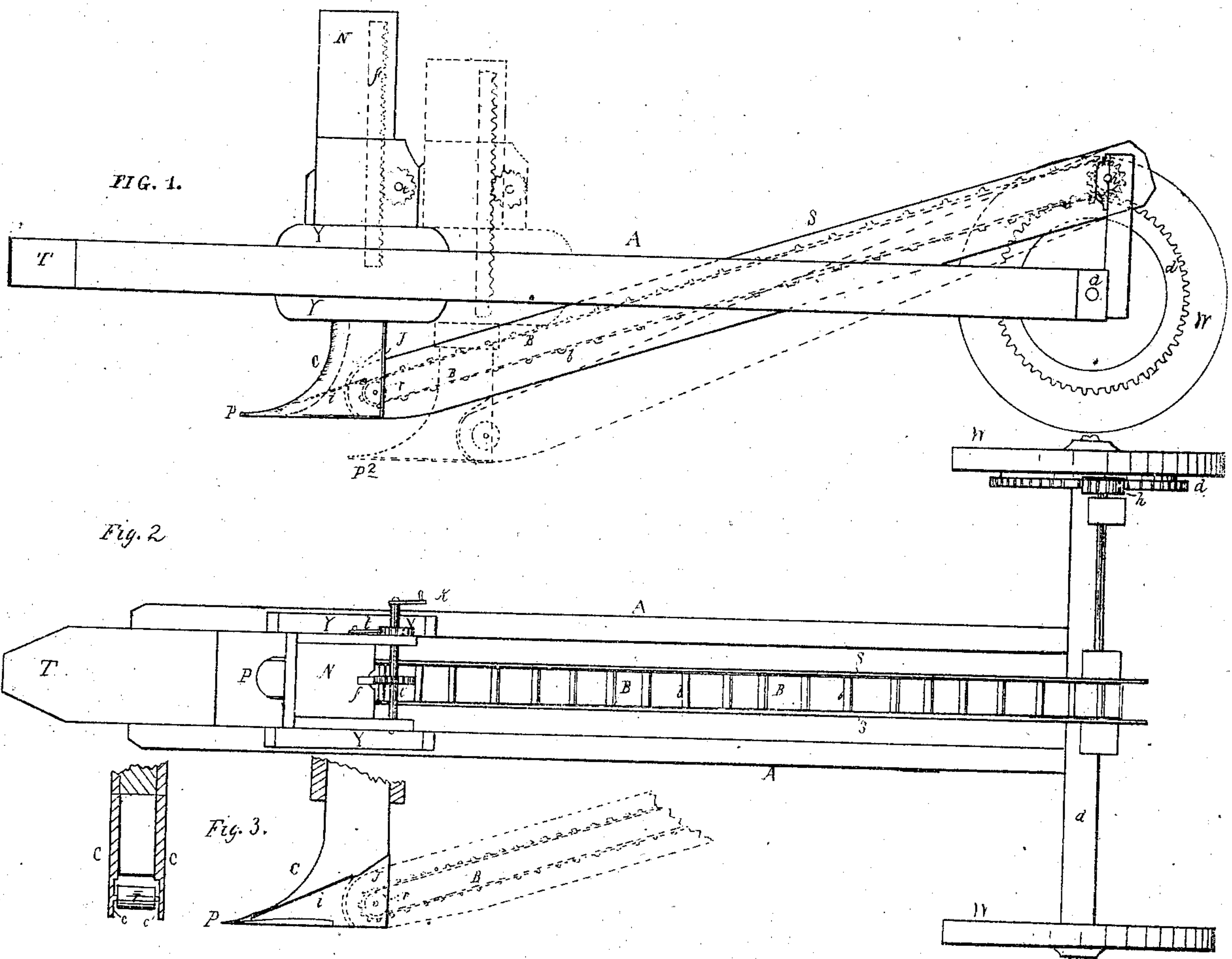


# Jacob King Ditching Machine.

No 74.549.

Patented Feb. 18. 1868.



Witnesses.

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JACOB KING, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO HIMSELF, JAMES HAMILTON, AND B. STOKELY, ALL OF SAME PLACE.

*Letters Patent No. 74,549, dated February 18, 1868.*

## IMPROVED DITCHING-MACHINE.

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

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JACOB KING, of Indianapolis, in the county of Marion, and State of Indiana, have invented a new and useful Improvement in Ditching-Machines; 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, like letters referring to like parts.

The nature of my invention consists in providing a self-adjusting yoke, (in that class of ditchers that has an endless belt for carrying the earth up and away from the cutters,) which yoke, being coupled to the cutters, slides forward or back on the frame of the machine, as the cutting-device is raised or lowered, and that, too, without any attention from the operator, farther than what is required to operate the elevating and depressing-mechanism. Also in a hinged coupling between the heels of my side cutters and the lower front end of the sides of the dirt-way. This coupling-hinge serves the useful purpose of preserving, at all times, the proper working relation of these essential parts of this class of ditching-machines; and the sliding adjustable yoke (described in the preceding paragraph) always acts in concert with the movements of this hinge, rendering the machine so simple in its functions that any person can operate it successfully and with the greatest ease.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation. In all other respects, (excepting the self-adjusting yoke and coupling-hinge hinted at above,) my machine may be made much like any other machine of this class.

Figure 1 is a side elevation of my ditching-machine.

Figure 2 is a top view of fig. 1, and

Figure 3 is a rear and side view of my side cutters.

A is the parallel frame or draw-bars of my machine. Their front ends are securely bolted to T, the coupling-block. When the machine is in use, this coupling-block is bolted to the front axle of any common two-horse wagon. The parallel bars A may be three by six inches in size, and from eight to twelve feet long. They must be framed a sufficient distance apart to admit the free play of the mechanism between them. Their rear ends are secured to the axle *a*. W, the wheels, that sustain the rear end of the dirt-elevator, and communicate motion to the belt B through cog-wheel, *d*. Pinion *h* gears into this cog-wheel, and through a shaft extending midway between wheels W and a smooth or spur-pulley on the end farthest from *h*, gives motion to belt B, sufficiently rapid to elevate the loose earth as fast as it is cut from the ditch. Y is a sliding yoke, composed of four pieces, two above and two below parallel bars A, and held together by the boxing or "housing" of cutter-beam N. This cutter-beam slides up and down between the yoke-pieces Y, and having the side cutters C securely bolted to its lower end, and these in turn being hinged to the front end of way-boards S, it plainly appears that, when the cutters are depressed, through the operation of cog-bar *f*, pinion *e*, and crank *k*, the yoke Y must slide towards the rear, causing the point of bottom cutter P to describe a circular movement, it being the radius, and the belt-pulley at upper rear end of S, the centre. The changed position of the yoke Y and cutter-bars and S are all shown by the dotted lines in fig. 1. P<sup>2</sup> C are my side cutters, bolted to the lower end of N, with the horizontal cutter P between them, and constituting the extreme point. *i* is the inclined-plane board, over which the cut earth first passes on its way to the elevating-belt B. It stands at about the angle shown in figs. 1 and 3. The belt B passes around the small roller *r*, situated between C and just under the rear end of *i*. It will be seen in fig. 3 that the horizontal bottom cutter does not reach back to the belt, thus leaving an open space through which dirt may freely pass, should any chance to get under *i*, thus preventing any choking or interference with the free movement of the belt. The space J and *c*, in fig. 3, is sufficient to admit the entire thickness of the side-boards S. The recess being circular and the front ends of S round, makes a free working-hinge of the side cutters, they being outside. The way-boards S press the sides of the ditch smooth, so that the elevator has great freedom in its passage. At J, in fig. 3, the recess is seen to be tangential to the remainder of the circle. This is for the purpose of free movement to the side-boards of the elevator when the cutters are depressed to their lowest point when cutting the bottom of a ditch. Cog-bar *f*, figs. 1 and 2, is let into the rear



face of N. Into this the pinion *e* is geared, and by operating the crank *k*, the point of the ditch-cutter can be lowered to any required depth, and is held in any desired position by the ratchet-pawl *t* dropping into ratchet-wheel *v*, the pawl being hinged to one of the bars of yoke Y.

In constructing these machines for very heavy work, it may be necessary to use a driving-spur wheel, *d*, on each of the two wheels W, and the pinion-shaft to extend between them, with a pinion on each end, and the belt pulley in its middle. *b* are wooden cleats, fastened on the top or outer face of the belt B. They furnish a lodgment for the loose earth in its upward passage from the ditch, and maintain an equal distribution of the same along the belt in its upward passage.

The mode of operation is simple, and has been partially described in the foregoing. With a hole through the front end of T to receive the king-bolt of a wagon, the machine can be coupled to the same, this ditcher taking the place of the rear portion of said wagon. By turning the crank K back, the cutters and entire nose of the machine are let down, so that it will make a cut of two to four inches deep. A shedding-roof or double plane chute may be suspended at the rear, so that it will "shed" or throw the dirt on each side of the ditch as it drops off the belt B. After making the "first cut," the "nose" of the machine P may be set down again to take another cut, and so on until the ditch is cut as deep as desired. This operation of lowering the cutting-device never changes the proper working relation of the parts that perform the cutting, to the bottom of the cut. The land-sides of C and the bottom side of P always occupy the same position.

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

1. The combination of the side cutters C C with the way-boards S S, when the former are constructed with circular recesses to receive the correspondingly rounded forward extremities of the way-boards, so as to form a hinge-joint, substantially as and for the purpose specified.

2. The yoke Y, arranged to slide upon the frame A, and adapted to change its position in conformity with the adjustment of the cutter-beam N, as and for the purpose specified.

JACOB KING.

Witnesses:

ROBERT G. SMITHER,  
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