

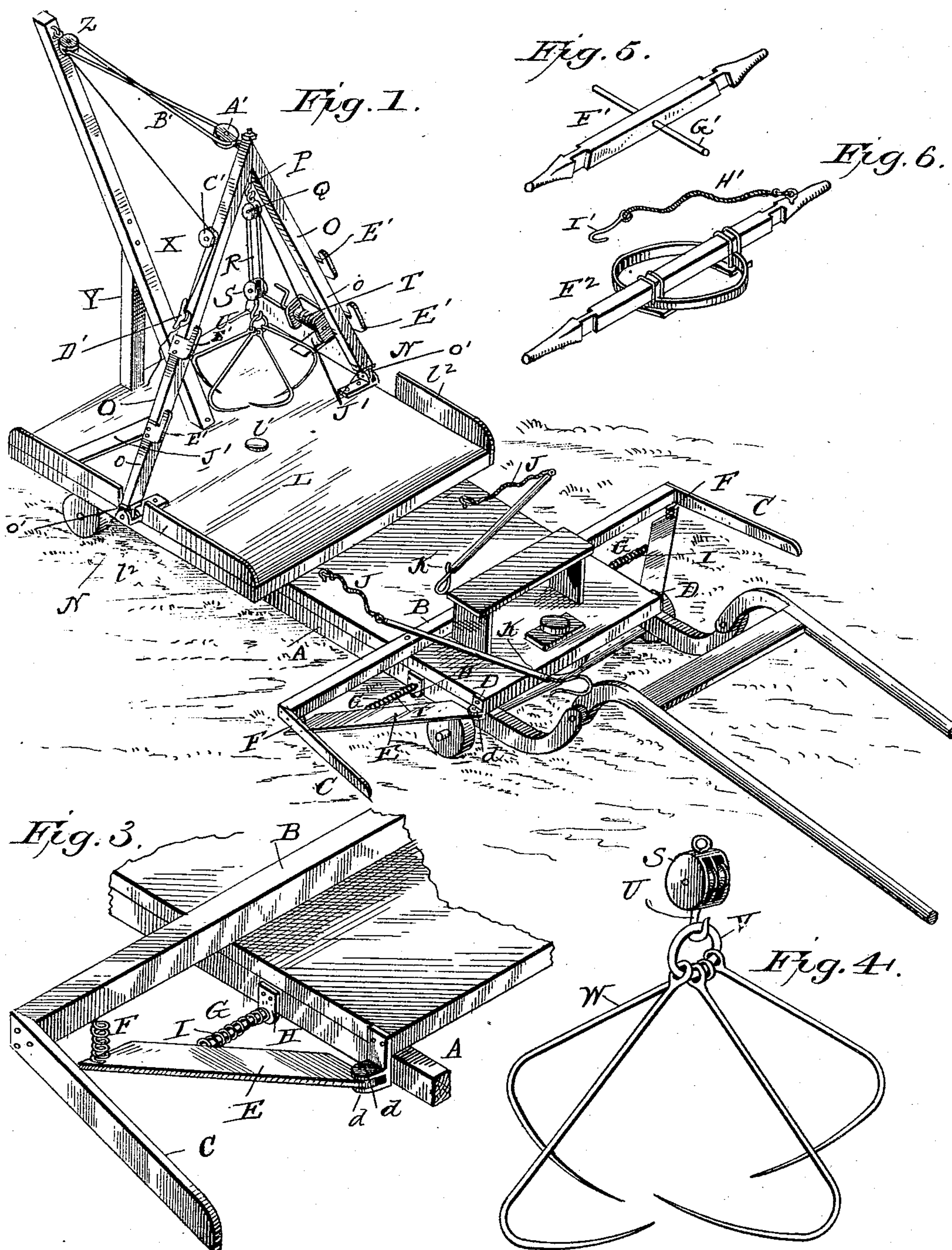
(No Model.)

2 Sheets—Sheet 1.

G. F. S. ZIMMERMAN.
CORN HARVESTER.

No. 459,517.

Patented Sept. 15, 1891.



WITNESSES
F. L. Ourand.
G. M. Jones.

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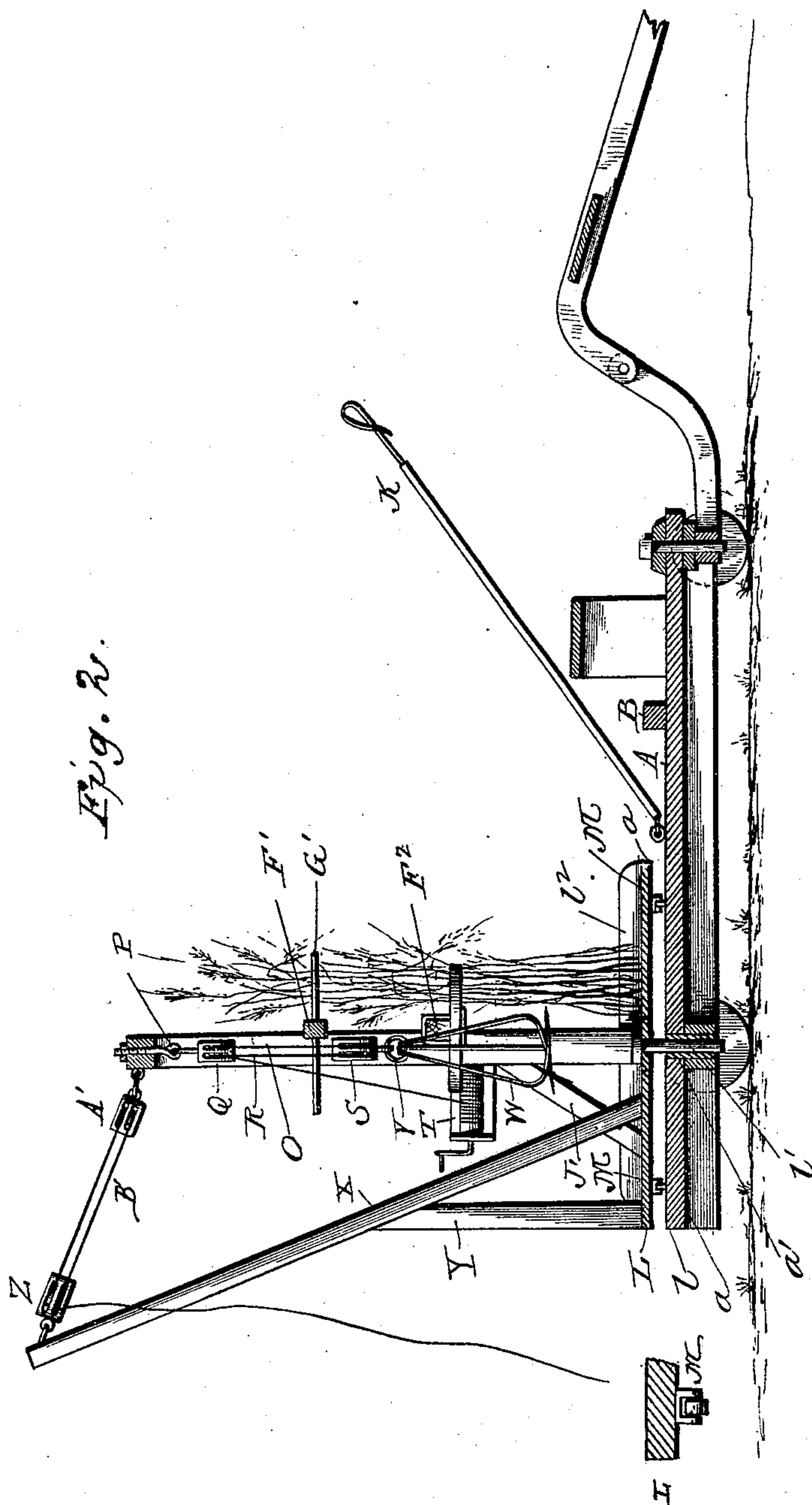
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UNITED STATES PATENT OFFICE.

GEORGE F. S. ZIMMERMAN, OF FREDERICK, MARYLAND.

CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 459,517, dated September 15, 1891.

Application filed November 13, 1890. Serial No. 371,329. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. S. ZIMMERMAN, a citizen of the United States, residing at Frederick, in the county of Frederick and State of Maryland, have invented certain new and useful Improvements in Corn-Harvesters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention has relation to improvements in corn-harvesters, and more particularly to certain improvements upon Letters Patent of the United States issued to me under date of May 6, 1890, and numbered 427,531.

The object of the invention is, first, to improve the cutting apparatus described in said Letters Patent, so that the knives will have a yielding motion, and, secondly, to improve the construction of the revoluble table and its attachments, whereby the same is not only simplified, but at the same time the efficiency of the device greatly enhanced.

The invention consists in the improved construction and combination of parts, as hereinafter more fully described in the specification, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the complete device with the exception of the cross-bars. Fig. 2 is a longitudinal sectional view. Fig. 3 is an enlarged detail view of the cutting device. Fig. 4 is a detail view of the hooks or grapples. Fig. 5 is a detail view of the upper cross-bar, and Fig. 6 is a detail view of the lower cross-bar.

Like letters of reference refer to like parts throughout the several views.

Referring to the drawings, forming part of this specification, the letter A indicates the frame or body of my improved harvester. Secured to the upper surface of the frame, near the forward end, is a cross-bar B, provided at its ends with forwardly-extending oblique gathering-arms C C, which, as the machine passes over the ground, assist in bringing the growing corn into contact with the cutting-blades, hereinafter referred to. Se-

cured to the side edges of the frame, at the extreme forward end thereof, are brackets D D, which are provided at their lower ends with laterally-extending lugs *d d*, between which the forward ends of the cutting-blades E E are pivoted, the pivoted joint being sufficiently loose to permit of a certain amount of play. These cutting-blades are arranged at an oblique angle, and their rear ends, as plainly indicated in Figs. 1 and 3, are on a plane somewhat below the ends of the cross-bar B, to which they are secured by means of vertical springs F F. Near the center of the inner edges of the cutting-knives are secured arms or rods G G, the inner ends thereof passing through apertured lugs or ears H H, depending from the sides of the frame. Encircling these arms or rods, and interposed between the lugs or ears and the inner edges of the knives, are coiled springs I I.

The above described construction constitutes the improvement which I have made in the cutting apparatus described in my former patent above referred to. In that patent it will be observed that the cutting-knives were described and shown as perfectly rigid. In my present improvement, however, the knives not only have a pivotal connection at their forward ends, but furthermore have a spring connection at their rear ends, whereby said ends may have a slight vertical play, and still further a slight inward play or give by means of the spring-actuated arms or rods G G, which pass freely through the apertured ears.

Heretofore in all devices in which the knives present an unyielding cutting-edge to the cornstalks great objections have been found to exist, principally from the tendency which the knives have, when arranged in the manner described, to pull or tear the stalks up bodily from the ground, and thus failing to sever the stalks. This difficulty ensues entirely from the fact that the cutting-blades are rigid and present a perfectly straight edge to the stalks, and is practically illustrated in the case of a pocket-knife, for if the cutting-edge of the blade is presented to the stick to be cut perfectly horizontal and at right angles considerable difficulty will be experienced and the tendency will be to tear

the stick from the hand. If, however, the blade is turned to a slight obliquity and the handle given an upward or downward turn, the difficulty will be at once overcome and the severance readily made. It is on this principle that my improved knives operate. When the stalks meet the edges of the knives, the spring-actuated rods or arms will allow of an inward movement, while the springs F will permit of a slight vertical movement, approximating the motion just described with reference to an ordinary pocket-knife. This I deem to be a great improvement over my former Letters Patent, inasmuch as the complete severance of the stalk is insured.

In order to facilitate the gathering of corn to the knives, I secure to each side of the frame A, by means of cords or equivalents J J, hooks K K, adapted to be operated by persons standing on the machine. By providing these hooks cornstalks that may have become bent or are too far from the machine to be reached by the gatherers C C can be engaged by the hooks, and thus brought into proper position for the action of the cutting-knives.

I will now proceed to describe my improvements upon the stalk-receptacle and its attachments. By reference to my former Letters Patent No. 427,531 it will be noticed that the stalk-receptacle is shown as circular. In the present instance I prefer, however, to employ a receptacle of rectangular shape, which, while answering every purpose fully as well, at the same time is more readily and cheaply constructed. This receptacle is indicated by the letter L and has secured to its under side an annular band or ring l , into which anti-frictional rollers M fit, said rollers bearing upon the platform of the machine and thus supporting the outer circumference of the table. The receptacle is also provided with a central spindle l' , which fits in a suitable iron socket a' in the frame, thus forming the turning-point, and with side flanges l^2 l^2 , against which the butts of the stalks rest. Secured at opposite sides of the table are laterally-extending journals or lugs N.

The letter O indicates the sheers, consisting of two legs o o , secured together at their top, as is ordinarily the case. The lower end of each leg of the sheers is provided with suitable casting o' o' , provided with eyes or journal-bearings registering with the eyes in the laterally-extending journals or lugs N, to which they are pivotally secured by means of horizontal pins or bolts, upon which they are free to turn.

Depending from the top or crotch of the sheers is a hook or hanger P, having secured thereto a block and tackle Q. A rope R passes around each sheave within the block and also around the sheaves in a lower block and tackle S, the upper end of said rope being continued downwardly and secured to a drum or windlass T, projecting from one of the legs o of the sheers. The lower block and

tackle S has also secured thereto a hook U, which engages a ring V, having swung thereon a series of grapples or hooks W.

Projecting rearwardly from the stalk-receptacle is an inclined beam X, said beam being supported by a vertical brace Y. At the upper end of the beam is secured a block and tackle Z, while a similar block and tackle A' is secured to the top of the sheers O, the several pulleys within the block being connected by a guy-rope B', the free end thereof passing over a sheave or pulley-roller C', extending from one of the legs o of the sheers and finally wound around a securing-pin D'. Each leg of the sheers has also projecting forwardly therefrom angular lugs E' E', which receive and support upper and lower cross-bars F' F'. The upper cross-bar F' is intersected by a loose pin G', while the lower cross-bar F' is provided at its end with a cord H', the free end thereof having attached thereto a hook I'. The legs o o of the sheers have, furthermore, extending therefrom short arms or stops J' J', which serve to maintain said sheers in an erect position, or, in other words, prevent the guy-ropes from pulling the same back against the oblique standard. If preferred, however, these arms or stops may be secured to the stalk-receptacle and project up therefrom, either location accomplishing the function ascribed.

This being the construction of my improved device, the operation is as follows: The machine traverses the ground by the side of the corn-row, and an operator stands upon the side of the machine nearest the corn-row, and by means of one of the hooks K assists in bringing the cornstalks into contact with the knives. As the stalks are cut the operator places the same upon the stalk-receptacle, the butts thereof resting against the side flanges of said receptacle, while their ends are brought together or converged at the top. It will be seen that the pin intersecting the upper cross-bar forms two angles at each side of said bar which are filled separately—that is to say, one angle is first filled completely, usually accommodating thirty to fifty stalks, and then the next angle is likewise filled. The receptacle is then turned by the operator and the other portion thereof filled in a similar manner. To guard against the stalks falling out, however, when one side of the receptacle is filled, and the same is revolved toward the rear, I provide the cord H' and the hook I', hereinbefore referred to, said cord being passed around the stalks and the hooks secured to one of the standards or legs of the sheers. After the receptacle has thus been completely filled the shock is then ready to be deposited upon the ground. In my former Letters Patent it was necessary to lift the shock from the receptacle by hand. This I have found by experience to be exceedingly irksome and difficult, and I have therefore in the present invention devised means for readily overcoming the objection. In order to ac-

compleish this the shock is first securely tied by the ordinary shock-tyer just above the top cross-piece. After this the pin and cross-bars are drawn out and the grapple-hooks are pulled down and thrust through the shock just below the shock-tyer. The shock may then be elevated by simply turning the crank upon the end of the windlass until the butts are clear of the receptacle, so as to swing freely. In practice the sheers extend twelve feet above the platform of the receptacle, so that ample room is afforded for the elevation of the shock. The revoluble stalk-receptacle may now be rotated to any desired position—as, for instance, to such a position as to bring the forward end of the receptacle to either the right or left hand side of the machine or to the rear of the machine, according to the place where it is desired to deposit the corn. The free end of the rope or cord B' is now released and the pivoted sheers allowed to drop down until the shock comes in contact with the ground. The sheers will project sufficiently to permit the shock to swing entirely free of the platform, being held at the same time firmly by the guy-rope which also prevents too rapid descent. After the shock is on the ground the grapple-hooks are removed, and the sheers pulled back to its erect position, ready for another shock.

Having thus described my invention, what I claim as new, and desire to protect by Letters Patent of the United States, is—

1. In a corn-harvester, the combination with the frame thereof, of obliquely-arranged cutting-knives pivoted at their forward ends to said frames and having a vertical spring connection at their rear ends, substantially as set forth.

2. In a corn-harvester, the combination of the frame thereof, obliquely-extending cutting-knives or blades pivoted at their forward ends to said frame, a vertical spring connection at the rear ends of said knives, and a spring connection interposed between the inner edge of the knives and the sides of the frame, substantially as set forth.

3. In a corn-harvester, the combination of the frame thereof, a cross-bar having its ends projecting beyond the sides of the frame, for-

wardly-projecting gatherers extending from the ends of said cross-bar, obliquely-extending cutting-knives having their forward ends pivoted in brackets secured to the sides of the machine, vertical springs arranged between the rear ends of the knives and the ends of the cross-bar, apertured plates secured to the sides of the frame, rods secured to the inner edges of the knives and having their inner ends passing through the apertures of the plates, and springs encircling said arms, substantially as set forth.

4. In a corn-harvester, the combination of a revoluble stalk-receptacle, a sheers pivoted thereto, grapples depending from the top of the sheers, and means for raising and lowering said sheers, substantially as set forth.

5. In a corn-harvester, the combination of a revoluble stalk-receptacle, a sheers pivoted thereto, a windlass extending from one of the legs of said sheers, a rope secured to said windlass, blocks and tackles around the sheaves of which the rope passes, a ring secured to the lower block and tackle, grapples or hooks upon said rings, and means for raising or lowering the sheers, substantially as set forth.

6. In a corn-harvester, the combination of a revoluble stalk-receptacle provided with side flanges, sheers pivoted thereto, lugs projecting from the legs of said sheers, cross-pieces fitting in said lugs, a pin intersecting the upper cross-bar, grapples depending from the sheers, and means for raising and lowering said sheers, substantially as set forth.

7. In a corn-harvester, the combination of a pivoted sheers, an obliquely-extending standard, a vertical brace for said standard, a block and tackle secured to the upper end thereof, a block and tackle secured to the upper end of the sheers, and a guy-rope passing over the sheaves of the blocks for raising and lowering said sheers, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. F. S. ZIMMERMAN.

Witnesses:

EDWIN C. MARKELL,
MARSHALL FOUT.