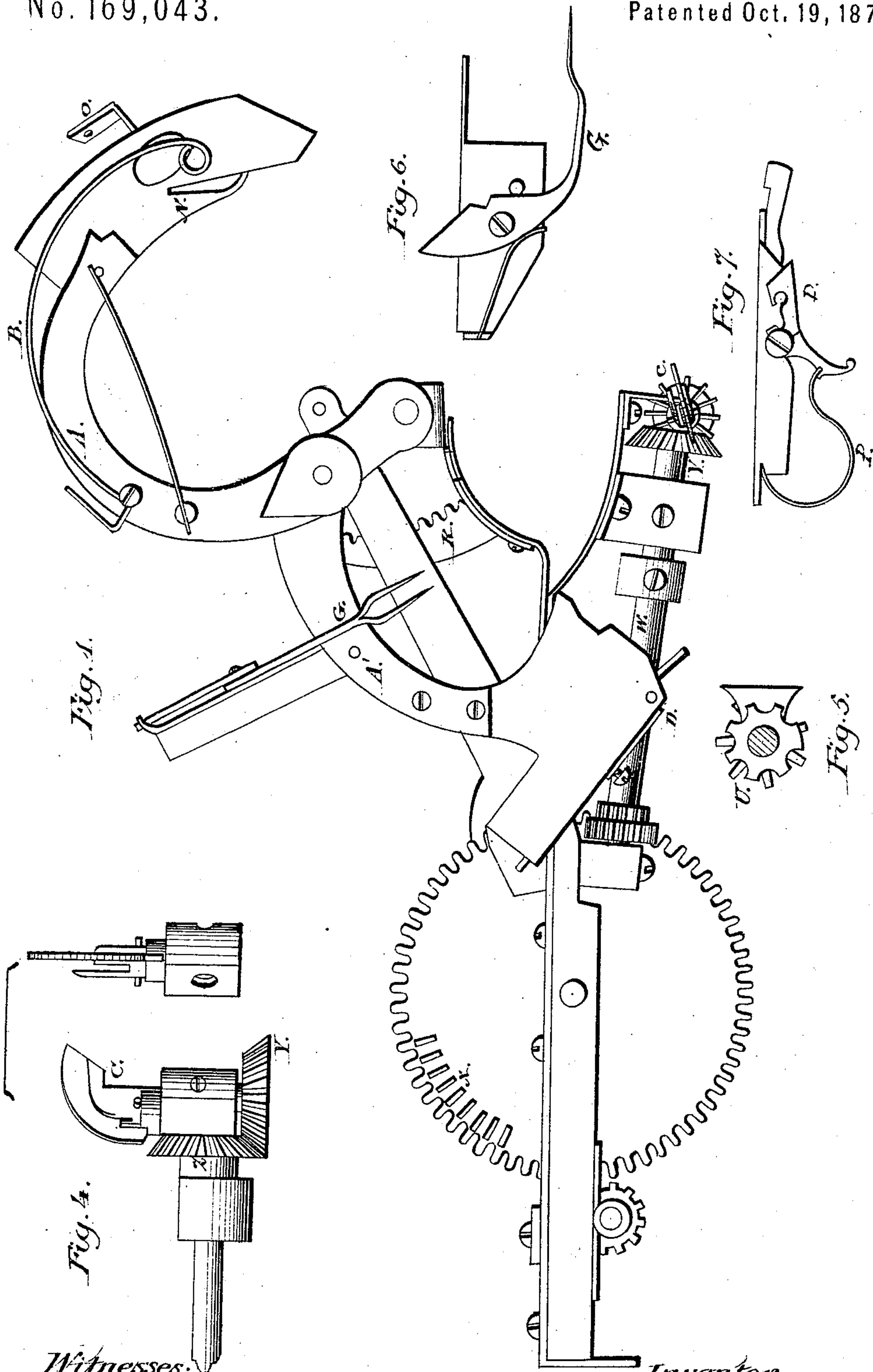


F. P. ROSBACK.
Grain-Binder.

No. 169,043.

Patented Oct. 19, 1875.



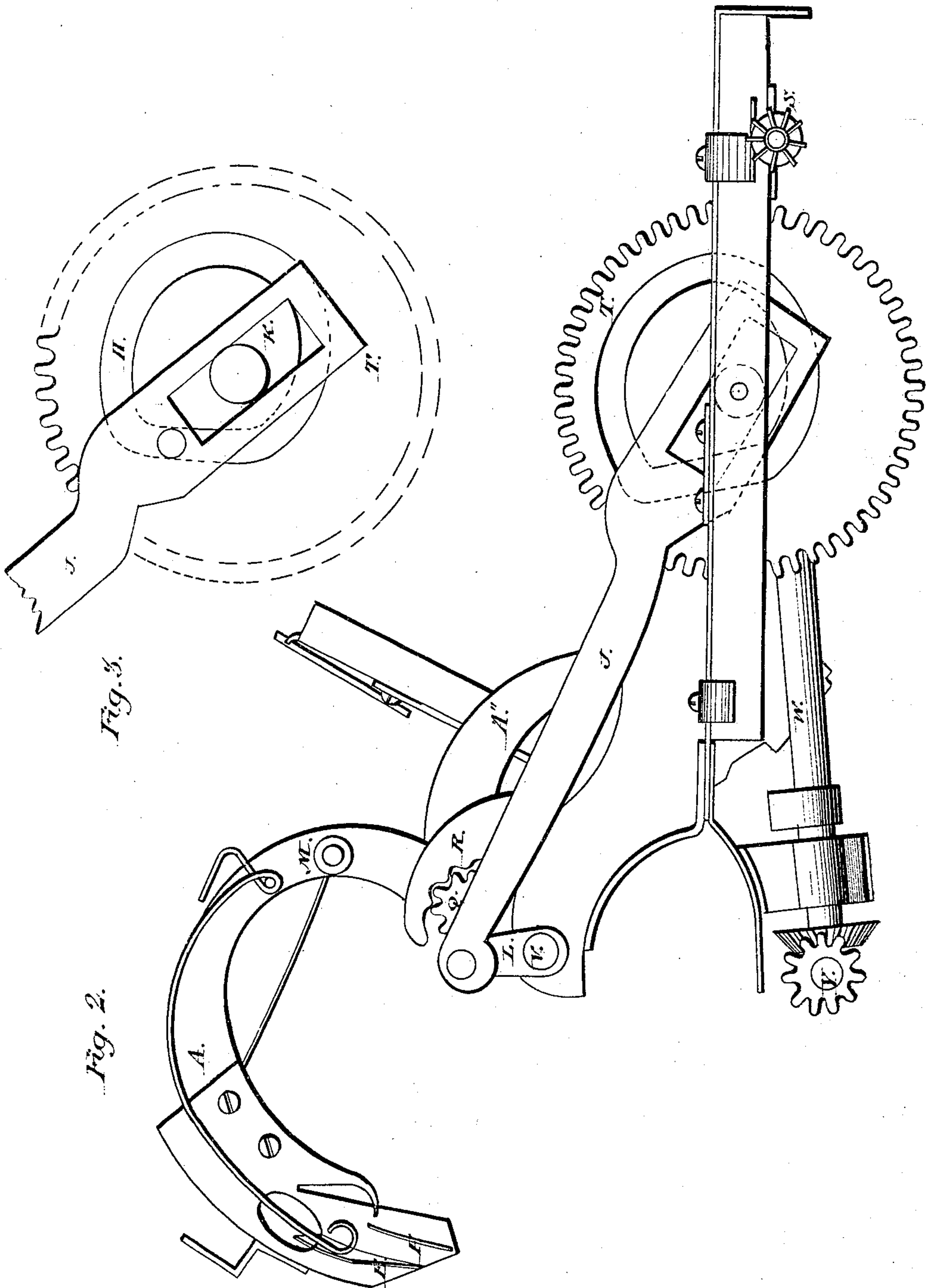
Witnesses:
Edw. W. Brown
M. Gardner.

Inventor:
Frederick P. Rosback
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UNITED STATES PATENT OFFICE.

FREDERICK P. ROSBACK, OF SPRINGFIELD, MISSOURI.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. **169,043**, dated October 19, 1875; application filed September 14, 1875.

To all whom it may concern:

Be it known that I, FREDERICK P. ROSBACK, of Springfield, in the county of Greene and State of Missouri, have invented certain Improvements in Grain-Binder Attachment for Reapers, of which the following is a specification:

The nature of this invention relates to the novel construction of a grain-binder attachment for reapers; and it consists in devices, hereinafter described, for continuously carrying a band of twine around the bundle, and for tying a hard, solid knot therein, and throwing out the bundle.

Figure 1 is a perspective view of my improved binder, showing it in position to receive a bundle. The grain is carried under the compressor A A' by an apron. (Not shown in the drawing.) As the compressor closes, it puts the twine around the bundle; the separator B keeps the grain from crowding on the compressor; the twine is placed over the knot-tier C, as shown in Fig. 4, and at the same time into D; the knot-tier then turns around once, making the loop, the nippers taking hold of the end of the twine; the compressor then rises up, and the knife E cuts the bundle from the ball, the nippers D carrying the end of the twine back ready for another bundle. The tightener F slips the knot off of the knot-tier to the bundle, making the knot perfectly tight, and pulls the end of the string out of the nippers in the knot-tier C. The fork G, on the backward movement of the compressor, passes out, throwing out the bundle.

Fig. 3 is the main driving-wheel. The slot operates on the connecting-rod J, giving it a reciprocating motion, the slot being so constructed as to give time for the tying of the knot, and the passing in of the grain. The slot K of Fig. 3 slides over the shaft of the wheel, in order to hold it firm, at the same time allowing an oscillating movement, given by the crank L, at the other end. The nippers open and close, in order to take the end of the twine. They are operated by the eccentric slot in the end of the box at C. The pinion Z runs into the pinion Y of Fig. 4. The pinion U, with the flat side, goes on the shaft W, and connects to the driving-wheel

T, it having a rack of cogs, X, equal to the number of cogs in pinion U, giving it one revolution to each of that of T, and the flat side prevents it from turning farther until the driving-wheel has made its revolution. The compressor A, while it compresses the bundle, at the same time carries the twine around the bundle and carries the spool M. N is the slot that carries the twine. O is the guide that carries the twine into the nippers D. P is the spring that operates the same. A' is the back compressor. The nippers D are kept closed by means of a spring. (Shown on drawing at P.) Q is the pinion that operates the compressors, R being a rack working compressor A, and operates the pinion Q. The motive power to drive the binder is taken from the outside driving-wheel of the reaper, and attached to beveled pinion S, to which is attached a common clutch to throw it in and out of gear, so that it is under full control of the driver.

The following is a description of the knot-tier C: The knot-tier is simply a shaft bent at one end, with two slots in it—one for the nippers, and the other for the knot-tightener to operate in. The twine is placed over the knot-tier, so the end next to the bundle is at right angles with the knot-tier, and the end next the spool is in line with the nippers. When the knot-tier turns around it forms the loop, as shown in Fig. 4, and the nippers catch the end of the twine. Now the loop is ready to be slipped up to the bundle, and to be cut off from the spool, which is done first. The twine being cut, as before described, leaves the ends of the twine in the nippers. Now the knot-tightener catches the twine between the nippers and the loop, and slips the knot toward the bundle, preventing the bundle from expanding. The tightener then, when the knot is tight, pulls the end of the twine out of the nippers, turns the bundle loose, which is then thrown out by the fork G.

The following is a description of the driving-wheel T: This is simply a cog-wheel with a groove cut in one side, so constructed as to throw the compressors down over the grain and hold them there until the knot is tied in the twine. It then raises up the compressors, and holds them up, giving time for the grain to run in

under the compressors on the apron. The other side of the wheel has a segment of cogs equal to that of the wheel U, Fig. 5, in order to give one revolution to the knot-tier, and then slides over the flat side of the wheel without turning it.

The following is a description of the separator: its operation is governed entirely by the compressor. As the compressor descends to take the bundle, it strikes the apron first, separating the grain—that is, no grain can pass it as long as it remains on the apron, and it allows the compressor to go down without interfering with the grain, as all the grain in front of it is stopped, and all behind it passes on into the bundle. As the compressor rises, it strikes the cam and raises the separator, as represented.

The following is a description of the knot-tightener F: This piece has a slot in it, so constructed as to allow the twine to pass into it, but too narrow to allow the knot to pass through it. As it passes through the slot in the knot-tier, it takes the end of the twine between the loop and the nippers into the slot, and, as the knot cannot pass through it, slips it toward the bundle, thus preventing any expansion of the bundle; consequently the bundle remains as tight as it was when compressed.

The following is a description of the com-

pressors A A': These are so constructed as to go on a frame, Figs. 1 and 2, keyed to a shaft, V, and are operated by the crank. The compressor is attached to the frame, and is operated by a pinion, Q. On the end are the nippers D, that carry the end of the twine, which it receives from the guide O, so that it never loses the end of the twine. The hook in the end of the nippers is to prevent the twine from slipping out while the knot is being tied.

What I claim as my invention is—

1. The compressor-arms A A', pinion Q, stationary rack R, in combination with cam-wheel T, as and for the purpose set forth.

2. The knot-tying hook C, provided with the slot, in combination with the nippers D, as and for the purpose described.

3. The arm A, having tightener F and knife E, and the arm A', having nippers D, in combination with the knot-tier C, substantially as described.

4. The fork G, in combination with the stationary cam for operating the same, as and for the purpose set forth.

5. The separator B, pivoted on the vibrating arm A, as and for the purpose described.

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Witnesses:

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E. J. BALDWIN.