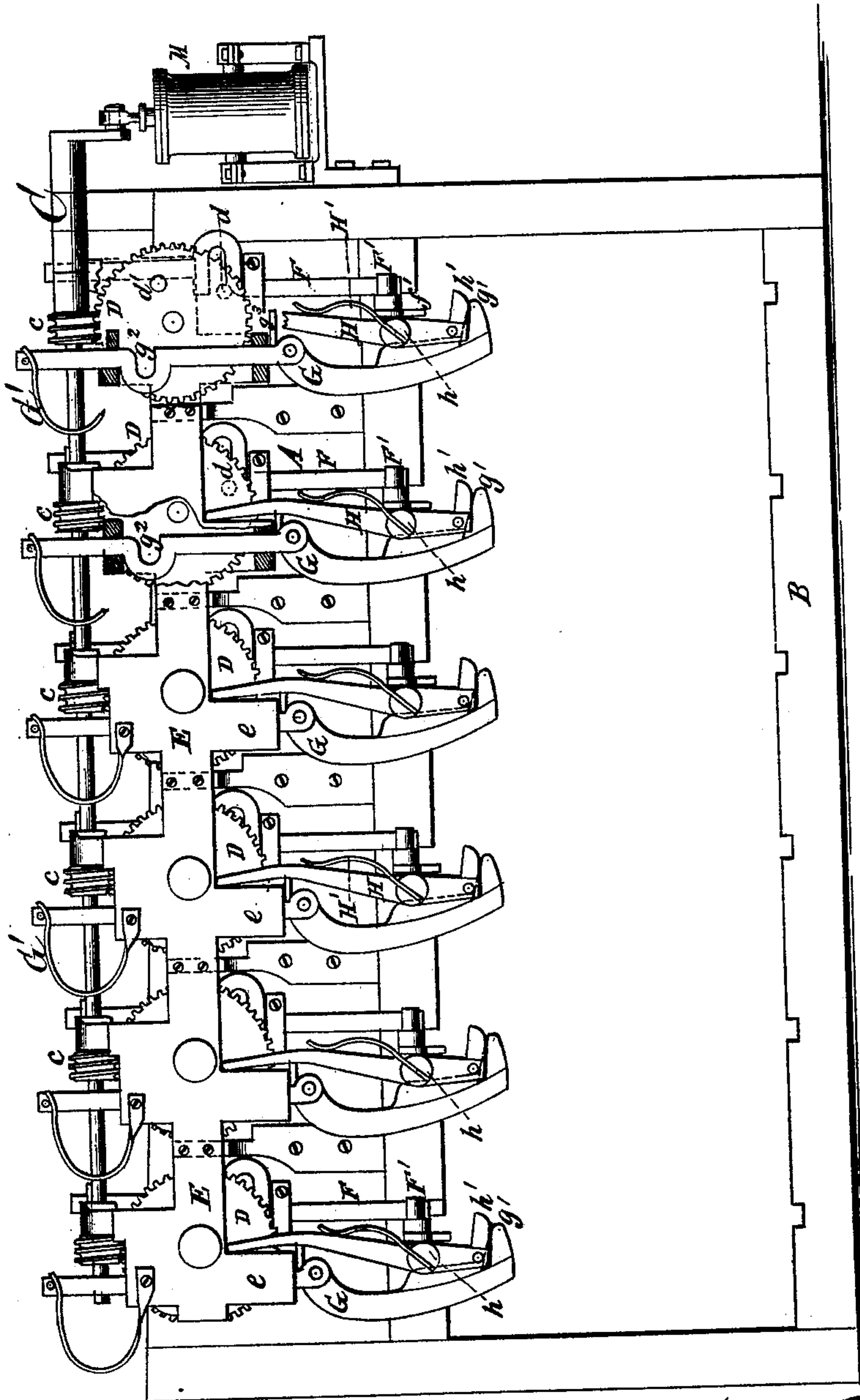


W. ROGERS.
AUTOMATIC BALE-TYING MECHANISM.
No. 176,355.
Patented April 18, 1876.

Fig. 1.



Witnesses:
A. Ruppert
John C. Eils.

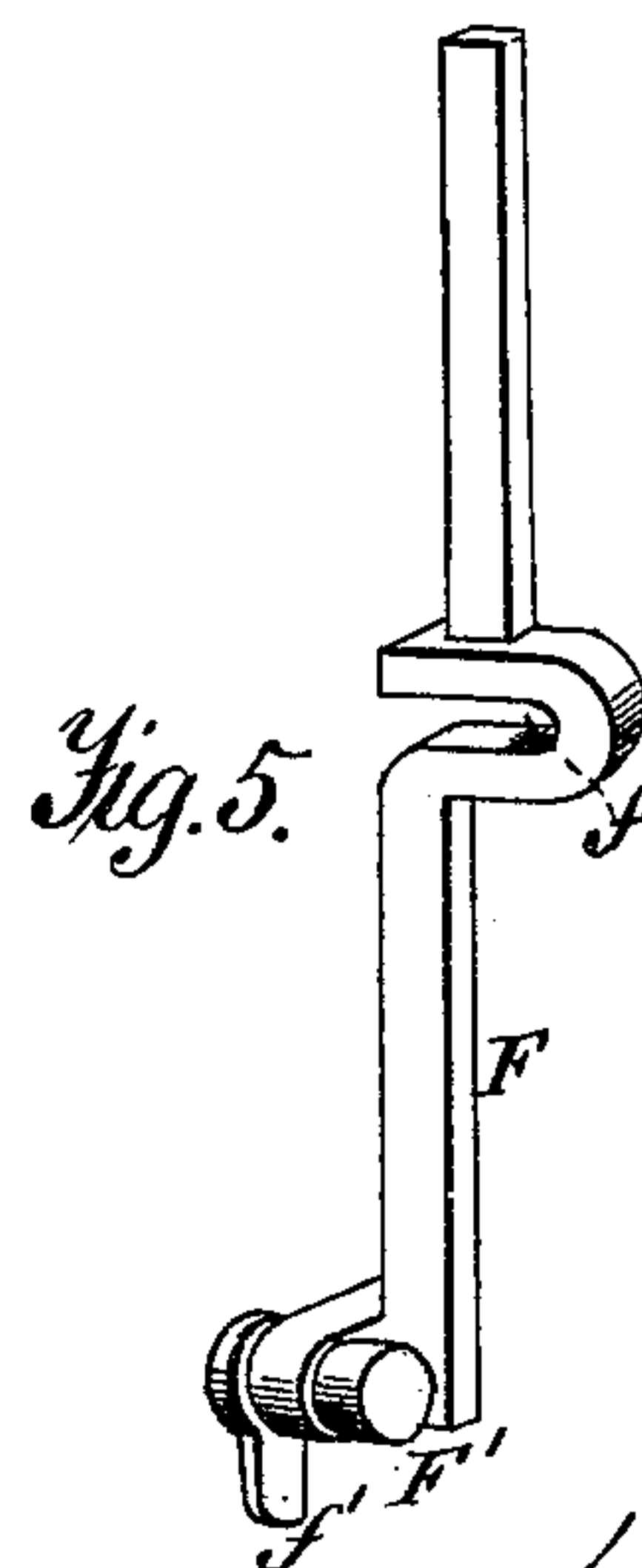
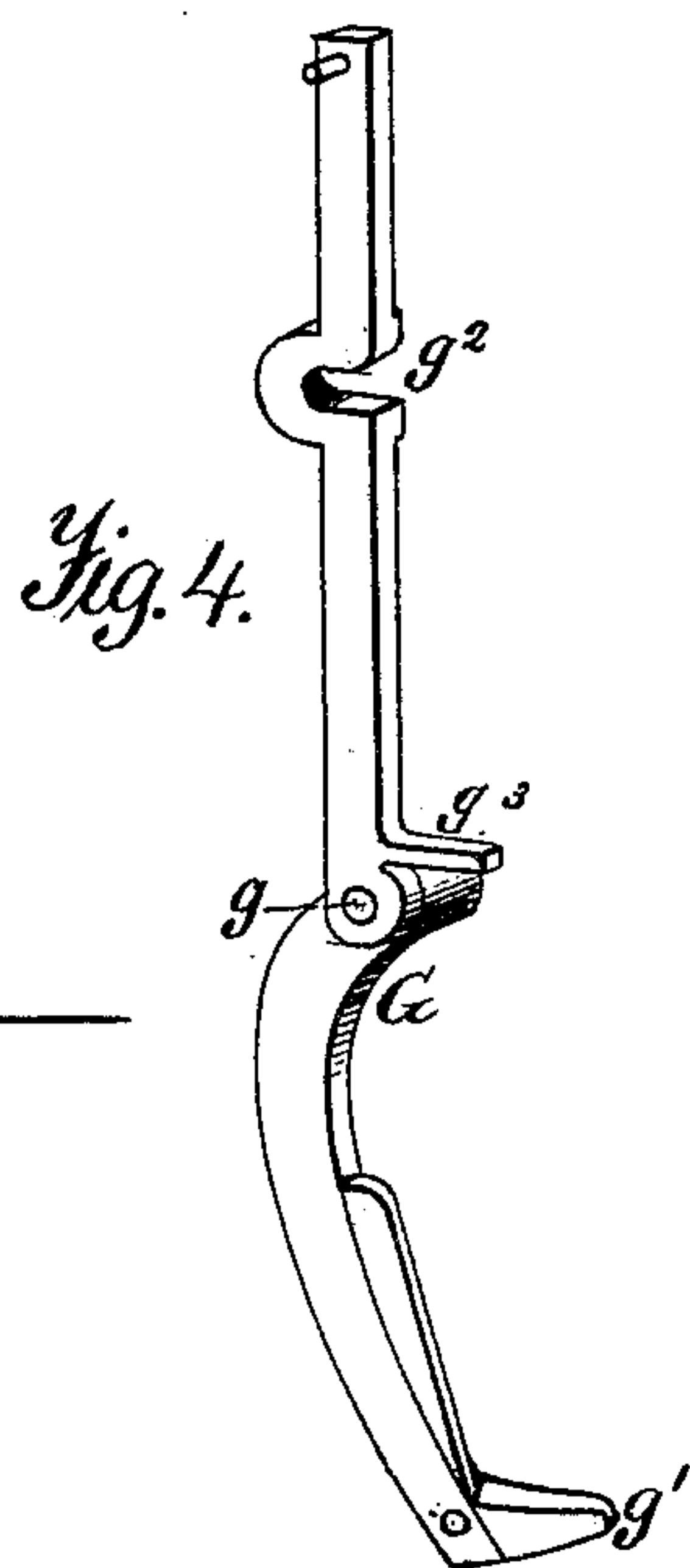
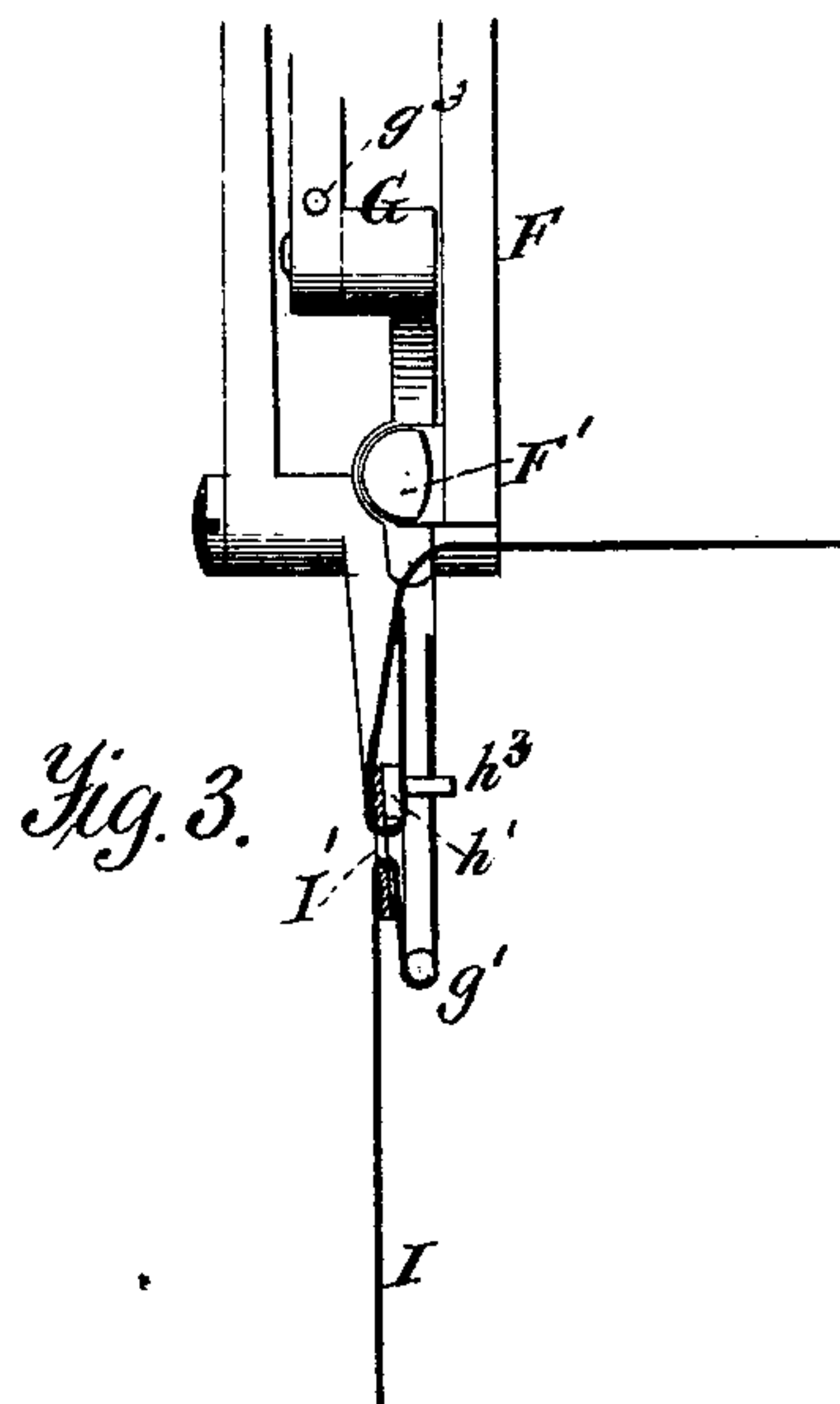
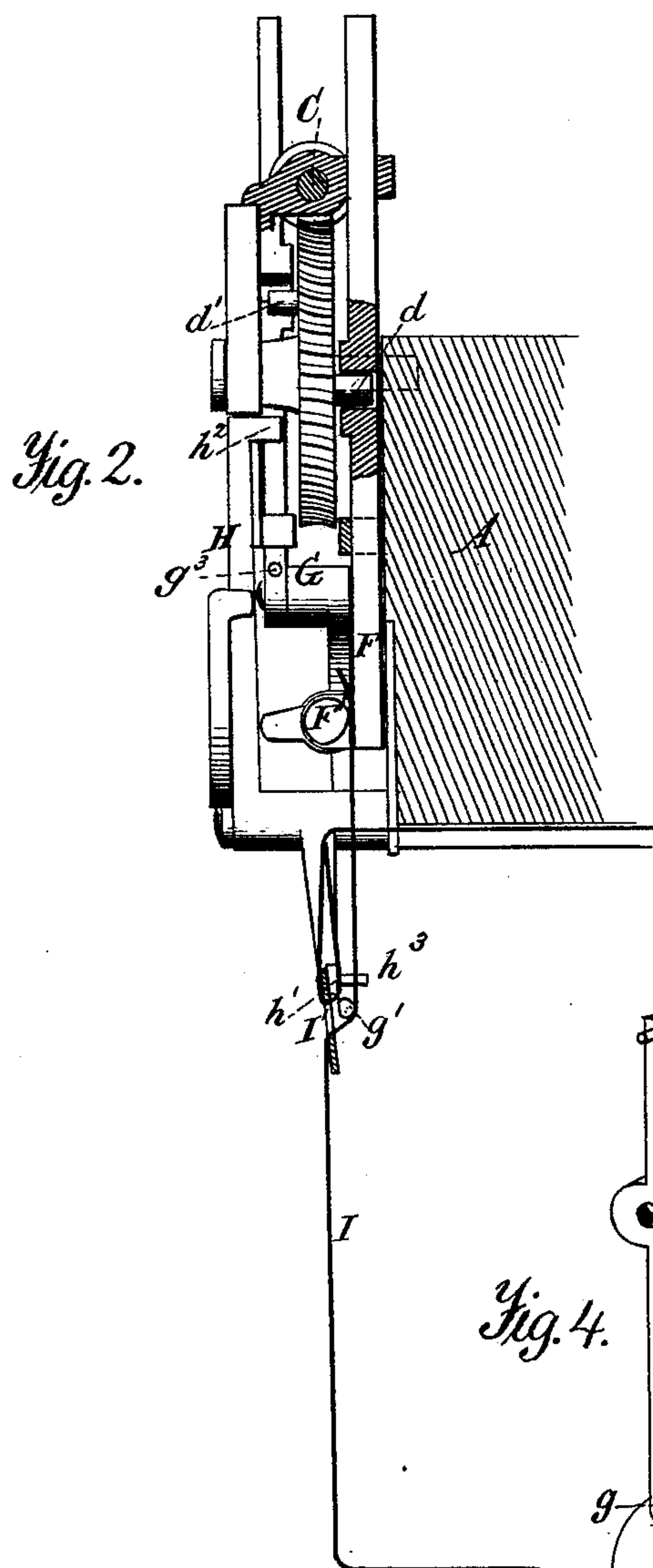
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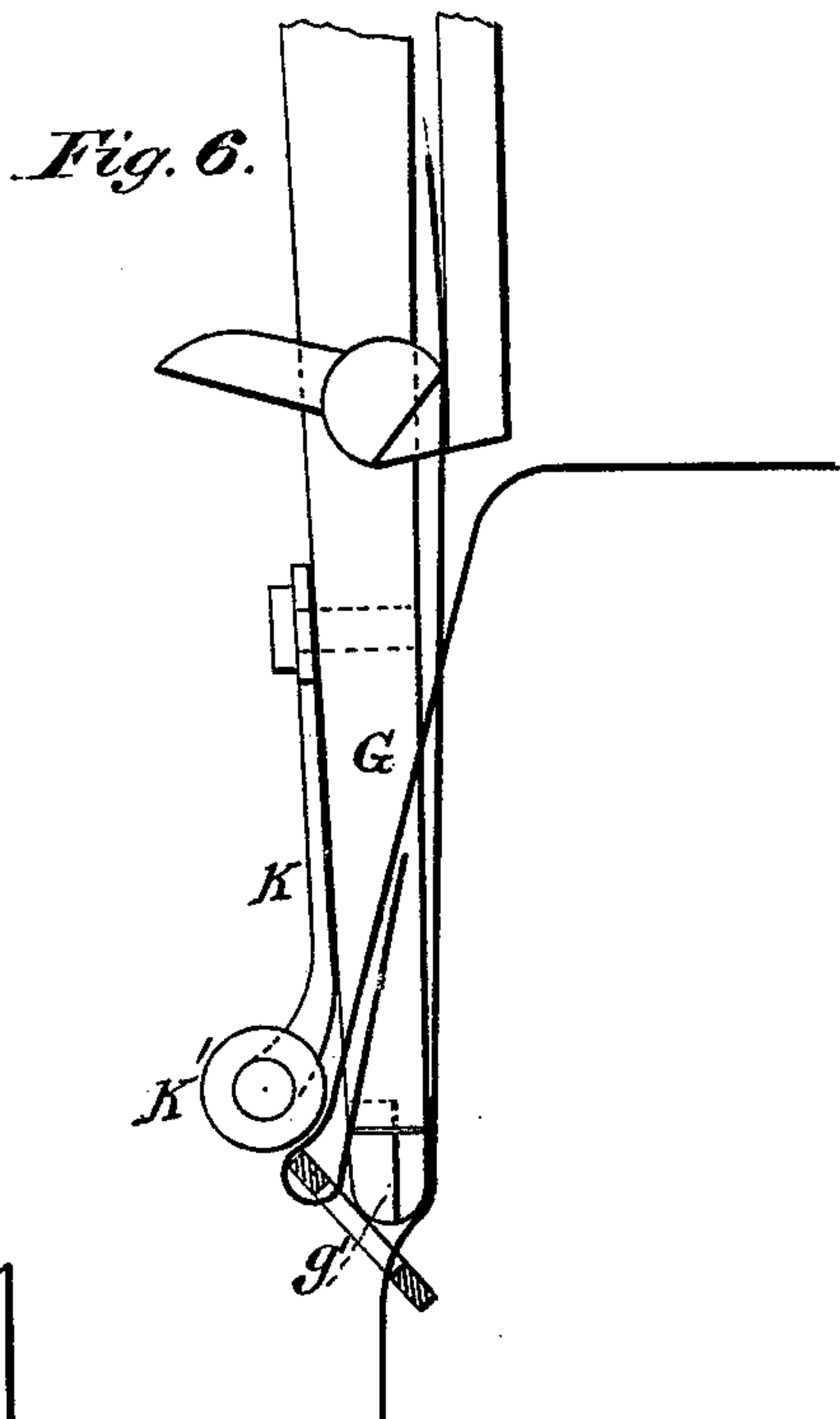


Fig. 6.

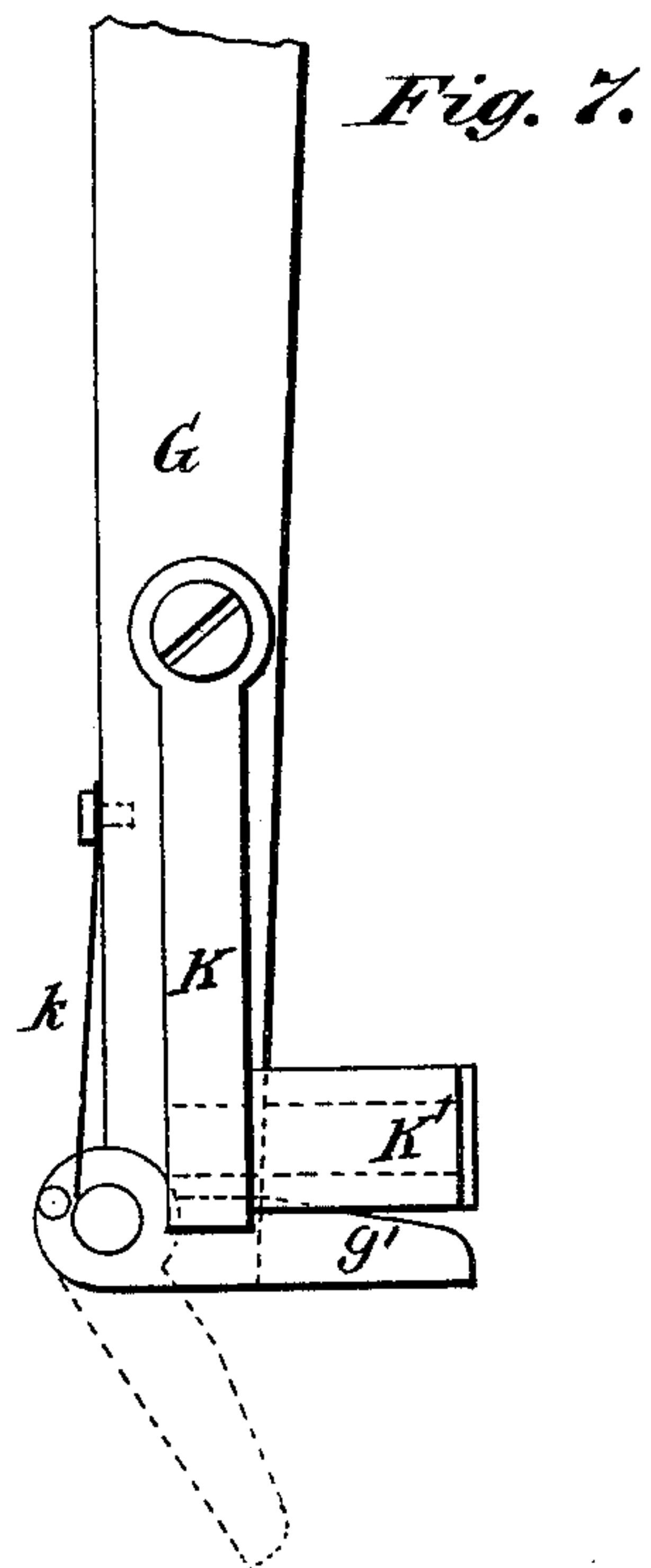


Fig. 7.

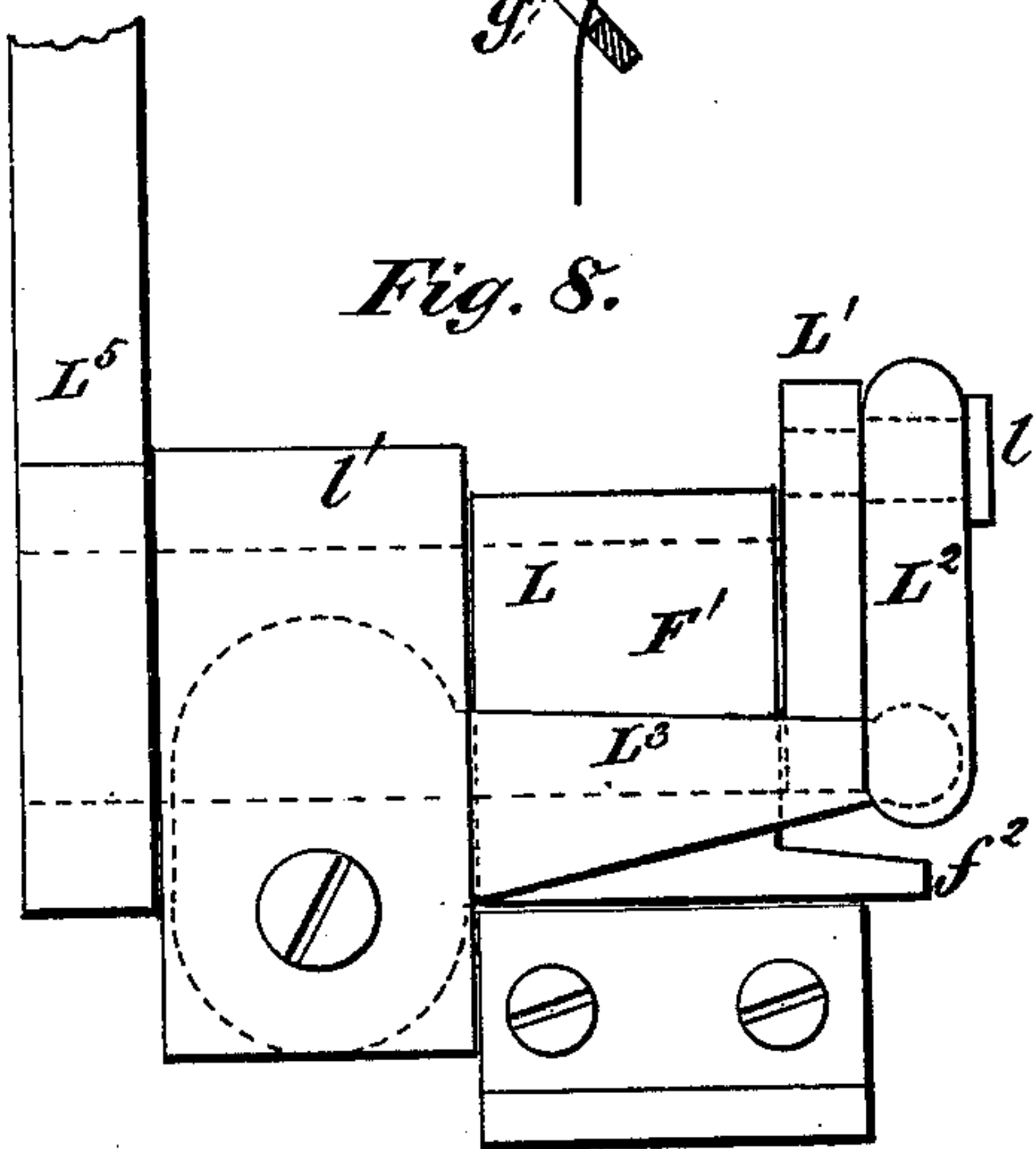


Fig. 8.

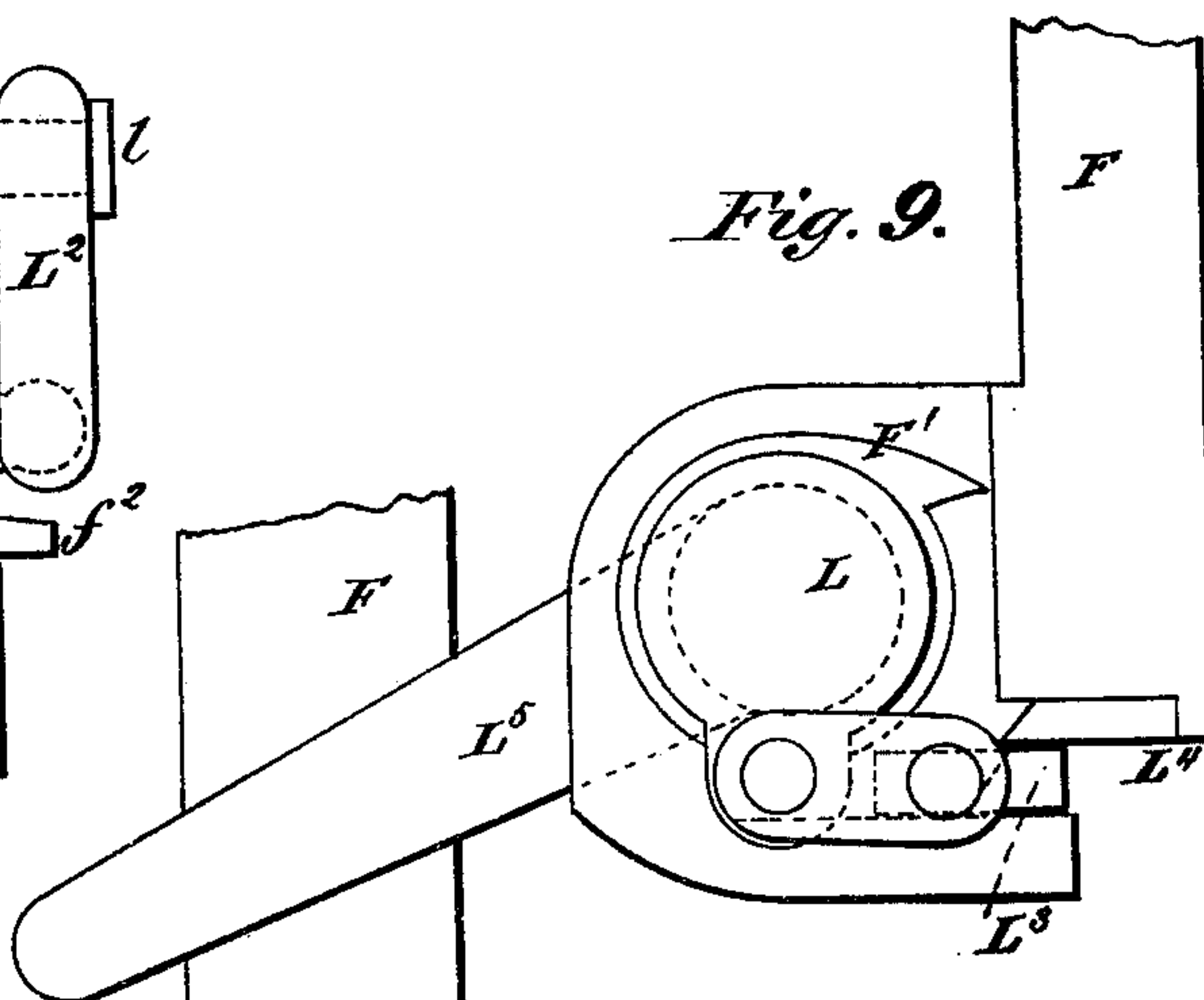


Fig. 9.

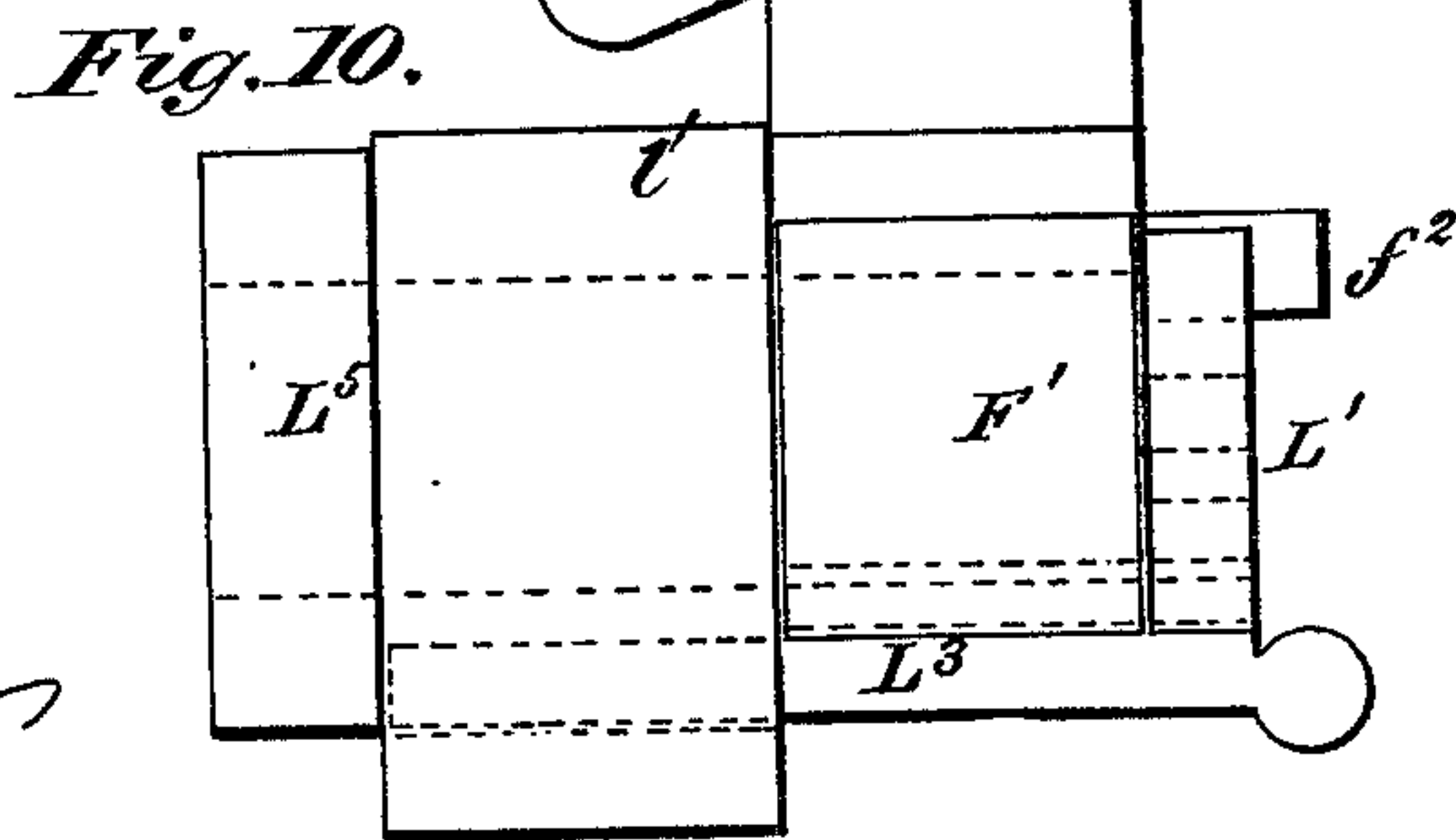


Fig. 10.

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UNITED STATES PATENT OFFICE.

WILLIAM ROGERS, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN AUTOMATIC BALE-TYING MECHANISMS.

Specification forming part of Letters Patent No. **176,355**, dated April 18, 1876; application filed March 11, 1876.

To all whom it may concern:

Be it known that I, WILLIAM ROGERS, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in Automatic Bale-Tying Mechanism, of which the following is a specification:

This invention has for its object the application of machinery to cotton presses or compresses, so termed, for simultaneously and automatically tying all the bands or ties of the bale. It consists of certain hereinafter fully explained means for drawing the bands or ties tightly around the bale and doubling the ends of the bands under, in manner as now commonly practiced by manual labor. The all-important advantage sought to be gained is the confining of the bale as nearly as possible within the compass into which it may be compressed by the compress.

In the annexed drawings, Figure 1 is a front elevation of the mechanism which I have devised for the purpose stated. Fig. 2 is a transverse sectional elevation, showing one of the bands or ties in the tying mechanism in position for drawing it tight around the bale. Fig. 3 is an end elevation, showing the doubler in the act of descending to double the end of the strap under. Fig. 4 is a perspective view of the doubler. Fig. 5 is a perspective view of the stretcher. Figs. 6 and 7 illustrate a modification of the doubler, which, in this case, also performs the function of the hold-fast. Figs. 8, 9, and 10 illustrate a mechanism for shearing off the superfluous end of the band or tie.

The same letters of reference are used in all the figures in the designation of identical parts.

My tying mechanism is to be connected to one side of the upper platen A of a cotton press or compress, said platen being suspended in the compress from above, as usual, and capable of a limited vertical range of adjustment by a wedge, as in the "Tyler compress," or in any other manner, to provide for an equal compression of varying sizes of bales. B refers to the lower movable platen, operated in the ordinary way. The number of bands or ties applied to a bale of cotton is six, ordinarily, and I have consequently provided six

distinct tying mechanisms, which are, however, all operated simultaneously from a common driving-shaft, C, turning in suitable bearings secured to the platen A, and driven by means of an oscillating or other suitable engine, M, also carried on the same platen, so that the whole mechanism will partake of the movements of the platen, and always maintain a fixed relation thereto.

The several tying devices are precisely alike, so that it will be necessary only to describe one of them in detail.

The driving-shaft C has a worm, *c*, for each tier, driving a worm-wheel, D, journaled transversely in the platen A and the frame E, which, in this instance, connects all the tiers. This worm-wheel has a stud, *d*, projecting from one side, and another stud, *d'*, projecting from the opposite side, which respectively act on the stretcher F and on the doubler G, in manner presently to be stated. The hold-fast H is pivoted upon a fixed stud, *h*, projecting from the platen or the frame E, terminating at its lower end with a laterally-projecting finger, *h*¹, of flattened form, with a dull lower edge. The upper arm of the hold-fast has a lug, *h*², at its upper end, which, projecting toward the worm-wheel D, is within the path of the stud *d'* thereof when the hold-fast is in its normal position, with upper arm pressed against the part *e* of the frame E by the spring H'.

In the example shown in Figs. 1, 2, 3, and 4 the doubler is jointed at *g*, so that its lower arm can swing laterally; but it may also be made without this joint, and be made to swing laterally from its upper guide. The doubler, which also terminates at its lower end with a laterally-projecting finger, *g*¹, is arranged just in rear of the hold-fast, in such a manner that its finger is slightly lower than the finger of the hold-fast, which has a rearwardly-projecting stud, *h*³, which limits the swing of the doubler in one direction, and also serves to move the doubler laterally when the hold-fast is turned on its pivot by the action of the stud *d'* of the worm-wheel, by which action both the hold-fast and the doubler are disengaged from the bale and the tie.

The upper member of the doubler is arranged to move vertically in guides of the

frame-work, and is acted upon by a spring, G' , which supports it in its normal elevated position, shown in Figs. 1 and 2, or any other device, which will force the doubler into this normal position, may be employed. A bend is formed in this vertically-moving member of the doubler, producing a horizontal slot or bearing, g^2 , therein, which is engaged by the stud d' of the worm-wheel on its descent, causing a downward movement of the doubler.

The stretcher F is likewise arranged to move vertically in guides of the frame, and has also a bend with a horizontal slot or bearing, f , which is engaged by the stud d of the worm-wheel on its ascent, causing an upward movement of the stretcher. In their normal position the respective fingers of the hold-fast and doubler will extend across the place of the corresponding grooves in the platens A and B , whereas the stretcher is so constructed and arranged that its clamping-cam F' at the lower end thereof, will stand just to one side of said tie-grooves, so that the loose end of the tie or band can be drawn one side the buckle end in tightening. The device for clamping the loose end of the tie to the stretcher consists, in the example shown, of a cam F' , as already intimated, the cam being arranged across the face of the stretcher at its lower end, vertically above the fingers of the hold-fast and doubler. The cam is overhung so that the end of the tie can be introduced sidewise between it and the face of the stretcher. It is journaled in a lug on the stretcher, and the projecting end of its journal is provided with an arm, f^1 , which serves as a handle in turning the cam to clamp the tie, and is, when near the completion of the upstroke of the stretcher, struck by a pin, g^3 , on the doubler, which will turn it so as to release the tie from the pinch of the cam. In its normal position the lower end of the stretcher will be a little distance above the fingers of the hold-fast and doubler.

The operation of the mechanism, so far as described, may be briefly stated as follows: The bales of cotton will be so placed in the press or compress that the side of the bale adjacent to the tying mechanism may be in close proximity to the doubler and hold-fast. A bale having been compressed, the ordinary ties are passed around it through the tie-grooves, so that the ends, provided with any common buckle, hang down past the finger of the hold-fast. The finger of the hold-fast is then slipped into the loop of the tie, which confines one cross-bar of the buckle, as shown in Figs. 2 and 3, where I' refers to the buckle and I to the tie. The other end of the tie is then passed into the buckle, drawn up behind the finger of the hold-fast, and slipped between the stretcher and the cam F' , which latter is then turned to clamp the tie. As soon as all the ties have been thus applied, the engine M will be started. The studs d of the worm-wheels will immediately engage the stretchers and draw them up, tightening all the ties simultaneously. A little time before

the stretchers have completed their upstroke, the studs d' will engage the doublers, and commence pushing them down. The ties will be released from the pinch of cams F' by pin g^3 of the doublers, as soon as the latter have bent the ties down behind the lower cross-bar of the buckles to an extent sufficient to prevent any slip of the tie when it is disengaged from the stretcher. The doublers will continue to descend, doubling the loose ends of the ties down between the bale and the ties proper, as indicated in Fig. 3. The stretchers, as soon as released from the studs d , will descend to their normal positions.

On passing out of the slots of the doublers the studs d' will strike the projection h^2 on the hold-fasts, turning them on their pivots so as to draw their fingers out of the loops of the ties. At the same time the lower pivoted members of the doublers will be turned by pins h^3 of the hold-fasts, so that the fingers g' will also be drawn from between the ties and the doubled under ends thereof. Immediately after such withdrawal the doublers will be drawn up by their springs or other devices into their normal positions.

In the practical application of this bale-tying mechanism it may be found desirable to suspend the entire mechanism from the driving-shaft, so that the doublers may just lean against the bale. I shall also probably provide for independent adjustment of each tying mechanism by connecting each to a separate frame-work, adjustable on the same driving-shaft, the gearing being also adjustable in that case.

In Figs. 6 and 7 I have illustrated a modification of my invention, which consists in constructing a device that can perform the twofold function of a hold-fast and a doubler. In this case the bar G of the doubler is without a joint, and its finger g^1 is pivoted to its lower end. A spring, k , acts on the finger to hold it in a horizontally-projecting position when it brings up against the lower end of the vertical bar G , so that it can resist upward strain on it. A stiff spring, K , secured to the face of bar G , carries a laterally-projecting roller, k' , standing just in front of finger g^1 .

In using this combined hold-fast and doubler the buckle end of the tie is slipped in between the roller k' and the finger g^1 , as shown. The spring K is made stiff enough to hold the roller in position, so as to prevent the buckle end of the tie from being drawn through between the roller and the finger by the draft of the stretcher on the loose end of the tie. But on the descent of the doubler the spring K will give way to let the buckle pass through between the roller and the finger. The finger will remain confined under the tie until the bale descends, when the finger, being drawn down by the weight of the bale, will, in turning on its pivot, release itself.

The superfluous ends of the ties may be sheared off by hand-shears as now ordinarily

practiced. In Figs. 8, 9, and 10 I have, however, illustrated an automatic means whereby these ends may be clipped off by the action of the tying mechanism. The cam F' for clamping the loose ends of the ties is here placed loosely on the journal-pin L , which now projects a little beyond the outer end of the cam, to receive a crank, L^1 , the wrist-pin l of which is connected by a short pitman, L^2 , to a ball on the end of a shear-blade, L^3 , which is pivoted under the end of the bearing-lug V of the stretcher F , and operates in conjunction with a fixed blade, L^4 , fixed directly to the bottom of the stretcher. The pin L also projects beyond the bearing-lug V , to receive an arm, L^5 , which corresponds to the arm f^1 of the cam, shown in Fig. 5. The cam may have a lateral projection, as f^2 , so that it may be readily thrown back or forward to release or clamp the band. The end of the band or tie will be clamped the same as in the former case. It will, however, pass between the shear-blades. Now, at the beginning of the downward movement of the doubler the arm L^5 will be struck by pin g^3 as formerly, which will, however, only act to turn the journal-pin L in the clamping-cam,

the latter holding onto the band. The crank of pin L will drive the shear-blade L^3 toward the fixed blade L^4 , and cut off the band just after the doubler has bent the same behind the lower cross-bar of the buckle sufficient to prevent slippage.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the platen of a cotton-press, of a group of bale-tiers, substantially as specified, constituting one automatic tying mechanism for simultaneously tying all the bands of the bale.

2. In a bale-tier the combination, substantially as specified, of the hold-fast, the stretcher, and the doubler.

3. The combination, substantially as specified, of the stretcher and the shears.

In testimony whereof I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

WM. ROGERS.

Witnesses:

B. E. J. EILS.

JOHN EILS.