

**No. 684,869.**

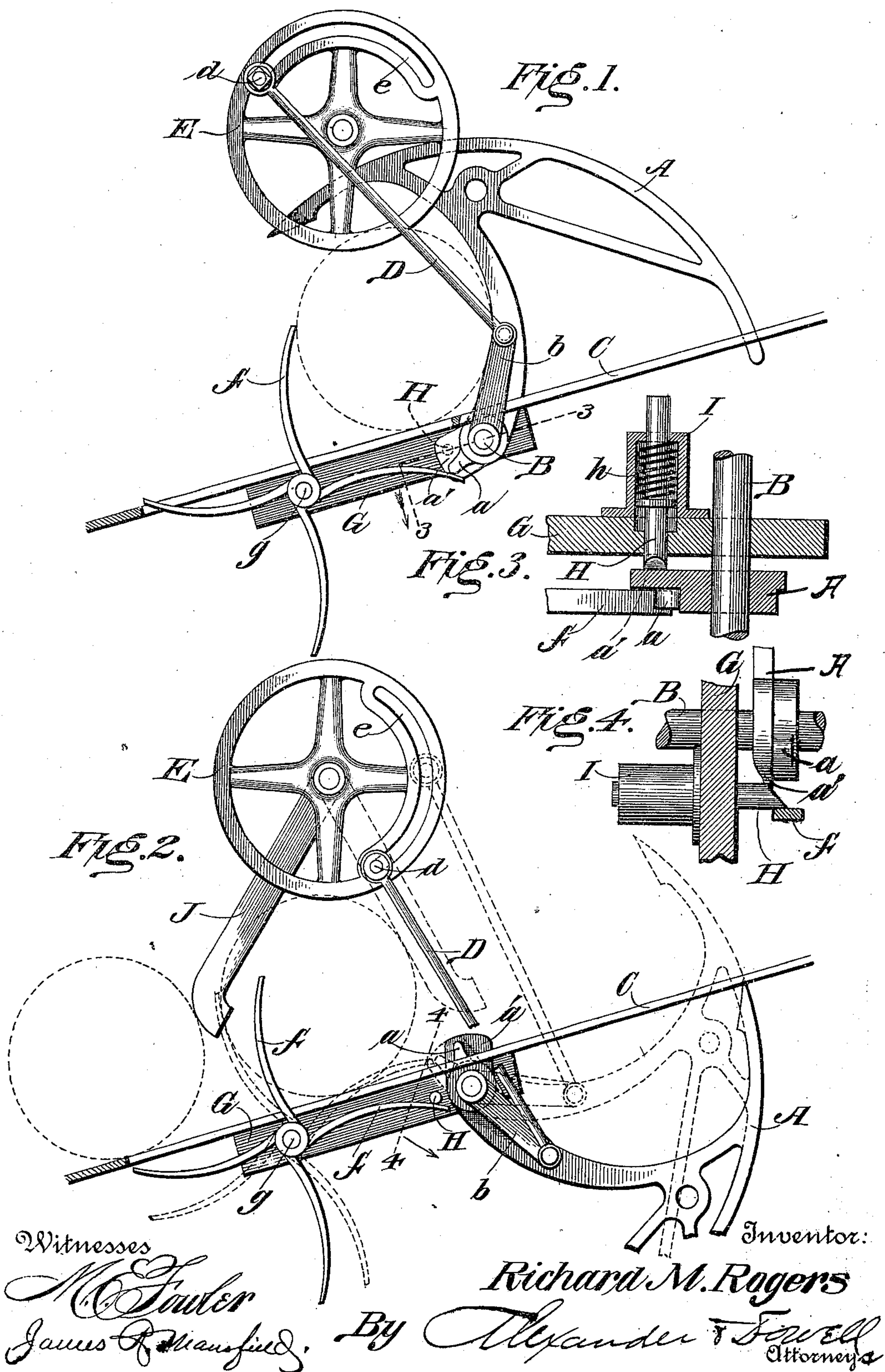
Patented Oct. 22, 1901.

**R. M. ROGERS.**

# GRAIN BINDER.

(Application filed June 8, 1901:)

(No Model.)





# UNITED STATES PATENT OFFICE.

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## GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 684,869, dated October 22, 1901.

Application filed June 3, 1901. Serial No. 62,990. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD M. ROGERS, of Muscatine, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Grain-Binders; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

10 This invention is an improvement in grain-binders, and has particular reference to the needle-actuating and bundle-compressing mechanisms; and its object is to simplify the construction of such parts by utilizing the  
15 needle as the prime means for actuating the compressor and by providing for a very quick return of the needle after the compressing and tying operations.

The invention consists in the improved constructions and combinations of parts herein-  
20 after claimed, and the accompanying drawings illustrate only so much of the bundle-tying mechanisms of a grain-binder as is necessary to impart a clear understanding of the  
25 invention to those skilled in the manufacture of such machines, and in said drawings—

Figure 1 is a side elevation showing positions of parts during the compression of a bundle. Fig. 2 is a similar view with parts  
30 in position for ejecting bundle. Figs. 3 and 4 are detail sectional views on lines 3 3 and 4 4, respectively, of Fig. 2.

A designates the needle of the machine, mounted on a shaft B just below the binding-  
35 table C, said shaft having a crank-arm b connected by an actuating-pitman D to a wheel E above the table, said parts being of the ordinary construction and arrangement, with the exception that the pitman D instead of  
40 being connected to a fixed crank-pin on wheel E is connected to a movable crank-pin d, which works in an arc-shaped slot e in the wheel, said slot extending about one-third around the wheel. The object of this peculiar construction is to allow the needle to be retracted  
45 very suddenly and to remain at rest during part of the time of collecting a bundle and until pin d is picked up at the rear end of the slot and carried around with the wheel until  
50 it passes beyond the center of gravity at the top side of the wheel after the bundle is com-

pressed and tied, when the needle can drop back quickly, pin d sliding to the front end of the slot at this time, and then the needle and pin remain inert until the pin is again  
55 picked up by the heel of the slot.

In rear of or below the needle is a rotatable compressor-spider having four arms f, which are preferably curved so that the uppermost arm will project above the table through a  
60 suitable slot therein in line with the needle and toward the upper end of the table or toward the needle when the latter is raised. This compressor is journaled on a bolt g, attached to a suitable support G, and is so lo-  
65 cated that the ends of its arms will pass close to the heel of the needle as the compressor rotates. A bolt H is secured in a housing I at the side of support G and is adapted to be projected into the path of the spider-arms, so  
70 as to engage the latter by means of a spring h within the housing. This bolt stops the rotation of the spider when its uppermost arm is in a vertical position by engaging the next  
75 arm of the spider, as shown. On the heel of the needle is a lug a, which when the needle is raised engages the adjoining horizontal arm of the spider and forces the latter to partially  
80 rotate, so that the upper arm thereof moves toward the needle, compressing the bundle of grain caught between the needle and upper arm of the spider, as shown in Fig. 1. On the  
heel of the needle, beside lug a, is a cam-flange a', which will engage and force back bolt H (see  
85 Figs. 3 and 4) before lug a engages the arm f, and this flange will hold back the bolt during the compression of a bundle (see Fig. 1) and until the needle drops back, releasing the arm  
90 of the spider, which passes the bolt H before cam a' releases it. The outward and downward movement of the tied bundle in escaping from the tying mechanism gives a quarter-turn to the spider, which is arrested, however, by the engagement of the next spider-arm f with the bolt, the bundle meanwhile having been  
95 moved clear of the spider-compressor by the bundle-ejector arm J on the shaft of wheel E, (see Fig. 2,) as usual.

It will be observed that the bundle is compressed during the rise of the needle and by  
100 the action of the needle, which is directly operated from the wheel E, and the compressor-



spider is operated by the cam-lug *a* on heel of needle, which construction greatly simplifies the mechanism, and the quick return or drop of the needle, owing to the slot-and-pin connection between pitman and wheel, is also quite advantageous.

Having thus described my invention, what I therefore claim as new, and desire to secure by Letters Patent thereon, is—

10 1. In a bundle-tying mechanism for self-binding machines, the combination of the needle, the actuating-wheel having an arc-shaped slot extending partly around it near its periphery, and the pitman for operating the needle from said wheel, said pitman having its end slidably engaged in the said slot in the wheel to permit quick return or drop of the needle.

20 2. In a bundle-tying mechanism for self-binders, the combination of the needle, its shaft, and crank-arm thereon, the actuating-wheel having an arc-shaped slot extending about one-third of its circumference near its periphery, and a pitman having one end pivoted to the crank-arm and the other end connected to a pin loosely engaged in the wheel-slot, for the purpose and substantially as described.

25 3. In a bundle tying and compressing mechanism for self-binders, the combination of the needle and its actuating mechanism; with a rotary compressor pivoted beside the needle, and cam-lug connected with the needle adapted to engage and operate the compressor when the needle rises.

30 4. The combination of the needle, a rotary compressor beside the needle having a series of compressing-arms, a lug on the needle adapted to engage one arm of the compressor when the needle rises so as to partially rotate the compressor backward or toward the needle, and means for allowing the compressor to ro-

tate sufficiently to discharge the bundle, when the needle drops back.

5 5. The combination of the needle, and means for reciprocating it; with a rotary compressor pivoted below the table adjacent to the heel of needle, a bolt adapted to lock the compressor during the collection of a bundle, means adapted to actuate the compressor when the needle rises, and means to disengage the bolt momentarily from the compressor to permit the latter to be partly rotated when the needle drops, for the purpose and substantially as described.

6 6. The combination of the needle, the actuating-wheel, and the pitman for operating the needle from said wheel, said pitman having its end slidably engaged with a slot in the wheel to permit quick return or drop of the needle; with a rotary compressor pivoted beside the needle and having a series of arms, and a lug on the needle adapted to engage and operate the compressor when the needle rises, substantially as described.

7 7. The combination of the needle, and means for reciprocating it; with a rotary compressor pivoted below the table adjacent to the heel of needle and having a series of radial arms, a bolt adapted to engage the compressor-arms, a lug on the needle adapted to actuate the compressor when the needle rises, and a cam on the needle adapted to disengage the bolt momentarily from the compressor to permit the latter to be partly rotated when the needle drops, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

RICHARD M. ROGERS.

In presence of—

CONRAD BRICK,  
J. H. W. RATHJE.