(No Model.)

2 Sheets—Sheet 1.

J. F. SEIBERLING.

CORD HOLDER FOR GRAIN BINDERS.

No. 440,510. Patented Nov. 11, 1890

Fig. 1.

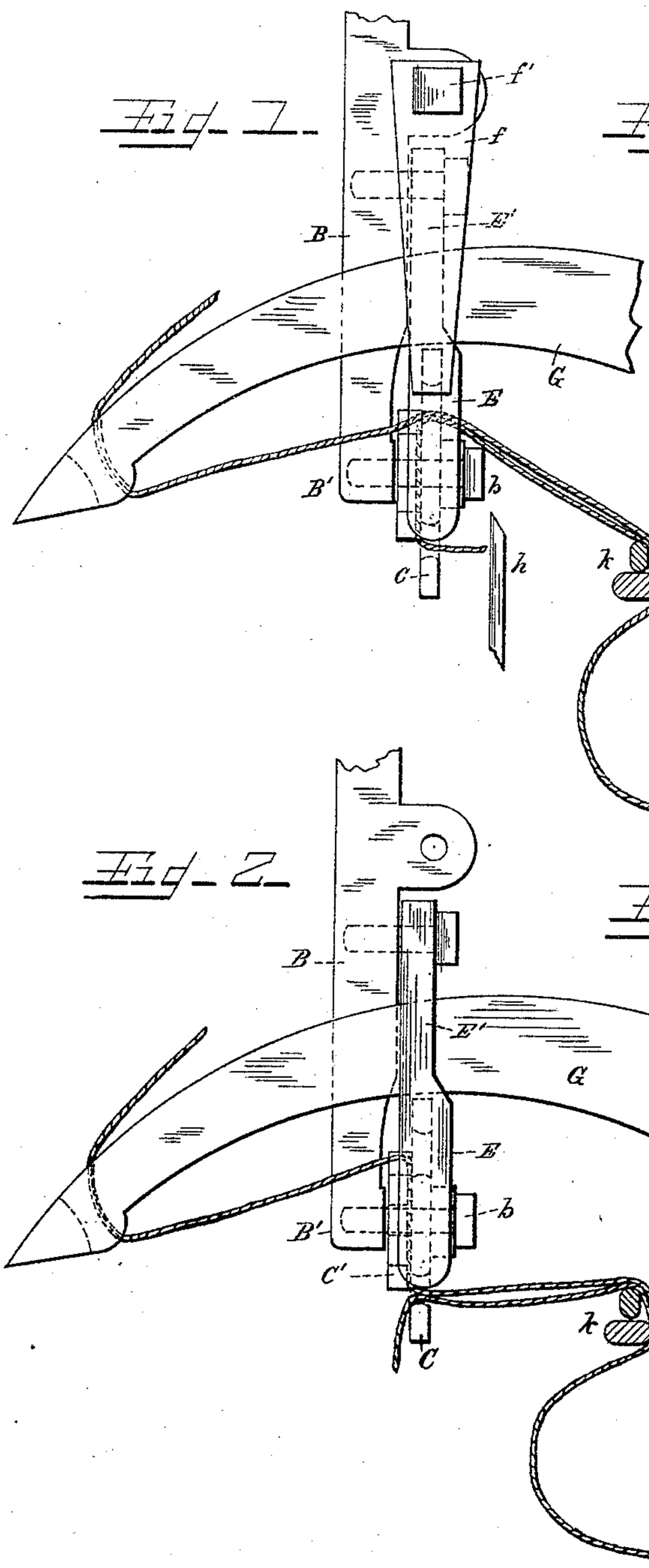

Fig. 3.

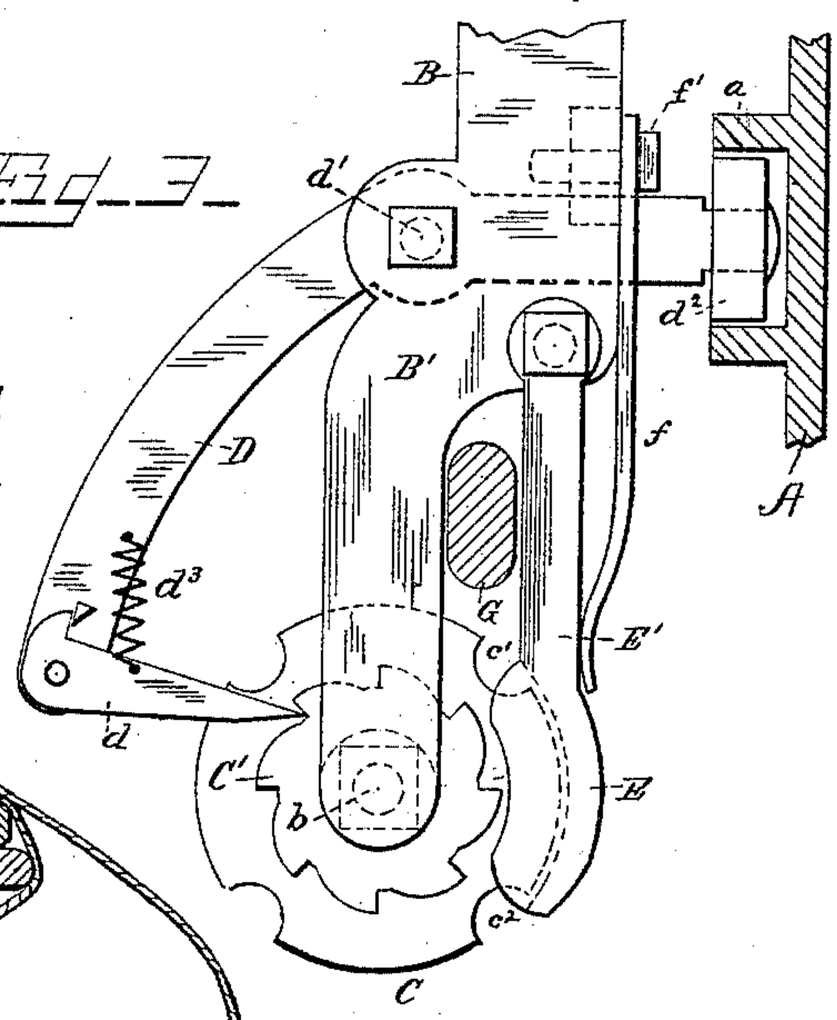

Fig. 2.

Fig. 4.

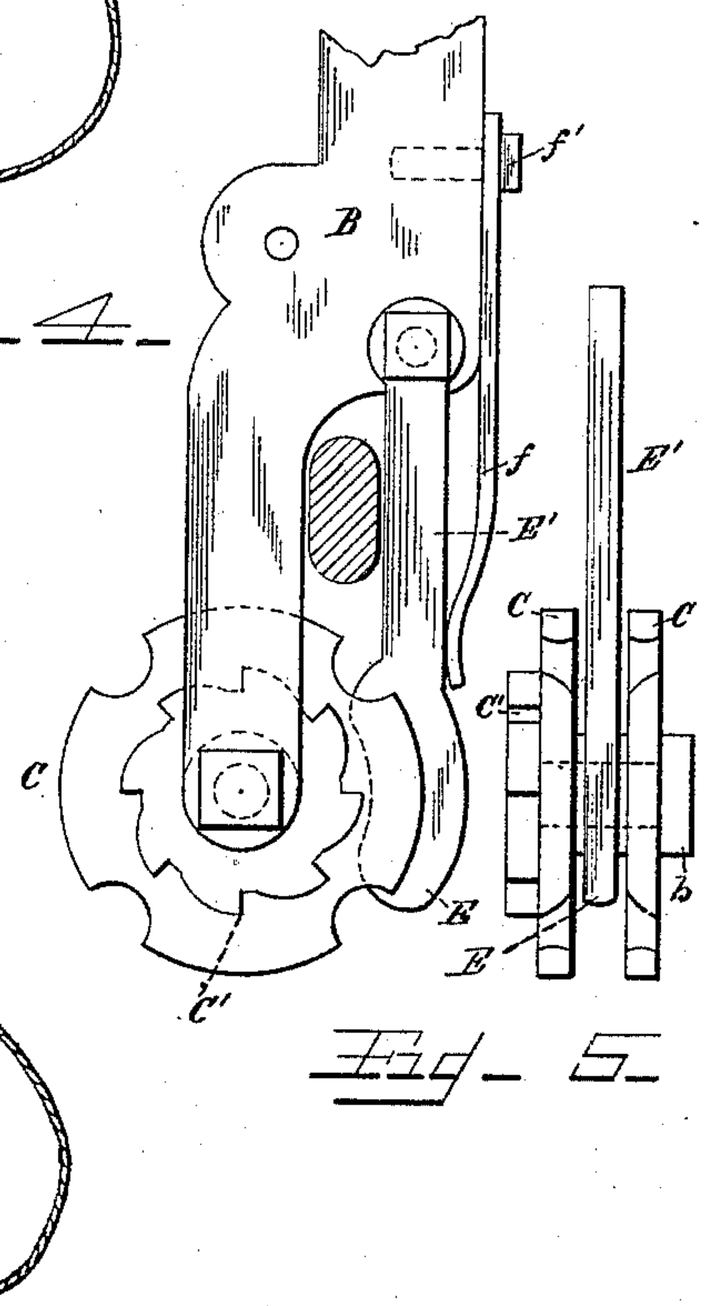

Fig. 5.

Witnesses
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Wm. T. Robertson

Jno. F. Seiberling, Inventor,
By his Attorneys A. M. Smith & Son.

(No Model.) 2 Sheets—Sheet 2.

J. F. SEIBERLING.

CORD HOLDER FOR GRAIN BINDERS.

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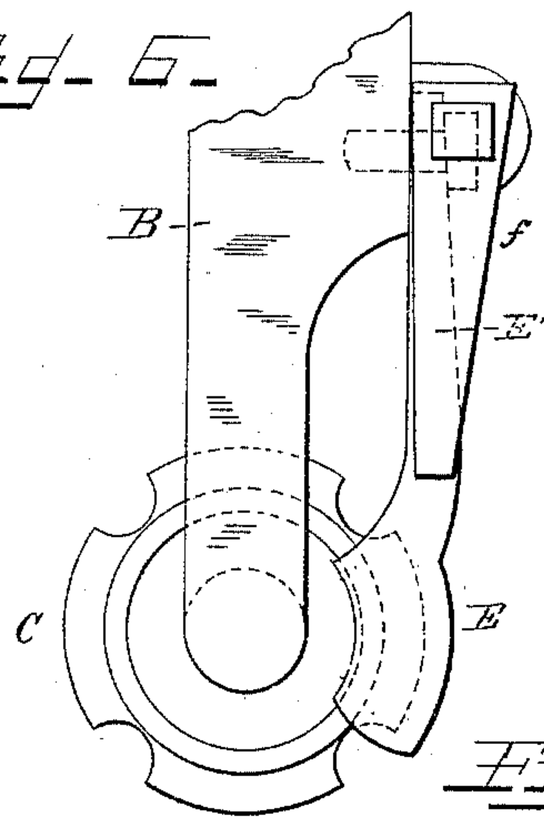
Fig. 6.



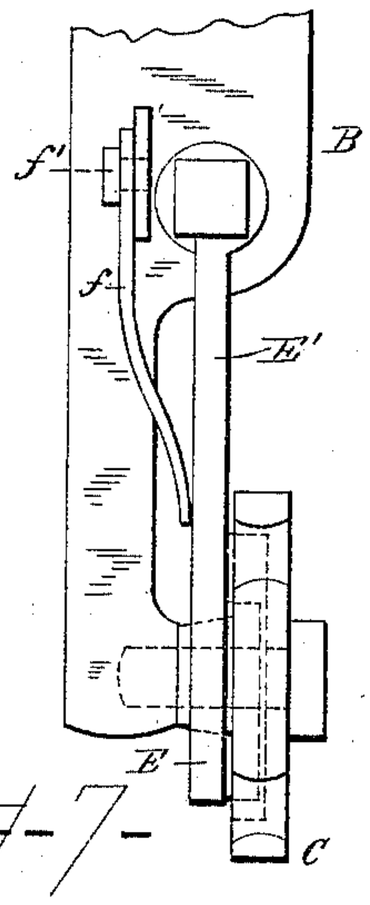


Fig. 7.

Fig. 8.

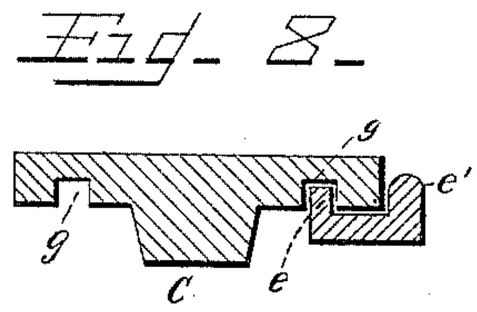


Fig. 12.

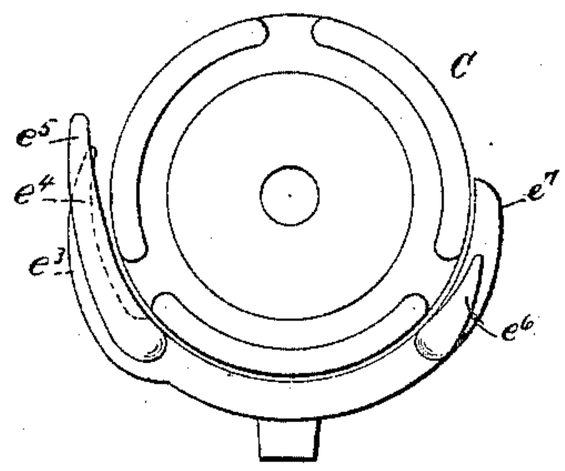


Fig. 11.

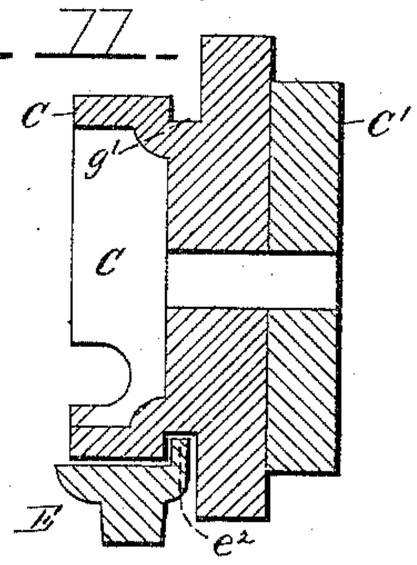


Fig. 9.

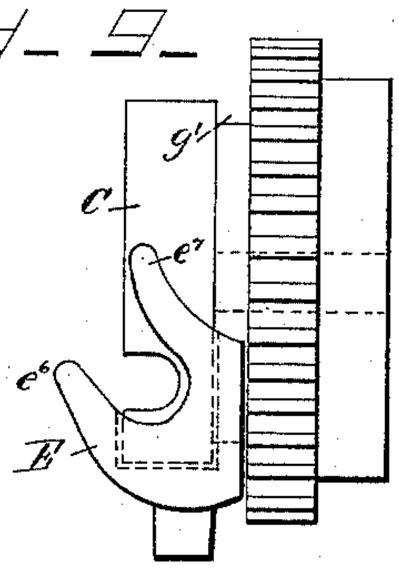
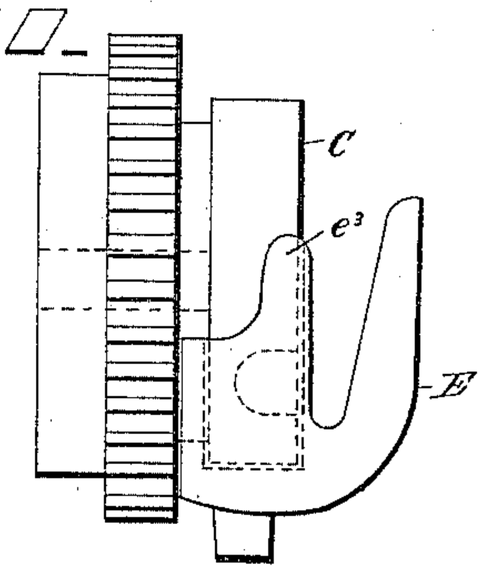


Fig. 10.



Witnesses:
Rob. M. Smith.
Wm. F. Robertson

Jno. F. Seiberling, Inventor.
By his Attorneys, A. L. Smith & Son.

UNITED STATES PATENT OFFICE.

JOHN F. SEIBERLING, OF AKRON, OHIO.

CORD-HOLDER FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 440,510, dated November 11, 1890.

Application filed September 28, 1889. Serial No. 325,366. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SEIBERLING, a citizen of the United States, and a resident of Akron, county of Summit, and State of Ohio, have invented a new and useful Improvement in Cord-Holders for Grain-Binders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to the construction of the cord-holder clamp or shoe and the arrangement of the same relative to the notched cord-holder disk or wheel whereby it is made to release the end of the cord or band passing around the bundle in advance of the action of the knife upon the cord, so that the cord ends, instead of being left in the cord-holder to accumulate and clog its action, are drawn out by and discharged with the bundles. It further relates to certain details of construction and arrangement of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents in front elevation as much of the binder mechanism as is necessary to show my improvement, with the parts in the position they occupy after the cord has been laid by the needle and before movement of the cord-holder disk. Fig. 2 is a similar view to Fig. 1, but with the cord-holder disk moved to grasp the cord from the needle and to release the end previously held, the knotter-jaws being shown in section in both figures. Fig. 3 is a side elevation of the cord-holder looking from the stubble side, the needle and a portion of the knotter-actuating cam-wheel being shown in section. Figs. 4 and 5 represent, respectively, grain side and rear elevations of my improved cord-holder, showing a modification in the form thereof. Figs. 6 and 7 are also side and rear elevations similar to Figs. 4 and 5. Fig. 8 represents a horizontal section through the cord-holder disk and shoe, showing a shoe having a single clamping-surface and the flange or lip and groove for preventing lateral displacement thereof; and Figs. 9, 10, and 12 show, respectively, a stubble side, a grain side, and a rear elevation, and Fig. 11 a vertical section through a crown-disk cord-holder and its shoe, showing the retaining lip or flange and groove applied thereto for holding the shoe in place.

The construction shown in the drawings, in its general arrangement of parts of the binder mechanism, is of the well-known Appleby type, and need not therefore be described in detail further than is necessary to an understanding of my improvement.

Referring to the drawings, A, Fig. 3, indicates the knotter-actuating cam-wheel, (in part,) B a portion of the knotter-stand or frame, which in practice is suspended from the knotter-actuating shaft in any usual manner. The lower end of a pendent arm B′ of this stand is provided with a short stud-shaft *b*, on which is mounted a notched cord-holder disk C, provided on its inner face, adjacent to the arm B′, with a ratchet-disk C′, with which a pawl *d*, pivoted in the lower end of an angular arm or lever D, engages for imparting an intermitting rotary movement to the cord-disk. The arm D is shown pivoted at *d′* to a lug on the stand B, and is provided on its horizontal forwardly-projecting arm with a roller d^2, which enters a cam-groove at *a* in the cam-wheel A and imparts a vibratory movement to the lever D in each revolution of the cam-wheel for actuating the cord-holder disk. A spring d^3 connects the pawl *d* with the lever D and allows it to yield to pass back over the teeth of the ratchet-wheel.

While the construction shown and described illustrates a simple and effective method of actuating the cord-disk and one that will be readily understood, other suitable means may be employed for the purpose.

E indicates the cord clamp or shoe, formed upon or rigidly secured to an arm E′, pendent from and pivoted at its upper end to the standard B. In Figs. 1, 2, and 3 this shoe is shown doubly flanged or grooved to stride the periphery of the disk C, and these flanges, between which the outer edge of the cord-disk C moves, and which constitute the cord-clamping portion, extend only between two adjacent notches, as *c′* and c^2, of said disk in such manner that the cord received and carried by the disk into the shoe at one end will be released and allowed to escape at the other end of the shoe. A spring *f*, secured at its upper end to the standard B, at its lower end bears

against the shoe E to hold it pressed firmly against the edge of the disk. The pressure of this spring may be regulated by the adjustment of a bolt or set-screw f', which secures the spring to its support. G indicates the needle.

In Figs. 4 and 5 the notched cord-holder disk is shown made double and the shoe single and pressing between the two parts of the disk.

In Figs. 6, 7, and 8 a single notched disk is employed of slightly greater thickness than the disks of Fig. 4, and it has an annular groove g formed in one side inside of the cord-notches, and with which a lip e on the adjacent side of the shoe engages for preventing radial displacement of the shoe. A similar lip e' on the outer edge of the shoe may be provided to overhang the periphery of the disk and prevent accidental withdrawal of the cord at points intermediate the ends of the shoe. In this construction the shoe has only one clamping-face—viz., that pressing against the side of the disk adjacent to its periphery.

In Figs. 9 to 12, inclusive, a crown-disk form of cord-holder wheel is shown rigidly secured to its actuating-wheel and provided with cord-notches at its open annular end. The shoe E is pressed by the spring against the outer face of the rim or crown wheel, and a groove g', formed in one in connection with a rib e^2 on the other entering said groove at the inner end of the wheel, prevents lateral displacement of the shoe and is out of the way of the cord, which is carried into the shoe outside or in rear of the rib by the notches in the outer edge of the disk or rim, and the cord is consequently not liable to be caught by the rib and wrapped around the wheel. The shoe is provided on its inner end adjacent to the knotter with a guard e^3, which prevents the cord from the needle from being carried into the notch in the wheel nearest to the knotter and is removed from the periphery of the rim C^2 far enough to prevent any liability of the end of the cord being caught or held clamped to the disk thereby, the latter construction being indicated by the dotted line at e^4, Fig. 12. An outwardly-inclined finger e^5 on the same (inner) end of the shoe serves to draw the cord from the needle toward the notched edge of the wheel, and fingers at the outer end of the shoe serve, one e^6, inclined on its upper face, to deflect the cord and carry it into the notch in the wheel at that point, and the other e^7, extending around inside of and over said notch, serves to throw the cord from the needle off the end of the wheel and prevent it from being wrapped thereon.

In all the several constructions shown the receiving end of the shoe or of the flange thereof is beveled or inclined inward to cause the cord when acted upon by the notch in the disk to pass under the shoe or flange, and the clamping-surface of the shoe extends only between two of the notches of the cord disk or wheel and may be less in length than the distance between said notches, and the cord, which is carried into the shoe at one end of said clamping-surface is released at the other end thereof in each movement of the wheel, which is made to conform to the distance between the cord-notches therein. Thus in Fig. 1 the cord-wheel holds the cord carried down through the holder, where it is cut by the knife, indicated at h, after having been carried around a previous bundle and received into the cord-holder and with the parts in position to again take the cord from the needle. In Fig. 2 the cord-holder disk has received its rotary movement and has carried the cord from the needle down into the clamp or shoe, while the end left therein in the previous movement of the parts is carried through the clamp and released at the end thereof, the notch carrying said end passing beyond the clamping-surface of the shoe in such movement of the disk. Just at this moment the knife is operated in any usual or well-known manner to cut the portion of the cord coming from the bundle and extending up through the holder to the needle, thereby leaving the new end in the holder, while the former end freed from the holder, as described, is drawn out by the bundle as the latter is discharged, instead of being held by, and therefore cut off and left in the holder to clog it, as in the former constructions. In this movement of the cord-disk the two strands are moved from the inclined position relative to the knotter (indicated at k) into about the same horizontal plane therewith, thereby to that extent yielding cord to the knotter.

In Figs. 1, 2, and 3 the cord-wheel is shown arranged to move in a plane substantially at right angles to the path of the needle, which is shown passing between the arm which supports said wheel and that which supports the shoe; but it may be arranged to move in a plane oblique to the plane of the needle, or in case the crown-wheel is employed it may be arranged to move in a plane substantially parallel therewith; but in all cases it is preferred to so arrange it as that the feed or direction of movement of the cord through the clamp will serve to yield cord to the knotter, and to that extent facilitate the formation of the knot.

Having now described my invention, I would state that I am aware that it is not new to shorten or cut away one flange or rib of a double-flanged shoe to facilitate the discharge of the short cut ends of the cord after the same have been cut off to free the bundle and left in the cord-holder; but in such construction one flange has always been left sufficiently extended to hold the cord until after it was cut, and the cut end was thus left in the holder.

I am aware that the clamping-surface of the shoe has been made less in length than the distance between adjacent notches in the cord-holder disk operating in connection therewith;

but in all such constructions the movement of the disk relative to the shoe has been such as to leave the end of the cord held fast in the shoe when the knife acted to sever the cord, and the short cut end of the cord was thus left in the holder, whereas in my construction the end of the cord is carried through the shoe and released in advance of the action of the knife on the other strand of the cord, (that coming from the needle through the holder,) so that only the latter is cut, and the end of the cord is thus drawn out and discharged with the bundle, instead of being left in the holder to clog it.

What I claim as new is—

1. The combination, in a grain-binder, of a knotter, a rotary cord-holder wheel or disk having a series of cord-notches and provided with means to impart an intermittent movement thereto during each revolution of the knotter, a knife between the knotter and disk to cut the cord, and a clamp or shoe to hold the cord on said disk, the receiving end of the flange of said shoe being inclined to permit the notch in the wheel to carry the cord under the flange toward the terminal end of the shoe and the intermittent movement of the notch carrying the cord arranged in respect to the shoe to cause the notch to carry the end of the cord past the end of the clamping-surface of said shoe and release it in advance of the action of the knife to cut the cord, substantially as described.

2. The combination of a knotter, a cord-holder wheel having a series of cord-notches at intervals, a knife between the knotter and cord-holder wheel, a double-flanged clamp or shoe arranged to straddle the periphery of said cord-holder wheel, the flange of said shoe farthest away from the knotter arranged to clamp the cord running from the needle and the receiving end of the flange nearest the knotter inclined to guide the cord running to the knotter under said flange, and a spring to hold said shoe on the cord-holder wheel, said clamp or shoe being arranged in respect to the intermittent movement of the notch carrying the cord, substantially as described, so that the end of the cord will be carried by the notch past the clamping-surface of the shoe, for the purpose specified.

3. The combination, in a grain-binding knotter, of a rotary cord-holder disk or wheel having a series of notches to receive the cord and a clamp or shoe to hold the cord thereon, said wheel and clamp being provided one with a groove and the other with a retaining lip or flange engaging said groove, said flange and groove being located below the bottoms of the cord-notches and extending in the direction of the travel of the wheel, and said clamp or shoe having a clamping-surface extending between two of said notches only, substantially as described.

In testimony whereof I have hereunto set my hand this 26th day of September, A. D. 1889.

JNO. F. SEIBERLING.

Witnesses:
FRED W. NASH,
A. L. DICKINSON.