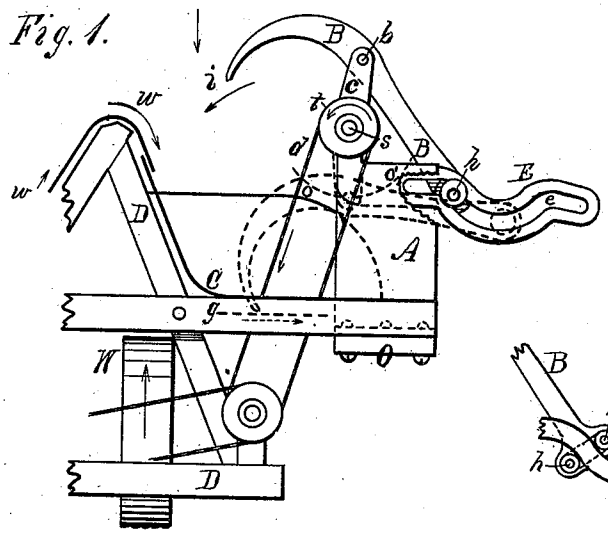
J. H. GORDON.
GRAIN-BINDER.

No. 193,241. Patented July 17. 1877.

Fig. 1.



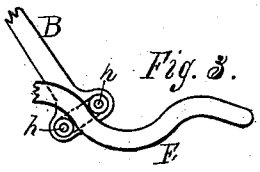


Fig. 3.

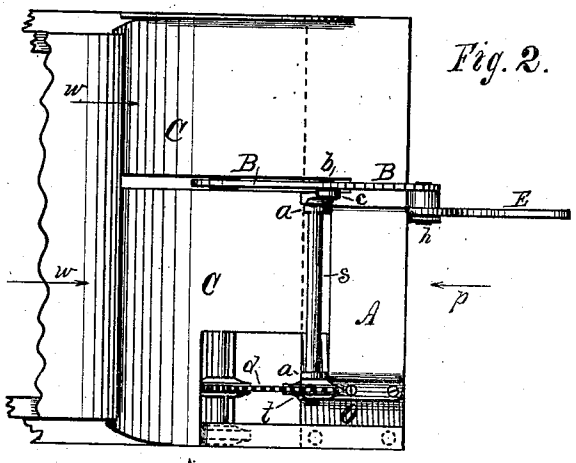


Fig. 2.

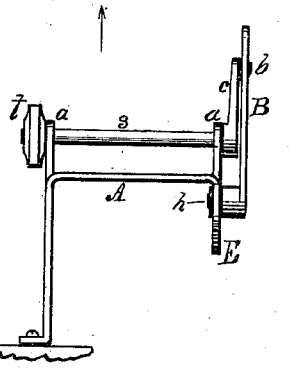


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN H. GORDON, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. 193,241, dated July 17, 1877; application filed July 1, 1876.

To all whom it may concern:

Be it known that I, JOHN H. GORDON, of Rochester, Monroe county, New York, have invented certain new and useful Improvements on Grain-Binding Machines, of which the following is a specification:

The object of my invention is to provide a cheap and simple method of operating a binder-arm in such manner that it shall advance above the grain, descend over the same, and then move backward in a horizontal plane, or in any other special or irregular path desired, the horizontal movement being, however, the special aim of the arrangement, in order that the arm may operate in connection with a horizontal table or receiver and a horizontally-moving twister-head; and to this end the invention consists in mounting the binder-arm directly upon a rotating crank, and governing the course of its movement by means of a stationary guide, in or upon which the arm slides, and which may be varied in form so as to give the arm any peculiar or special movement required, no matter how irregular the same may be.

I am aware that it is old to mount a binder-arm on a driving-crank, and arrange its rear end to slide through a guide mounted on a fixed pivot, as in the patent granted to O. O. Storle, dated December 3, 1867; and I am also aware that it is old to mount a binder-arm at its middle on a driving-crank, and guide its rear end by pivoting it to the lower swinging end of a pivoted link, and I therefore make no claim to either of said arrangements; nor do I claim mounting a binder-arm on a crank, or broadly mounting it on a crank, and guiding its rear end in the arc of a circle.

Figure 1 represents a side elevation of the rear end of a harvesting-machine provided with my improved binding-arm; Fig. 2, a top plan view of the same; Fig. 3, a view illustrating a slightly-modified form of the apparatus; Fig. 4, an outside elevation or end view of the arrangement represented in the first two figures.

B represents the binding-arm, mounted at or near its middle on a rotating crank, *c*, and provided at its rear end with a lateral stud, *h*, arranged to slide in a guiding-slot, *e*, as shown, the slot being made in a rigid arm, E, and of such form that the rotation of the crank causes the forward end of the binder-arm to advance above the grain, descend over the same, and then move backward. The path in which the end of the binder-arm moves is governed by the shape of the guiding-slot *e*, which may be varied in such a manner as to give the arm any movement required, no matter how irregular or peculiar the same may be; but, ordinarily, it is preferred to give the slot substantially the form shown in the drawings, whereby the end of the binder-arm is caused to move backward during the whole or part of the distance in a horizontal plane, so that it may be used in connection with a twister-head having a horizontally-sliding movement.

As shown in the drawings, the slotted guide-arm is formed on, and the cranked end of the shaft sustained by, an arm extending out horizontally from the upper end of a standard, A, and overhanging the grain table or receiver, the standard being secured in place at the outer rear corner of the table or receiver. By sustaining the shaft-guide and binder-arm wholly by the overhanging arm of the standard or bracket, the grain table or receiver is left clear and unobstructed, and the bound bundles of grain permitted to pass freely under the rear end of the binder-arm, and off over the end of the table or receiver.

The binder-arm may be used in connection with a twister and other binding devices of any ordinary construction; and the standard and twisting devices may all be adjustable forward and backward, in order to adapt them for binding different lengths of grain.

In order to reduce the friction of the parts, the binder-arm may have the stud or guide-pin *h* on its rear end provided with an anti-friction roller.

Instead of making the slot in the guide-arm E, it is obvious that, as shown in Fig. 3, the arm itself may be given the same form or curvature as the slot, and the end of the binder-arm provided with two rollers or studs, *h*, to embrace and slide upon the guide-arm, as shown.

The advantages of my arrangement over those cited are, mainly, that the course of the arm may be regulated as desired, and its point caused to travel in any irregular path

required, instead of being confined, as in the other arrangements cited, to certain limited regular paths; that it requires a less number of parts; that it has a smaller number of working joints; that the standard does not require to be extended upward, as in the arrangement employing the hanging link; and that a more solid and easier working apparatus is produced.

Having described my invention, what I claim is—

1. In a grain-binding machine, the combination of a driving-crank, a fixed slotted guide, and a binder-arm mounted at or near its middle directly on the crank, and arranged to slide in the guide, substantially as shown and described.

2. In a grain-binding machine, the combination, substantially as shown and described, of a rotating driving-crank, a binder-arm mounted at or near its middle thereon, and a fixed curved guide, by which the movement of the binder-arm is controlled, and its nose caused to travel in a straight line during the whole or the greater part of its backward movement.

3. The combination, in a grain-binder, of the table C, the fixed overhanging standard provided with the rigid guide-arm E, the crank *c* having its shaft mounted in the standard, and the binder-arm B, sustained and carried by the crank and guide-arm, as shown.

4. The combination of the rotating crank, the binder-arm mounted thereon, and a fixed elongated guide, E, having the end of the arm arranged to slide to and fro therein or thereon, as shown, the distance between the crank-pin and the bearing of the arm on the guide remaining the same during the entire movement of the arm.

5. In a grain-binding machine, the combination of a rotating driving-crank, a fixed sinuous guide, and an arm adapted and arranged to carry the binding-wire around the grain mounted directly on the crank, and controlled in its movement by the guide, substantially as shown and described.

JOHN H. GORDON.

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