parts, all of which will be hereinafter more 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 arrangement, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation with the spokes of the wheels broken away to show various parts of the machine. Fig. 2 is a top view with part of the foot-board removed. Fig. 3 is a central longitudinal section taken on line *x x* of Fig. 2, and Figs. 4 and 5 are views showing detached parts. Fig. 6 is an end view.

A and A′ represent bars, secured to the bolster B on the axle C, extending back and projecting beyond the axle, as shown. At about the center of the axle D, and near together, are placed two sprocket-wheels, P and P′, which are rigidly attached to the axle, and revolve with it, carrying an endless chain, N, with the links of which the cogs of the wheels engage.

On the outer sides of the wheels P and P′, upon the axles D, are placed bearings E E, through which the axle passes and revolves freely. Each bearing is composed of parts *a* and *b*, held together at one end by a headed screw or bolt, I, passing through slots F into the plate G of the trough H, and at the other end by the overlapping dovetail flange *c* of the part *b*, under which the end of the part *a* is held by the axle, as shown in Figs. 2 and 4 of the drawing.

The upper end of the trough H is provided with a plate, G, rigidly attached thereto, having a right-angled flange, *z*, at one end, as shown in Fig. 4, through which a set-screw, R, bearing upon the part *b*, is passed, and used for adjusting the endless chain to the proper tension by moving the trough forward upon the tightening of the screw or bolt. This end of the trough is held in its elevated position by the headed bolt or screw I, passing through the slots F and into the plate G, permitting the required longitudinal adjustment of the trough in relation to the endless chain by sliding in the slots F.

The trough H extends from immediately back of the axle D to a point just back of the axle C, and terminates in a scraper, J, the front of which is provided with a detachable cutting-edge, K, and point L.

In the sides of the trough, immediately back of the scraper, is journaled a shaft, *d*, carrying the sprocket-wheels O and O′, the whole composing a chain-pulley, which carries the front end of the endless chain N.

The endless chain is provided with a series of scrapers or buckets, *e*, placed at suitable intervals. These scrapers are of a suitable size to occupy the spaces within the trough, and, as they are drawn from the front end, to carry that which may be before them to the back end.

The depth of the cut made by the scraper J is regulated by a bail, *f*, to which is attached a chain, *g*, which passes over a pulley, T, attached to and extending out in front of the center of the bolster B, and to a windlass, U, located either upon the bolster or the bars A A′. This windlass is provided with a pawl and ratchet.

Upon the bars, within easy reach of windlass, is placed a seat for a driver, so that the same person that drives the team can regulate the cutting of the scrapers. To the upper or back end of the trough are attached two chutes, *h* and *i*, extending to either side, and arranged to receive the discharge from the trough, and carry it to a point in the rear of the back wheels.

The angle of inclination of the chutes is regulated by chains *k* and *l*, which may be caught upon hooks attached to the rear end of the bars A and A′, and serve to hold the chutes up when the machine is on the way to and from work. The front axle C, at its center, is enlarged, so as to make a disk for the seat of the

bolster B, the center of which is enlarged to form a disk of corresponding size to the disk of the axle upon which the king-bolt passes. The bolster is arched sufficiently to remove all friction, except between the disks. The insides of the hubs of the hind wheels are each provided with a ratchet-wheel, *m*, the teeth of which engage a spring-pawl, *o*, attached to a vertical disk, *n*, which forms a part of the axle D, and cause the axle to revolve with the wheel upon the forward movement of the machine, and permit the wheel to revolve freely upon the axle upon the backward movement of the machine.

The operation of my device is as follows: The scraper being adjusted to cut the required depth, the machine is put in motion. The hind wheels operate as driving-wheels, engaging the pawl upon the vertical disk, thus revolving the axle D, which, carrying the wheels P and P′, puts the endless chain in motion, and draws the scrapers through the trough H, removing and depositing the material cut by the scraper J. The bottom of the inner surface of the scraper J is constructed with an elevation, as shown at *r* in Fig. 3 of drawings. From the cutting-edge the ascent of this elevation is in a curve to the axis of the chain-pulley, and extends to a point adjacent to the circle described by the scrapers upon the endless chain, where it diverges with a curve, and assumes a direction parallel to that circle. This construction is peculiarly adapted to the reception of dirt by the endless chain.

Instead of the pawl and ratchet shown in Fig. 5, I may use the device hereinafter described, and shown in the following figures, and in which Fig. 7 is a top view; Figs. 8, 9, and 10, detached parts; and Fig. 11 is an elevated end view.

To the parts A and A′ is secured a cross-piece, 1, upon which is pivoted a lever, 2. To the short end of the lever 2 is secured one end of an arm, 3, and about the same distance on the other side of the pivotal point of the lever is secured another arm, 4. These arms are provided with forked ends 5, which are secured to the bands 6 of the sockets 7, adjustably arranged on the axle, and made to receive the hub 8, as shown.

The object of this arrangement is, that as the machine is being moved from one place to another, the socket 7 may, by the lever 2, be drawn back from the hubs 8, thereby throwing the machine out of gear, and so that the endless chain will not operate.

This construction also admits of connection or disconnection at any time without changing direction or elevating the plow.

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

1. In a ditching-machine, the scraper J, provided with the elevation *r*, in combination with an endless chain and trough, substantially as shown and described.

2. In a ditching-machine, a trough having a plate, G, provided with an arm, *z*, and a bearing device composed of slotted parts *a* and *b*, overlapping dovetail flange *c*, and set-screw I, in combination with an axle, D, substantially as shown and described.

3. In a ditching-machine, an adjustable bearing for sustaining the trough from the axle, substantially as set forth, composed of a slotted bearing-piece, *a*, in combination with a slotted piece, *b*, having a dovetail flange, *c*, overlapping the bearing-piece *a*, and screw or bolt I, substantially as shown and described.

4. In a ditching-machine, the combination of the bearing device hereinbefore set forth with the trough, axle, sprocket-wheels, and endless chain, substantially as shown and described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JEHU F. WOTRING.

Witnesses:
RUSSEL G. CARTER,
ABUBOSE CORNTEN.