

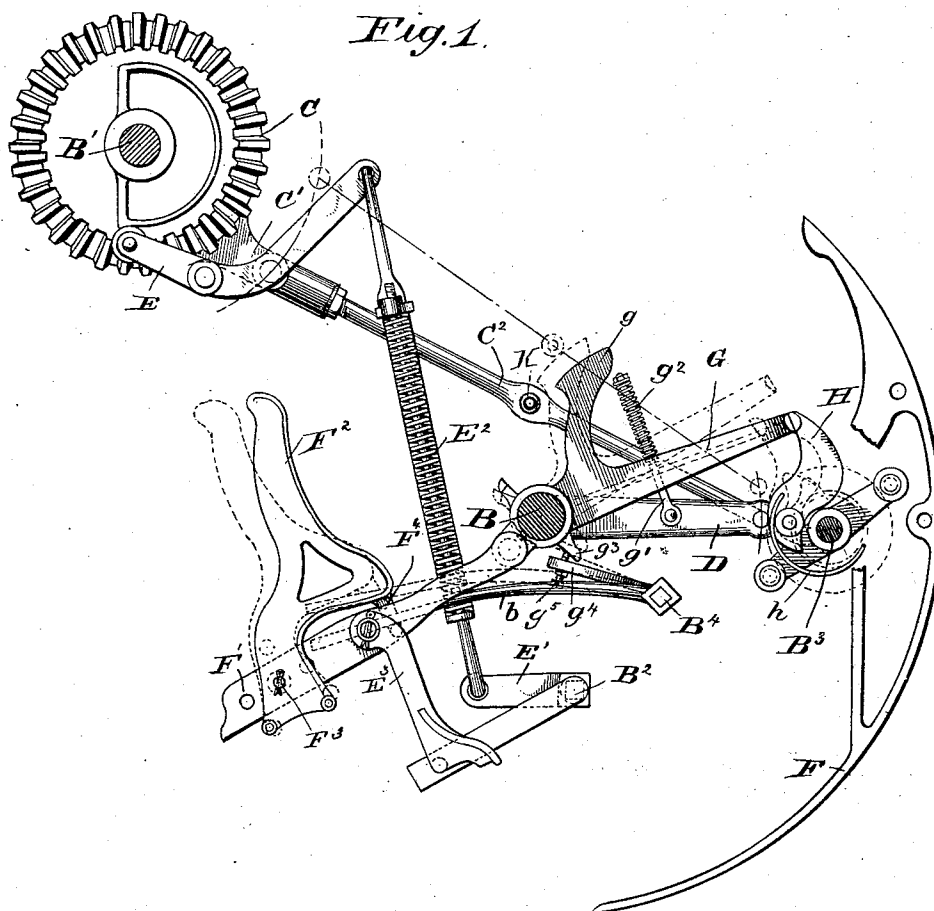
(No Model.)

2 Sheets—Sheet 1.

C. A. A. RAND.
GRAIN BINDER.

No. 471,826.

Patented Mar. 29, 1892.



Witnesses
Arthur Johnson
Chas. W. Halverson

Inventor.
C. A. Anderson Rand

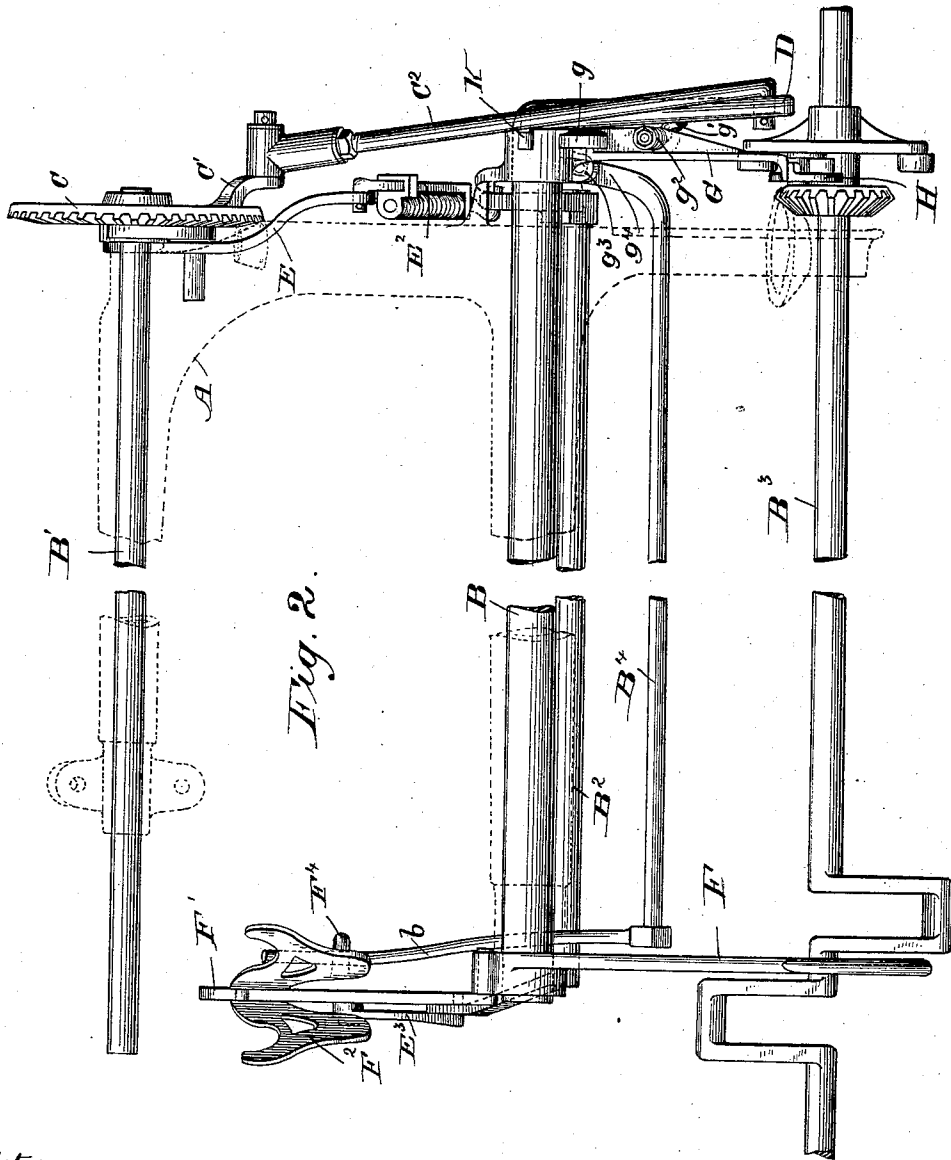
(No Model.)

2 Sheets—Sheet 2.

C. A. A. RAND.
GRAIN BINDER.

No. 471,826.

Patented Mar. 29, 1892.



Witnesses
Arthur Johnson
Eli M. Halverson

Inventor:
E A Anderson Kandel

UNITED STATES PATENT OFFICE.

CHARLES A. ANDERSON RAND, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE
WILLIAM DEERING & COMPANY, OF SAME PLACE.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 471,826, dated March 29, 1892.

Application filed December 7, 1891. Serial No. 414,302. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. ANDERSON RAND, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Binders, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of the parts of a grain-binder necessary to understand my improved device. Fig. 2 is a plan view of the frame and main parts of a grain-binder, showing the relation of the parts forming my improvement thereto.

A is the main binder-frame, (shown in dotted lines in Fig. 2,) forming bearings for the needle-shaft B and the knotter driving-shaft B'.

B² is the compressor-shaft, B³ the packer-shaft, and B⁴ the tripping-shaft, the latter being, in fact, a rock-shaft adapted to transmit motion from the rocking compressor-arms to the clutching device. The shaft B⁴ is necessarily long, and unless made of a heavy bar is elastic to such an extent that when stress is suddenly applied to rock one end it yields without imparting the necessary motion to disengage the clutching device at the other end.

The tripping-compressors are pivoted to a supporting-bar F', and as they are carried upward after the discharge of every bundle they are compelled to rock to an erect position by means of the rock-shaft B⁴, which is actuated as the binder returns to its position of rest to turn on its axis by being engaged by the clutch-tripping detent. The force of the clutch-detent spring is the power which is usually applied to erect the compressor-arms. As the latter are quite heavy, it is found that the spring cannot be made sufficiently strong to do this work and yet be light enough to be moved by the compacted grain to permit engagement of the clutching device. This whole matter will be made clear by reference to Fig. 1.

The main wheel C receives motion from the packer-shaft through the instrumentality of the gearing placed within the frame, and shown in dotted lines in Fig. 2. The needle-shaft is provided with the crank D, and the

wheel C with the crank-arm C', having a suitable wrist, connecting which and the eye in the arm D is the pitman C². The wheel C is adapted to make one rotation to move the parts to bind each bundle of grain. By means of a cam adapted to actuate the lever E, an arm of which is connected to the arm E', extending from the compressor-shaft, the compressing devices are raised and dropped by the spring-link E². Pivoted to the heel of the needle F is the compressor-bar F', and pivoted to the latter are the compressor-fingers F², adapted to rock on the pivot F³. One of these compressor-arms is provided with a lug F⁴, having an eye, into which the arm b, extending from the tripping-shaft B⁴, passes.

In Fig. 1 the compressor-arms are shown in full and dotted lines, the full lines representing the position in which they stand for receiving the grain as it is forced by suitable packers thereagainst, and the dotted lines representing the position into which they are forced by the accumulated grain.

Loosely mounted upon the needle-shaft is the clutch-detent G, having an upward extension g, formed as one piece with it. Pivoted to the arm D and extending through a hole in the flange of the detent G is the spring-rod g', having the spring g² and suitable adjustment-nut. The detent, when in its position of rest, is adapted to engage the pawl H of the clutching device, as shown in both of the figures, and separate the working parts of the clutch. The detent G is provided with a short arm g³ and the tripping-shaft with the arm g⁴, the latter adapted to press beneath the short arm g³. For the purposes of adjustment a screw g⁵ is used.

Referring to Fig. 1, the connection of the tripping-compressors and the clutch-tripping device may be traced. The pressure of the grain against the arms F² will cause them to rock downward, and the movement will cause the arm b to reach the position shown in dotted lines and the arm g⁴ to press beneath the arm g³ and cause the detent to rise away from the pawl H and allow the spring h of the clutching device to cause the latter parts to engage. The binder will then pass through one movement and its parts eventually return to position of rest; but, as before stated,

as soon as the bundle is bound the compressor must be dropped away to permit its ejection. The cam of the wheel C, the lever E, the spring connection E², the rock-shaft, its arm E', and the connecting-link E³ serve but as means for raising and dropping the compressor to permit ejection, and as far as a proper understanding of the present invention is concerned need not be dwelt upon.

10 With the parts in the position of the dotted lines in Fig. 1 the spring g² alone is depended upon for forcing the detent, the rock-shaft B⁴ and its arms, and the compressor F² to the positions shown by the full lines, and as the

15 said parts must be brought to position very quickly I provide other parts whereby the spring may be aided, and it is these parts and their operation which form the gist of my invention. As stated, g is an arm extending

20 upward from the detent G. It will be seen that the pitman lies adjacent to this arm g. From it I extend a pin or other suitable pro-

jection, preferably an anti-friction roller K, and so place it that as the pitman is brought to its home position said roller may strike 25 the curved track upon the arm g and carry the latter down with a positive force as it rolls along the track. When the compressing-arms are once brought to their home position and the roller has passed off the track, the light 30 spring g² is sufficient to hold them there.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a grain-binder, the needle-controlling pitman having the part K, in combination 35 with the clutch-detent G, provided with a suitable portion against which said part K on the pitman may come in contact to force the said detent to its home position, substantially as described.

C. A. ANDERSON RAND.

Witnesses:

ELISE M. HALVERSON,
ARTHUR JOHNSON.