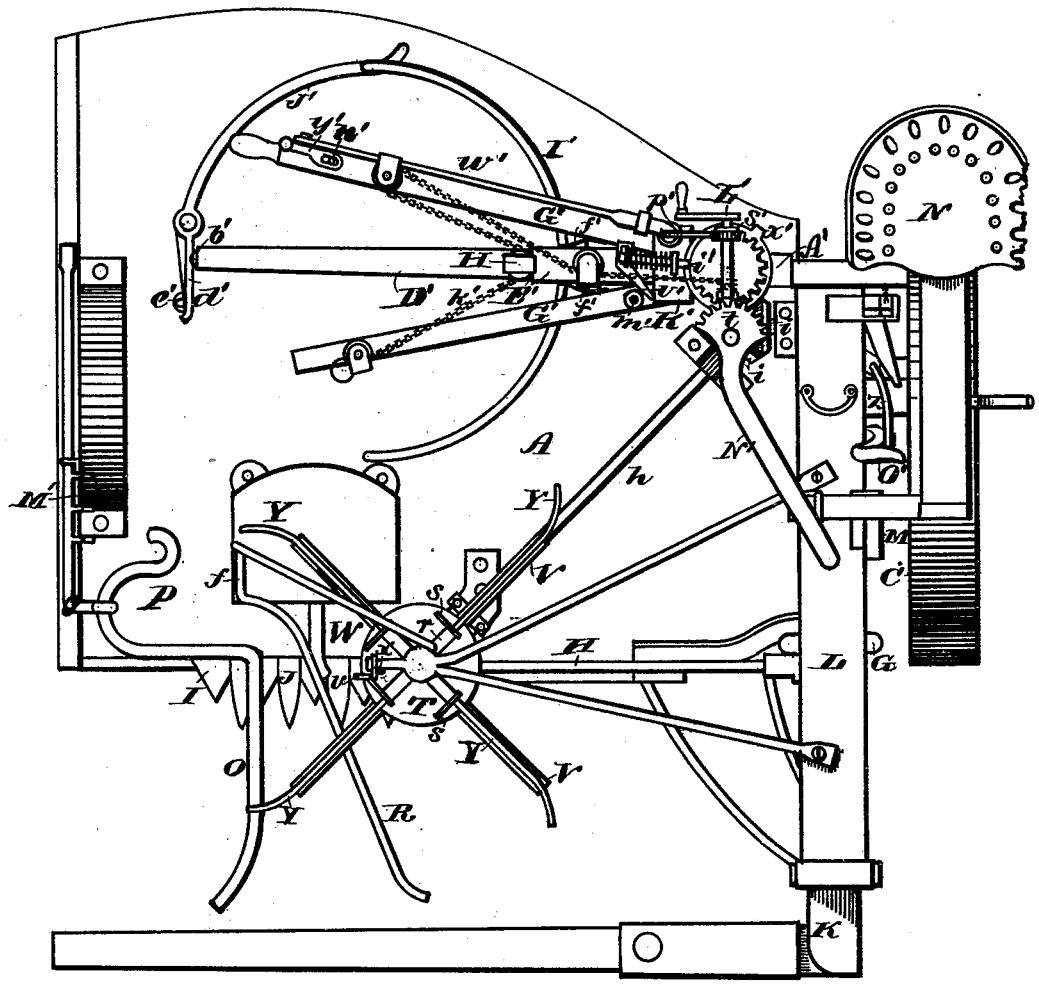
4 Sheets—Sheet I.

R. B. ROBBINS.

CORN-HARVESTER.

No. 186,168. Patented Jan. 9, 1877.

Fig. 1.



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No. 186,168. Patented Jan. 9, 1877.

Fig. 2.

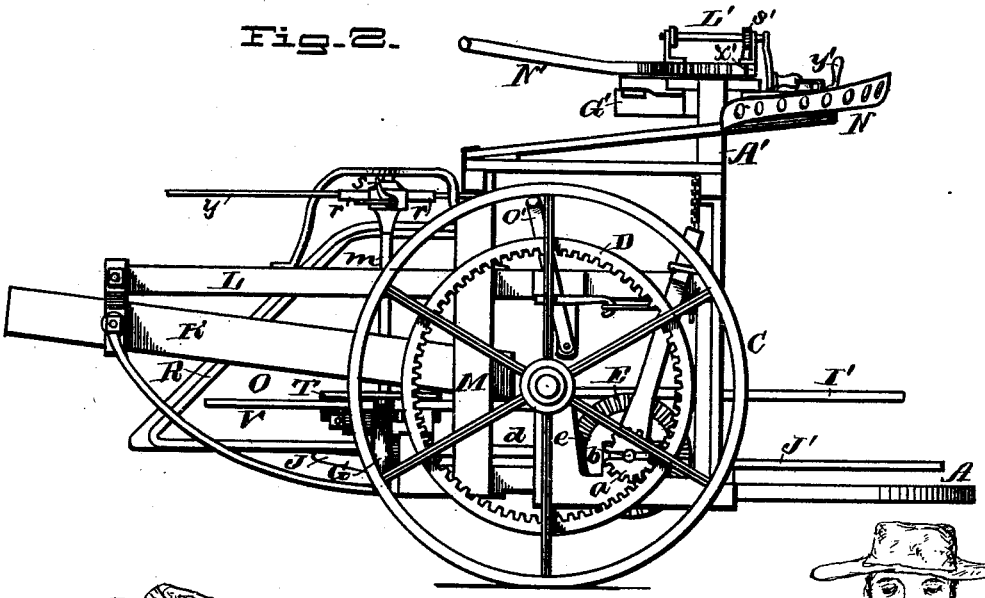
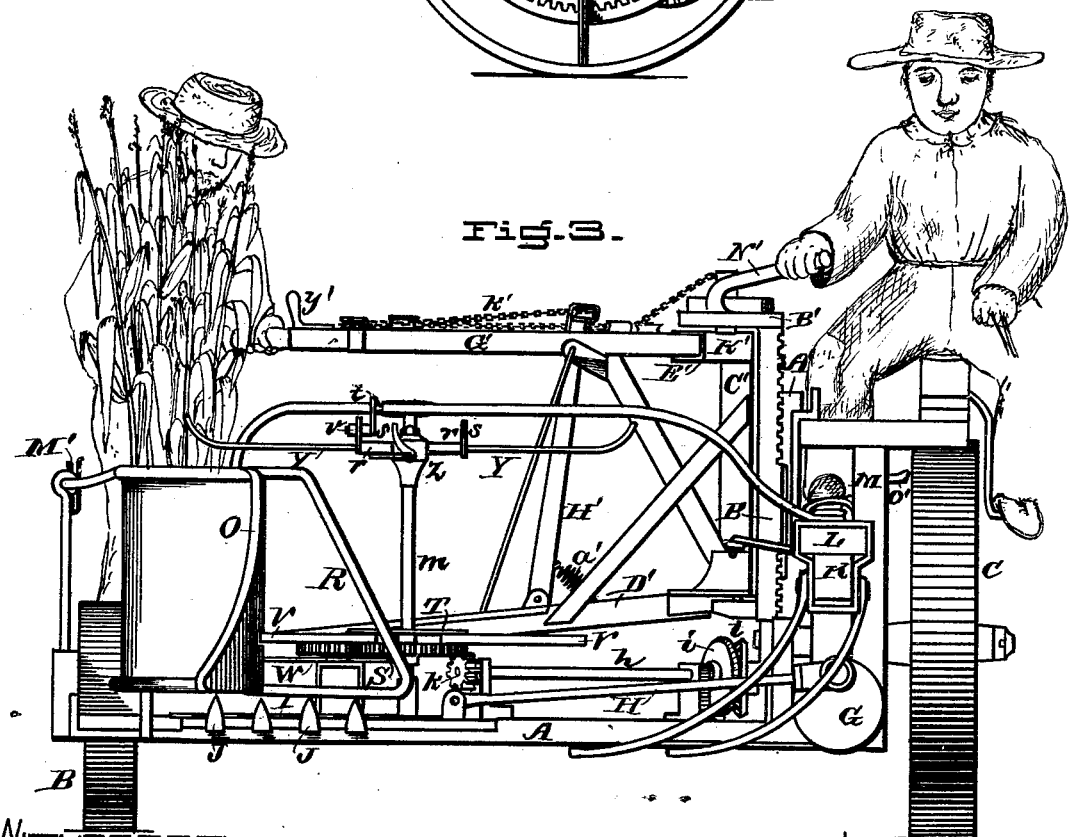


Fig. 3.



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4 Sheets—Sheet 3.

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No. 186,168.

Patented Jan. 9, 1877.

Fig. 4.

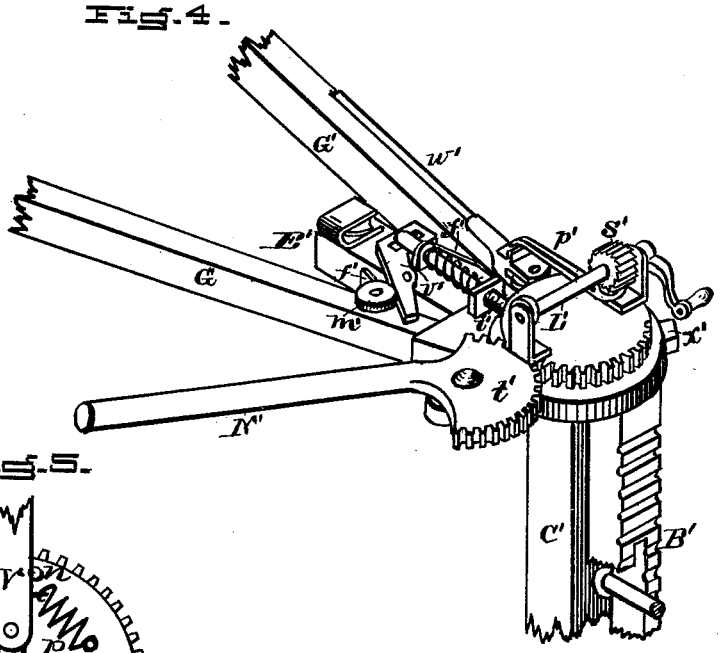


Fig. 5.

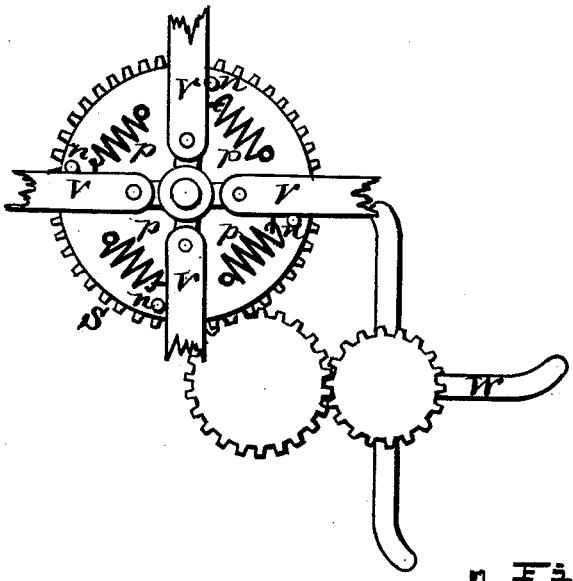


Fig. 6.

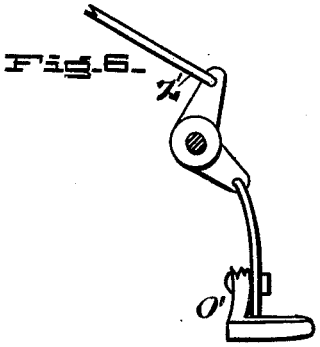
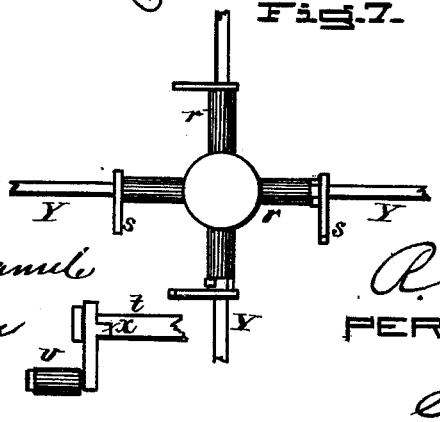


Fig. 7.



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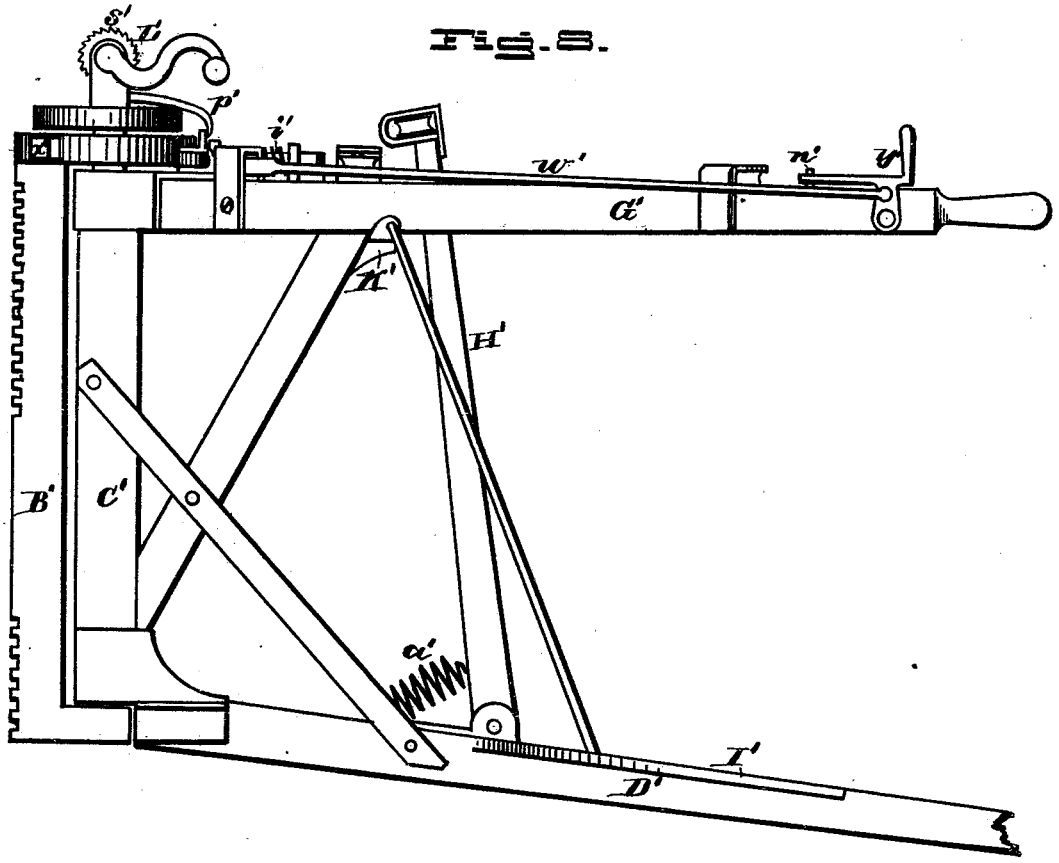
CORN-HARVESTER.

No. 186,168. Patented Jan. 9, 1877.

Fig. 8.



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UNITED STATES PATENT OFFICE.

RICHARD B. ROBBINS, OF ADRIAN, MICHIGAN.

IMPROVEMENT IN CORN-HARVESTERS.

Specification forming part of Letters Patent No. **186,168**, dated January 9, 1877; application filed May 29, 1876.

To all whom it may concern:

Be it known that I, RICHARD B. ROBBINS, of Adrian, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Corn-Harvesters, of which the following is a specification:

My invention relates to corn-harvesters; and it consists, essentially, in the construction and arrangement of the devices for collecting and holding the corn to form a shock; and, also, in the devices for forming the shock and delivering or discharging the same on the ground, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a plan view. Fig. 2 is a side elevation. Fig. 3 is a front view. Figs. 4, 5, 6, and 7 are detail views. Fig. 8 is a side view of derrick.

A represents the platform, supported at its outer end by the wheel B, and at the inner end by the driving-wheel C, placed on a spindle having its bearings in suitable standards on the platform.

On the inner side of the driving-wheel C is an internal gear-wheel, D, which meshes with a pinion, *a*, on a shaft, *b*, and on this shaft is a bevel-wheel, E, meshing with a similar pinion, *e*, on a shaft, *d*, running with the line of the draft, and having on its front end a crank-wheel, G, connected by a pitman, H, with the cutter-bar I working in the fingers J in the usual manner. K is the tongue of the machine, pivoted in a stirrup under the front end of the stationary beam L, and its rear end adjusted vertically to a standard, M, so as to regulate the height of the fingers from the ground. N is the driver's seat, located above the driving-wheel C.

To the above devices I lay no claim, as they may be constructed and arranged in any well-known manner, or in a manner deemed most convenient.

At the outer end of the finger-bar is a guard, O, curved at its outer end, as shown, and at its inner or rear end it is bent outward in nearly semi-cylindrical form and connected permanently to the platform A, forming a pocket, P, for holding the hills of corn as they are cut off while a shock is being formed. The binder, stationed on the platform, removes the same from the pocket as he requires them to form a shock.

At the inner end of the finger-bar is a wire guard, R, also made flaring at its front end, and the upper portion thereof is bent toward the front and top of the pocket P, and near this point the guard R is bent to form, as it were, a partial rail, *f*, across the open side of the pocket at the top, and it is then bent downward and secured to the platform. By this construction of the guard R the stalks are conveyed into the pocket P.

The inner end of the shaft *b* above mentioned is by bevel-gears *i i* connected with a shaft, *h*, running diagonally across the platform to near the inner end of the finger-bar, where said shaft is provided with a bevel-pinion, *k*, which meshes with a bevel cog-wheel, S, secured upon an upright shaft, *m*. To this shaft, above the wheel S, is secured a disk, T, leaving a suitable space between them, and in this are arranged four radial arms, V, pivoted at their inner ends and held by means of springs *p* against stops *n*, so as to be at equal distances apart.

In operation these arms, while revolving, carry the stalks inward toward the cutters, and, being yielding or flexible, they will give in case they should strike a stalk before the cutters have reached it, which is often the case, as the hills are always more or less out of line. As the flexible arms V carry the stalks inward, the stalks are caught at their lower ends by a four-armed reel, W, the arms of which are rigid, and by it carried into the pocket.

When desired the armed reel W may be omitted, leaving the stalks to be carried into the pocket P by the radial arms V without assistance.

This reel is operated by suitable gears from the wheel S, as shown. At the same time as the base or lower ends of the stalks are operated upon the upper ends are carried inward into the pocket by means of rocking arms Y in the following manner: On the upper end of

the shaft *m* is a head, Z, provided with four radiating tubular projections, *r*, at equal distances apart, and through these are passed two horizontal rods extending each on both sides of the head and forming four arms, Y. The ends of each of these rods are bent or curved in the same direction. On each arm Y at the end of the tube *r* is a pin, *s*. From the upper bearing of the shaft *m* extends an arm, *t*, carrying upon its end a crank, *v*, which has a lug, *x*, so arranged that it will strike the arm *t* and prevent the crank turning in one direction while it can turn out of the way in the opposite direction.

In operation, as the shaft *m* revolves, the arms Y in succession take hold of the stalks with their curved ends extending rearward. As the stalks then are carried backward and guided by the guard R, the pin *s* on the arm Y strikes the crank *v*, and, as the pin cannot pass by the same, the arm Y is turned one-half of a revolution in its bearings, so that just at the proper time the convex side of its bent end will press the stalks into the pocket. When the other arm of the same rod reaches this point and is turned, the first arm is turned into proper position for work again. There are suitable stops arranged on the arms to prevent more than the required rocking of the arms. If the arms should turn backward the crank *v* swings out of the way of the pins *s*. On the back part of the platform A, at the inner end, is a vertical frame or standard, A′, to the side of which is adjustably attached a casting, B′, and to this casting is pivoted a derrick. The adjoining surfaces of the standard A′ and the casting B′ are serrated, and the casting B′ is slotted longitudinally. Through this slot bolts are passed. The derrick is adjusted to the required height and the bolts tightened, closely engaging the serrated surfaces of the standard A′ with the serrated surface of the casting B′. This derrick is composed of an upright bar, C′, pivoted at top and bottom in the casting, and provided at its lower end with an inclined arm, D′, permanently attached thereto. At the top of the bar C′ is a horizontal arm, E′, and said bar and arms are suitably braced and connected together.

To each side of the arm E′, near its inner end, is hinged or pivoted an arm, G′, and between these two arms extends the upper end of an arm, H′, the lower end of which is hinged on the lower stationary arm D′, and drawn backward by means of a spring, *a*′. The outer end of the arm D′, beyond the point where the arm H′ is connected to it, has its sides beveled, so as to form a sharp edge on top, or, in other words, be wedge-shaped. To this arm D′ is also connected a semicircular guide, I′, suitably braced, as shown.

At the extreme outer end of the arm D′, on the under side, is a stud, with friction-roller *b*′, which strikes a flange, *d*′, on the front end of a curved rail, J′, pivoted on the platform, and held against a stop, *e*′, as shown. The arms G′ are supported upon a guide, K′, and held apart by means of springs *f*′.

For operation, the derrick is held in position by means of a spring-bolt, *i*′, entering a notch in the upper circular part of the casting B′. As the corn-stalks are collected in the pocket P, the operator takes them from the pocket and places them between the arms G′ G′, and over the arm D′, so that the latter, being wedge-shaped, will divide and spread the shock at the base.

On top of the casting B′ is a windlass, L′, from which a chain, *k*′, passes around a pulley on the arm E′; thence around pulley on one arm, G′, around a pulley at the upper end of the arm H′, and from thence around a pulley on the other arm G′.

When the binder has placed the shock between the arms G′, as described, he takes the end of the chain *k*′ and hooks it on a pin, *n*′, near the outer end of the other arm. The driver then, from his seat, turns the windlass L′, which draws the two arms G′ toward each other, and the upper end of the arm H′ follows the chain, the spring *a*′ acting upon said arm H′, always keeping the chain taught.

By this means the shock is compressed and the arms held closed by a pawl, *p*′, and ratchet *s*′, on the windlass. The binder then takes a band from a rack, M′, and binds the shock, and as soon as that is done, the driver swings the derrick outward by means of a hand-lever, N′, pivoted on top of the casting, and formed with a cogged segment, *t*, that engages with cogs upon the base of the windlass L′.

It should here be remarked that, as the arms G′ close to compress the shock, a roller, *m*′, on one of them, turns a lever, *v*′, which withdraws the bolt *i*′ from the notch in the head casting B′; otherwise, the derrick could not swing outward. When the derrick arrives at a position at or near right angles with its former position, a roller on the end of a rod, *w*′, strikes a cam, *x*′, on the casting, and pushes said rod outward, and the pawl *p*′, being operated by the said rod, is thrown out of the ratchet-wheel *s*′. This rod *w*′ is held in suitable guides on one of the arms G′, and its outer end connected to a trigger, *y*′, one end of which is on the pin *n*′, under the end of the chain *k*′, hooked thereon; hence, at the same time as the pawl *p*′ is released, the trigger *y*′ pushes the chain from off the pin *n*′. The springs *f*′ at once throw the arms G′ outward from each other, and arm H′ draws up the chain, releasing the shock, which settles down over the wedge-shaped arm D′ to the ground, the base of the shock being by said arm spread, so that the shock will stand upright.

As the derrick and shock move outward, the curved rail J′ is turned on its pivot out of the way for and by the shock.

By the continued forward motion of the machine the arm D′ is drawn out of the shock, and the derrick is then swung forward back

into position by means of a foot-lever, O′, operated by the driver, and connected with the derrick by a rod, g'. As the derrick gets into position the roller b' thereon strikes the flange d' on the rail J′, and returns the rail to its former position.

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

1. The stationary pocket P, as shown and described, arranged at the side of the platform of a corn-harvester, in the described relation to the cutters, for holding the hills of corn as cut while the shock is being formed.

2. The guard R, constructed substantially as shown and described, in combination with the pocket P, for the purposes herein set forth.

3. In a corn-harvester, a revolving reel composed of a series of radial flexible or yielding arms V, operated immediately above and in conjunction with the cutter-bars, substantially as and for the purposes herein set forth.

4. The combination of the wheel S and disk T on the shaft m, the hinged or pivoted arms V, springs p, and stops n, as and for the purposes herein set forth.

5. The flexible arms V, in combination with the pocket P and guard R, substantially as and for the purposes herein set forth.

6. The revolving reel W, for carrying the base of the stalks into the pocket, as herein set forth.

7. The combination of the pocket P and revolving reel W, for the purposes herein set forth.

8. The rocking arms Y, mounted upon a revolving shaft, substantially as shown and described.

9. The combination of the curved rocking arms Y, with pins s, and the arm t, and crank v, with lugs s, substantially as and for the purposes herein set forth.

10. The combination of the pocket P, guard R, flexible arms V, reel W, and rocking arms Y, substantially as and for the purposes herein set forth.

11. The central bar or arm D′, forming part of the derrick, substantially as and for the purposes herein set forth.

12. The hinged arm H′ and spring a', in combination with the derrick and chain, for the purposes set forth.

13. The combination of the windlass L′ with pawl and ratchet, the chain k', hinged arm H′, arms G′ G′, with their respective pulleys, and the pin n', substantially as and for the purposes herein set forth.

14. The springs f', in combination with horizontal arm E′ and hinged arms G′ G′, substantially as shown and described.

15. The combination, with the derrick, of the spring-bolt i', notched casting B′, lever v', and roller m', on one of the hinged arms G′, for the purpose described.

16. The combination, with the hinged arms G′, of the rod w', pawl p', cam x', and trigger y', as and for the purposes herein set forth.

17. The combination, with the swinging derrick, of the hand-lever N′ with cogged segment t', and the cogged base of the windlass L′, for the purposes herein set forth.

18. The foot-lever O′ and rod g', in combination with the derrick, for the purposes set forth.

19. The curved rail J′, pivoted, as described, and provided with the flange d', in combination with the roller b' on the derrick-arm D′, for the purposes set forth.

20. The combination of the serrated surfaces and bolts for adjustment of the derrick, to suit the varying height of corn.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

RICHARD B. ROBBINS.

Witnesses:
JAS. F. DU HAMEL,
H. B. BROWN.