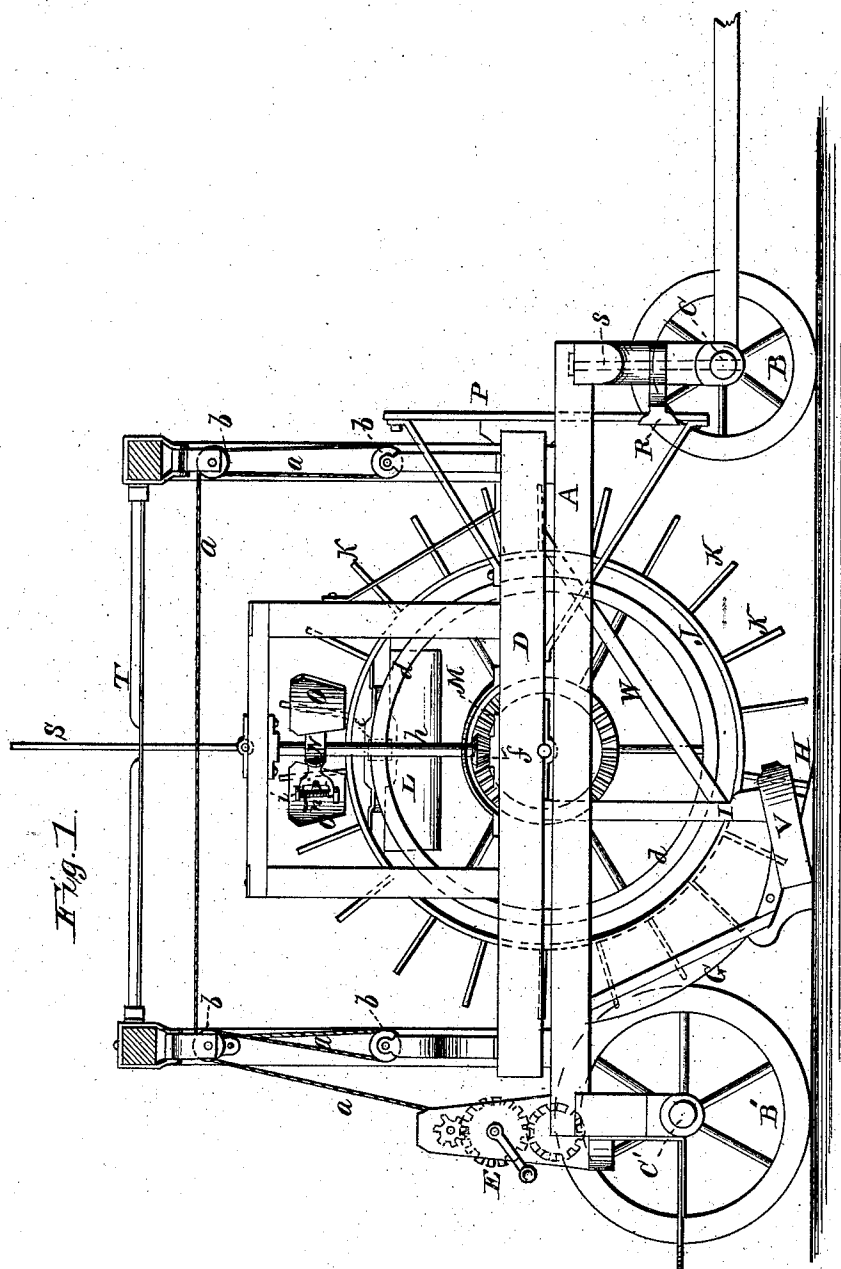


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DITCHING-MACHINE.

No. 184,156.

Patented Nov. 7, 1876.



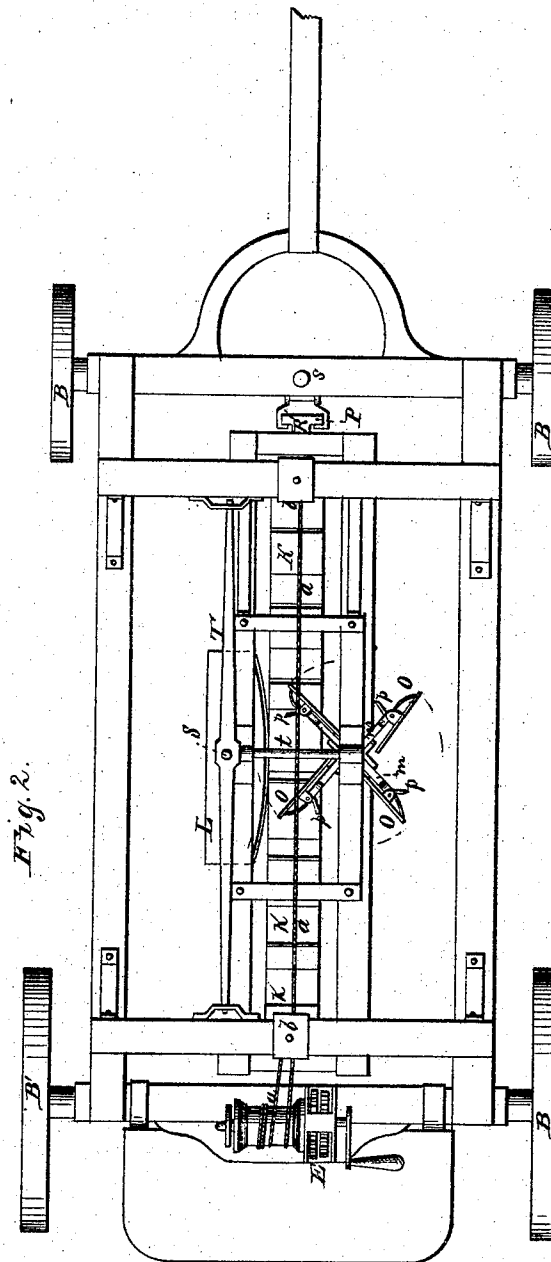
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UNITED STATES PATENT OFFICE.

ALBERT E. JOHNSON, OF SAMANTHA, OHIO.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. 184,156, dated November 7, 1876; application filed October 19, 1876.

To all whom it may concern:

Be it known that I, ALBERT E. JOHNSON, of Samantha, in the county of Highland and State of Ohio, 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of my invention consists in the construction and arrangement of a ditching-machine, as 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 operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of my improved ditching-machine. Fig. 2 is a plan view of the same.

A represents a suitable frame-work mounted upon wheels B B', placed upon the ends of the front and rear axles C C', respectively. In this frame-work is suspended another frame-work, D, containing the entire ditching mechanism. This frame-work D is suspended by means of chains or cables *a a* passing around pulleys *b b*, as shown, and connected to a windlass, E, by means of which said frame-work D and the ditching mechanism connected thereto are raised and lowered, as required. From the rear portion of the frame D depends a conductor, G, in curved form, as shown, and provided at its lower front end with a plow, H, which is directly under the center of the frame D. On each side of this plow is a vertical cutter, I, for cutting the sides of the ditch. In the frame D is mounted a large wheel, J, provided on its periphery with a series of wings or spades, K, projecting radially from the same at equal distances apart. This wheel with spades works in the conductor G, and is rotated by the wings or spades coming in contact with the ground, and the earth cut or loosened by the plow and side cutters is carried up the conductor by the spades, and then, resting on said spades, is carried up to the top of the wheel, where it

is discharged by means of a cleaning apparatus, hereinafter described, to one side over an inclined apron, L, attached to the side of the frame D. Under the apron L is mounted a friction-roller, *e*, which bears against a circular track, *d*, attached to the side of the wheel J. On the other side of this wheel to the hub is attached a bevel-gear wheel, M, which meshes with a pinion, *f*, on the lower end of a vertical shaft, *h*, which has its bearings in suitable boxes attached to the frame D. On the upper end of this shaft is attached a four-armed hub, N, the arms of which are slotted vertically, and in each of them is pivoted a short arm, *m*, having its outer end forked, as shown. To the forked end of each arm *m* is pivoted a paddle or cleaner, O, by means of a vertical bolt, *i*, and the cleaner is held against the side of the arm by means of a spring, *n*. As the wheel J revolves the cleaners O in succession enter between the spades K at the top of the wheel, and turning on their pivots against the springs expel all the dirt from between the spades K. As soon as the cleaners emerge from the wheel the springs *n* throw them back in their former positions. Each arm *m* has a projection, *p*, to prevent the cleaner O from being turned too far backward. At the front end of the frame D is a vertical bar, P, which enters a grooved slide, R, hinged on the king-bolt *s*, said vertical bar being braced firmly at both ends to the frame. The draft is thus applied directly to the frame D and the mechanism connected thereto. On top of the frame D is a projecting rod, *t*, on the end of which is loosely placed a lever, S, that passes up through a hole in a rocking bar, T, running longitudinally in the top of the main frame A, whereby the frame D is guided perpendicularly in its movement or adjustment up and down. On the side of the plow is attached a shoe, V, which holds the plow against the opposite side of the ditch. This shoe may be made adjustable up and down, as required. The track *d* and roller *e* above mentioned counteract the pressure of the cleaners O as these operate between the spades K of the rotating wheel. The plow H of this ditching-machine is attached parallel with the plane of the frame D, so that in operation the point or share of the plow is pre-

vented from digging down by the heel being on the same line as the point. Each side cutter I has a draft-rod, W, attached to it, which turns forward and upward to the frame D, as shown.

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 plow H, with side cutters I I attached, connected together and to a frame, D, adjustably suspended in a main frame mounted on wheels, all constructed substantially as and for the purposes herein set forth.

2. The combination, substantially as set forth, of the side cutters I I, suspended from the frame D and the draft-rods W W, secured to the cutters, and extending upward and forward, and connected to the frame, substantially as and for the purposes described.

3. In combination with a rotating wheel, provided with radially-projecting spades, a series of revolving yielding spring-cleaners O, arranged to operate between the spades, in

the manner and for the purposes herein set forth.

4. The combination, with the wheel J and its spades K, of the shaft *h* with four-armed hub N, forked pivoted arms *m*, pivoted cleaners O, and springs *n*, substantially as and for the purposes herein set forth.

5. The combination of the adjustable frame D, vertical bar P, and grooved coupling R, for the purpose set forth.

6. The combination of the frame D, rod *t*, lever S, and rocking rod or bar T in the main frame A, for the purposes set forth.

7. The shoe V, arranged on the side of the plow H, substantially as and for the purposes herein set forth.

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

A. E. JOHNSON.

Witnesses:

C. L. EVERT,

T. H. ALEXANDER.