

WILLIAM SIVERD, Jr.

Improvement in Grain Binders.

No. 124,020.

Patented Feb. 27, 1872.

FIG. I.

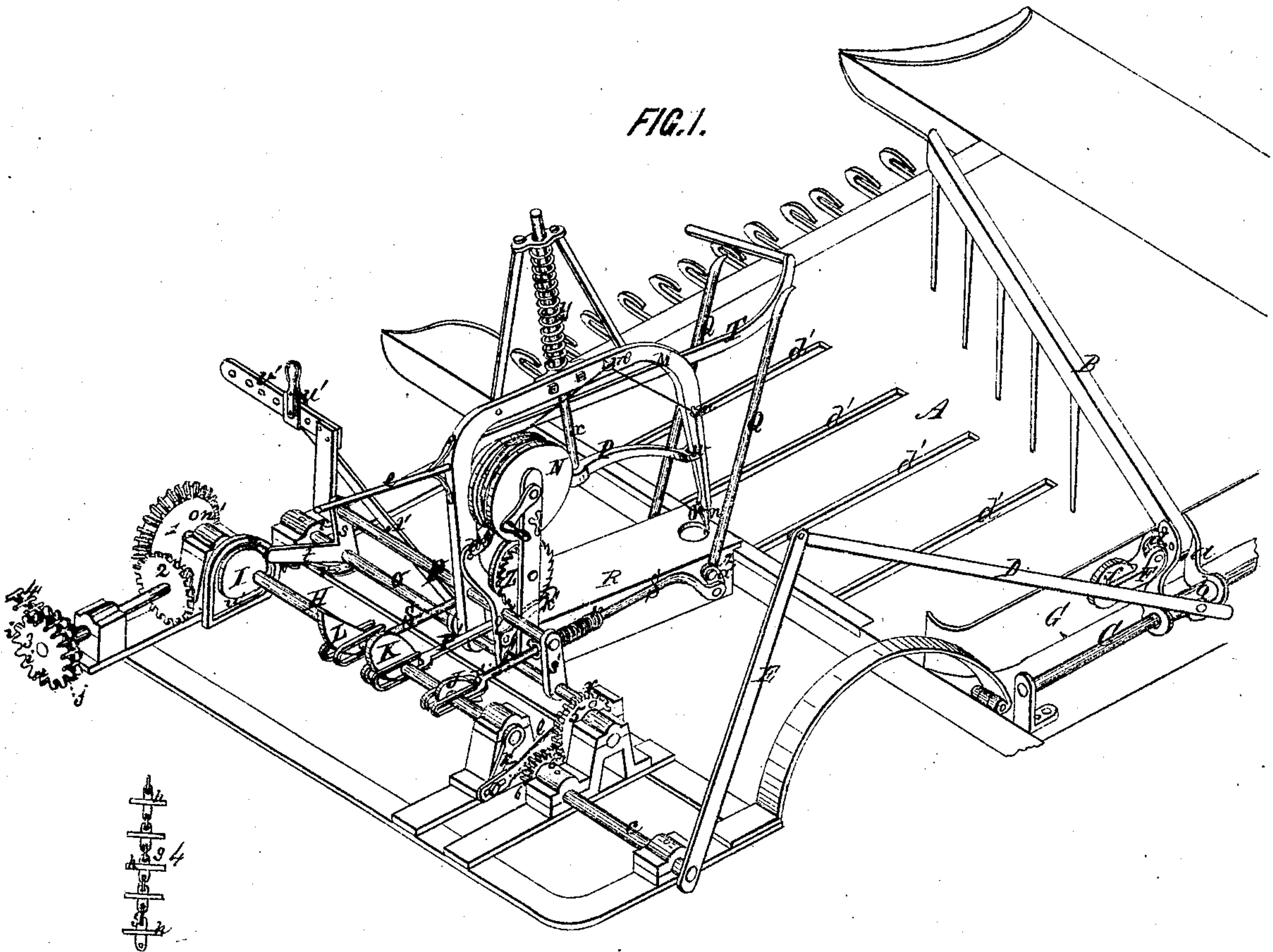
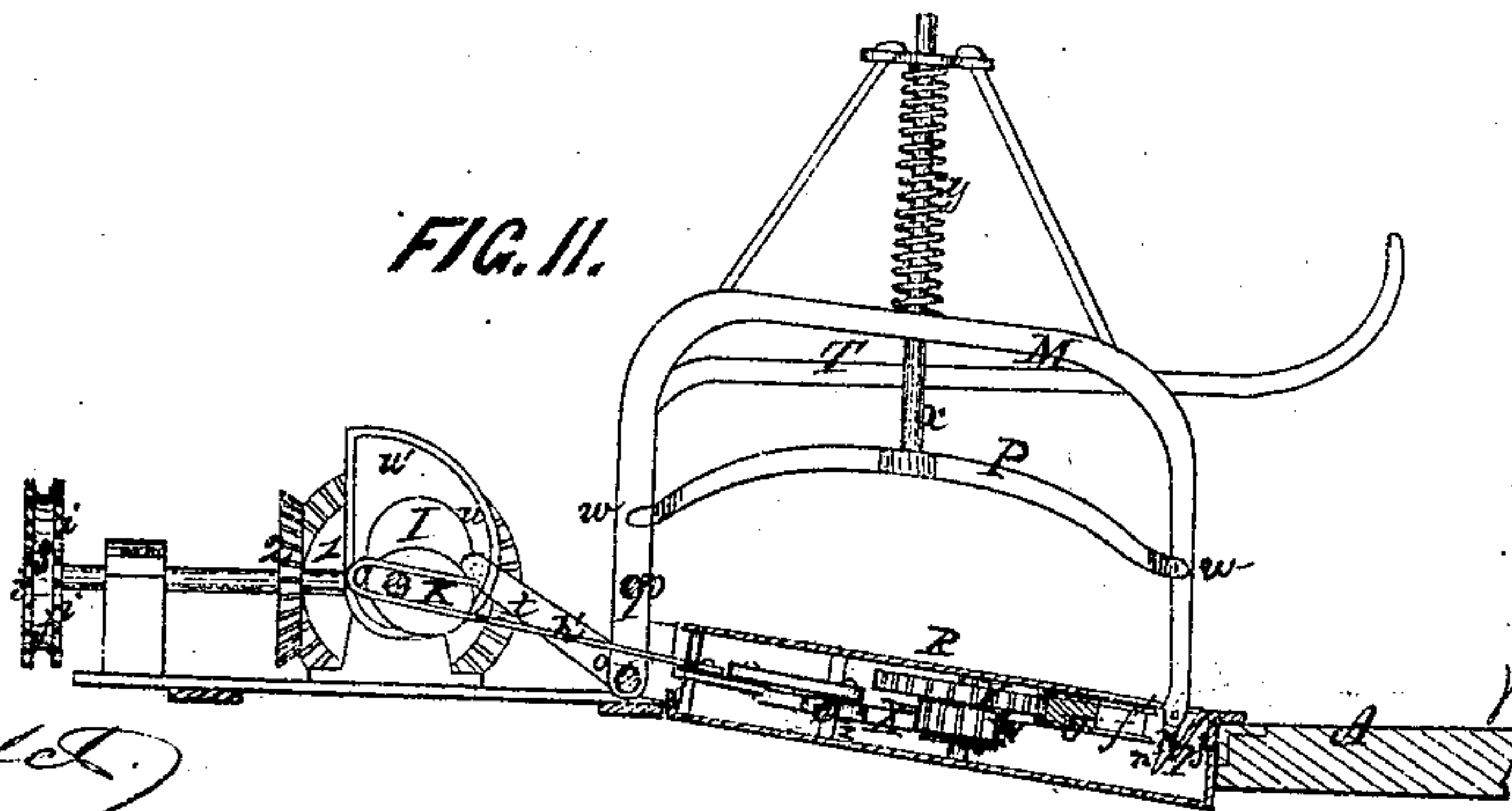


FIG. II.



Witnesses.

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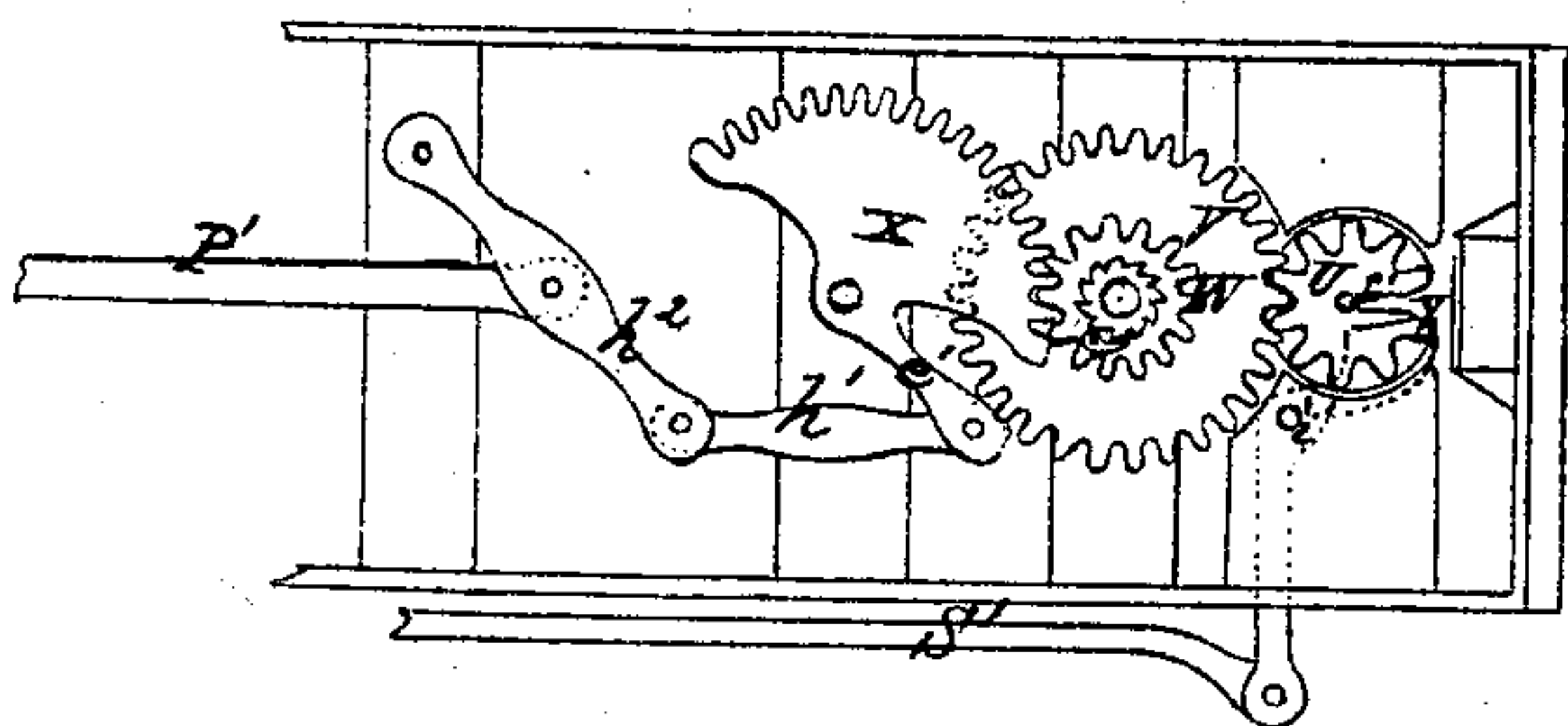


FIG. V.



FIG. VI.

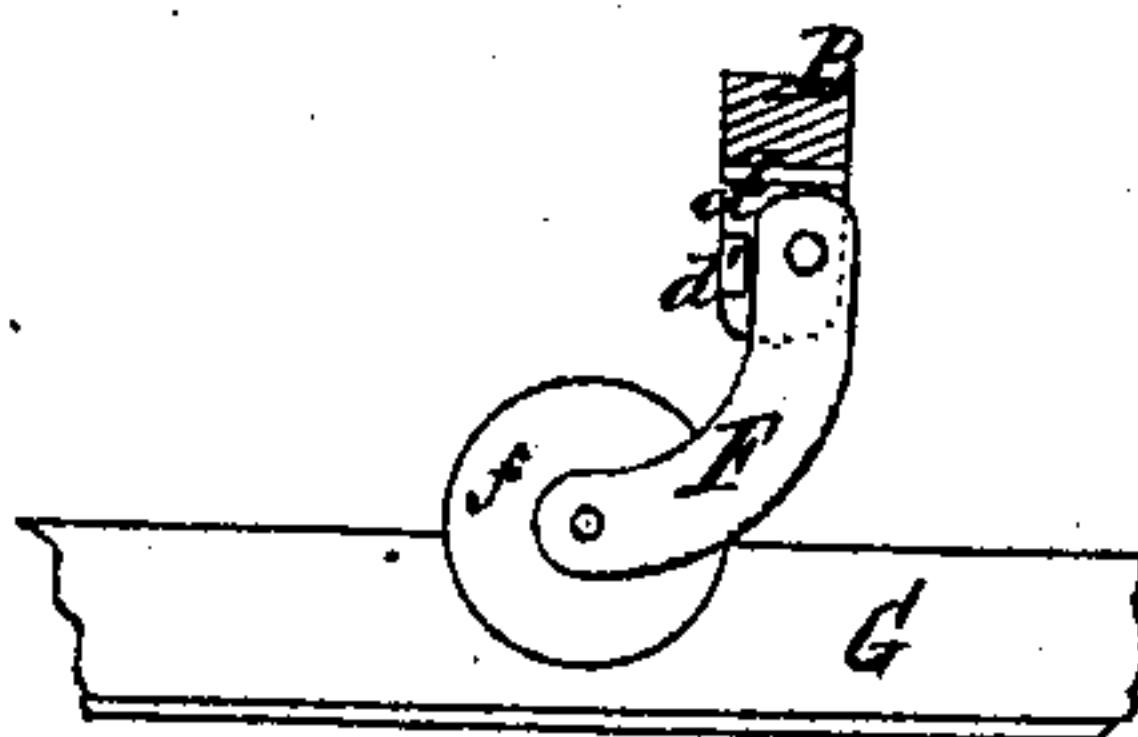


FIG. IV.

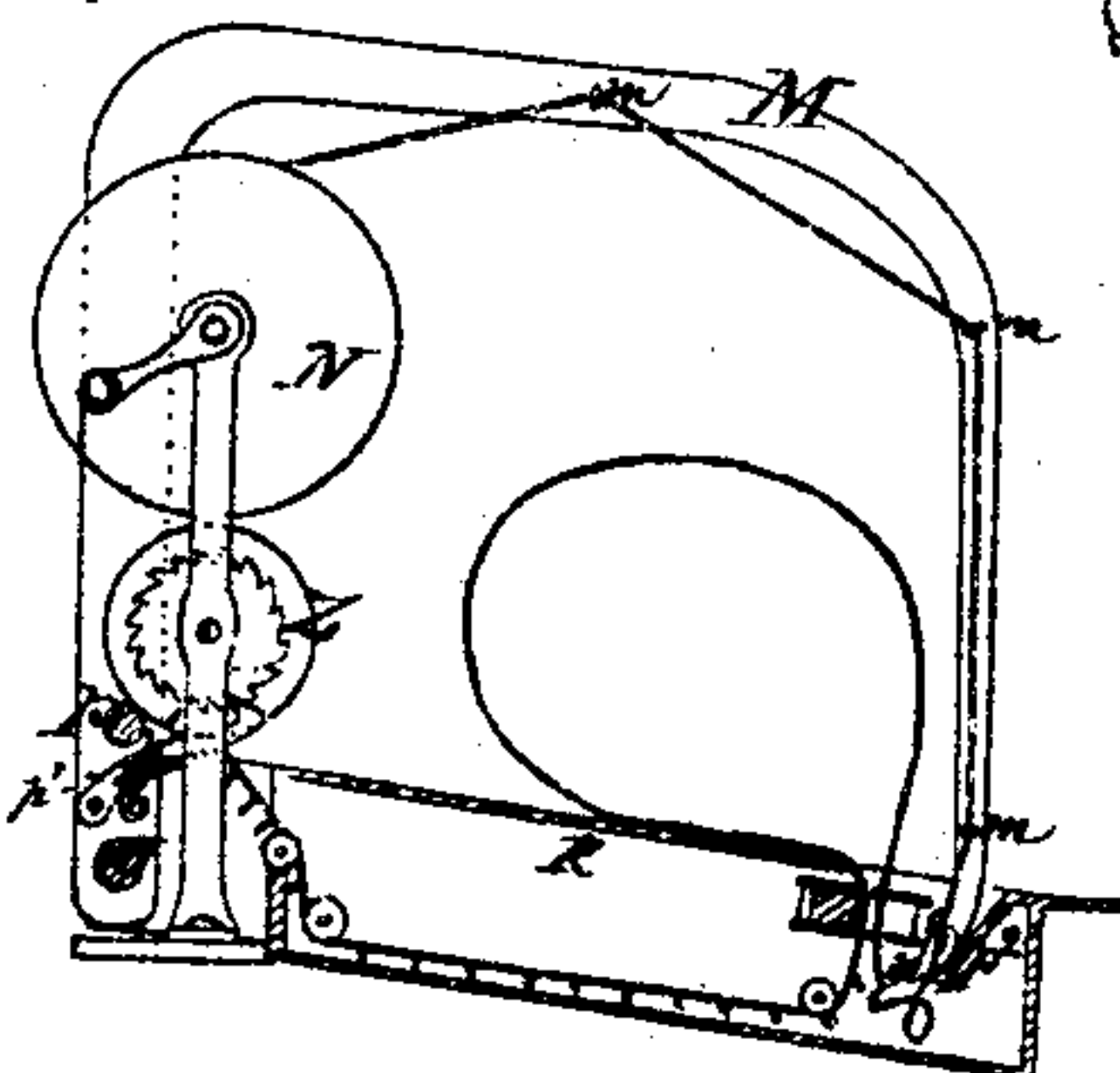


FIG. VII.



FIG. VIII.

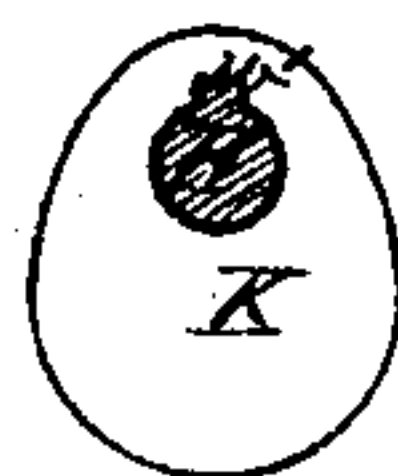
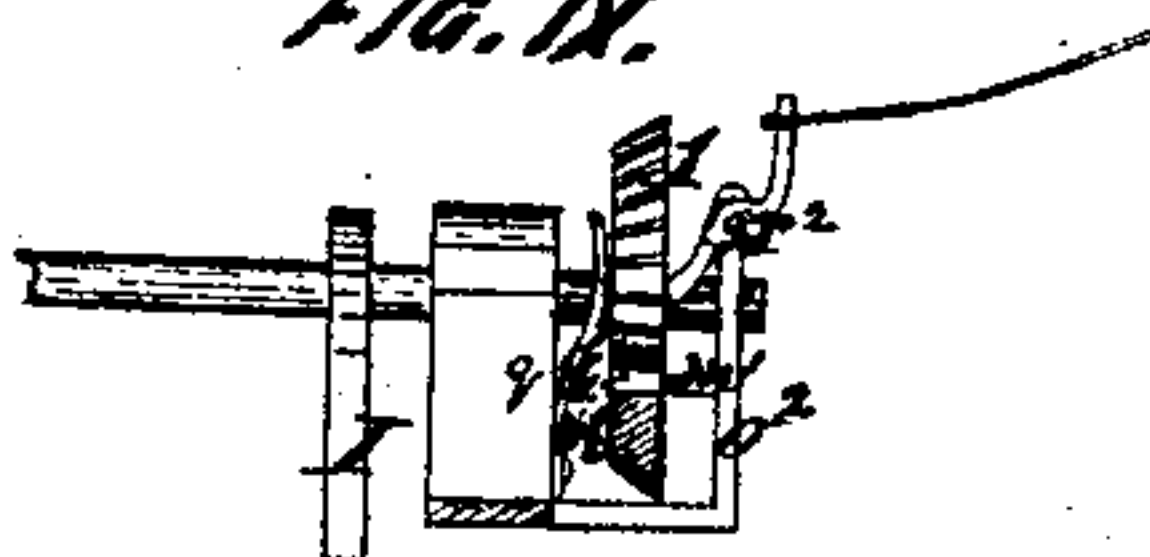


FIG. IX.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM SIVERD, JR., OF GENESEO, NEW YORK.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. 124,020, dated February 27, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, WILLIAM SIVERD, JR., of Geneseo, in the county of Livingston and State of New York, have invented a certain new and useful Improvement in Machines for Raking and Binding Grain, of which the following is a specification:

Nature of the Invention.

This invention consists in the construction and arrangement of the parts, as hereinafter described.

General Description.

In the drawing, Figure 1 is a perspective view of my improved machine; Fig. 2, a vertical section of the rear part of the machine, showing specially the arrangement for twisting the wire; Fig. 3, a bottom view of the same; Fig. 4, a view of the curved arm and spool arrangement; Fig. 5, the end of the curved arm; Fig. 6, the caster-wheel to the rake-head; Fig. 7, one of the hook-heads or bearings of the cams; Fig. 8, one of the cams and its shaft; Fig. 9, the arrangement for disconnecting the gears.

A represents the platform of a harvester, and B the rake. To the heel of the rake are attached arms *a*, which are connected by a collar, *b*, that slides freely on the way C. This way is simply an iron rod. A pitman, D, is jointed to the collar, and connects the rake-head with a long crank-arm, E, fixed to shaft *c*. The forward-and-backward rocking motion of this crank gives the proper sweeping motion to the rake. A fixed lug, *d*, is attached on the under side of the head of the rake, and to this is jointed an arm, F, holding a caster-wheel, *f*. This wheel runs back and forth upon a rail, G, on the rear of the platform, as clearly shown. At the extreme of motion in each stroke of the rake, the wheel turns round or changes position, so as to drag behind. In going forward to rake the grain, the rake stands lower, caused by the upper end of the clevis dragging higher under the rake-head; but in going backward, it stands higher, to sweep over the table, by reason of the top of the clevis turning under a shoulder, *d'*, Fig. 6, under the rake-head.

The binding arrangement is as follows: H

is a rock-shaft, having at one end the bevel-gear 1 meshing into pinion 2. At the opposite end of the shaft of the pinion 2 is a double-toothed gear, 3, which receives motion, by chain 4, from any desired power. This chain and wheel are peculiar in their construction, the chain being made up of links *g g*, with cross-lugs *h h* jointed between them. The longitudinal links of the chain strike into the central groove *j* of the wheel, while the cross-lugs fit into the teeth *i i* on the opposite sides of the central groove. A secure connection is thus attained, which is essential in machinery like this. On the main shaft H are situated four cams, I, J, K, and L, whose object will presently be explained; also, at the inner end, a crank, *k*, whose pin rests in a slot of connecting-rod *l*. This crank by its revolutions imparts a reciprocating or vibrating motion to the rake-crank E through the medium of gears 5 6 and shaft *c*. M represents a curved arm, which carries the wire from spool N through eyes *m m* to the point O, which is jointed at *n* to the main arm. The wire passes through an eye in this point, and enters thence the twisting-wheel U, as will presently be described. The rear or base end of the curved arm is sustained by two shafts, *o p*, which pass loosely through it; and also by a brace, *q*, fastened to the shaft *p*. The ends of shaft *o* rest in boxes *r r*, while *p* is sustained by arms *s s'* at its ends, which arms rest on shaft *o*. The arm *s* is of right-angled form, the part *t* having a crank-pin, which enters a slot, *u*, of cam I. This slot is of such form that it will operate the arm *s t* to throw the curved arm M down to embrace the bundle of grain to be bound at the proper time, and then release it when bound. For this purpose the main portion of the slot is circular and the other part is angular, and the angular part is left in the form of an open space, *u'*, which, when it reaches the crank-pin, will allow a quick reaction of the arm *s t*, caused by the spring *v* on its under side connecting it with the platform. This spring throws the arm suddenly downward, and thus as quickly removes the curved arm M from contact with the bundle of grain it has held. The rear side of the curved arm M has a stop, *e*, which prevents its being thrown too far back. A compressor, P, extends from side to side of the arm M inside, and slides thereon by means

of clasp-lips $w w$. It has a central shaft, x , and a spring, y , on top, which forces it down. The object of this compressor is to act in conjunction with the arm M to hold the bundle of grain firmly in place while it is being bound, which it does by pressing down directly on top the mass. Q Q are two arms, which are secured on opposite sides of the box R, inclosing the twisting machinery, being connected by a shaft, z , which passes through the box. The shaft z has a short crank, a' , to which is jointed a connecting-rod, S, which extends back to shaft H, and has a slotted or hook-shaped head, b' , which embraces the cam J, which thus throws it forward, and thus elevates the arms. The reaction of the arm is produced by a spring, c' . These arms, when thrown down, strike into slots $d' d'$ in the platform, to be out of the way of the grain sweeping over them. When a sufficient quantity has collected, they are raised by the action of a cam, and deposit the grain under the curved arm M, which then descends upon it. The grain is prevented from being thrown upward in the reverse motion of the arms Q Q by means of a fixed guide, T, of a form similar to the curved arm M, which guide extends out between said arms Q Q, as clearly shown in Fig. 1. This guide also serves to direct the grain inward to form the bundle.

The twisting arrangement is as follows: U is a slotted wheel, the slot f' of which receives the wires after being doubled around the bundle, and twists up the ends by the revolving motion of the wheel. This is the common way of twisting the wires in grain-binders. This slotted wheel has cogs, with which engages a gear-wheel, V. Another gear, W, lies below V on the same axis, and engages with it by a pawl and ratchet, so as to give motion to it in the forward turning, but disengage from it in the back turning. A segment-gear, X, engages with W, having an arm, e' , with which are connected toggles $h^1 h^2$ attached to rod P' that runs back to cam K, and is connected and operated in the same manner as rods S S'. This forward-and-back motion gives a corresponding alternate motion to the gears XW, but only a forward motion to the slotted wheel U and gear-wheel V, owing to the interposed ratchet-and-pawl arrangement before spoken of. The slotted wheel, by the gearing up of the parts, receives several revolutions by one movement of the arm P, and is so adjusted that its slot always comes in position for the wires at the extent of each stroke. When the twisting is accomplished, a cutter, Y, Fig. 3, pivoted at i and operated by the rod S' and cam L, passes across the slot, and divides the twist of the wire, and frees the bundle, while the end of the wire with the twist on it is wound up on the secondary spool Z below the main spool. This spool winds up only a short length or section of the end of the wire after the securing of each bundle—just sufficient to draw the twist already formed down out of the slot of the wheel to give freedom to the twist of the next bundle. In fact, all the wire that winds upon this spool

z is made up of short pieces occurring from the successive cutting of the twists, as but a single wire is used. In other words, the lower attachment of the wire is with spool z , while the upper spool N, which holds the surplus, lets it off as required, and spool z simply turns sufficiently to draw down the twisted part and keep it free from the operating devices. The movement of the spool z is accomplished by a pawl, k' , engaging with teeth on its periphery, said pawl being attached to brace q , and rocking with it. The outer length of the wire, after passing around the bundle, is carried into the slot of the twisting-wheel by means of the striking of the end of point O of the curved arm M upon an inclined plane, p^2 , just within the mouth of the box R. The box R inclosing the twisting arrangement, the arms Q Q', the arm M with its connecting parts, also the cams J, K, and L with their rods S, S', and P', all move laterally on the platform in order to adapt the action of said parts to long or short grain. The box R is adjusted by means of a rod, A', pivoted thereto, which connects with a slide, w' , which rests on a way, v' . This way has adjusting-holes at proper distance apart, and the slide has a pawl, which engages thereon. The cams and connecting parts simply slide upon the main shaft H, which has a feather, w' , Fig. 8; and the cams are keyed in place. The curved arm M and adjuncts slide upon the shafts $o p$. To insure perfect control of the operating parts, the bevel-gear 1 is allowed to slide outward upon its shaft by means of a feather thereon, and is provided with a slot or hole, n' , which receives or is forced over a pin, m' , on the upright o^2 by the pressure of a spring, q , placed against the wheel, as clearly shown in Fig. 9. This has the effect to sever the connection between the bevel-gear 1 and pinion 2. When it is desired to again apply the power, the bevel 1 is forced back away from the pin m' and against spring q' by the short arm of lever r^2 , which has a cord or chain extending from the long arm to the operator, until it meshes with pinion 2; and, the gear 1 commencing its revolution directly this occurs, the hole n' is carried beyond the pin m' , which latter, by bearing against the face of the bevel 1, insures the connection until the revolution is completed, and the hole again comes opposite and is forced over the pin by the force of the spring behind.

Claims.

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

1. The combination of the hinged caster F f , collar b , way C, and rake B with the rail G, substantially in the manner and for the purposes specified.

2. In a grain-binder, the inclined plane p^2 , arranged and operating in connection with the jointed point O of the curved arm M, constructed substantially as set forth, for the purpose specified.

3. The twisting apparatus, consisting of the

gears U, V, W, and X, having an interposed ratchet and pawl, as described, whereby a continuous forward motion is given to the slotted twisting-wheel, as herein described.

4. The arms Q Q, rod S, spring c' , and cam J, combined and arranged in the manner and for the purpose specified.

5. The shafts $o p$, bell-crank $s t$, and cam I, arranged and operating in the manner and for the purpose specified.

6. The combination of the shaft H with cams I J K L, rods S S' P, and bell-crank $s t$, in the manner and for the purpose set forth.

7. The guide T combined with the arms Q

Q and the curved arm M, in the manner and for the purpose specified.

8. The way v' , slide u' , and connecting-rod Δ' , in combination with the binding apparatus, for adjusting the same laterally, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM SIVERD, JR.

Witnesses:

R. F. OSGOOD,

G. WILLM. MIATT.