

J. EDGAR.  
GRAIN-BINDER.

No. 175,679.

Patented April 4, 1876.

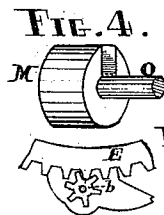
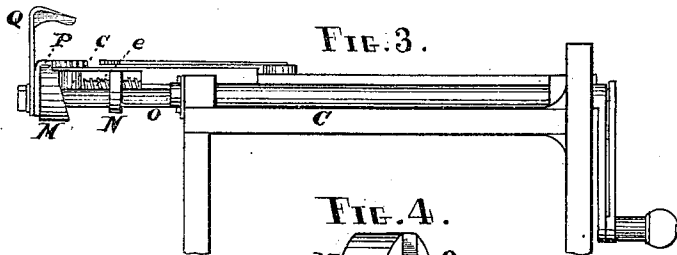
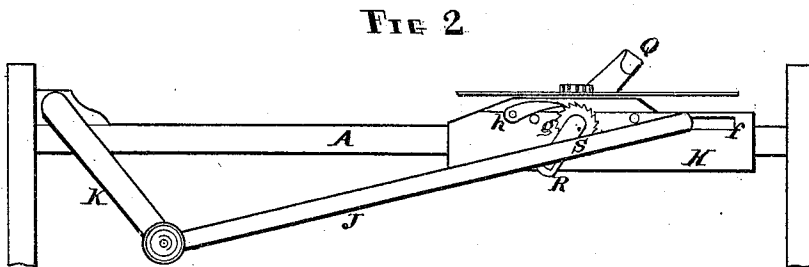
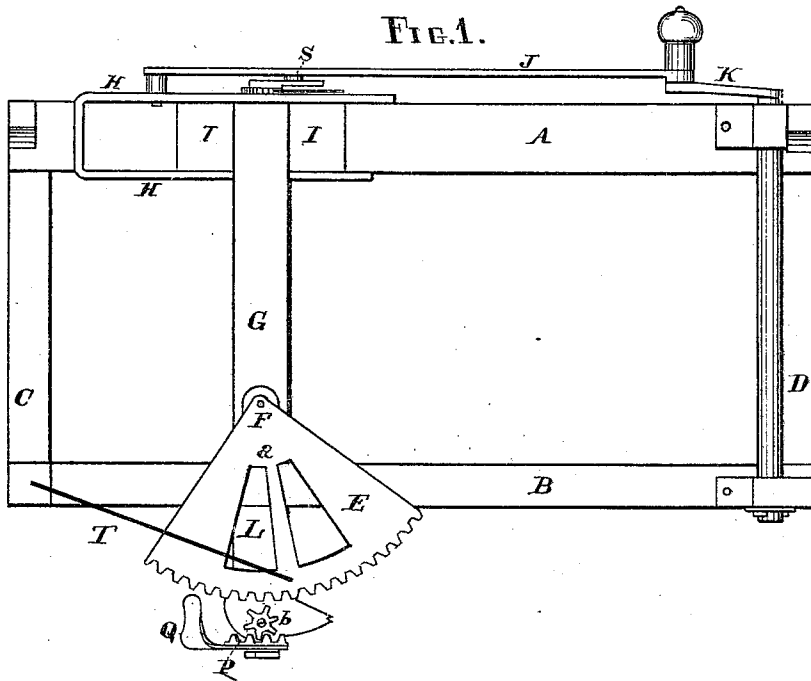


FIG. 5. INVENTOR:  
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# UNITED STATES PATENT OFFICE.

JOHN EDGAR, OF ROCHESTER, MINNESOTA.

## IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. **175,679**, dated April 4, 1876; application filed October 16, 1875.

*To all whom it may concern:*

Be it known that I, JOHN EDGAR, of Rochester, county of Olmsted, State of Minnesota, have invented a new and useful Improvement in Binder Attachments for Harvesters, and for other machines, of which the following is a specification:

The particular and immediate object of the invention is to improve on the grain-binder patented to Charles B. Withington, January 20, 1872, or at subsequent times.

The nature of the invention consists in a crank and pitman; said pitman operating in a slot, which together drive the binder-carriage, and at the same time, by means of a wrist pin on the pitman, intermediate between its two ends, operating in a slotted crank, drive a horizontal shaft. This shaft is provided at its opposite end with a cam, a rack, and an arm. The cam is for putting the twister-pinion into gear with a quadrant-rack. The rack on shaft is for moving the twister-pinion half-way round, for the purpose of bringing the first wire into back side of twister-pinion. Said rack is also to hold the twister-pinion, while out of gear, stationary, and in the right position to fall into gear again with the quadrant-rack at the proper time and place. The arm is to carry the first wire into the twister-pinion, and to hold said wire in place till the bundle is in.

In the drawings, Figure 1 is a plan or top view of the mechanism embodying my improvements, placed on a track for their support and guidance; Fig. 2, a longitudinal elevation of Fig. 1; Fig. 3, an end elevation thereof; Fig. 4, perspective of the cam on the horizontal shaft; Fig. 5, a broken view of a part of the gearing, showing the twister-pinion in gear with the quadrant-rack.

A B C D is that portion of the frame or track which is attached to the McCormick harvester for the purpose of supporting the binding mechanism hereinafter described. H H represent the sides of a carriage projecting down on the sides of the frame-pieces A, and fastening to a bar, G, which extends over and slides upon the frame-piece B. To the top of this bar is pivoted a quadrant-rack, E, which rotates the twister-pinion. There is arranged to slide on this bar a plate, L, and

on the top and at the outer end of this plate is affixed the twister-pinion *b*. Beneath the plate L is a coil-spring, *e*, to move the plate L, with the twister-pinion thereon, out of gear. M represents the cam on end of horizontal shaft O. P is the rack, also on end of shaft O, and is arranged to rotate the twister-pinion at the proper time, as hereinafter shown under the head of operation. Q is an arm, also attached to said shaft O, for a purpose given under said head. The outer plate H of the carriage is provided with a slot, *f*, in which a pin on the end of the pitman J operates, the slot being long enough to compensate for the movement of a slotted crank, R, Fig. 2, which slotted crank is driven by a wrist-pin, S, on the connecting-rod J, intermediate between its two ends. O is a horizontal shaft, which gives motion to the arms of the binder for making the bundle, and which are not shown in this device, and also for giving motion to the cam, rack, and arm, all on end of said shaft. This arrangement is such that when the crank K is turned the carriage moves back and forth on the frame A B, and said carriage will come to a stand at the end of each reciprocating movement, while at the same time the shaft O is rotated about half round at such stand of the carriage. The crank R being attached to the shaft O, and the latter being provided with a ratchet-wheel, *g*, a pawl, *h*, keeps the shaft from rotating in the wrong direction; also, the said shaft O rotates the cam M, the rack P, and the arm Q half-way round at each said stand of the carriage.

The means herein described for putting the carriage in motion, and for rotating the shaft O, differ from said Withington's patent devices, inasmuch as he uses an endless chain instead of the crank and pitman moving in a slot. At the same time I get the same or better motions of the carriage and of the shaft O. The means herein described of moving the twister-pinion in and out of gear, of rotating said pinion half-way to bring the first wire into back side of pinion, of holding said pinion till it comes into gear again, and of bringing the first wire into the said pinion differ from, and the arm Q is in addition to, devices in the said Withington patent.

The arms for compacting the bundle, the

wire, and the twist on same are the same as in said Withington patent, and are not represented on this device. The connecting pivoted rod T, quadrant-rack E, twister-pinion b, plate L, and bar G, and other devices, are shown in the patent named. I therefore confine myself to the hereinafter-named claims.

**Operation:** The crank K is to be rotated by power derived from the harvester in an ordinary manner, well known to the art. This crank, by means of the pitman J, will move the carriage back and forth, and turn the shaft O so as to operate the compressing-arms, as in the Withington patent, and, besides, will cause the cam M to put the twister-pinion b in mesh with the rack E at the proper time; also, at the other stop in the reciprocating movement, said shaft O will rotate the rack p and the arm Q, so as to bring the first wire into the twister-pinion at the proper time, and will cause the twister-pinion to rotate half-way round. The rack p will also, after causing such half rotation of pinion, hold the same stationary till ready to fall into gear again with the quadrant E. The arm Q insures the bringing in of the first wire by a positive movement, and without the aid of the pressure or weight of the grain, as is needed in said Withington device.

In the drawings herewith the axis of crank K, of the shaft O, and of the pin in the outer end of the pitman J lie in the same plane, and when the pitman J is at its greatest throw the pitman J, crank K, slotted crank R, and slot f are in the same line; also, the bearing of wrist-pin on pitman J at crank R is intermediate between the ends of the pitman J, and the slot in which the pin in the end of pitman J operates is in a part of carriage M M; also, the carriage moves or slides upon a frame.

All this may be varied as follows: First, the axis of crank K of shaft O, and of the pin in the outer end of the pitman J, may lie in a different plane, the one from the other, in which case the pitman J must be curved to fit the change of bearings. Second, the pin on pitman J, which moves in slot in carriage, and

said slot, may be intermediate between the crank K and the slotted crank R, with its shaft O, in which case a given motion of the crank K in the former method will reverse the motion of the slotted crank R in this. Third, the slot in which the pin on pitman J operates may be in the frame, and not in the carriage, in which case said slot must be as long as the throw of said pitman, and another slotted pitman will be needed to give the carriage its greatest reciprocating motion. Fourth, the carriage H I and bar G, with all the apparatus for binding, may be, by this means of motion, pivoted or hinged at a point either above or below the center of crank K, and be made to swing on said pivot or hinge, instead of sliding or moving on a frame. Fifth, the slot in which the pin on pitman J moves, and the slot in crank R, may be either straight or curved, and the slot, whether in the carriage or on the frame, may be, instead, in the pitman, in which case the pin would be placed in the carriage.

I claim and desire to secure by Letters Patent—

1. The combination of the crank K, the pitman J, and slotted carriage H f, for giving reciprocating movement to carriage, as set forth.

2. The combination of the crank K, the pitman J, and slotted crank R, for giving motion to the shaft O, as set forth.

3. The devices for putting the twister-pinion in and out of gear with the rack E, consisting of a combination of the cam M, a spring, e, the shaft O, and crank R, as set forth.

4. The rack P, shaft O, cam M, arm Q, and twister-pinion, for half rotating the twister-pinion and locking it when out of gear, as set forth.

5. The combination of the shaft O, rack P, and arm Q with the twister-pinion, as set forth.

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Witnesses:

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OTTO ADIX.