

(No Model.)

B. F. STEWART.
MECHANICAL MOVEMENT FOR GRAIN BINDERS.

No. 473,976.

Patented May 3, 1892.

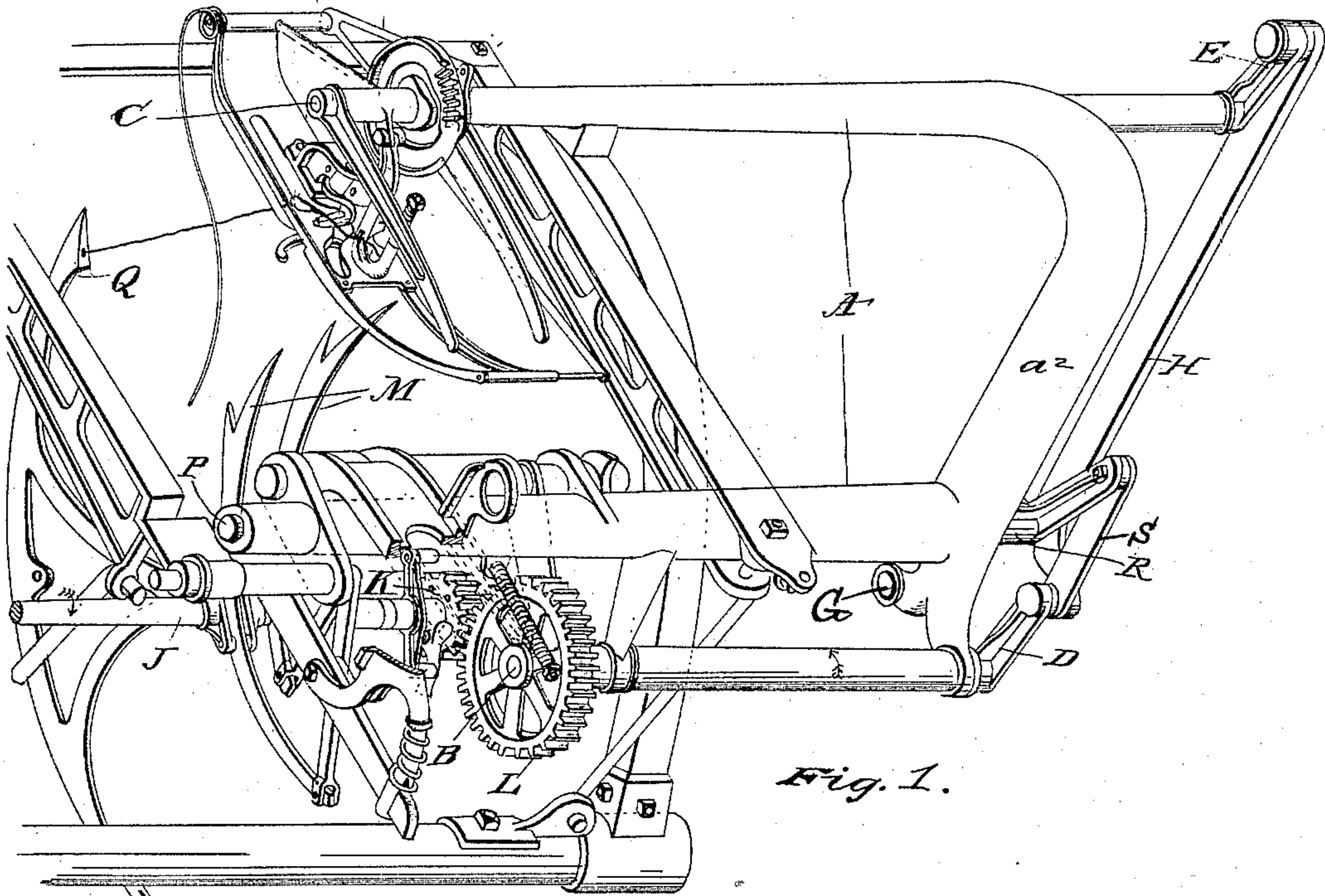


Fig. 1.

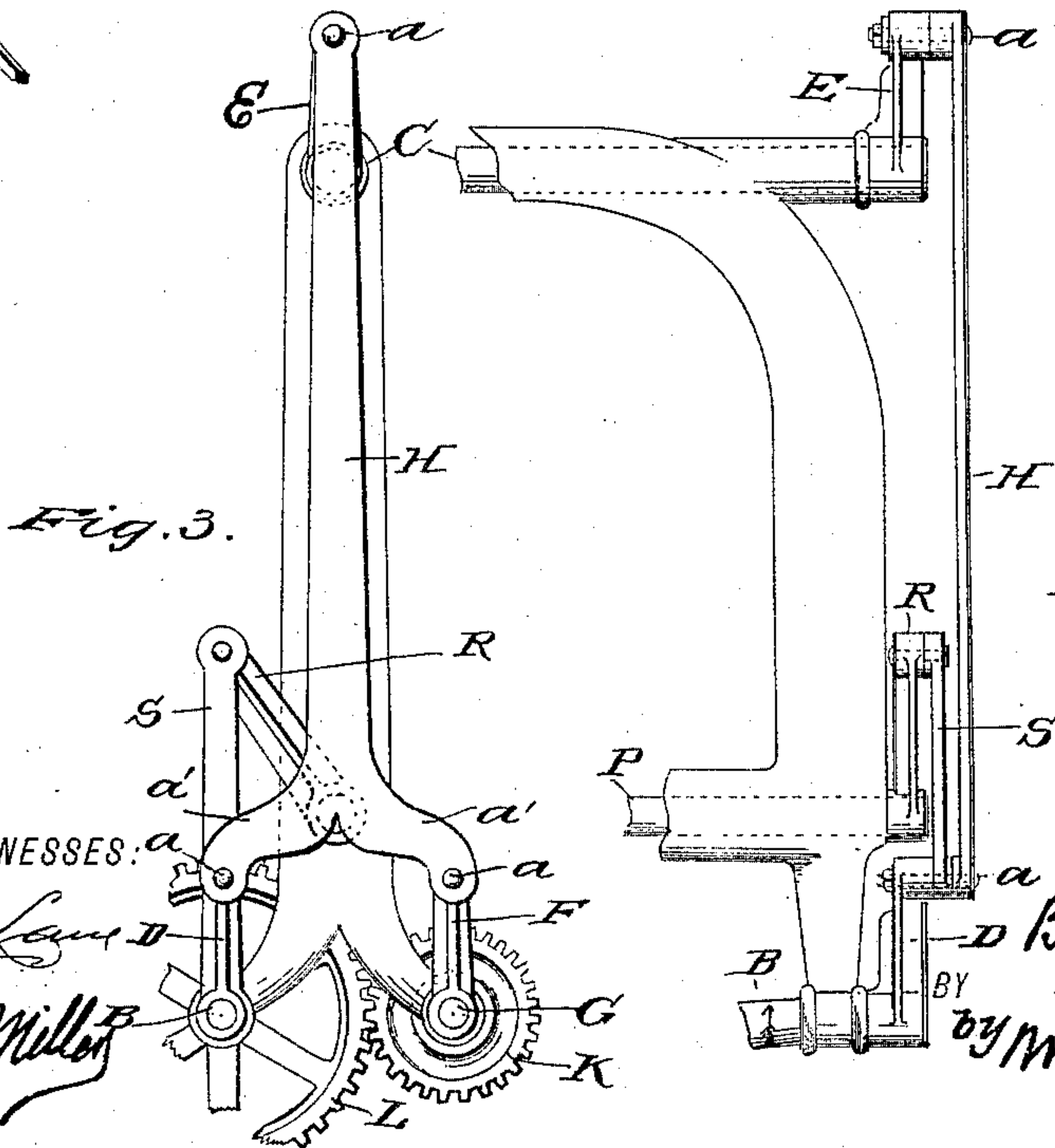


Fig. 2.

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MECHANICAL MOVEMENT FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 473,976, dated May 3, 1892.

Application filed February 26, 1890. Serial No. 341,882. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. STEWART, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have
5 invented a new and useful Improvement in Mechanical Movements 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.
10

My invention relates to an improvement in mechanical movements for grain-binders; and it consists in providing shafts and cranks constructed as hereinafter described and connected by a double pitman for the purpose of
15 communicating a rotary motion from one shaft to another, both rotating in the same direction with a positive regular movement without the use of interjacent helpers or fulcrums.
20

The objects of my invention are to simplify the means of revolving the knotter-shaft in grain-binders, to lighten the structure, and reduce the initial cost.

25 With these ends in view my invention consists of the construction and combination of parts, as hereinafter described, and pointed out in the claim.

Figure 1 of the accompanying drawings is
30 a view in perspective of a binder, illustrating my invention; Fig. 2, a side elevation, and Fig. 3 an end elevation.

Similar letters of reference indicate corresponding parts in all of the figures of the
35 drawings.

As my invention is alike applicable to many of the well-known harvester-binders, I will proceed with the description thereof, referring to the binder parts only as conjunctional
40 thereto.

A represents the binder-frame, in which is mounted parallel shafts B C, having cranks D E on their outer ends, substantially as shown.

45 The shaft J will be known as the "packer-shaft," B as the "binder-actuating shaft," and C as the "knotter-shaft." To provide a steady and uniform rotary movement of the knotter-shaft C a third crank F is provided,
50 having its inner end loosely mounted on a stud G. The three cranks D, E, and F are of equal length, the wrist-pins a describing cir-

cles of equal diameter. A pitman H is provided, having one of its ends bifurcated or doubled, the prongs a' adapted for a pivotal
55 engagement with the cranks D F, and the other end for a similar engagement with the crank E on the knotter-shaft C.

In Fig. 1 I have shown my invention applied to a grain-binder where motion is transmitted from the packer-shaft J to the binder-actuating shaft B by means of cogged wheels K and L. The shaft J and wheel K, rotating over and out, as indicated by the arrow, for the purpose of giving the packers M the
65 proper upward and outward movement, will rotate the wheel L and shaft B over and inwardly, as indicated by the arrow.

To rotate the knotter-shaft C in an opposite direction to the packer-shaft J and in the
70 same direction of the binder-actuating shaft B, that the knotter-wheel N may have the desired movement to tie the band and the discharge-arms O a downward and outward movement to discharge the bundles, the
75 cranks D and F are provided, and the pitman or connecting rod H, adapted for and having pivotal engagement with said cranks D F and with the crank E, the rotary movement of the driving-crank D, through its connection with
80 the pitman H, will rotate the crank F, which serves as a fulcrum to crank D, by which the driving-power is applied laterally, giving to the pitman an up-and-down and back-and-forth movement and to the crank E and shaft
85 C a rotary movement without the use of intervening helpers or fulcrums, the endwise movement of the pitman being parallel with the end portion a^2 of the binder-frame A.

To rock the needle-shaft P to raise and
90 lower the needle Q, a crank R is mounted on the end of said shaft and is connected with the crank D by the link S.

In operation the driving-power is transmitted to the packer-shaft J, and the spur
95 pinion K, which meshes into an external gear-wheel L, connected by the shaft B to the crank D and by the forked ends of the pitman to the crank F, causing the cranks to revolve, which being connected by the pitman
100 H to the crank E, which is rigidly connected to the knotter-shaft, the latter is caused to positively rotate in the same direction with the double cranks D and F, thus operating

the knotter mechanism and the needle, whose shaft is attached to the crank D by the crank R and link S.

5 Having thus fully described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

10 The combination of the packer-shaft J, provided with a gear-wheel, the binder-actuating shaft B, provided with a gear-wheel in mesh with the first-named gear-wheel, a stud G, fixed to the frame, cranks D and F, secured to the shaft B and stud G, respectively, a knotter-shaft C, a crank E, secured to the end

thereof, a pitman H, having one end pivoted to said crank and its opposite forked end piv- 15
oted to the cranks D and F, a needle-shaft P, a crank R, secured to the end thereof, and a link S, pivoted to the crank R and to the end of the crank D, substantially as set forth.

In testimony whereof I have hereunto set 20
my hand this 10th day of January, A. D. 1890.

BENJAMIN F. STEWART.

Witnesses:

W. K. MILLER,

CHAS. R. MILLER.