J. H. RAUCH.

DITCHING-MACHINE.

No. 195,048. Patented Sept. 11, 1877.

Fig: 1.

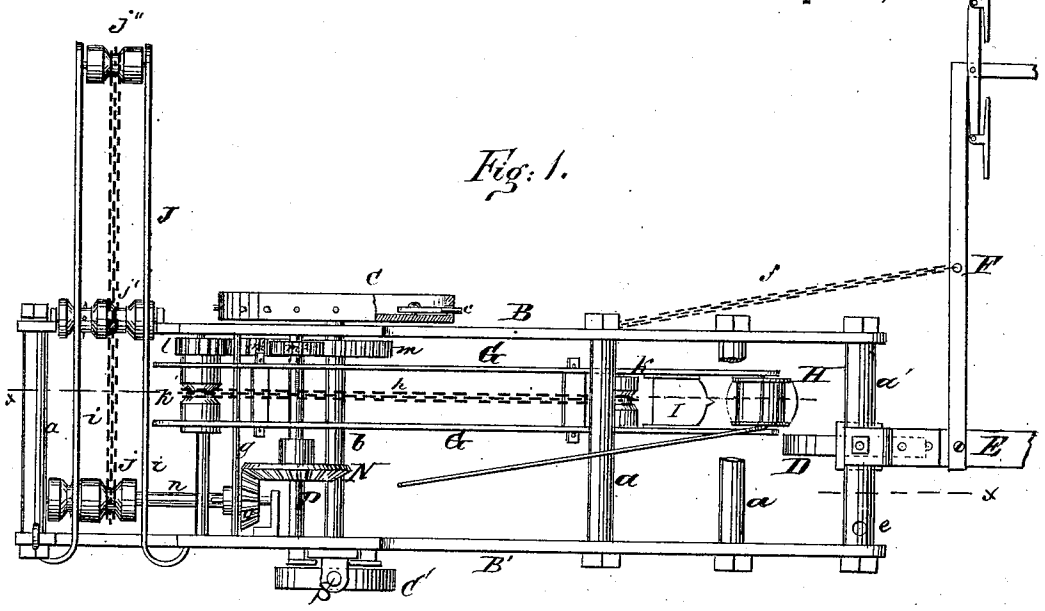


Fig: 2.

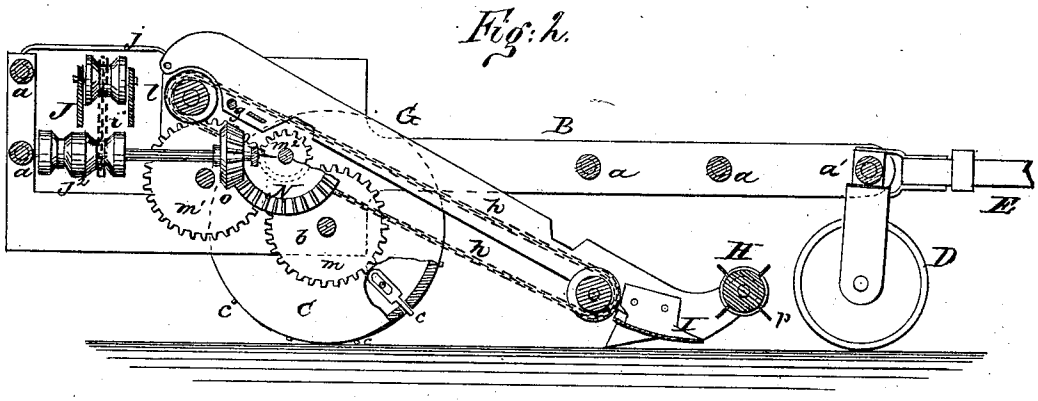
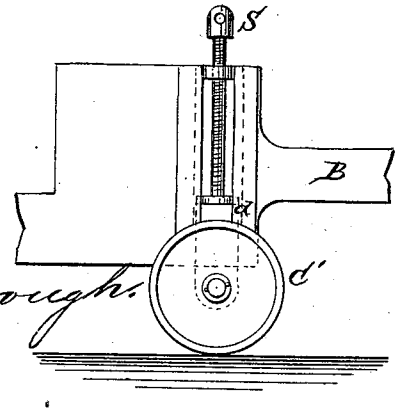


Fig: 3.



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JOHN H. RAUCH, OF IDA, MICHIGAN.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. **195,048**, dated September 11, 1877; application filed July 23, 1877.

To all whom it may concern:

Be it known that I, JOHN H. RAUCH, of Ida, in the county of Monroe and State of Michigan, have invented a new and Improved Ditching-Machine, of which the following is a specification:

The invention will first be described in connection with the drawings, and then pointed out in the claim.

In the annexed drawings, Figure 1 is a top view of the machine. Fig. 2 is a section taken longitudinally and vertically through the machine in the planes indicated by dotted lines *x x* on Fig. 1. Fig. 3 shows the guide for the hub-plate of the adjustable transporting-wheel.

Similar letters of reference indicate corresponding parts.

The frame of the improved ditching-machine is composed of two parallel lines, B and B′, rigidly secured together at a suitable distance apart by means of bolts and bracing-tubes *a a′*.

This frame is mounted on two transporting-wheels, C C′, one of which, C, is applied on an axle, *b*, and constructed with a flanged rim, through which radially-adjustable pins *c* pass, and are exposed beyond the periphery of the wheel, for the purpose of preventing it from slipping on the ground.

The short axle of the wheel C′ is secured to a plate, *d*, which is vertically adjustable between guides fixed to one of the sides B of frame by means of a screw, S.

At the front of the frame is a wheel, D, which is connected to the bar *a′* by a swivel. Sometimes I shall connect the swivel-standard of the wheel D to the bar *a′* at the point lettered *e*.

To the swivel-standard is pivoted a draft-tongue, E, and to this draft-tongue is secured at right angles to it a bar, F, which has pivoted on its outer end a double-tree bearing two single-trees. The bar F is braced by a chain, *f*, which is attached to it at or near the middle of its length, extended back, and attached to the draft-frame.

By means of this draft-equalizer the team can walk on the outside of the ditch being dug, and draw the machine, and by means of the tongue attachment a team can draw the machine direct.

G G designate two parallel inclined cheeks, which are curved, as shown in Fig. 2, and which constitute the elevator-frame. This frame is pivoted to a transverse rod, *g*, so that its front edge is free to rise and descend vertically.

At the front end of the elevator-frame is a gage-drum, H, which is provided with sod-cutters *p*, and in rear of this drum, and a little below it, is a shovel-plow, I, rigidly fixed to the elevator-frame.

The earth excavated by this plow is carried up by means of an endless apron attached to a chain, *h*, and deposited upon another endless apron, which is arranged at right angles to the elevator-chain *h*. The chain *h* is applied around two drums, *k k′*, the upper one of which has a pinion, *l*, keyed on its shaft, which receives rotation from a large spur-wheel, *m*, on the axle *b*, through the medium of pinion-wheel m^1 m^2.

The transverse endless apron, which receives the earth elevated by the apron attached to chain *h*, is attached to an endless chain, *i*, which is applied around drums *j* j^1 j^2, one of which has its journal-bearing in the sides of a frame, J, and the other two have their bearings in the draft-frame.

The frame J is detachable, and it is also reversible from one side to the other of the draft-frame.

The pulley-drum j^2 is keyed on a longitudinal shaft, *n*, on which is also keyed a beveled pinion, *o*, which engages with a bevel-wheel, N, on a transverse shaft, P, which receives rotation from the wheel *m* through a pinion, m^2.

It will be seen from the above description that by adjusting the wheel C′ the machine can be leveled, whether it be ditching or is being moved from one place to another. This wheel C′ will, of course, run on the surface of the ground, while the wheel C may run in the ditch. The drum H rolls on the ground in front of the plow I and gages the depth the plow should run.

The excavated earth is carried up by the elevator-apron, which will be attached in a suitable manner to the chain *h*, and deposited upon an apron attached to the chain *i*, which latter will carry the earth off laterally and deposit it in a wagon or upon the ground at a proper distance from the ditch.

The elevator-frame can be raised and lowered by means of a rod, R.

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

In combination with the frame of the ditching-machine and the tongue E, attached to the swivel-standard of the wheel D, the bar F, and its double and single trees, and the chain *f*, arranged substantially as and for the purposes specified.

JOHN HENRY RAUCH.

Witnesses:
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