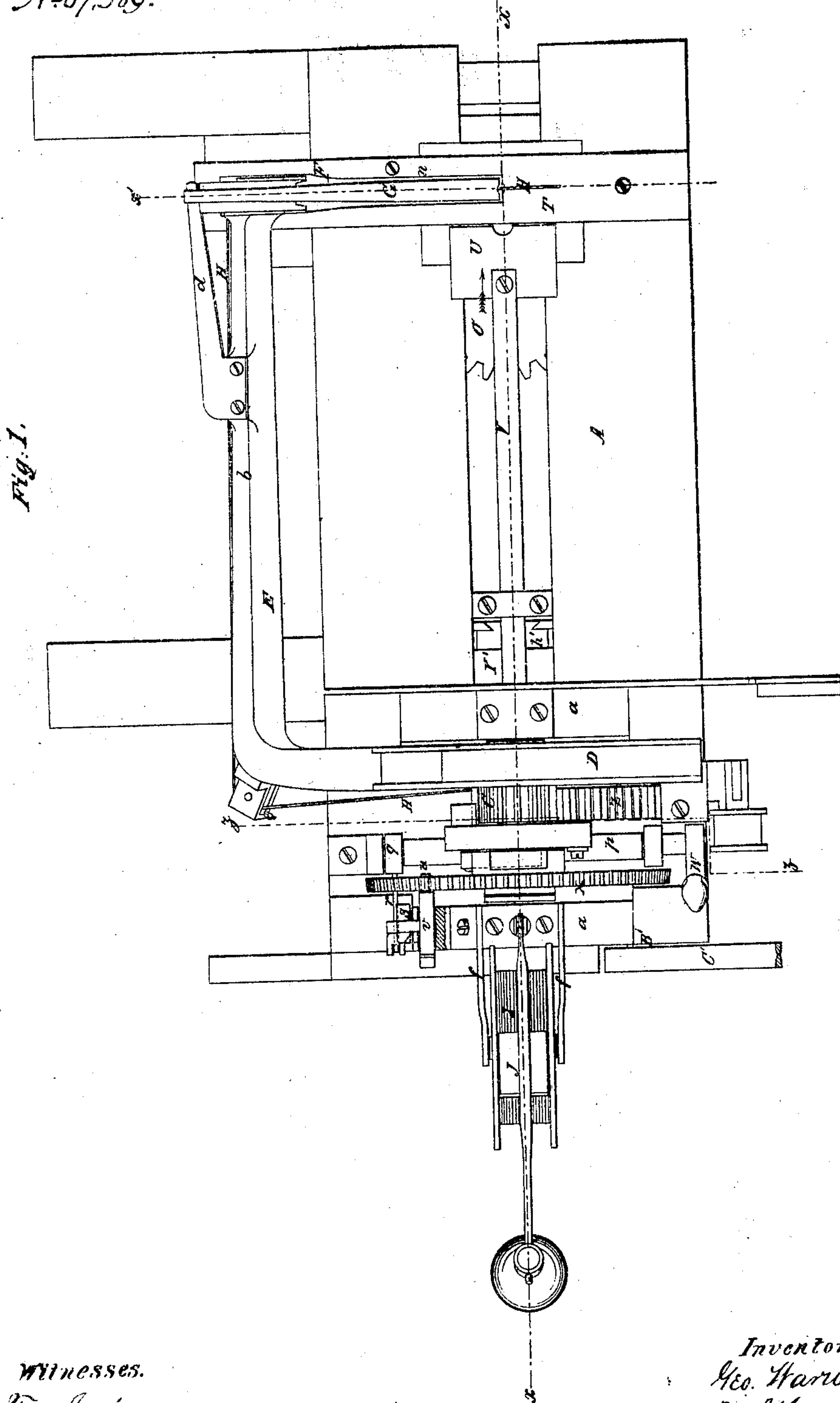


*Geo. Warner,
Grain Binder.*

N^o 67,389.

Patented Jul. 30. 1867.



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Geo. Warner Grain Binder.

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Fig. 4.

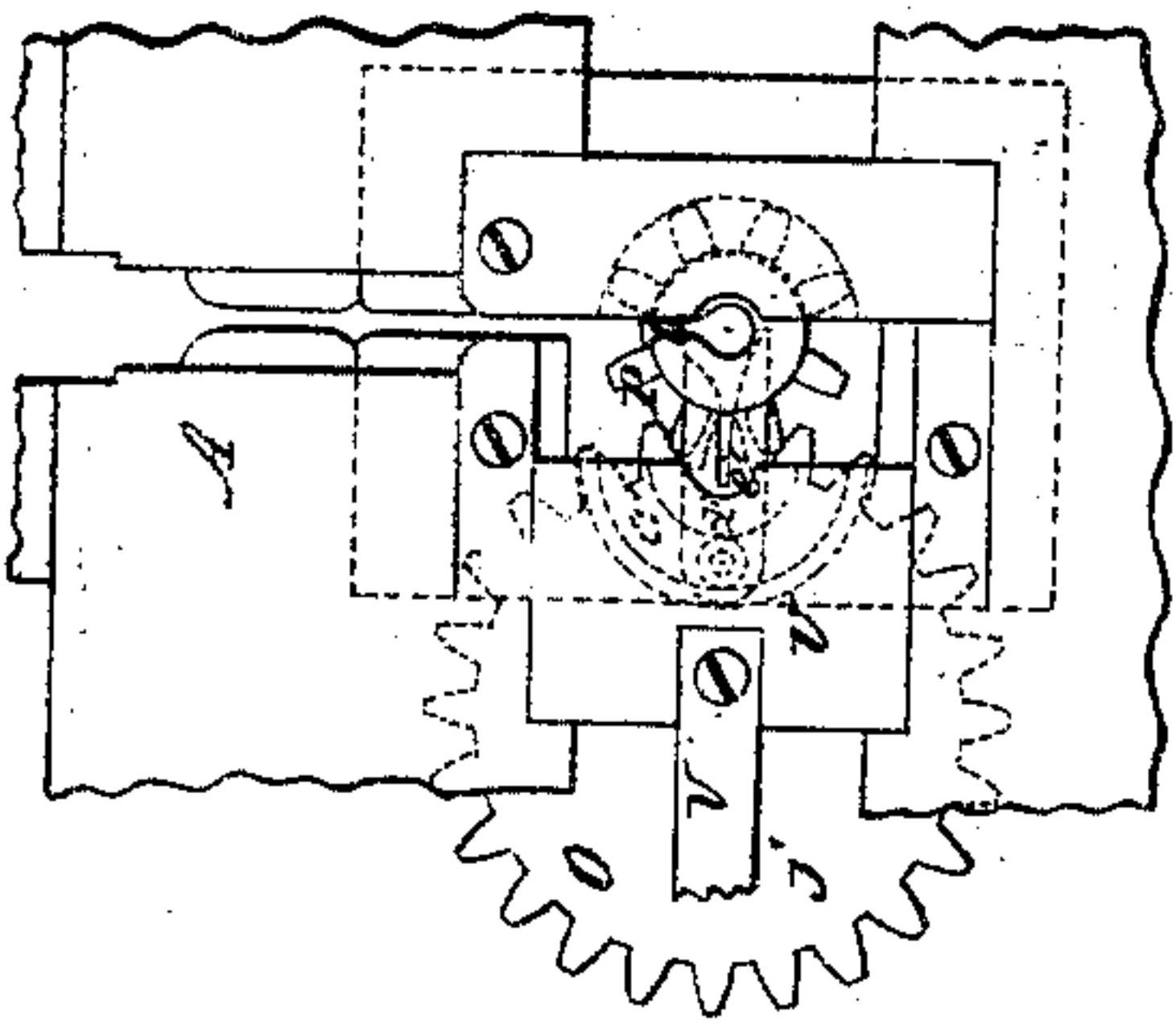


Fig. 3.

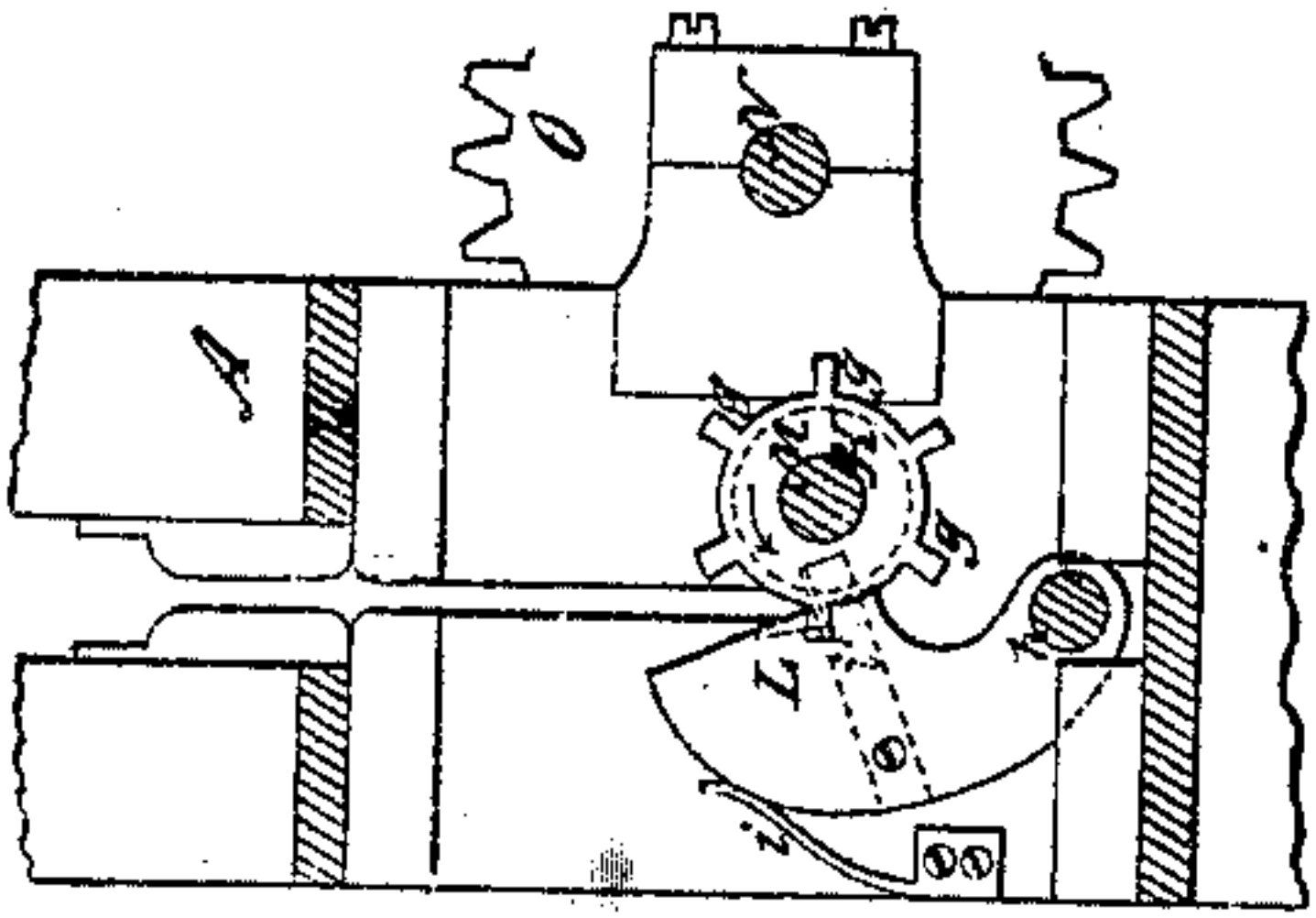


Fig. 2.

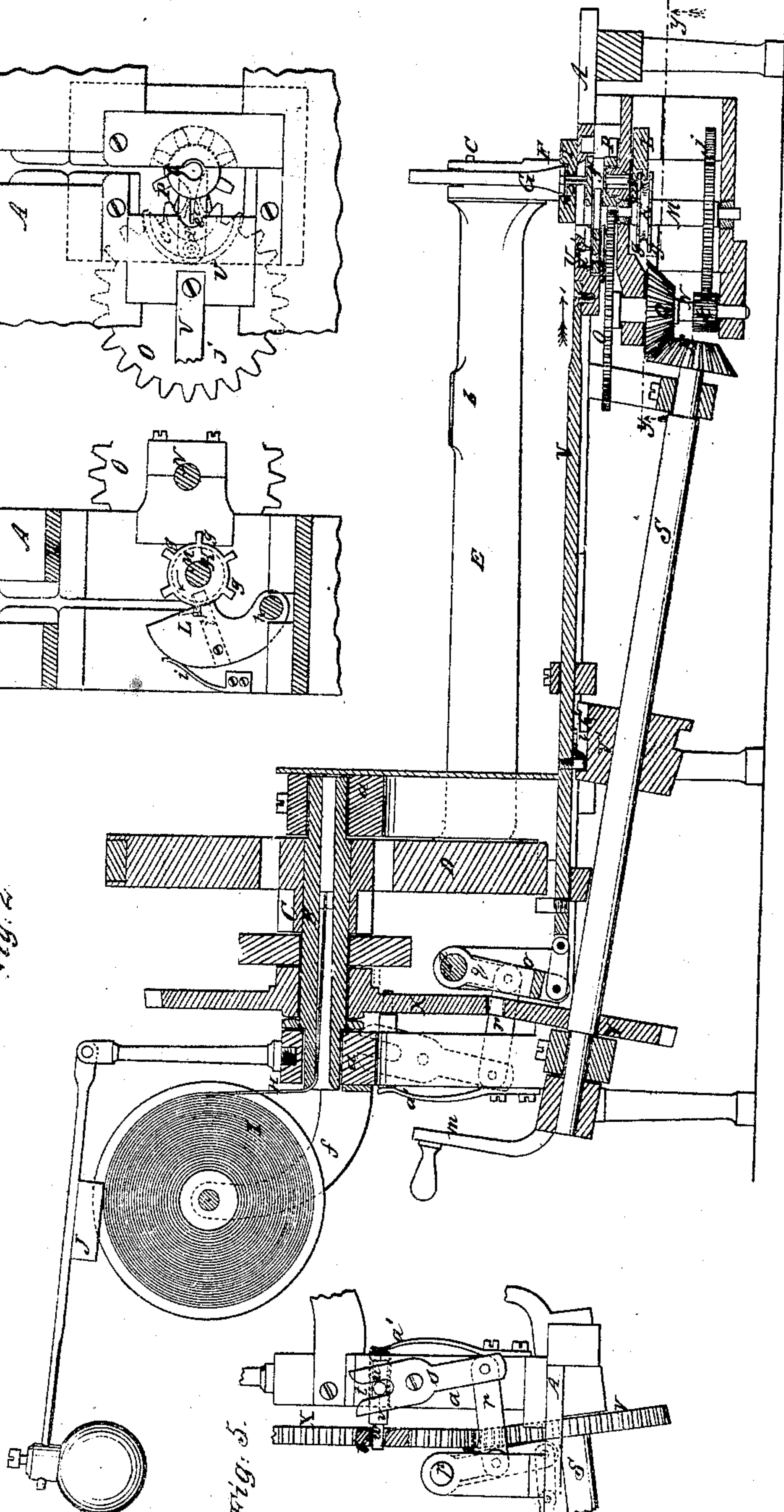
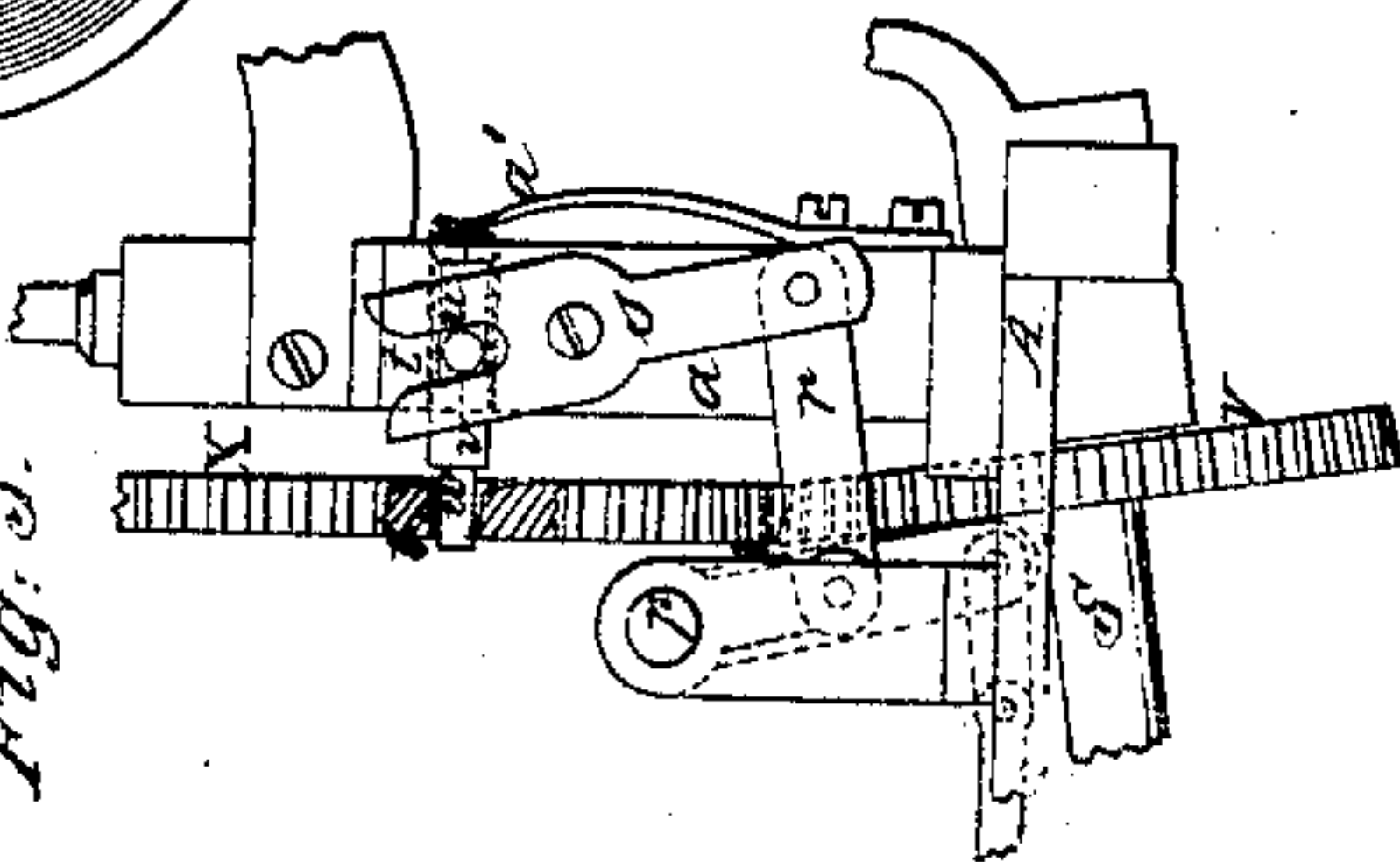


Fig. 5.



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Fig. 8.

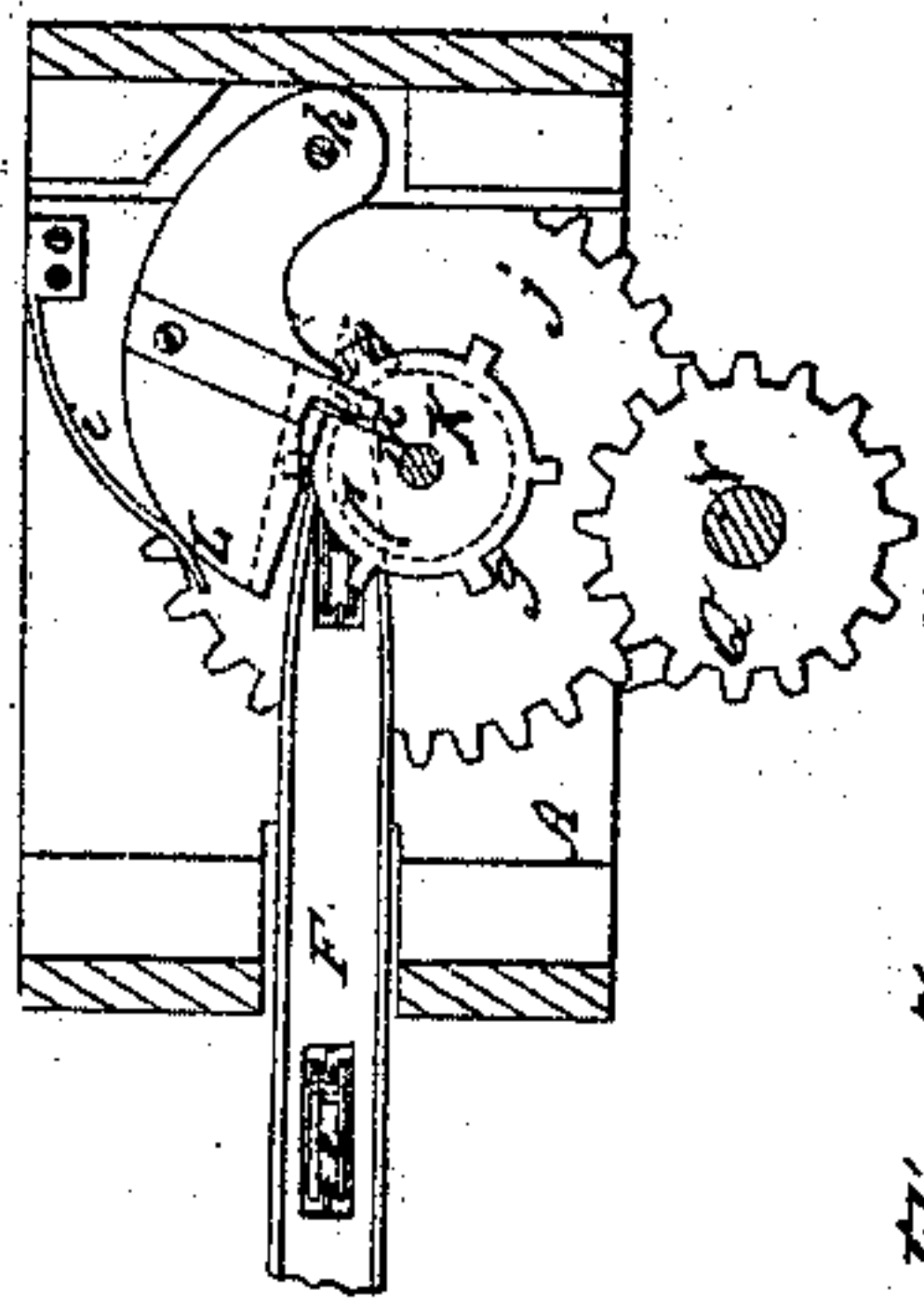


Fig. 7.

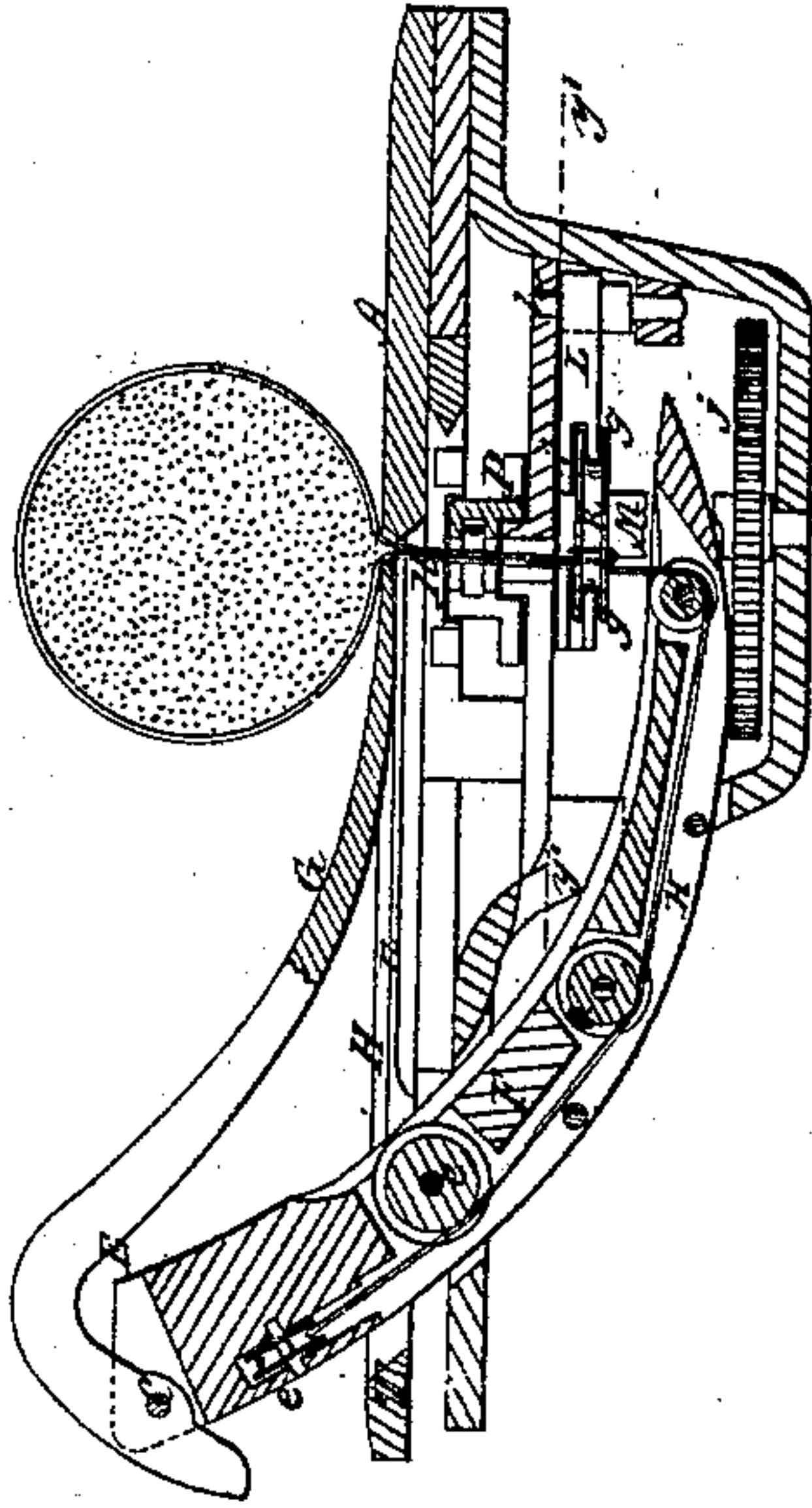


Fig. 9.

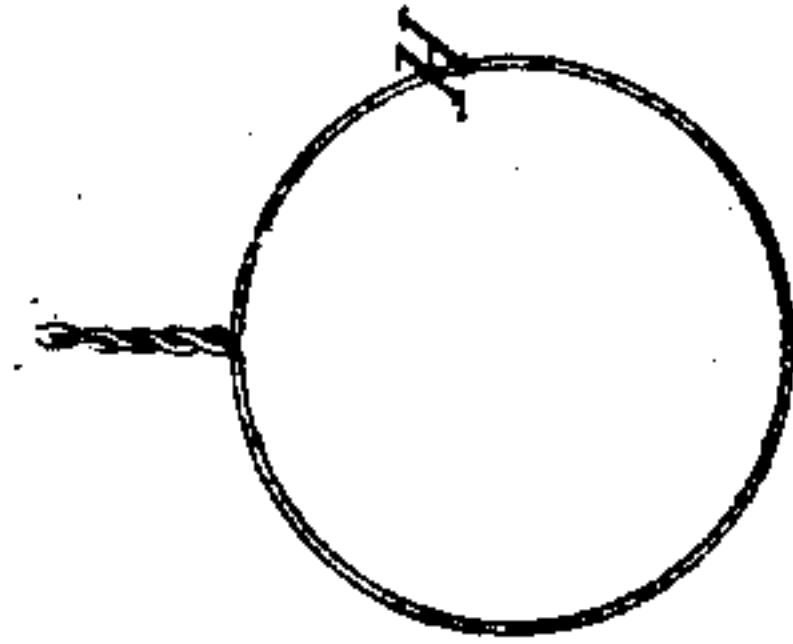
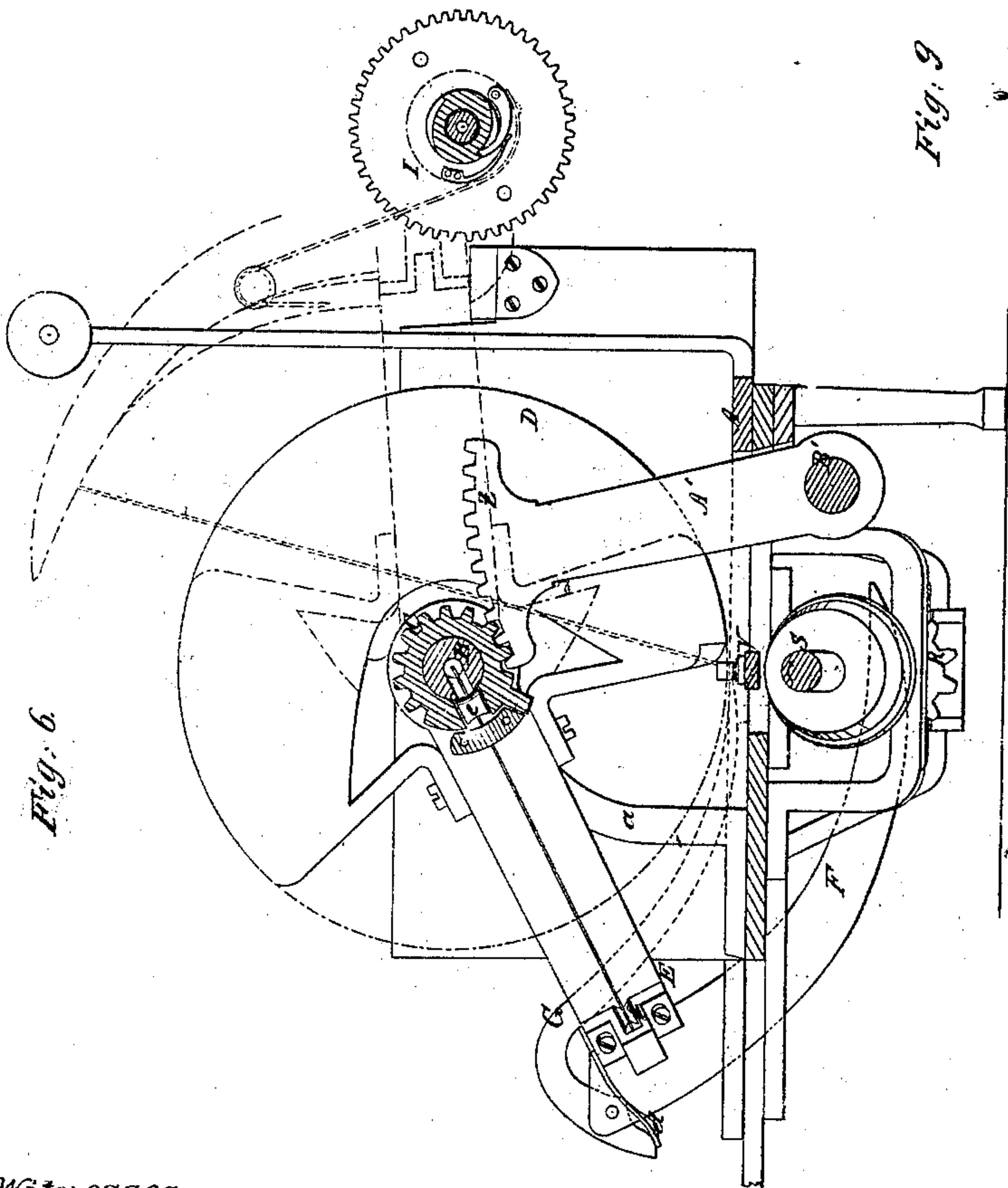


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE WARNER, OF WEST LIBERTY, IOWA.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. 67,389, dated July 30, 1867.

To all whom it may concern:

Be it known that I, GEORGE WARNER, of West Liberty, in the county of Muscatine, and State of Iowa, have invented a new and Improved Grain-Binding Attachment for Harvesters; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet No. 1, is a plane or top view of my invention; Fig. 2, Sheet No. 2, a longitudinal vertical section of the same, taken in the line *x x*, Fig. 1; Fig. 3, a horizontal section of a portion of the same, taken in the line *y y*, Fig. 2; Fig. 4, a plan or top view of a portion of the same; Fig. 5, a front view of a portion of the same; Fig. 6, Sheet No. 3, a transverse vertical section of the same, taken in the line *z z*, Fig. 1; Fig. 7, a transverse vertical section of the same, taken in the line *x x'*, Fig. 1; Fig. 8, a horizontal section of a portion of the same, taken in the line *y' y'*, Fig. 7; and Fig. 9, a detached view of a wire band formed by my invention.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and improved grain-binding attachment to be applied to harvesters for the purpose of binding grain as it is cut.

A represents a platform, which is so placed on the reaper or harvester that it may receive the grain as it is cut, and *a a* are two semicircular bars placed at one end of said platform to support a horizontal tubular shaft, B, on which there is a toothed segment, C, and a semicircular counterpoise, D, the latter having a crank-shaped or right-angular bar, E, attached, the long arm *b* of which is parallel with the front and rear sides of the platform A, and has a curved arm, F, at its outer end, which works over and under the platform A near its outer end. The rear end of the curved arm F has a finger, G, secured to it by a pivot, *c*, and a spring, *d*, which is attached to the arm *b*, bears against the rear end of the finger G, and has a tendency to keep the front or outer end of said finger in contact with the outer part of the finger G. In the curved arm F on the bar E, and in the tubular shaft

B, there are sheaves *e* to serve as guides for a wire, H, which extends from a spool, I, fitted between arms *f* attached to one of the bars *a* which support the tubular shaft B. (See Figs. 1 and 6.) J is a brake which rests upon the wire on the spool, as shown in Fig. 2, and prevents the latter from casually turning. Underneath the platform A there is placed a gripping device, which is composed of a wheel, K, having radial arms or teeth *g* projecting from its periphery, two rows, one at each side, to form a groove to receive a holder, L, which works on a pin, *h*, and has a spring, *i*, bearing against it, as shown clearly in Fig. 3. The wheel K is placed on a vertical shaft, M, having a toothed wheel, *j*, on its lower end, into which a pinion, *k*, on a vertical shaft, N, gears, said shaft N having a toothed wheel, O, on its upper end, which gears into a wheel, P, having a radial slot, *l*, made in it to receive the wire H. On this shaft N there is also placed a bevel-wheel, Q, which gears into a corresponding wheel, R, on a shaft, S, underneath the platform A, and which shaft is slightly inclined from a horizontal line, as shown in Fig. 2, and having a crank, *m*, on its outer end. The platform A has a plate, T, attached to it transversely and in line with the arm F of the bar B, and said plate T has a slot, *n*, made in it to allow the wire H to pass through, a corresponding slot being made in the platform A for the same purpose. U is a slide, which is fitted between proper guides in the platform A, and is attached to a bar, V, one end of the latter being pivoted to the lower end of an arm, *o*, on a shaft, *p*, having a lever, W, at one end of it. This shaft *p* has also a pendent arm, *q*, at its front end, and the lower end of the arm *q* is connected by a link, *r*, with the lower end of a lever, *s*, which has a vertical slot, *t*, in its upper end to receive a pin, *u*, of a slide, *v*, having a pin, *w*, at its inner end. (See Fig. 5.) The slide *v* has a spring, *a'*, bearing against its outer end, and said spring has a tendency to keep the pin *w* pressed against a toothed wheel, X, which is placed loosely on the shaft B, and has a series of holes, *b'*, made in it to receive the pin *w*. The slide U has a semicircular slot, *c'*, made in its under side to receive a pin, *d'*, of a forked bar, *e'*, which, when the slide U is shoved forward in the direction indicated by arrow 1, passes

through a slot in the neck or hub f' of the slotted wheel P. The bar V has a pin, g' , projecting down from it, which fits in a circumferential groove, h' , in a hub, Y', on said shaft S, said hub also having a longitudinal groove, l' , made in it, which communicates with the groove h' . (See Fig. 2). On the shaft S there is a toothed wheel, Y, which gears into the wheel X on shaft B. The toothed segment C, on shaft B, gears into a segment, Z, on an arm, A', on a shaft, B', which has a lever, C', connected to it.

The operation is as follows: The wire H on the spool I is passed into the end of the shaft B, and drawn through the side of the same, and through the toothed segment C, and over the sheaves along the bar E, and in the curved arm F, and has its end drawn out a short distance from said arm near its end, as shown clearly in Fig. 6. The bar E, which is now at the rear side of the platform A, is moved forward or over to the front side of the same by actuating the lever C', the toothed segments C Z effecting that result. By this movement of the bar E the curved arm F is thrown under the platform A, and the wire H is shoved along in the slots in the plate T and platform, and into the slot l of the wheel P. The lever W of the shaft p is now actuated so as to draw the pin w out of the hole b' in the wheel X, the slide-bar V and slide U being moved at the same time, so that the forked bar e' will be shoved through the neck f' of the wheel P, the wire H being in said slot. The shaft S is then turned, and motion thereby given the wheel K, the teeth g of which carry the wire between the holder L, the latter pressing the wire firmly between it and the wheel P, the end of the wire above the holder being cut off by a knife, i' , attached to the upper side of the holder. The shaft S in this operation is turned until a succeeding hole, b' , in the wheel X is brought in line with the pin w , when the latter is forced into the same by the spring a' . The bar E is now, by actuating the lever C', moved back over the platform A to the rear side of the same, and the wire H being held by the holder the former extends

upward, as shown in blue in Fig. 6, and the cut grain is deposited upon the platform A in front of it. The operator now, by actuating the lever C', is moved over to the front of the platform as before, and the wire H is thereby made to encircle the grain, and the former shoved into the slot l of wheel P. The lever W is then moved to liberate the wheel X, and the slide U moved as before, and the shaft S also turned. This turning of the shaft S causes the forked bar e' to rotate as said bar is shoved into the neck f' of wheel P, the pin d' of said bar being allowed to work in and through the semicircular slot c' in consequence of said slot being concentric with the wheel P. The rotation of the bar e' , the wire H, and the knife cuts the wire, severing the band from the upper portion. The bar E is then raised, the bound sheaf removed, and the operation repeated when a sufficient quantity of grain is upon the platform.

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

1. The combination with the bar E, arm F, finger G, and wire H, the gripping, cutting, and twisting device composed of the wheel K, provided with teeth g , the holder L with knife i , slotted wheel P, and revolving forked bar e' , all arranged to operate in the manner substantially as and for the purpose set forth.

2. The shaft S, for giving motion to the gripping, cutting, and twisting device, connected with the shaft B by the gearing X Y, in combination with the pin u attached to the slide v , the holes b' in the wheel X and the bar V, connected with an arm, o , on shaft p , and provided with the slide U, having the forked bar e' attached, and also provided with a pendent pin, g' , fitted in the grooved hub Y', all arranged to operate substantially in the manner as and for the purpose set forth.

The above specification of my invention signed by me this 27th day of August, 1866.

GEORGE WARNER.

Witnesses:

S. W. SEDGWICK,
JAS. A. BALL.