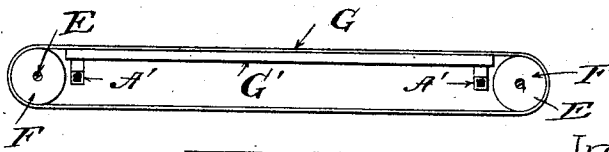
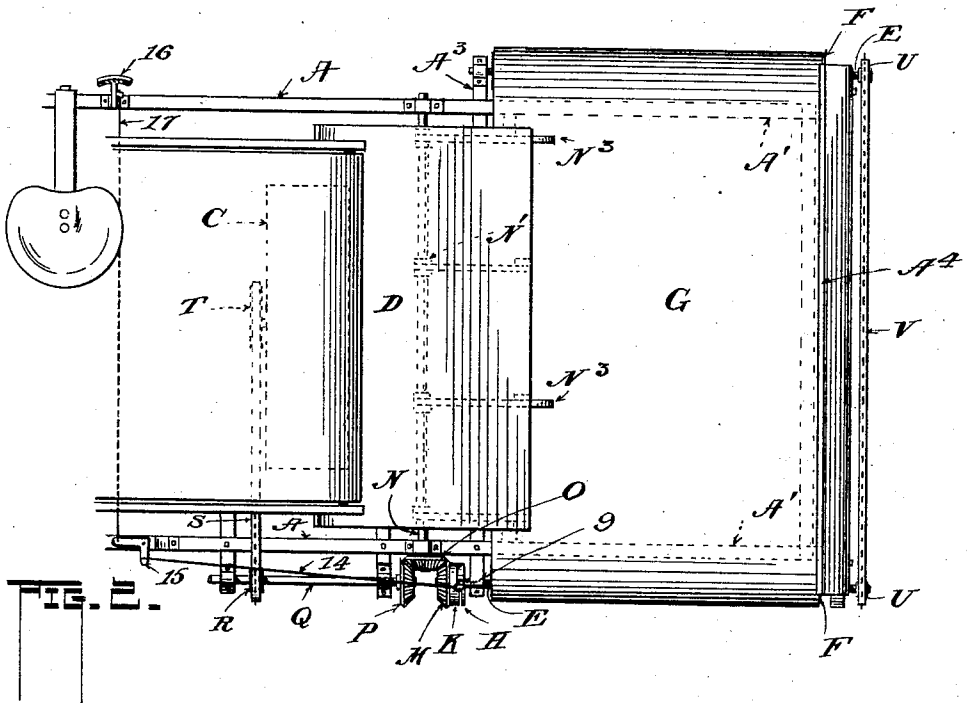
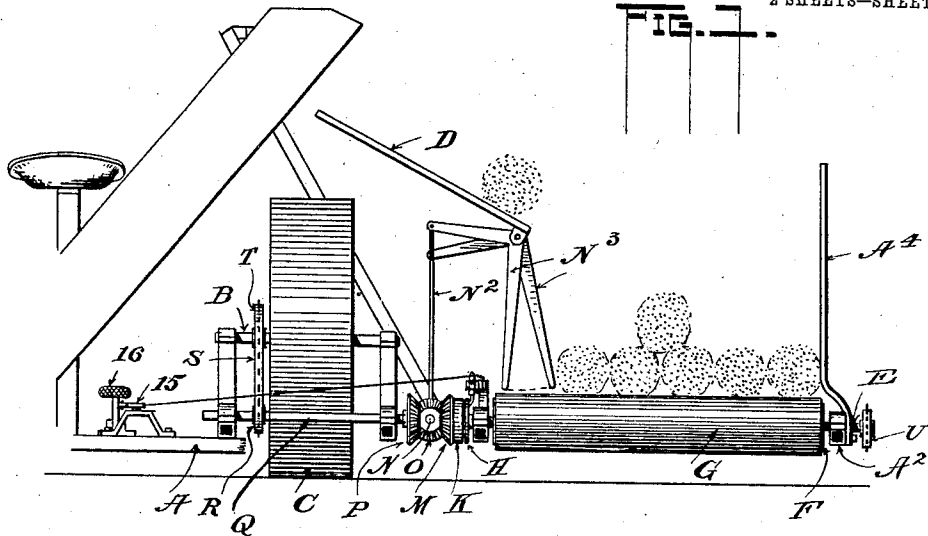


I. F. COLE.
BUNDLE CARRIER FOR BINDERS.
APPLICATION FILED NOV. 11, 1907.

933,160.

Patented Sept. 7, 1909.
2 SHEETS—SHEET 1.



Witnesses:
Loretto White
Ladd Dray

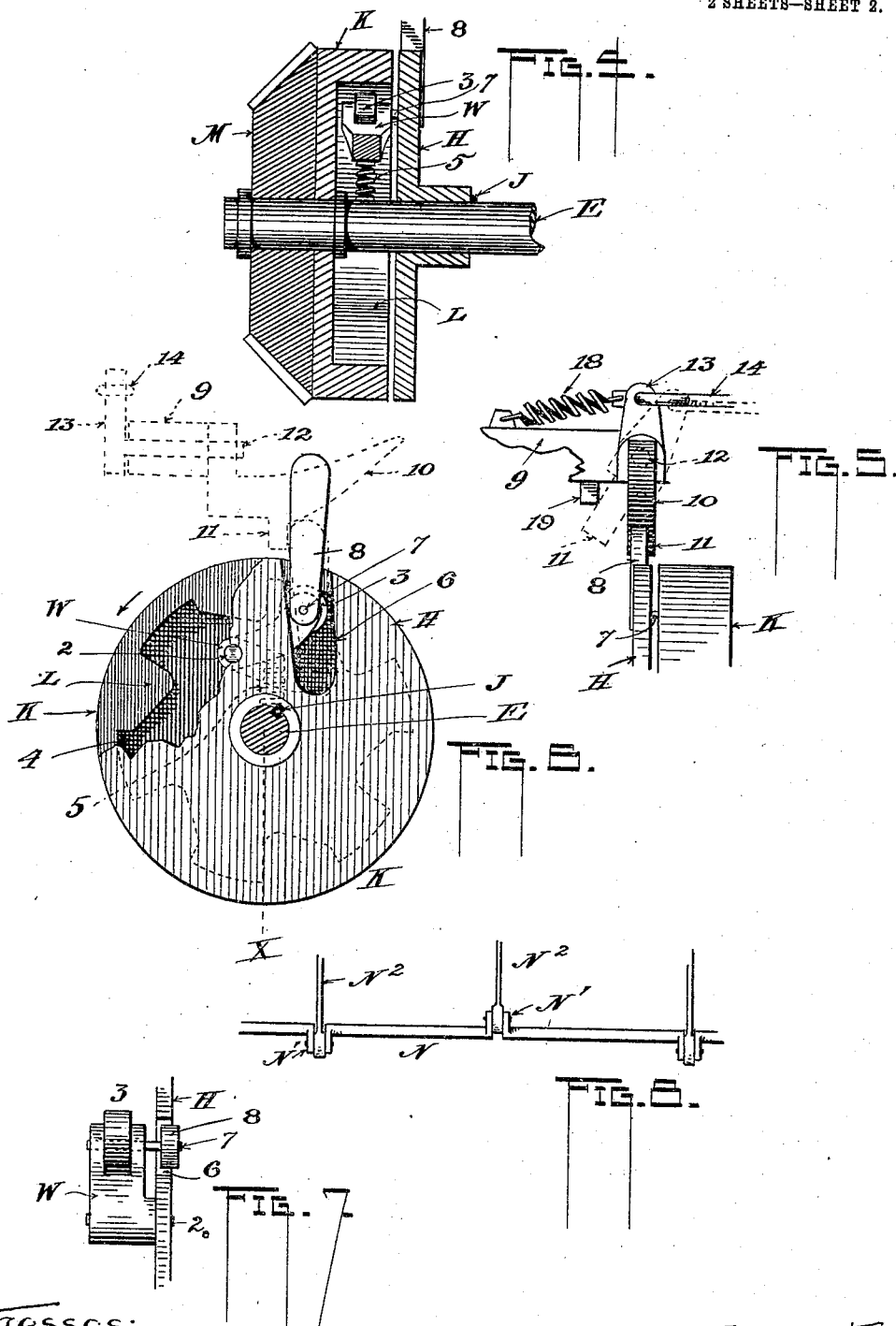
Inventor
Isaac F. Cole,
By L. M. Thibault
Att'y.

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UNITED STATES PATENT OFFICE.

ISAAC F. COLE, OF WILLIAMSFIELD, ILLINOIS.

BUNDLE-CARRIER FOR BINDERS.

933,160.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed November 11, 1907. Serial No. 401,772.

To all whom it may concern:

Be it known that I, ISAAC F. COLE, citizen of the United States, residing at Williamsfield, in the county of Knox and State of Illinois, have invented certain new and useful improvements in Bundle-Carriers for Binders; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to sheaf carriers for grain binders, pertaining more particularly to an endless carrier or belt to which motion may be imparted intermittently and at will for discharging a number of sheaves in bundles at one time upon the ground sufficient to form a shock.

The object is to provide means by which a large number of bundles or sheaves or at least a number large enough to make a shock can be discharged at intervals at the will of the operator so that it will be unnecessary for those who bind the shocks to gather the bundles usually discharged over the field by the binder.

Ordinarily the binder-deck is so close to the ground that it is very difficult to provide a structure that after having received the bundles will properly discharge them upon the ground since there is not space enough between the ground and the deck of the binder as now commonly built to permit the inclination of the bundle carrier sufficiently to deliver the load.

My invention, as distinguished from some of the common forms of carriers, includes a draper extending partially beneath the deck of the binder upon which the bundles or sheaves are discharged and which when it has received a sufficient number of bundles can be set in motion at the will of the operator to deliver its load and will then stop automatically ready to receive another load. The invention also includes means whereby after the draper has moved a sufficient distance to discharge the load it will stop automatically; the attendant merely operating a trip to cause the discharge of the load; the draper thus taking care of itself until time for the next delivery.

Having made my objects clear I shall proceed with the description of my invention aided by the accompanying drawings in which—

Figure 1 is a rear elevation of a harvester

or binder with my invention attached thereto. Fig. 2 is a plan of the same. Fig. 3 is a side elevation of a draper. Fig. 4 is a longitudinal section of a clutch. Fig. 5 is an elevation of a trip used in connection with the clutch. Fig. 6 is a side elevation of the clutch, the shaft carrying it being shown in transverse section. Fig. 7 is a plan of a portion of the clutch mechanism. Fig. 8 is a plan of a cranked shaft.

The frame of the binder is indicated by the letter A suitably hung or supported from the axle B of the usual drive wheel C. For the purpose of my invention the framing of the machine is extended some distance beyond the deck D of the binder as shown in Fig. 2, but is omitted from Fig. 1 in order that that figure can be more readily understood. The said extended ends are indicated at A' in Fig. 2 and also in Fig. 3 being suitably braced as by means of cross bars A² and A³ all formed preferably of light metal such as steel tubing or angle iron. Mounted upon said bars A² and A³ secured beneath the frame A are two shafts E which, as shown in Fig. 2, lie at right angles to the line of advance or parallel to the framing A A'. These said shafts are each provided with a roller F for carrying a canvas draper G which, however, if desired may be replaced by chains provided with slats, or the said draper, if desired, may itself be provided with the slats, I having merely described these changes as coming within the intent and spirit of my invention. Beneath the upper stretch of the canvas and carried in suitable manner by the frame is a platform G', Fig. 3, over which the canvas drags.

One of the shafts as clearly shown in the figures and particularly in Fig. 4, is provided with a clutch mechanism which consists of a plate H suitably secured thereto as by means of a key J. Adjacent thereto is a recessed member K having a series of internal teeth L, while adjacent to said member K for driving it is a beveled gear M, the gear and the member K adapted to revolve freely upon the shaft. Extending at right angles to the shaft E is a shaft N provided at one end with a beveled gear O which is in constant mesh with the gear M described. Said gear O also meshes with a gear P on one end of a shaft Q axially coincident with the shaft E. Upon the shaft Q is a sprocket wheel R driven by means of a chain S from a sprocket wheel T on the shaft B of the

drive wheel C before described. Upon the outer end of each shaft E is a sprocket wheel U and a chain V carried by both serves to transmit a positive drive from one roller to the other and consequently a positive drive for the canvas draper G. However, this chain and its sprockets may be omitted if desired so long as motion can be properly and positively imparted to such draper.

On the plate H of the shaft E is pivoted an arm W at one of its ends as at 2, its other end being bifurcated and provided with a roller 3 adapted to enter any one of a series of recesses 4 between the teeth L of the member K. A spring 5 is interposed between the shaft and the arm W and constantly tends to force the roller into one of the said recesses. The said plate H is provided with a slot 6 behind which may be seen the roller 3 within the member K, see Fig. 6, and extending from the arm W into said slot is a pin 7 which carries an arm 8 lying within said slot. Secured in suitable manner upon the bar A³ of the machine is a standard or bracket 9 extending upward and outward to overhang the clutch as shown in Figs. 1 and 5. To the overhanging end of this standard is pivoted a latch 10 shown clearly in dotted lines in Fig. 6. This consists of an upwardly inclined nose there being at its bottom a depending lug 11. Immediately above this lug the latch is pivoted to the standard 9 by means of the pivot pin 12 to which is secured an arm 13 having attached thereto a pull-rod 14 the opposite end of which is attached to a bell crank 15 on a suitable standard upon the frame A. At 16 is an operator's foot lever having attached thereto a pull rod 17 the other end of which is connected to the said bell crank 15 just mentioned.

The shaft N already described is illustrated in Fig. 8 and as shown in broken lines in Fig. 2 extends across the machine. It is provided with a series of cranks N' each of which has connected therewith a pitman N² shown in Figs. 1 and 8, their upper ends having connection with rocker arms N³ pivoted beneath the delivery end of the deck D or on some other portion of the frame adjacent thereto as may be found most convenient. The long ends of these arms extend downward in the vicinity of the canvas draper G and constitute what I shall term "packers" answering in the same way as those usually employed in binders. These are designed to have continual motion, as will be presently explained, and serve to cause the bundles delivered upon the draper to be pushed to the outside of the latter against a stop or side board indicated at A⁴ and suitably secured to the framing A².

The operation of the device is as follows:
The binder moving through the field con-

tinually discharges its bundles or sheaves from the deck in the usual manner which are deposited upon the draper G which it is understood is normally stationary. The shaft Q is in constant revolution by having connection with the drive wheel C and likewise sets up a continuous revolution to the shaft N to move the packers N³ and also the gear wheel M without imparting motion to the draper through the shaft E since the clutch mechanism is normally disengaged.

As shown in Fig. 8 the cranks N' are set or arranged in alternate positions one up and one down so that while one pair of arms is drawn backward the other pair is pushed forward. However, the cranks may be arranged in other positions so that the arms will all move in the same direction at the same time or they may have other movements as found best suited to the work. However, if desired, the packers N³ may be dispensed with and the draper may be slanted slightly downward at its outer edge whereby the bundles by the jarring of the machine will naturally work to the stop or side board A⁴. Normally the arm W of the clutch is held downward by means of the latch 10 through the arm 8, the position of the latter being shown beneath said latch as in dotted lines in Fig. 8 so that the member K revolving continuously in the direction of the arrow will impart no movement to the plate H to which the said arm W is attached but when the latter is released its spring 5 will force it upward into one of the notches 4 as already explained at which time one of the teeth in engaging the roller will push the arm and consequently its plate in the same direction as said member K thus turning the shaft E. After the clutch has made a full revolution its arm 8 contacts with the trip 10 and follows down the incline thus forcing the arm W downward out of engagement with the tooth that imparted the movement, while the member K continues to revolve. During this interval of revolution the accumulated bundles have been deposited upon the ground and then the draper is automatically stopped ready to receive a new load.

The length of a bundle of grain is 36 inches to 48 inches and it is only necessary that the draper G should have a travel of from 18 to 24 inches in order to carry the bundles rearward a sufficient distance to cause them to overbalance on the roller F. Then they will tilt and touch the ground and be drawn off as the machine advances. The drawings indicate a roller of considerable size. One that is eight inches in diameter is sufficient to impart a movement of twenty-four inches to the draper which movement is ample to cause the ready positive discharge of the bundles. A large roller rather than a small one will cause the

draper to move fast and thus the bundles will be more quickly carried out of the way and discharged to make place for the bundles thrown upon the platform from the deck B. The rollers could even be made of a still larger size than that mentioned so that a greater distance of travel and a faster travel could be imparted to the draper.

Fig. 5 indicates the movement of the trip 10 when the operator places his foot upon the foot lever 16, the said trip being swung to the position shown in broken lines in said Fig. 5. This removes the lug 11 from behind the arm 8, its limit of movement being governed by a depending lug 19 on the standard 9, allowing the arm W to rise as described thus imparting the movement already explained. The operator at once removing his foot from the foot lever 16 a spring 18 attached to the arm 13 and said standard 9 at once returns the trip to its normal position in the path of the said arm 8 which, as it strikes it at the end of the full revolution is depressed thus depressing the arm W as explained. It will be noted that since the pivot 12 of the latch 10 is immediately above the arm 8 said latch will not be moved out of its proper normal position by pressure of the arm 8 there against no matter how great that pressure may be. The trip may be limited in its movement as to the pull of the spring 18 by any desired means, as, for instance, by limiting the movement of the foot lever.

Evidently the packers N^s are in continuous motion as well as a portion of the clutch mechanism but it is also evident that the draper is normally stationary so as to receive the desired load and it lies with the operator as to how much of a load he desires to collect before depositing it upon the ground.

I have shown the deck D of some considerable height above the draper and in fact higher than it is in actual practice especially with low cut machines, but I have done this in order to better illustrate the packers and the general arrangement of the balance of the mechanism. Where a bundle carrier is employed and hung from a pivot and after being loaded is dropped down, the distance ordinarily between the deck and the ground is so small that the carrier cannot be dropped to an angle that will discharge a load readily whereas by using a draper the entire load can be dropped at once and fully out of the way, said draper being always ready for its load without the necessity of resetting it.

I desire to state that although the draper is arranged to drop the bundles in the rear of the machine it may be arranged to deposit them at the side if desired. Though not shown, the relative sizes of the gears must be such that the draper will be so driven with regard to a full revolution of the

clutch that it shall have completely discharged its load and then stopped ready for the next load during such full revolution. I may, of course, use any other kind of clutch mechanism by which to impart the desired extent of movement to the draper I having merely shown one form thereof. Or the clutch may be permitted to drive the apron the required distance by holding the foot lever.

I do not confine myself in any way to the structures shown and described herein as to other parts since equivalent structures can be readily supplied.

Having thus described my invention, I claim:

1. The combination of a binder, a draper, a pair of driving shafts carried by the binder and provided with rollers to carry said draper, a loose clutch-member on one of said shafts, a second clutch-member affixed to said shaft, a spring-held member pivotally carried by the said second clutch-member and normally tending to engage the first, means for normally holding the member out of engagement, a manually operated device connected with said means, and a drive shaft on the binder for imparting a continuous rotation to the first said clutch-member.

2. The combination of a binder, a draper, a pair of driving shafts carried by the binder and provided with rollers to carry said draper, a clutch-member carried by and adapted to turn upon one of said shafts, a drive shaft on the binder for imparting a continuous rotation to said clutch-member, a second clutch member affixed to the said shaft, a spring-held member pivotally carried by said second clutch-member and normally tending to engage the first, means supported on the binder and normally engaging the spring-held member to hold it from engaging the first clutch-member, and a manually operated device connected with the said means for moving it at will to release the said spring-held member by which movement may be imparted to the draper by a revolution of the fixed clutch-member and its shaft, the said manually operated device adapted to lie in the path of the spring-held member and to automatically disengage the latter from the clutch at the time and for the purposes set forth.

3. The combination of a binder, a draper, shafts on the binder for carrying the draper, a fixed and a loose clutch-member carried by one of the said shafts, means for imparting continuous movement to the loose clutch-member, a member carried by one of the clutch-members and adapted to engage the other of said clutch-members but normally free thereof, manually controlled means normally in engagement with the member and adapted when moved at the will of the operator to release said member to cause the

clutch-members to engage one another and impart a predetermined extent of movement to the draper, said manually operated means normally lying in the path of revolution of the member and adapted to automatically disengage said member from the clutch when the draper has completed its full movement.

4. The combination of a binder, a draper for receiving the bundles of bound grain therefrom, shafts for carrying the draper, a two-part clutch carried on one of the shafts, one loose and the other fixed thereon, means on the binder for driving the loose clutch portion continuously, a member carried by one of the clutch portions and normally disengaged from the other, means for preventing its engagement, and manually operated for at will permitting such engagement, said means adapted also to automatically disengage said member at the time and for the purposes set forth.

5. In an attachment for binders, a substantially horizontally disposed draper for receiving a series of bundles of grain from the binder and discharging them upon the ground at a single operation, means for at will imparting movement thereto, means for automatically interrupting said movement, and means for arranging the bundles in compact form upon said draper.

6. In an attachment for binders, a substantially horizontally disposed draper for receiving a series of bundles of grain from the binder and discharging them upon the ground at a single operation, means for at will imparting movement thereto, means for automatically interrupting said movement, means for arranging the bundles in compact form upon said draper, and means to prevent the bundles being pushed from or voluntarily leaving the draper.

7. The combination of a binder, a draper for receiving bundles of grain therefrom and lying normally stationary, a continuously rotated member, mechanism adapted for connection therewith for at will imparting movement to the draper to discharge its

load, means for automatically stopping the movement of the draper after its load has been discharged, and means for closely packing the bundles upon the draper for the purposes described.

8. In a bundle carrier attachment for binders, a draper, a continuously driven shaft, means for carrying and driving the draper, a shaft intermediate the driven shaft and draper carrying means, packers driven by said intermediate shaft, motion being imparted from the said continuously driven shaft through the intermediate shaft to the draper carrying means, clutch mechanism for causing a positive drive of the draper, and means in control of the operator for at will imparting movement to the draper through the clutch, said clutch having provision for automatically arresting the movement of the draper for the purposes set forth and described.

9. The combination of a binder, and its deck, a draper underhanging the latter, a support on the binder for carrying the draper, a continuously driven member for imparting movement to the draper at intervals, manually operated means for at will causing the driving of said draper, said means automatically arresting the movement of the draper, and packers continuously operated from said continuously driven member.

10. The combination of a binder, and its deck, a draper underhanging the latter, a support on the binder for carrying the draper, a continuously driven member for imparting movement to the draper at intervals, manually operated means for at will causing the driving of said draper, said means automatically arresting the movement of the draper, and a stop for retaining the bundles on the draper.

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

ISAAC F. COLE.

Witnesses:

L. M. THURLOW,
A. KEITHLEY.