

(No Model.)

C. RINDERKNECHT.

AUTOMATIC GRAIN SHOVEL MECHANISM.

No. 270,485.

Patented Jan. 9, 1883.

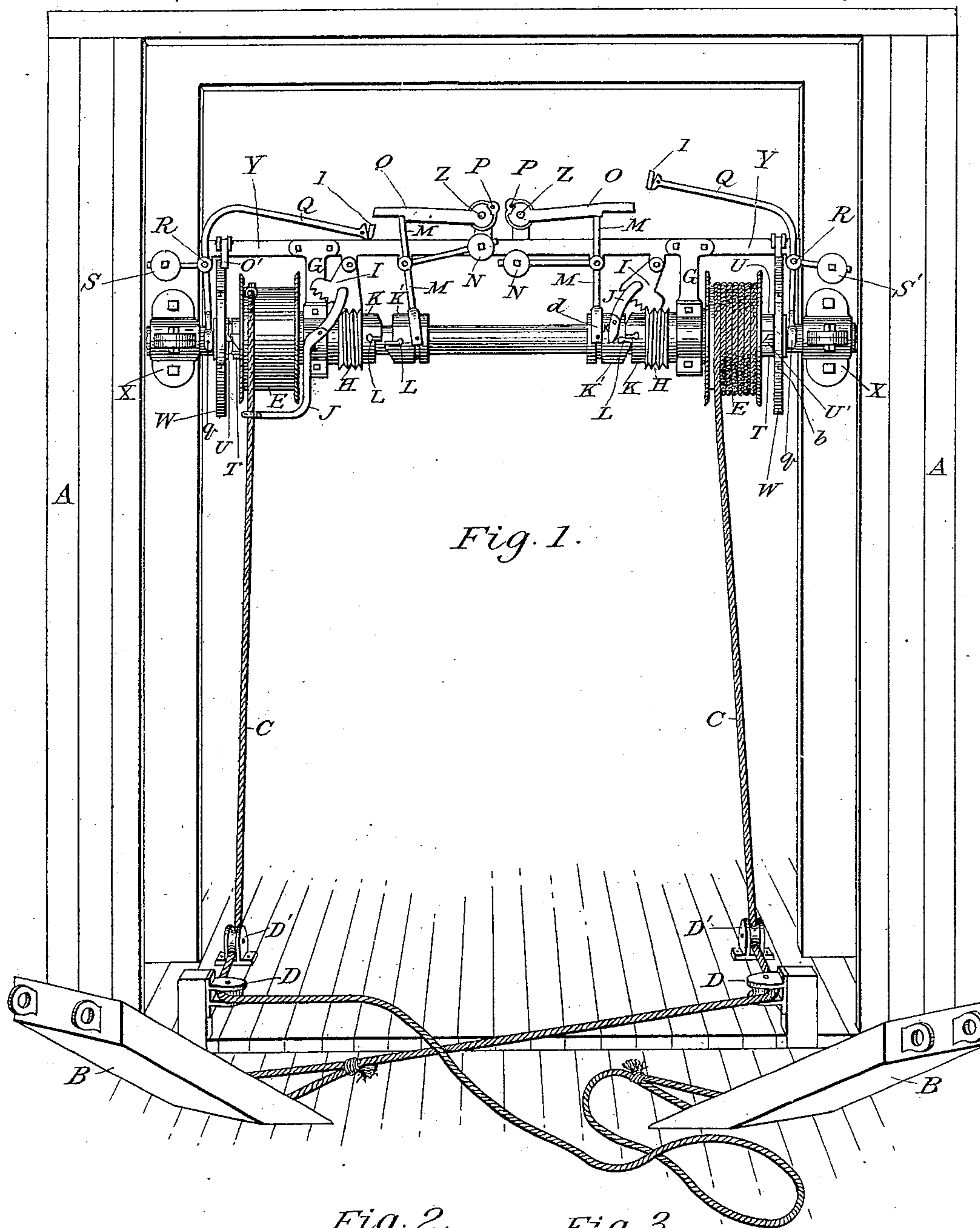


Fig. 1.

Fig. 2.

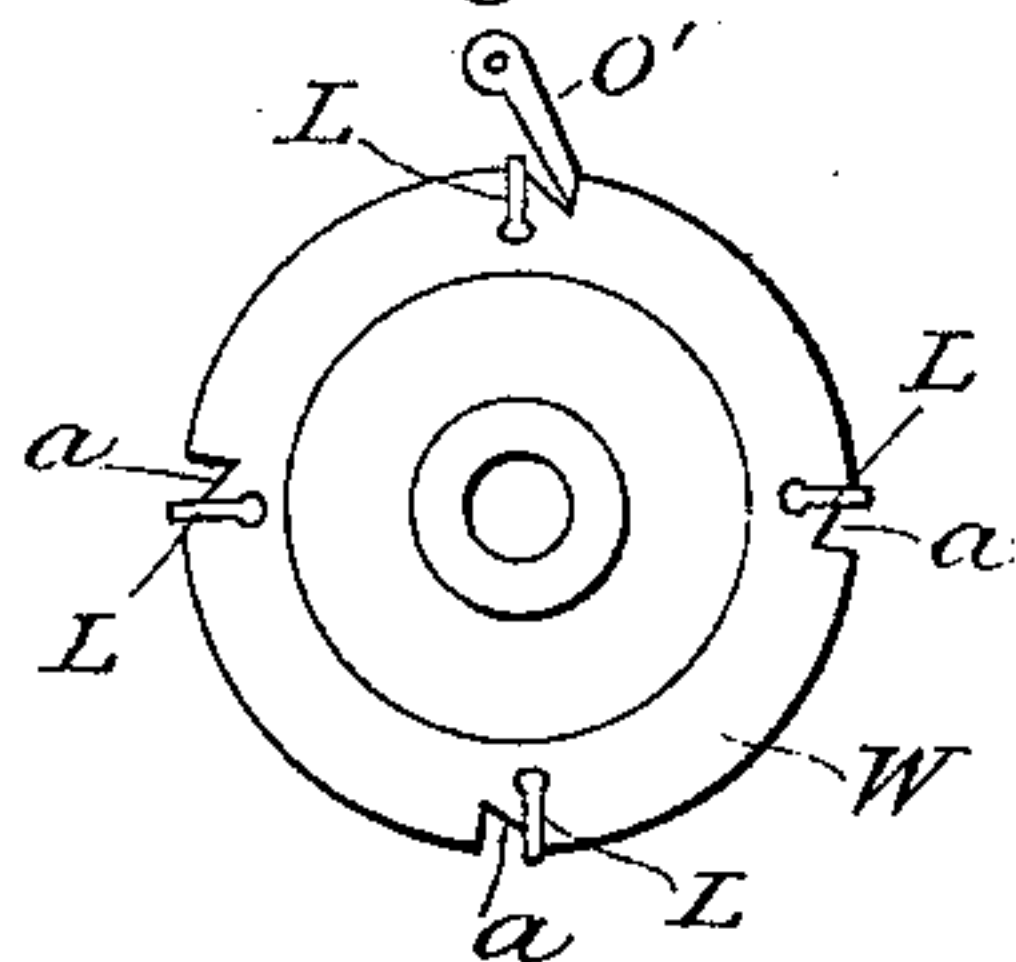
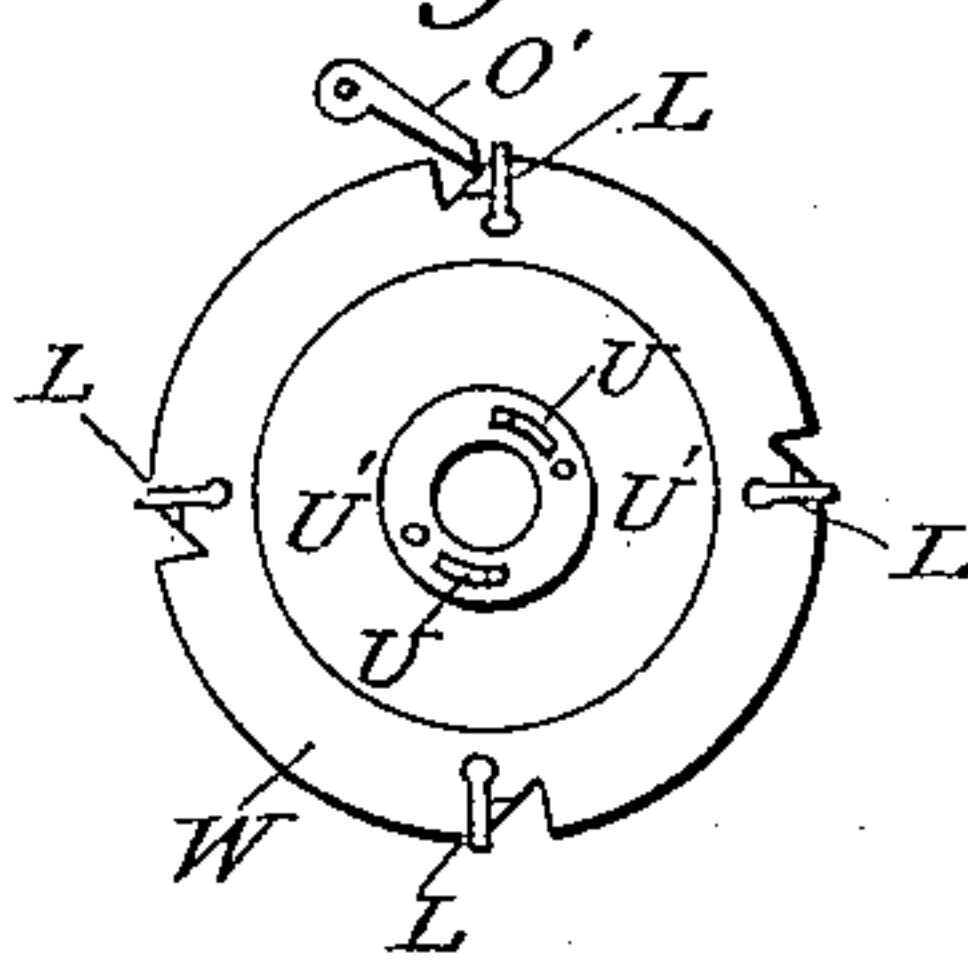


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES RINDERKNECHT, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF
ONE-HALF TO ABNER J. MALONE, OF SAME PLACE.

AUTOMATIC GRAIN-SHOVEL MECHANISM.

SPECIFICATION forming part of Letters Patent No. 270,485, dated January 9, 1883.

Application filed September 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES RINDERKNECHT, of Indianapolis, Indiana, have invented a new and useful Improvement in Mechanism for Working Grain-Shovels, automatic in its operation, of which the following is a description, reference being had to the accompanying drawings, in which like letters in the various figures indicate like parts.

My invention belongs to that class generally known as "clutch mechanisms," and is intended to be used in connection with scoops for unloading grain in bulk from cars and for other purposes.

It consists in the peculiar construction and arrangement of the several parts, as hereinafter particularly specified and claimed.

In the drawings, Figure 1 is a perspective view of my machine. Fig. 2 is an outside end view of the notched wheel W; and Fig. 3 is an inside view of the same wheel, showing the arrangement of the cams and stops.

To describe it in detail by the letters, A A is the wooden frame-work of the machine; B B, the scoops attached at the sides of the lower end to ropes C C, which pass through sheaves D D', as shown, and are fastened at the other end to spools E E, which work loosely on the main shaft F, the spools being supported by the independent brackets G G, which are secured to the iron frame-work Y Y.

H H are right and left worms mounted on the inner ends of the spool-sleeves, the ends of which are formed into clutches K K, which are intended to engage at the proper time with corresponding clutches, K' K', the latter mounted on the main shaft.

I I are toothed segments pivoted upon the iron frame, which, by engaging with the worms, operate as pushers for the clutch mechanism, and to these pushers are bolted traveling rope-guides J, (one only shown in the drawings.)

L L L L are steel plugs or keys sunk in the faces of the clutches to receive the force of the blow and strengthen these faces, so they will not be battered away by the impact. They are used not only in the clutch mechanism of the worm-wheels, but also on the notched wheels W, as shown in Figs. 2 and 3.

M M are bell-crank levers, which span the

clutches, working in grooves therein, bolted to the iron frame Y Y, having counterbalance-weights N N attached on the sides, and the upper ends of the levers M M are extended to the pawls O O, which rest thereon, the pawls being bolted to the iron frame Y Y at Z Z, and in the rear end of the pawls notches P P are cut, which operate as stops to limit the upward movement of the pawls.

Q Q are tripping-arms, having latches loosely attached at their ends to engage the pawls O, these tripping-arms extending over behind the wheels W W, and terminating in yokes q, spanning the spool-sleeve, and working against the ends of the wheels W, being operated by the counterbalance-weights S S. On the outer ends of the spools are fixed inclined cams T T, with pins or rests below, T', which engage with similar inclined cams, U, and rests U' on the inner side of the wheel W when the latter is forced up by the counterbalance-weight S.

R R are the points where the tripping-arms Q are bolted to the iron frame Y Y.

W W are wheels working loosely on the spool-sleeve, having one or more notches, a a, the upper ends of which are cut away one-half the width of the face of the wheel into secondary notches, as shown in Fig. 3, and also in Fig. 1 at b.

Y Y is a cast-iron frame, which supports the machine, the main shaft being fixed in bearings upon the wooden frame in the bearings X X.

O' O' are pawls journaled to the iron frame, which drop into the notches a of the wheel W.

My device operates as follows: Power being applied, the main shaft revolves, the ropes being wound on the spools. The operator takes hold of the scoop, enters the car, and the rope unwinds from the spool, the wheel W revolving with the spool operated by the cams, and when the first notch is reached in the wheel W the pawl O' drops into the notch, stops the wheel W, and holds it while the cams force it away from the spool, until the pawl O' drops down into the secondary notch b and is reversed, and the wheel W is now again free to move with the spool. It stays in its place, however, until the operator sets his scoop in

the grain. As he stops the spool stops, and the momentum of the notched wheel prevails, in connection with the weight S, to force the notched wheel back toward the spool, so that the cams will again engage with each other. As the weight S falls it lifts the pawl O, and the lever M, being thus disengaged, is drawn backward under the pawl O by the counter-balance weight S. This bell-crank lever M, as its weight falls, forces the clutch which it spans toward the other clutch. *d* is a small coiled spring attached to the pusher to give the clutches clearance. The pusher itself is operated by the worm-wheel on the spool-sleeve. As the clutches re-engage with each other the spool revolves with the main shaft, the rope is wound up, and the grain-laden scoop drawn to the door of the car, toward the hopper into which the grain is dumped. The operator again takes hold of the empty scoop, goes back into the car, and the operation is repeated as often as may be desired, the machinery working automatically to release the spool from the clutch, and again to engage it and cause it to revolve with the main shaft.

The operator may stop at any point he desires, and the notched wheel will instantly engage the clutches and draw the load forward to the hopper. The traveling guides J are so arranged as to prevent the rope from coiling upon itself irregularly and running off or over the flange of the spool. The reverse movement of the spool and the notched wheel W as the rope is wound up throws the pawl O' back again into a position ready for the next start of the operator. The steel plugs or keys L L are made in such a shape that they will stay in place without the aid of screws or pins, and can readily be

changed when worn down by use without taking down the machinery.

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

1. In an automatic grain-shovel, the combination of the notched wheel W, having cams on its inner side, the pawl O', the tripping-arm Q, with its yoke *q* and latch *l*, the weight S and connecting-arm, with the main shaft F, and spool E, having inclined cams and stops on its outer end, and its sleeve formed into a clutch on the other end, substantially as and for the purpose described.

2. The combination of the tripping-arm Q, weight S, pawl O, bell-crank lever M, with its yoke, the weight N and its connecting-arm, clutch K', segment-pusher I, traveling rope-guide J, worm H, and spool E, mounted on the main shaft F, substantially as described.

3. A clutch-jaw mortised near its face to receive a steel plug or key, J, in combination with a steel key or plug, J, substantially as shown and described.

4. The combination of the wooden framework A A A, supporting iron frame Y Y, main shaft F, the spool E, notched wheel W, pawl O', the cam mechanism T T U U, clutches K K', tripping-arm Q, with its yoke, weighted arm, and latch, bell-crank M, with its weighted arm and yoke, pawl O, pusher I, rope-guide J, with the worm H, and rope C, substantially as and for the purpose set forth.

In witness whereof I have herenunto set my hand this 7th day of September, 1882.

CHARLES RINDERKNECHT.

Witnesses:

C. P. JACOBS,
A. J. MALONE.