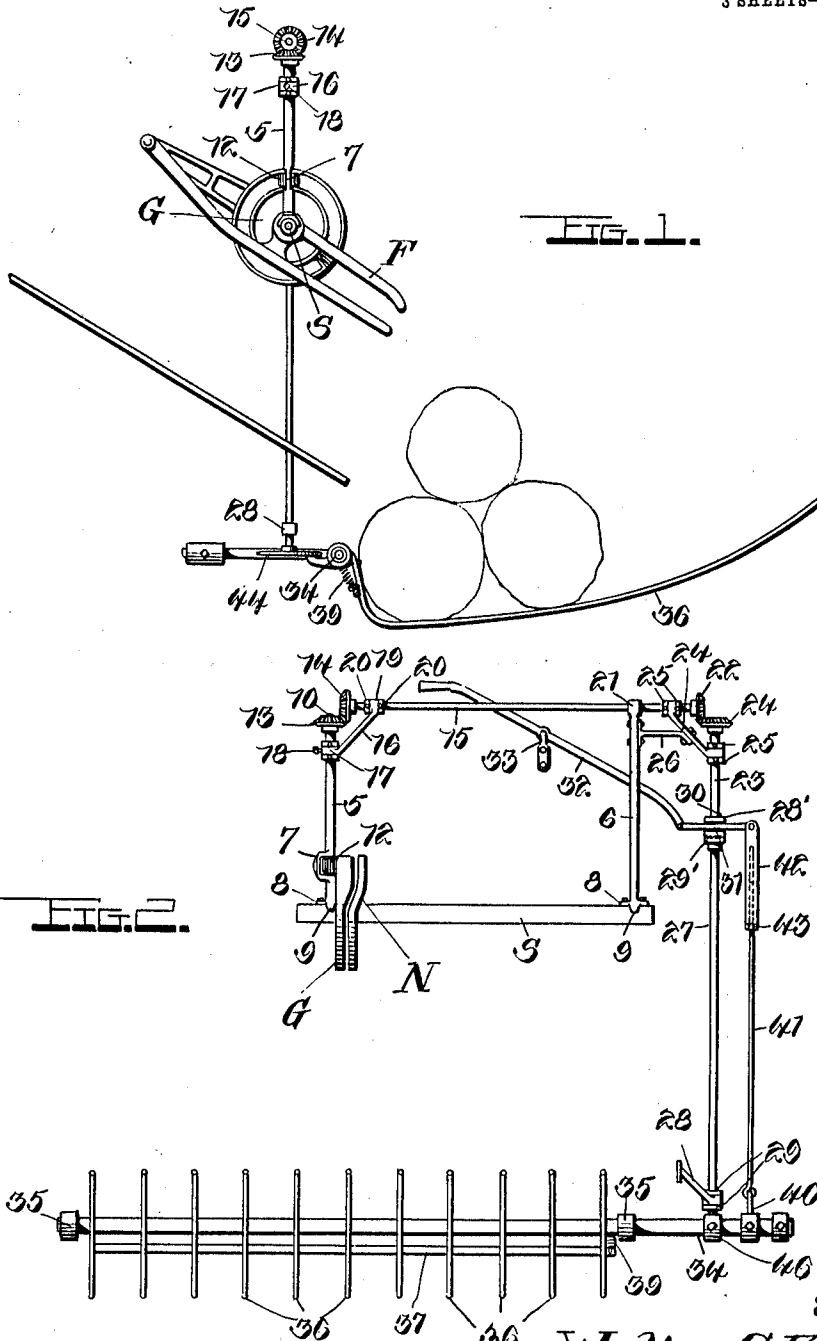


W. S. KOONTZ.
DISCHARGING MECHANISM FOR GRAIN BINDING MACHINES.
APPLICATION FILED FEB. 1, 1911.

1,019,716.

Patented Mar. 5, 1912.

3 SHEETS-SHEET 1.



Witnesses

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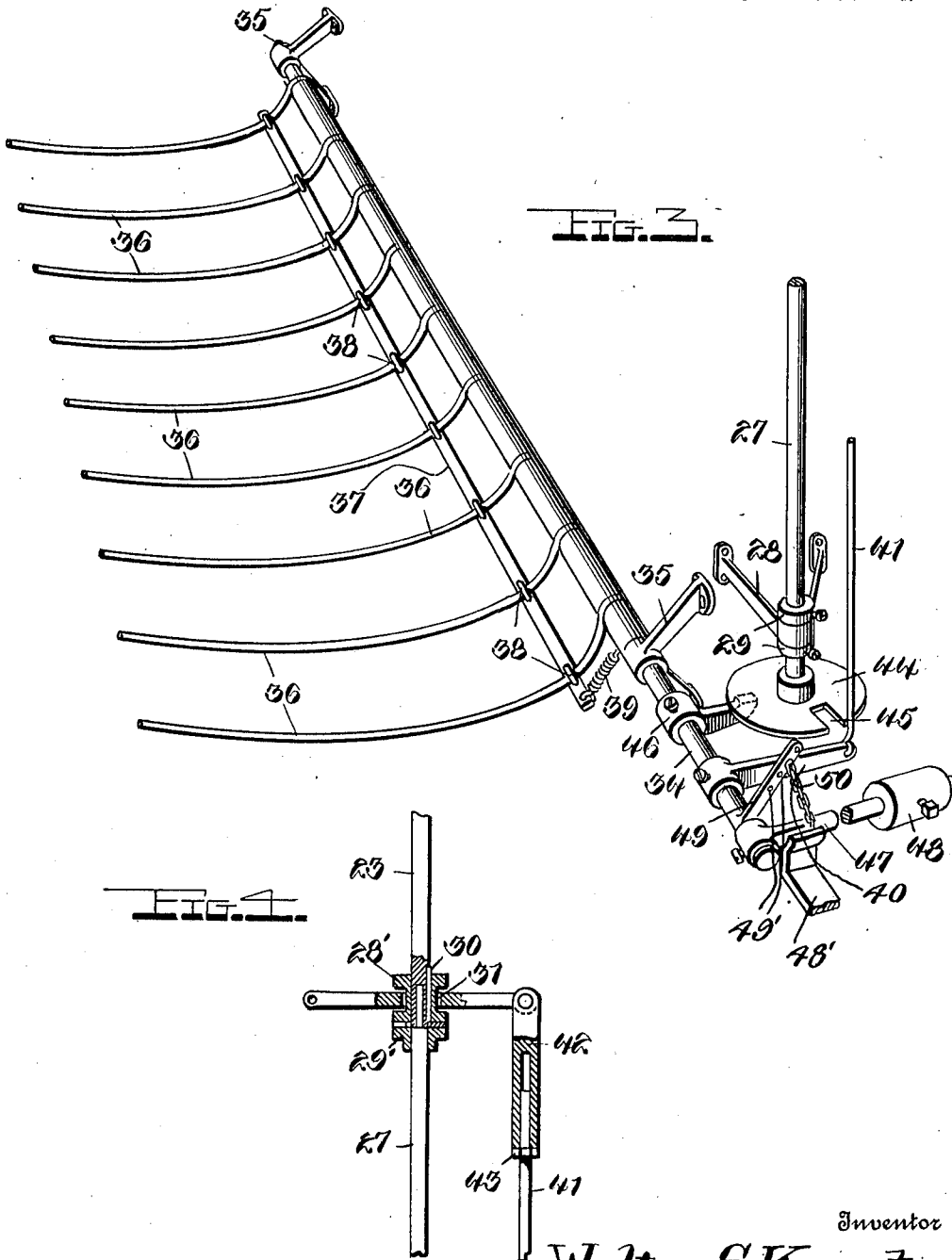
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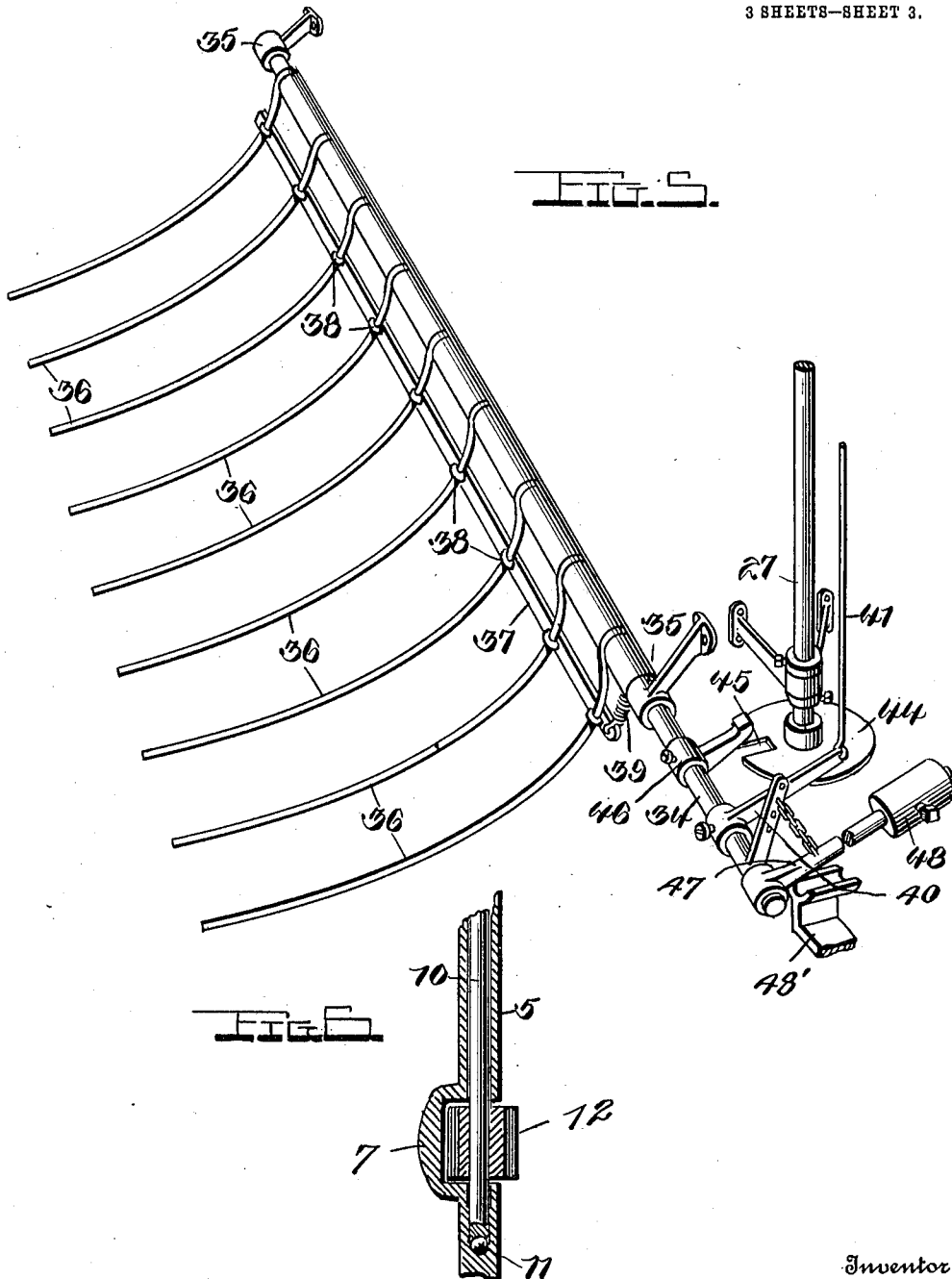
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Witnesses

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UNITED STATES PATENT OFFICE.

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DISCHARGING MECHANISM FOR GRAIN-BINDING MACHINES.

1,019,716.

Specification of Letters Patent.

Patented Mar. 5, 1912.

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To all whom it may concern:

Be it known that I, WALTER SCOTT KOONTZ, a citizen of the United States, residing at Adeline, in the county of Ogle and State of Illinois, have invented certain new and useful Improvements in Discharging Mechanism for Grain-Binding Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to bundle discharging mechanism for grain binding machines and has for its object to provide a simple, efficient and positively acting mechanism for the above purpose whereby the bound bundles of grain are automatically discharged from the machine.

A further object of the invention resides in the provision of a bundle discharging mechanism which is adapted to receive and discharge a plurality of bundles of grain, said mechanism being adjustable to vary the number of bundles so discharged.

A further object of the invention is to provide means for sustaining the bundle receiver in position to receive the bundles until the proper number have been deposited thereon, and then automatically permitting the receiver to lower under the weight of the bundles and discharge the same.

Still another object of the invention is to provide a mechanism of the above character which may be readily arranged in operative position upon binders as at present constructed without requiring any change therein, such mechanism consisting of few durably constructed parts which may be easily replaced for the purpose of repair.

With the above and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is an end elevation of my improved bundle discharging mechanism showing the same arranged in operative position, a fragment of a binder of approved form being illustrated; Fig. 2 is a side elevation; Fig. 3 is a detail perspective view of the discharging mechanism removed; Fig. 4 is a section of the clutch operating device; Fig. 5 is a fragmentary perspective view showing the position of the bundle receiver after the bundles have been discharged; and Fig. 6

is a detail section of one of the standards or supports.

Referring in detail to the drawings N designates the knotting mechanism of a grain binding machine. This mechanism which forms no part of the present application may be of any ordinary or approved construction.

S indicates the shaft which carries a plurality of fingers F which lift the bundles after they are bound and disposes the same upon the receiver which is located forwardly and beneath the knotting mechanism as clearly shown in Fig. 1.

My improved discharging mechanism comprises the vertical supports 5 and 6 respectively. The supporting standard 5 is tubular in form and is constructed in two sections connected by a substantially semi-circular plate 7. The standards 5 and 6 are mounted upon opposite ends of the shaft S of the knotting mechanism, said standards having ears or flanges 8 formed on their lower ends against which similar ears formed on the ends of the bearing plates 9 are disposed. These bearing plates are located on the ends of the shaft S and suitable bolts rigidly secure the lower ends of the standards upon the same.

Through the hollow standard 5, the vertical shaft 10 extends. The lower end of this shaft is mounted in a bearing 11 located in the lower section of the tubular standard. A pinion 12 is fixed upon said shaft and is disposed between the sections of the standard 5. Upon the upper end of said shaft a beveled gear 13 is secured which meshes with a similar gear 14 fixed upon the end of a transverse shaft 15. A diagonal brace bar 16 connects the shaft 15 with the upper end of the tubular standard 5, said brace bar having a sleeve 17 formed on one end which is disposed about the tubular standard 5 and is adjustably secured thereon by means of a set screw 18. A sleeve 19 is also formed on the other end of said brace bar and is arranged between the adjustable collars 20 located on the shaft 15. The shaft 15 is mounted adjacent to its other end in a bearing 21 on the upper end of the standard 6 and a beveled gear 22 is fixed to the end of said shaft. This beveled gear meshes with a similar gear 24 secured upon one end of a shaft 23. The shafts 23 and 15 are con-

nected by means of a diagonal brace bar 24 similar to the brace 16, the ends of said brace bar being disposed between adjustable collars 25 arranged on said shafts. A short
 5 brace bar 26 also connects the brace 24 with the upper end of the standard 6. A vertically disposed shaft 27 is mounted adjacent to its lower end in a bearing 28 fixed to the frame of the machine, collars 29 being arranged upon the shaft on either side of the bearing to prevent longitudinal movement of said shaft. The shaft 27 is disposed in
 10 alinement with the shaft 23, and the opposed ends of these shafts have clutch heads 28' and 29' arranged thereon. The head 29' may be integrally formed upon the shaft 27 or suitably fixed thereto. The clutch head 28' is keyed upon the shaft 23 as indicated at 30 for sliding movement thereon. A collar 31 surrounds the clutch head 28' and to
 15 said collar one end of the lever 32 is connected, said lever being pivotally mounted intermediate of its ends upon a support on the frame of the machine as indicated at 33. This lever extends within convenient reach of the driver to be actuated by him when
 20 necessity requires for operating the bundle receiver to discharge the bundles. In the normal operation of the mechanism, this discharge of the bound bundles is automatic. The manner in which this automatic operation is effected will now be set forth in detail.

The bundle receiver comprises a shaft 34 which is mounted in suitable bearings 35 upon the frame of the machine and is located beneath the knotting mechanism. To this shaft 34, a plurality of parallel tines 36 are secured. These tines are also connected by means of a bar 37, suitable clamps 38 being disposed over said tines and rigidly secured to the bar. In this manner the tines are at all times held in proper spaced relation, while at the same time they may
 40 be easily and quickly removed when it is necessary to replace them with new ones. A spring 39 is connected at one end to the bar 37 and at its other end to the bearing 35. The tension of this spring and the weight of the receiver act to return the tines 36 to their proper position with relation to the shaft 34 when they encounter an obstruction in the path of the machine. An arm 40 is rigidly fixed to the shaft 34 adjacent to one end thereof, and to this arm a rod 41 is pivotally connected, said arm extending vertically in parallel relation to the shaft 27. The upper end of this rod is disposed for movement in a short tube 42 which at its upper end is pivotally connected to an arm formed on the clutch collar 31. A nut 43 is fixed upon the rod 41 and is adapted to engage the lower end of the tube 42 to elevate the same and shift the clutch
 65 head 28' out of engagement with the clutch

head 29' when the bundles are discharged. This discharge of the bound bundles of grain takes place when the proper number of such bundles have been deposited upon the receiver.

The means employed for holding the receiver in position to receive the bundles until the desired number have accumulated thereon, is substantially as follows: Upon the lower end of the shaft 27 a circular plate 44 is secured. This plate is provided in its edge with a single notch or recess 45. An arm 46 is fixed at one end to the receiver shaft 34 and has its free end disposed beneath the edge portion of the plate 44 so that, as the shaft 27 is rotated, the recess 45 of the plate 44 will be moved into alinement with the arm 46 and allow the arm to move therethrough in the rotation of the shaft 34 which is occasioned by the weight of the bundles arranged upon the tines 36. A lever 47 is also pivoted to the shaft 34 and upon said lever a weight 48 is adjustably mounted. By adjusting this weight toward or from the shaft 34, the number of bundles whose combined weight is necessary to cause the receiver to move to its discharging position, may be regulated as desired. The weight 48 is supported in its normal position by an arm 48' secured to the binder frame, and when the proper number of bundles or sheaves have been deposited upon the receiver and the shaft 27 is rotated, upon the registration of the recess 45 with the arm 46, said weight and the lever 47 on which it is mounted are elevated. A bar 49 is also carried by the shaft 34 and is provided with a plurality of openings 49'. A chain 50 connects the lever 47 to the bar 49 and by adjusting the end of said chain in the openings 49', the lever may be raised or lowered so as to dispose the tines 36 at any desired elevation when in their receiving position. In this manner the extent of movement of the receiver from its receiving to its discharging position may be regulated.

The operation of my invention is as follows: Rotary movement is imparted to the vertical shaft 10 through the medium of a crown gear G provided with interrupted teeth and fixed upon one end of the shaft S of the knotting mechanism. This rotative movement is transmitted to the shaft 15 through the gears 13 and 14 and from said latter shaft to the shaft 23 by means of the gears 22 and 24. In the position of the parts when the receiver is elevated, the clutch heads 28' and 29' are engaged so that rotation is transmitted to the shaft 27. The end of the arm 46 is disposed beneath the edge portion of the plate 44 as illustrated in Fig. 3. The plate 44 being fixed to the end of the shaft 27 will move over the extremity of the arm 46. With each

operation of the shaft S to throw a bundle upon the receiver, the plate 44 makes one-third of a revolution. Thus when three bundles have been thrown upon the tines 36, the notch or recess 45 in the plate 44 will be moved directly over the end of the arm 46. The weight of the grain bundles will overbalance the weight 48 and cause the tines 36 to descend, thereby rotating the shaft 34. This rotation of the shaft 34 elevates the arm 40 thereby raising the rod 41 and engaging the nut 43 thereon with the end of the tube 42. The tube 42 is thus lifted to slide the clutch head 29 upon the lower end of the shaft 23 and disengage the same from the clutch head 28 of the shaft 27. Rotation of the shaft 27 is thus momentarily discontinued until the bundles have been discharged and the counterweight 48 returns the parts to their normal positions, the end of the arm 46 moving through the notch 45 to its position beneath the plate 44. Rotation of the shaft 27 is then immediately continued as the shaft S rotates to discharge the succeeding bundles of grain from the knotting mechanism.

From the foregoing description taken in connection with the accompanying drawings, it is thought that the construction and operation of my improved bundle discharging mechanism will be readily understood. The device is comparatively simple, may be readily arranged upon binders of the present construction and is entirely automatic in its operation. The manually actuatable lever 32 is operated only in the event that the parts through long use or accident, should fail in their functions. Under ordinary conditions, the driver may give his whole attention to the movement of the machine across the field, while the grain is being properly discharged from the same. The various elements employed in the construction may be considerably modified and the form and proportions thereof greatly altered without affecting the principle of operation or sacrificing any of the advantages of the invention.

Having thus described the invention what is claimed is:—

1. The combination with a knotting mechanism of a grain binder including a shaft,

of a movable receiver for the bound bundles arranged beneath the knotting mechanism, means normally acting to elevate said receiver into position to receive the bundles, a shaft, a plate fixed on said shaft, an arm carried by the receiver engaging said plate to normally hold the receiver in its elevated position under the cumulative weight of the bundles, power transmission means between the shaft of the knotting mechanism and said last named shaft, a clutch normally connecting the same to rotate said shaft and move the plate thereon out of engagement with the arm carried by the receiving mechanism whereby the receiver is moved to its discharging position under the weight of the bundles, and means for automatically operating the clutch in the latter movement of the receiver to momentarily discontinue the rotation of said shaft.

2. The combination with a knotting mechanism of a grain binder including a shaft, of a movable receiver for the bound bundles arranged beneath the knotting mechanism, means for normally holding the receiver in an elevated position, a vertically disposed shaft, a plate fixed on said shaft having a recess in its edge, an arm fixed to the receiver extending at its free end under said plate to maintain the receiver in its elevated position under the cumulative weight of the grain bundles, power transmission means mounted on the frame of the machine and geared to the shaft of the knotting mechanism, a clutch connecting said transmission means with said vertical shaft to normally rotate said shaft and move the notch in said plate into alinement with the arm of the receiver to permit the receiver to move to its discharging position under the weight of the grain bundles, and means connected to said receiver and to said clutch automatically operate the clutch and momentarily discontinue the rotation of said shaft when the receiver moves to its discharging position.

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

WALTER SCOTT KOONTZ.

Witnesses:

FRANK WERTZ,
HARM J. EVERS.