

J. C. OSGOOD.
DITCHING MACHINE.

4 Sheets—Sheet 1.

No. 107,710.

Patented Sept. 27, 1870.

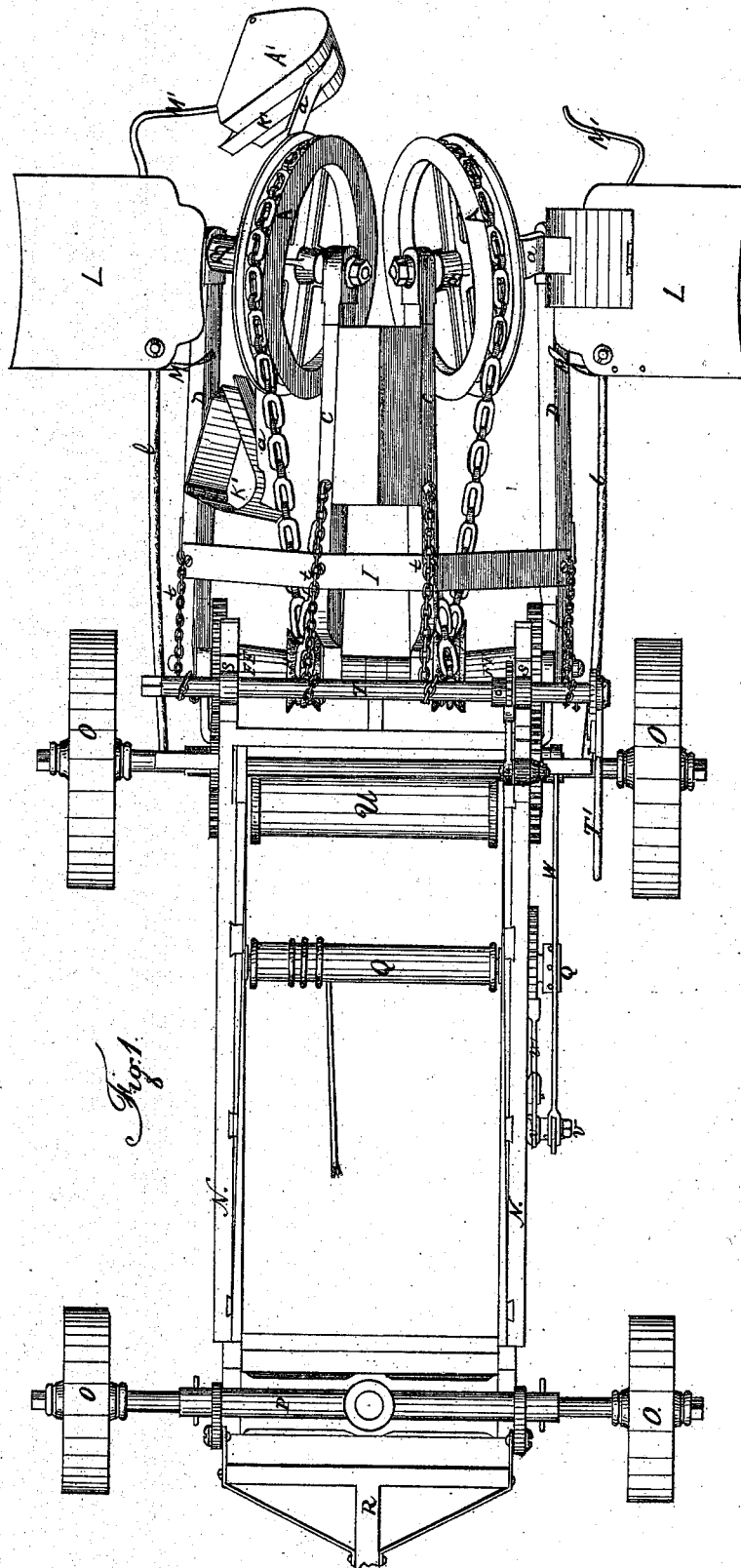


Fig. 1.

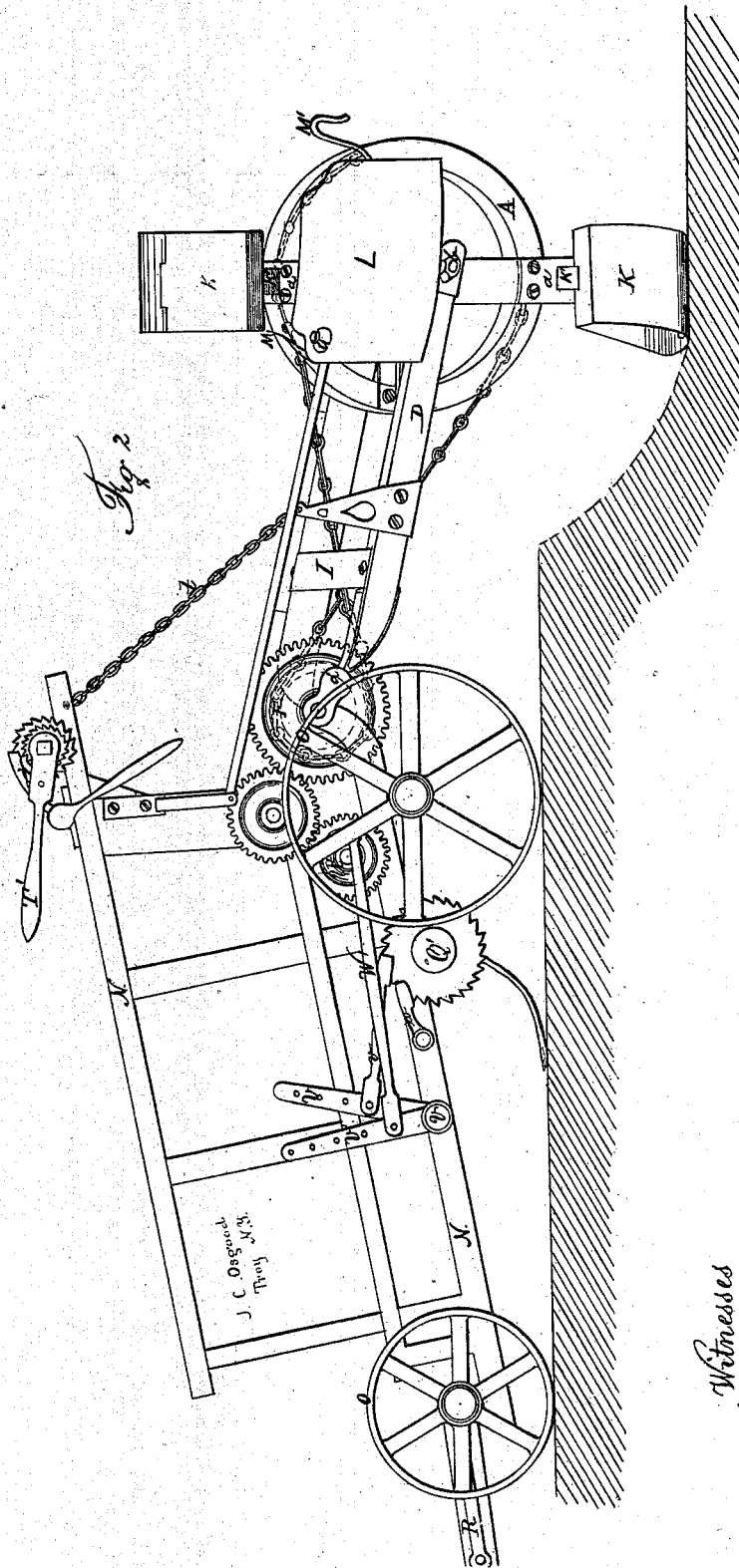
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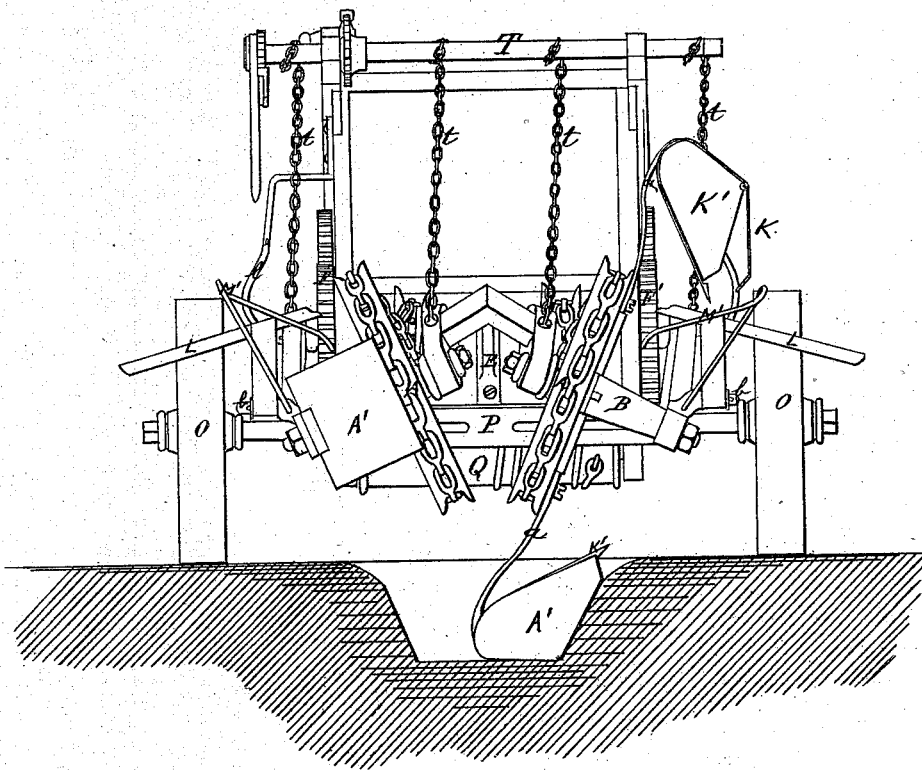
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4 Sheets—Sheet 3.

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Fig. 3



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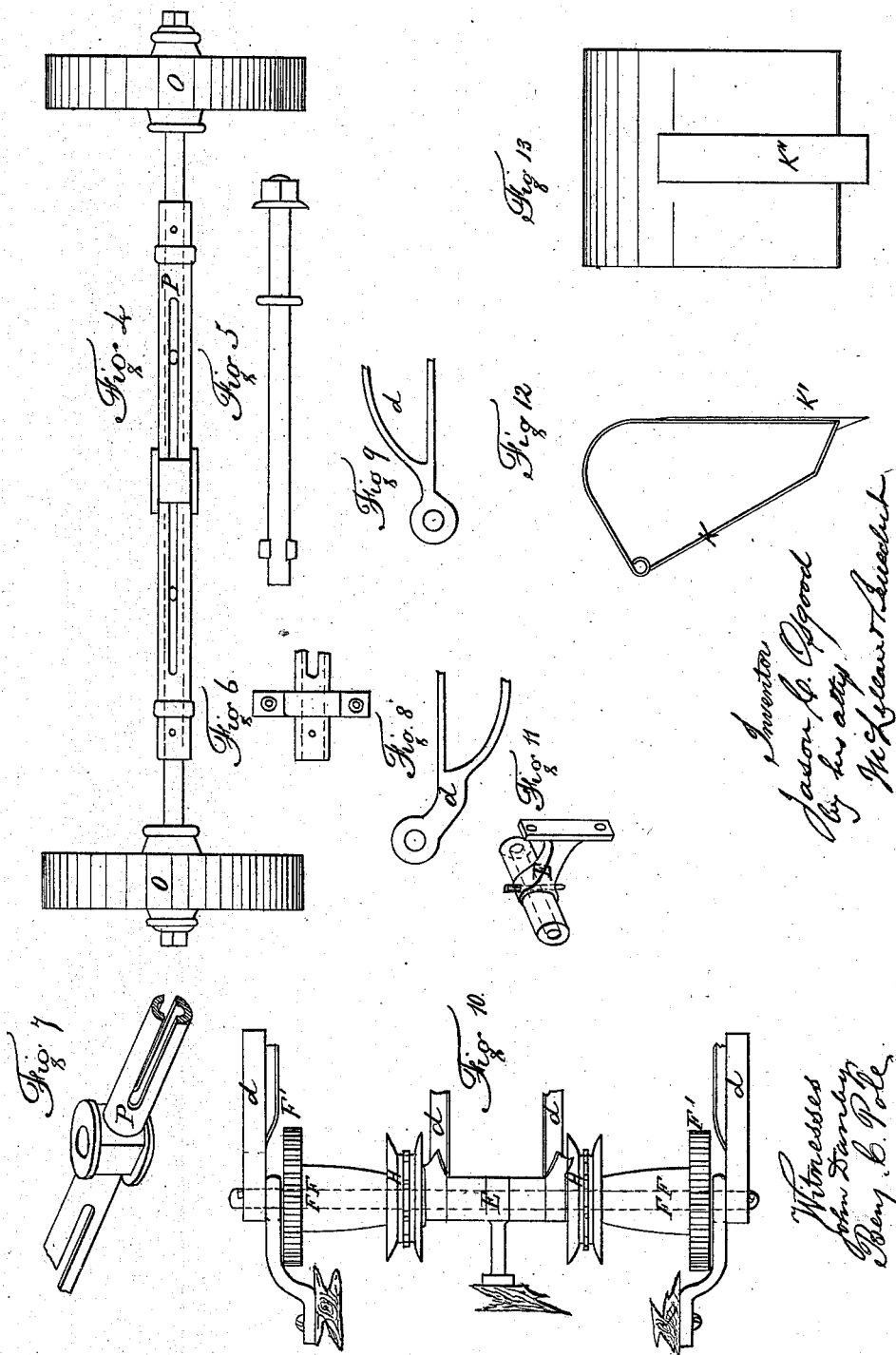
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J. C. OSGOOD.
DITCHING MACHINE.

4 Sheets—Sheet 4.

No. 107,710.

Patented Sept. 27, 1870.



United States Patent Office.

JASON C. OSGOOD, OF TROY, NEW YORK.

Letters Patent No. 107,710, dated September 27, 1870.

IMPROVEMENT IN DITCHING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same

To whom it may concern:

Be it known that I, JASON C. OSGOOD, of Troy, in the county of Rensselaer and State of New York, have invented a new and improved Ditching-Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon:

Figure 1, view of machine in operation, from a point directly above it.

Figure 2, side elevation of machine in operation.

Figure 3, rear end view of machine in operation.

Figure 4, telescopic axle.

Figure 5, inner axle.

Figure 6, modification of axle.

Figure 7, view of center of axle.

Figures 8 and 9, side view of link of arms D D.

Figure 10, shaft E, with sleeves, &c.

Figure 11, center bracket to shaft E.

Figure 12, side view of bracket.

Figure 13, back view of bucket, showing spring K'.

A A are wheels, carrying the buckets.

A' A' A' A' are digging-buckets.

a a a a are arms, by which buckets are attached to the wheels.

B B, shafts on which wheels A A turn.

b b are wrists projecting from arms D D.

C C, inner arms, supporting shafts B B.

D D, outer arms, supporting shafts B B.

d d, links terminating arms D D.

E is driving-shaft.

F F, sleeves on shaft E.

F' F', cog-wheels on sleeves.

G G, drum on sleeves F F.

H H, driving-chains.

I, braces connecting arms C C and D D.

K K K K, hinged sides of buckets A' A' A' A'.

K' K' K' K', spring catches on buckets.

L L, aprons for receiving the earth.

L' L', arms supporting aprons.

l l, bars connected with aprons.

M M, springs to open buckets.

M' M', springs to close buckets.

N, frame to support the power.

O O O O, wheels supporting frame N.

P P, axle-trees.

Q, drum under frame N.

Q', ratchet-wheel.

R, pole of frame N.

S, bearings in which T works.

T, rod by which machine may be raised.

t t t t, chains by which machine may be raised.

T', ratchet-wheel on T.

U, shaft to which power is applied.

U' U', cog-wheels in shaft U.

V, sway-bar.

V' V', arms attached to sway-bar.

v is ratchet.

W, rod operating sway-bar.

w, dog to ratchet-wheel Q'.

The nature of my invention consists in so constructing a machine that it will cut ditches in the land at the proper slope, and as wide and deep as may be required, will feed itself, and can be operated by horse, steam, or other power.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Having determined the width of the bottom of the ditch to be dug, and the slope of the sides, I construct four buckets or dippers, A' A' A' A'; the bottom of each of which shall be some six inches wider than one-half the required width of the ditch, with the outer side at such an angle with it as it is necessary to give to the sides of the ditch.

I then, as hereafter described, attach these buckets, by arms a a a a, to two wheels, A A, which I make of convenient size, (say four feet in diameter,) each of which turns on a shaft, B B.

These shafts are supported, at their inner ends, by arms C C, connected with driving-shaft E, and moving freely upon it, and at their outer ends, by arms D D, with the extremities of the same shaft E, the arms D D terminating in links d d, so arranged that the said arms may move about the said shaft as a center, and yet always be at the required angle with it, keeping always the centers of shafts B B and center of driving-shaft E at the same distance at which they are placed when the machine is constructed.

These arms C C and D D are so adjusted that the shafts B B incline toward each other, and cause the wheels A A to be at such an angle with each other that the buckets A' A' A' A', when revolving, cross each other's path in the ditch.

These buckets are so constructed, and attached to the wheels A A, that, when at their lowest point, their bottoms are horizontal, and their outer sides form, with the bottom, the angles required to give the desired slope to the ditch.

Each of them has a side, K K K K, which is hinged to the bottom, and is held in place by catch K' K' K' K'.

The buckets should be hung so that, as one is discharging, the other, on the same wheel, is excavating, and those on the two wheels may dig alternately.

To cause them to revolve, I connect the wheels A A to sleeves F F, by means of endless chains, H H, playing over them and over drums G G, or by cog-wheels, as may be convenient. These sleeves are operated by means of cog-wheels, F F, which are connected with the shaft U, to which the power is applied.

To each of the arms D D, over the shafts B B, I secure a wrist, b b. I then make the apron L L of any convenient size and material, supported on arms L' L', the lower ends of which play over wrists b b. To each apron, near its inner and upper corner, I con-

nect, by a joint, one end of a bar, *l l*, the other end of which is pivoted to a brace, attached to side of frame *N*. The length of the bar between the joints must be exactly equal to the distance between center of outer ends of shaft *B* and corresponding end of shaft *E*. By means of this arrangement the apron is kept in proper position, at whatever height the cutting-machine may be.

To the inner side of each of these aprons I attach the spring *M*, which is so constructed and placed as to press back the catches *K' K'* when the buckets reach them, opening the doors *K K*, and permitting the earth to fall out upon the apron *L*. To the arms *D D* or wrists *b b* I attach other springs, *M' M'*, in such a position that they press against the open sides *K K* of the buckets, as they begin to descend, and close them, the springs *K' K'* fastening them in place.

The machine should be strengthened by braces *I*, connecting-arms *C C* and *D D*, or in any convenient manner, so that said arms may be held firmly in their proper relative positions.

To enable one to move the machine from place to place, I construct frame *N*, on which to place a treadmill, or any other means of applying power.

This frame I support on two pairs of wheels, *O O* or *O O*, with broad tires, each pair of which is connected by telescopic axles *P P*, so constructed that they may be lengthened or shortened, in order that the width of track may be adapted to the width of the ditch.

When the machine is to be moved, the forward axle-tree should be attached to the frame *N* by being placed under the end of it, and held in place by a pin. When in the place where it is to operate, the axle-tree should be detached and placed over the frame, and again secured by the pin, thus giving the frame the proper inclination for the horses to work on it, if horse-power is applied.

Under the frame *N* I place the drum *Q*, working in journals, as usual, attached to the lower side of the frame. On one end of the drum is the ratchet-wheel *Q'*.

At a convenient place, on the side of frame *N* I attach sway-bar *V*, with two arms, *V' V'*. To one of these arms is attached the ratchet *v*, and to the other the rod *W*. Holes are made through the end of the rod and ratchet of the arms *V' V'*, so that the frame may be raised or lowered at pleasure, and held in place by pins. The other end of the rod *W* plays about an eccentric pin in face of wheel *V'*. A dog is so placed as to hold the wheel *W*, when relieved by ratchet.

At a convenient place under the frame *N* I secure shaft *U*, having cog-wheels *U' U'* at its ends, and to which the power is to be applied in any manner.

I now attach the machine to the frame, by securing to the former bearings, through which shaft *E* passes, and in which it may play freely.

The cog-wheels *U' U'* should work in cog-wheels *F F*.

To enable the machine to be raised or lowered, to adapt it to the depth of ditch, I connect with the upper part of the frame, over the shaft *E*, and parallel with it, the rod *T*, by means of bearings *S*, in which it plays. With this rod I connect the arms *C C* and *D D*, by chains *t t t t*, by winding or unwinding which over the rod *T* the machine may be elevated or depressed, at pleasure.

The machine now is ready to operate, and I attach the pole *R* to forward axle-tree, and, by horses, draw it to the place where it is to be used. Then, taking out the horses and depressing the front end of the frame, as before described, I attach one end of a rope or chain to the pole, and passing it through a pulley, secured to any stationary object in the line of the ditch, fasten the other end to the drum *Q*. Applying the power, the motion is imparted, by cog-wheels *N' N'*, to wheels *F' F'*, and the buckets *A' A' A' A'* revolve. As they reach, in turn, the springs *M M*, the hinged side opens, and the earth falls upon the aprons *L L*, from which it slides and falls at a convenient distance from the ditch. At the same time the motion is communicated to drum *Q*, which revolves and winds up the rope or chain, and this moves the machine forward as rapidly as desired, and feeds the digging-buckets automatically.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The wheels *A A*, with buckets *A' A' A' A'* attached, and combined with shafts *C C* and *D D*, all so constructed and arranged, with reference to one another, that the two pairs of buckets may be at such angle with each other that they will cross each other's tracks in the ditch, as herein described and set forth.

2. The construction and arrangement of the buckets *A' A' A' A'*, substantially as stated, and for the purposes set forth.

3. The arms *C C* and *D D*; bar *I*; wheels *A A*, and shafts *B B*, arranged as described, in combination with chains and shaft *F* and drums *H H*, substantially as set forth, and for the purposes described.

4. The arrangement of springs *M' M'*, combined with arms *D D* or wrists *b b*, so as to close and fasten the doors *K' K' K' K'*, whatever the position of the machine.

5. The arrangement of aprons *L* and *L'*, wrist *b*, bar *l*, and frame *N*, substantially in the manner and for the purpose described and set forth.

6. The drum *Q* and ratchet-wheel *Q'*, combined with sway-bar *V*, arms *V' V'*, ratchet *v*, rod *W*, and wheel *U'*, all constructed and operating substantially in the manner and for the purpose set forth and described.

JASON C. OSGOOD.

Witnesses:

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