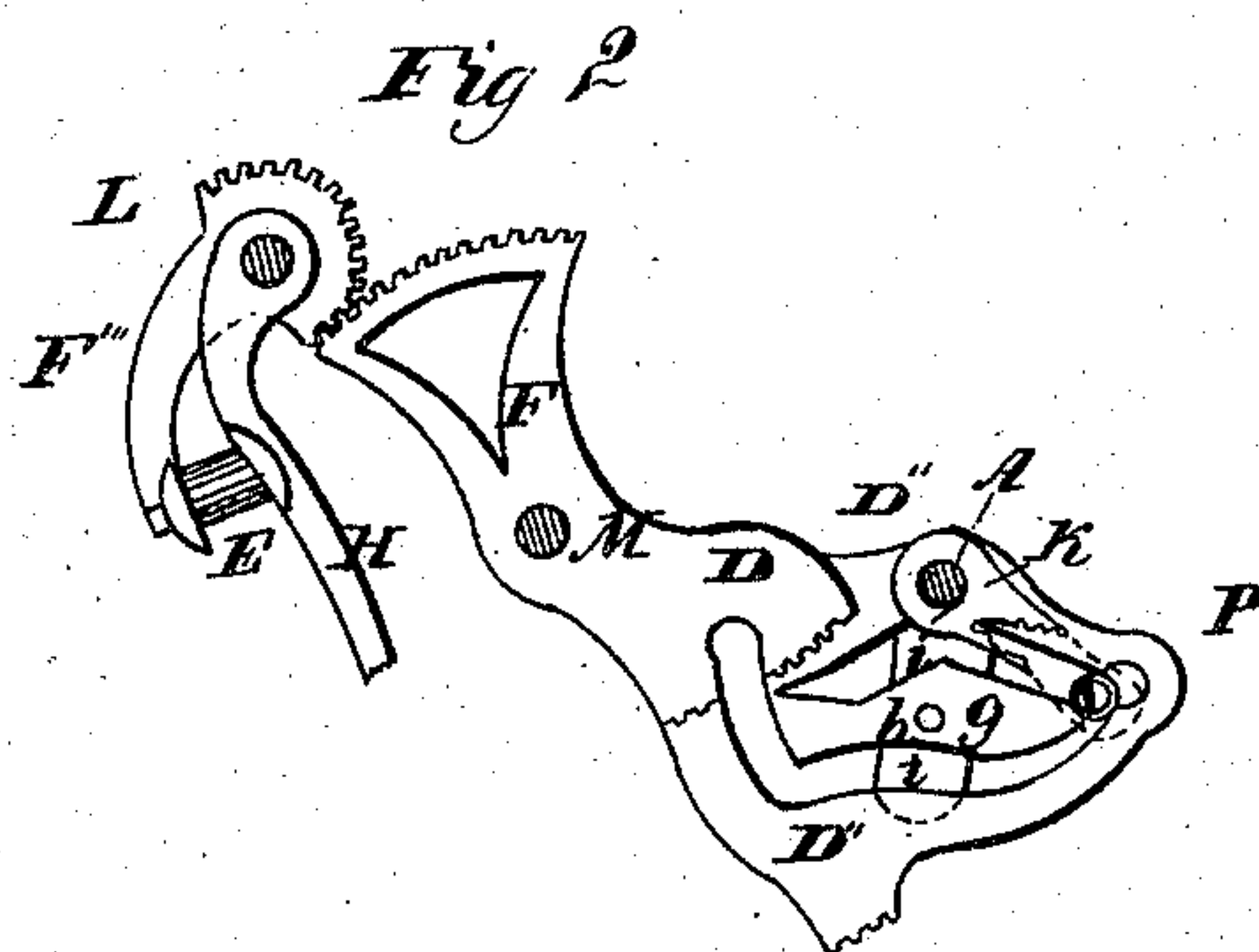
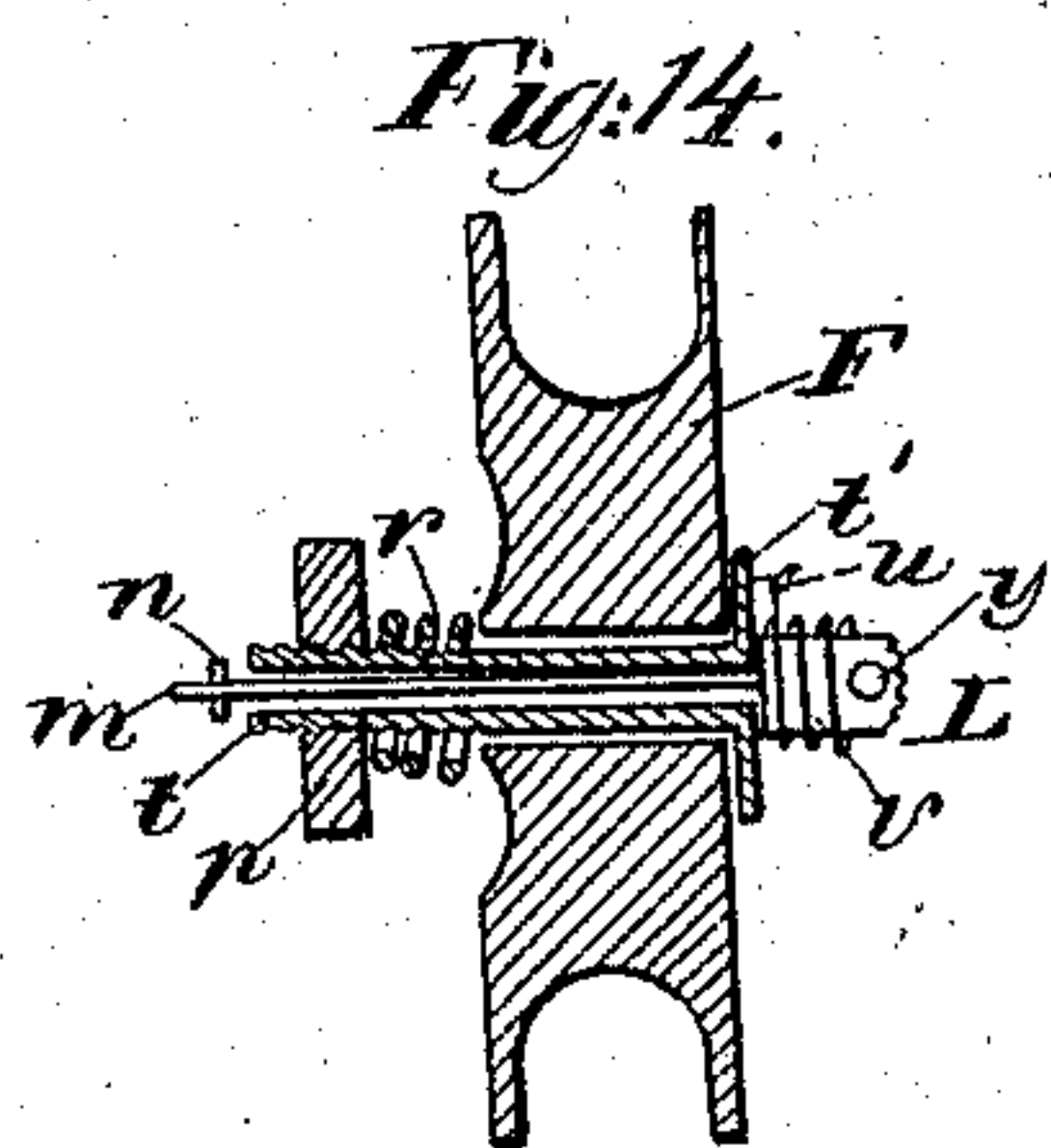
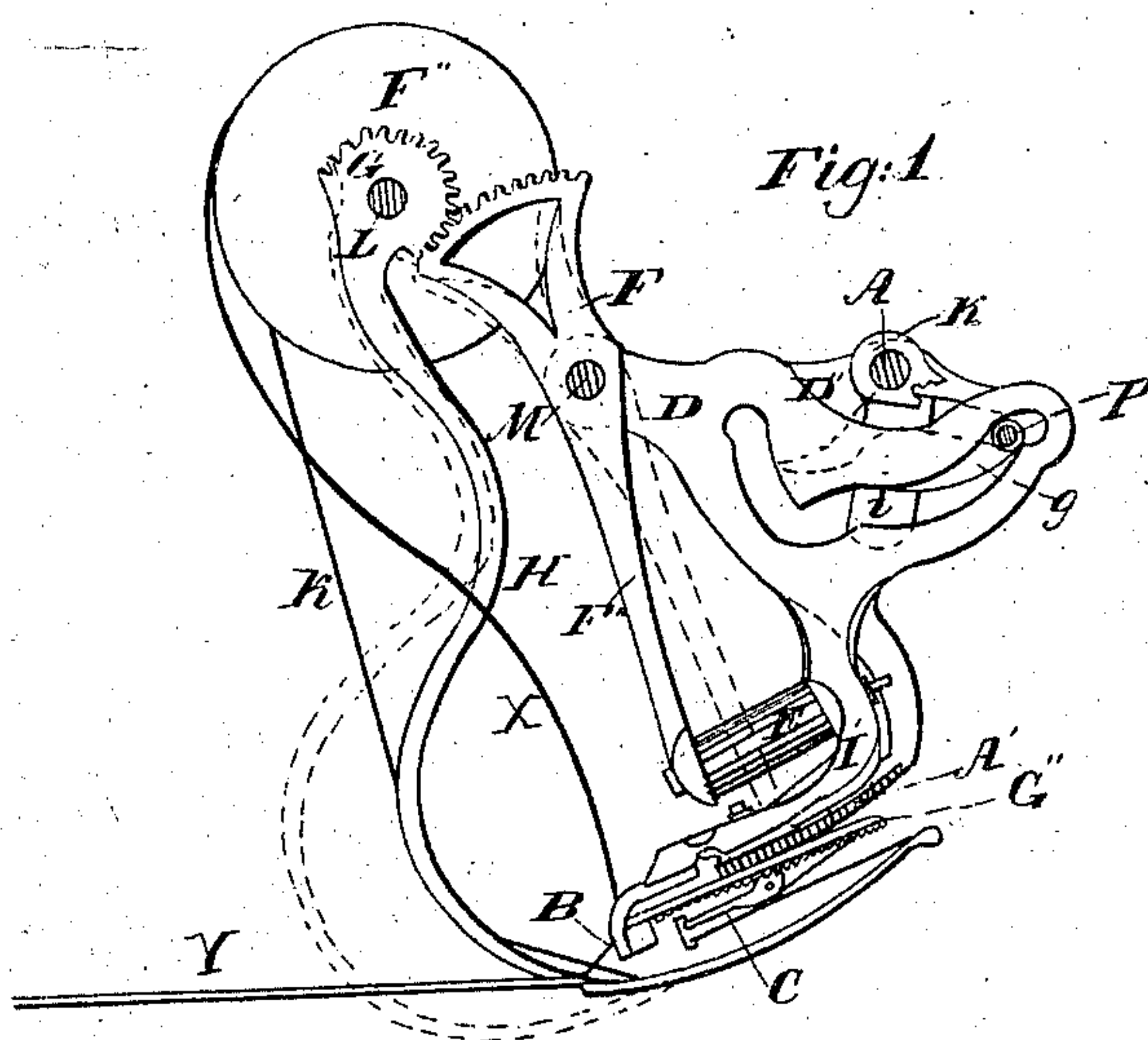


3 Sheet—Sheet 1.

S. D. LOCKE.
Grain-Binder.

No. 97,531.

Patented Dec 7, 1869.



Witnesses.

S. A. Skinner
J. E. Lambert

Inventor.

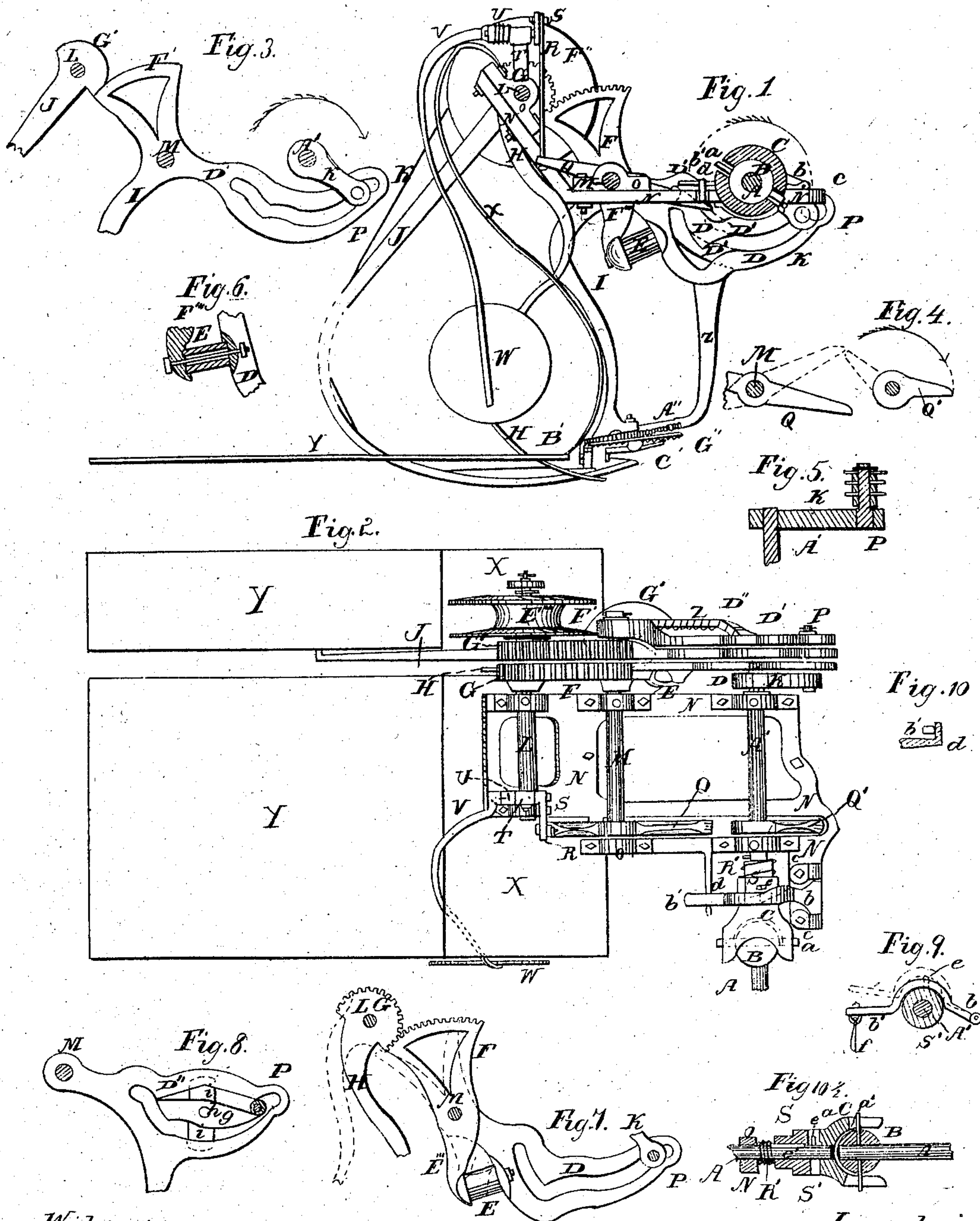
Sylvanus D. Locke.

S. D. LOCKE.
Grain-Binder.

3 Sheet—Sheet 2.

No. 97,531.

Patented Dec. 7, 1869.



Witnesses
L. A. Skinner
J. L. Lambert

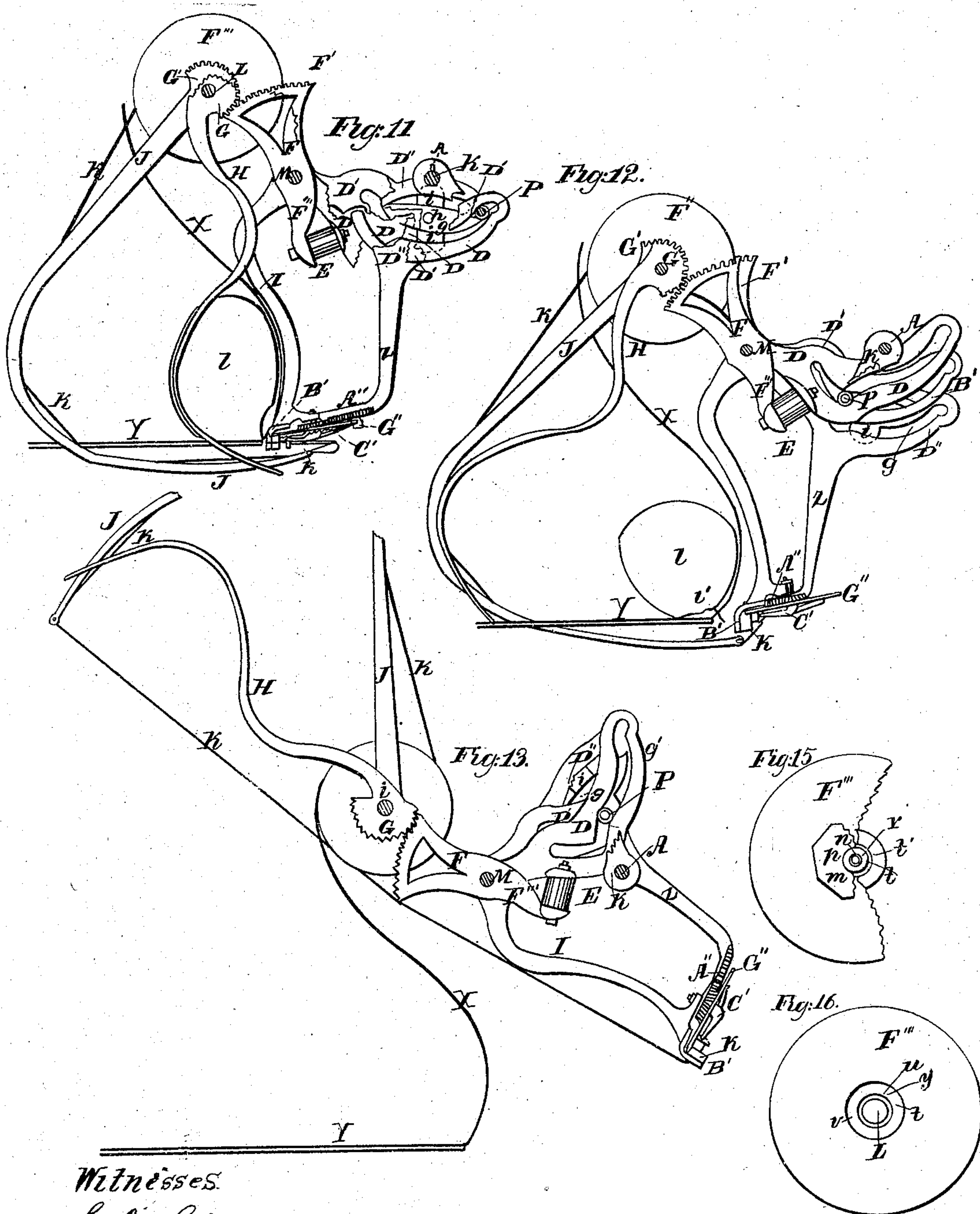
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3 Sheet—Sheet 3.

No. 97,531

Patented Dec, 7, 1869.



Witnesses.

S. A. Skinner

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UNITED STATES PATENT OFFICE.

SYLVANUS D. LOCKE, OF JANESVILLE, WISCONSIN.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. 97,531, dated December 7, 1869.

To all whom it may concern :

Be it known that I, SYLVANUS D. LOCKE, of Janesville, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Grain-Binders; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view. Fig. 2 is a top view. Fig. 3 is a side view of the cam and arms for bearing the binding-material around the bundle. Fig. 4 is a side view of the operating parts of the sheaf-discharging device. Fig. 5 is a longitudinal section of the crank and its connections. Fig. 6 is a longitudinal section through the spring E, Figs. 1 and 2. Fig. 7 is a side view of the cam and arm for compressing the bundle. Fig. 8 is a side view of the cam and arm for operating the tying or twisting device. Fig. 9 is a transverse section through the disengaging-coupling, showing the disengaging-lever. Fig. 10 is a longitudinal section through the support *d*, Figs. 1 and 2. Fig. 10½ is a longitudinal section through the coupling and universal joint. Figs. 11, 12, and 13 are side views of the compressing, binding, and tying or twisting arms, with their operating mechanism, showing them detached from the frame and other parts, and in three of the different positions which they assume during a revolution of their operating-crank. Fig. 14 is a longitudinal section of the reel. Fig. 15 is a front view of the same, with a portion of the body of the reel broken away. Fig. 16 is a rear view of the same. Fig. 1, Plate 3, is also a side view, showing a combination of the compressing and binding mechanism; and Fig. 2, Plate 3, is the same as the last, but with the spring differently attached.

The nature of my invention relates to the band-carrying and compressing arms of a grain-binder, with their operating mechanism; to the mechanism for operating the band-securing devices of grain-binders; to a new and improved mode of operating a sheaf-discharging device, and to a new and improved take-up reel; and consists in the use of the devices hereinafter more particularly described.

To enable others skilled in the art to make

and use my invention, I will proceed to describe its construction and operation.

In the drawings, A represents a shaft, taking power from a harvester; B the ball, C the socket, and *a* the pin, of a universal joint; A', the main driving-shaft of the grain-binder, (taking bearing on the frame N N N, or upon any suitable support,) on the end of which is a crank, K, having a wrist-pin, P, that plays in the grooves of the cam-arms D, D', and D'', that are pivoted on the shaft or stud M.

The cam-arm D is joined by a spring, E, and a stopping-bolt, more particularly shown in Figs. 6 and 7, to the arm F''', that is also pivoted on the shaft or stud M. On the arm F''' is a segmental gear, F, working in a segmental pinion, G, on the end of the compressing-arm H. Attached to the cam-arm D', and making a part thereof, is the arm I and the segmental gear F', shown more particularly in Fig. 3.

The arm I bears the twisting or tying mechanism, represented by G'' B', and the wire or cord holder, represented by C', while the segmental gear F' works in the segmental pinion G', on the end of the wire or cord bearing arm J.

The cam-arm D'' has attached thereto the tying or twisting arm Z, that, by means of the rack A'', operates the tying or twisting mechanism.

On the main shaft A' is a cam-lug, Q', that, revolving with the shaft, as shown in Fig. 4, operates the working beam or lever Q, that is pivoted on a shaft or stud, M, and is attached, by means of connecting rod or pitman R, to the crank S, on the shaft or pivoted portion of the sheaf-discharging arm V, which shaft or pivoted portion takes bearing in a standard, as shown, or in any suitable support.

To prevent the great lateral strain, incident to disengaging the coupling S', tearing the disengaging-lever *b* from its support *cc* on the frame N, I extend it over the coupling in the form of a lever, *b'*, as shown in Figs. 2 and 9, and allow this lever to work against a finger, *d*, that, extending out from the frame N, turns up so-as to form a lateral support, as shown more particularly in Fig. 10.

X is a grain-guard, and Y an extension of the reaper-platform.

The reel F'' plays loosely upon a sleeve, t , that turns freely upon the smaller portion m of the stud M , Figs. 14, 15, and 16.

The sleeve is kept in position on the stud m by a pin, n , or in any other suitable manner. The rear portion of the sleeve is enlarged, so as to form a brake, t' , against which the reel-body F'' is pressed with any desired force by the spring r and nut p on the outer end of the sleeve.

On the stud M is a spring, v , that has one end attached firmly to a pin, y , or otherwise, in the fixed stud M , while the other end is attached to a pin, u , on the brake portion of the sleeve, thereby joining the sleeve to the stud, and allowing the former to play upon the latter only so far as the limited movement of the spring v will permit.

The cam-arm D' , with the segmental gear and pinion F' and G' , and arms I and J , may be dispensed with, if thought desirable, by simply extending the cam-arm, so as to form a secondary arm, I' , for the support of the parts B' , C' , and G'' , and allowing the compressing-arm H to bear the binding material, as shown in Fig. 1, Plate 3. Or the segmental gear F , in last-named figure, may be attached directly to the cam-arm D , while the spring-arm F''' is attached to the segmental pinion G , and the spring E interposed between it, the spring-arm F''' , and the arm H , as shown in Fig. 2, Plate 3. I prefer either of the modifications shown in Plate 3 to the mode of constructing the parts first described.

When in operation, the crank K , turning in the direction indicated by the arrow in Figs. 1, 3, and 4, and the arms being open, with the wire or cord drawn up out of the way of the incoming gavel, as shown in Fig. 13, the movement of the arms is such as to first compress the bundle, and loop around it the binding material, as shown in Fig. 11. Then, the crank continuing to turn, the form of the cam-arms is such that the arms H and J , or the arm H alone, if only that be used, hold the bundle compressed and the binding material looped around it, as in Fig. 11, while the arm Z , moving, operates the tying or twisting mechanism $G'' B'$, thereby twisting or otherwise securing the band, as shown in Fig. 12.

At this stage of the operation, the form of the grooves in the cam-arms is such as to cause the arms H and J to partly open, as shown in Fig. 12, thereby loosening the bundle, and allowing the sheaf-discharging arm V , moved at the proper time by the cam-lug Q' , to sweep it endwise off the platform Y , when the arms again open to the first position shown in Fig. 13, the spring U returning the sheaf-discharging arm, and so continuously.

As the arms open the pin or lug e , on the disengaging-coupling, striking against the inclined portion of the disengaging-lever $b b'$, causes the couplings to disengage, and the movement of the various parts to cease until the lever $b b'$ is raised, as shown by dotted lines in Fig. 9, when the spring R' forces the couplings together, and the movement of the parts, as above described, is repeated.

The turning of the reel-body F'' , as the binding material is withdrawn from it, coils up the spring v until its elasticity equals the force necessary to overcome the friction of the reel against the brake t' , when the former slips over the face of the latter, so allowing the binding material to be withdrawn without further coiling up the spring v .

If at any time there should be slack wire or cord, the spring v causes the reel-body and sleeve to revolve backward on the stud or spindle m , so taking up the slack and keeping the binding material taut.

To insure the tension on the binding material, it is only necessary to run up the nut p , thereby pressing the reel-body F'' with increased force against the brake t' , when the spring v will be coiled up still further to obtain the requisite elasticity to overcome the increased friction on the brake.

What I claim is—

1. The combination of the cam-arm D' with the binding-arms $I J$, substantially as described.
2. The finger d and lever b' , for supporting the disengaging part b , substantially as described.

SYLVANUS D. LOCKE.

Witnesses:

S. A. SKINNER,
J. L. LAMBERT.