

No. 706,646.

Patented Aug. 12, 1902.

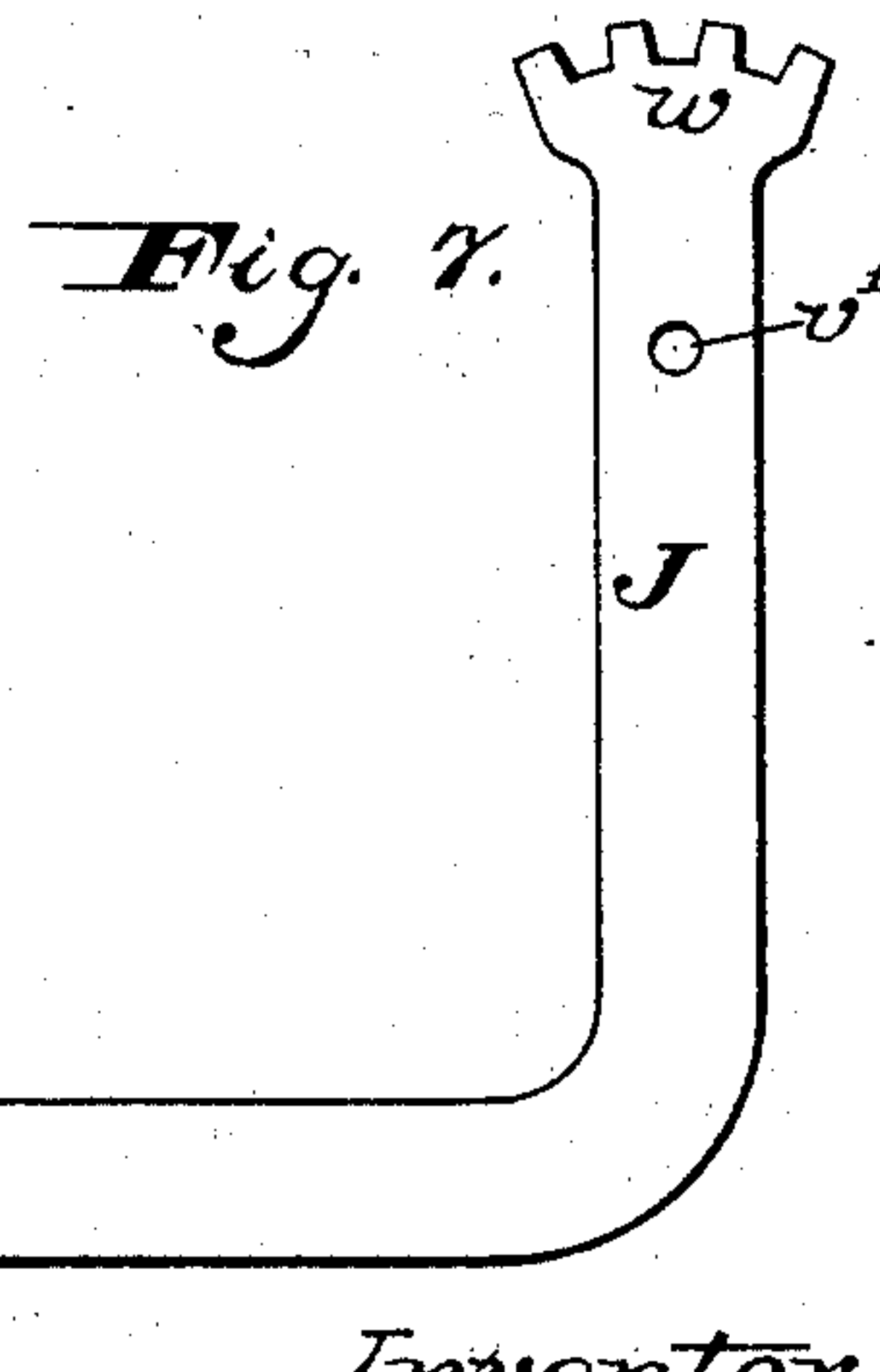
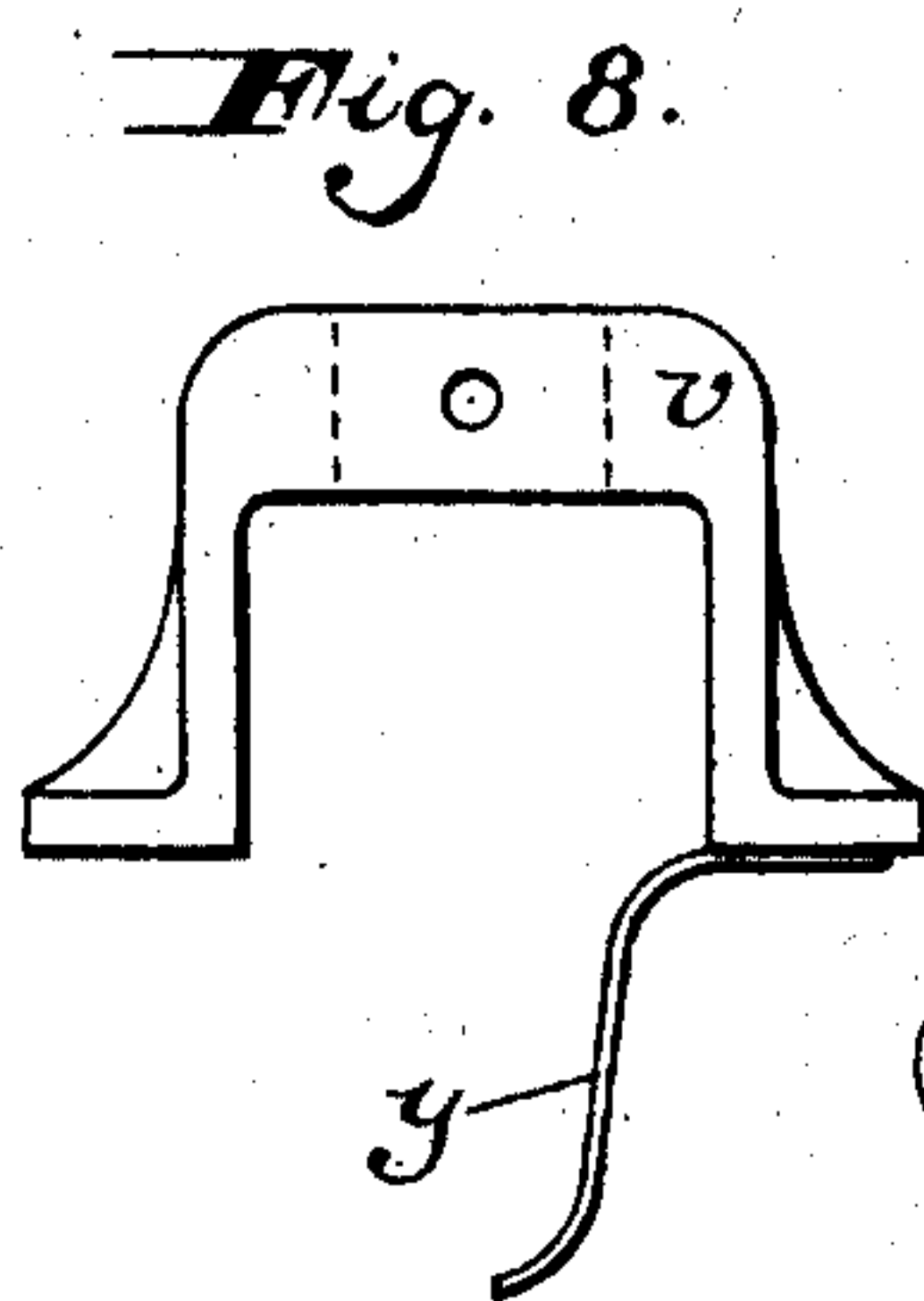
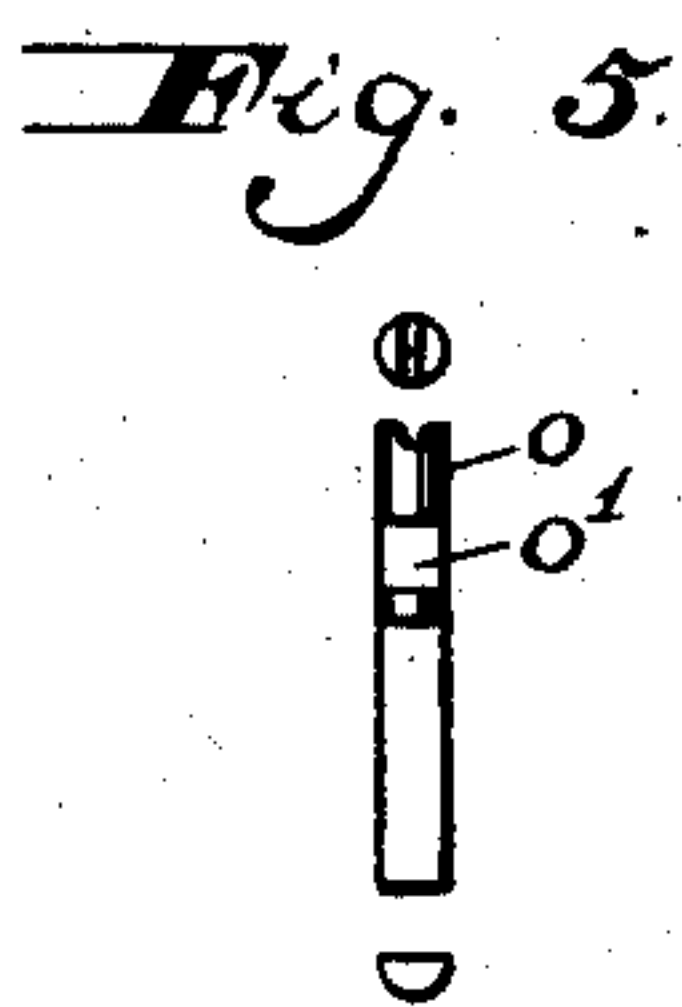
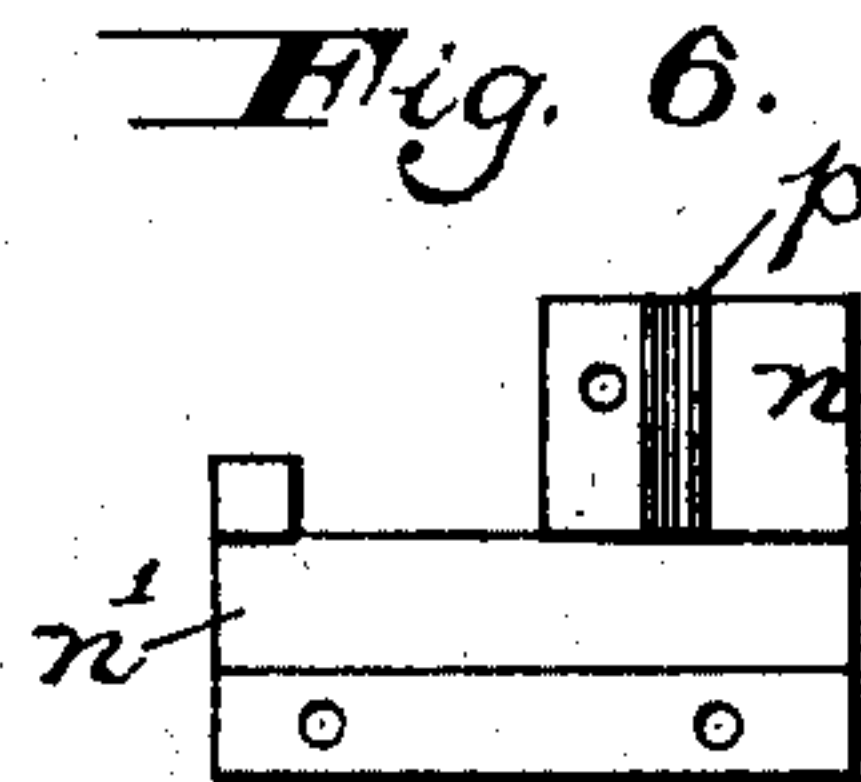
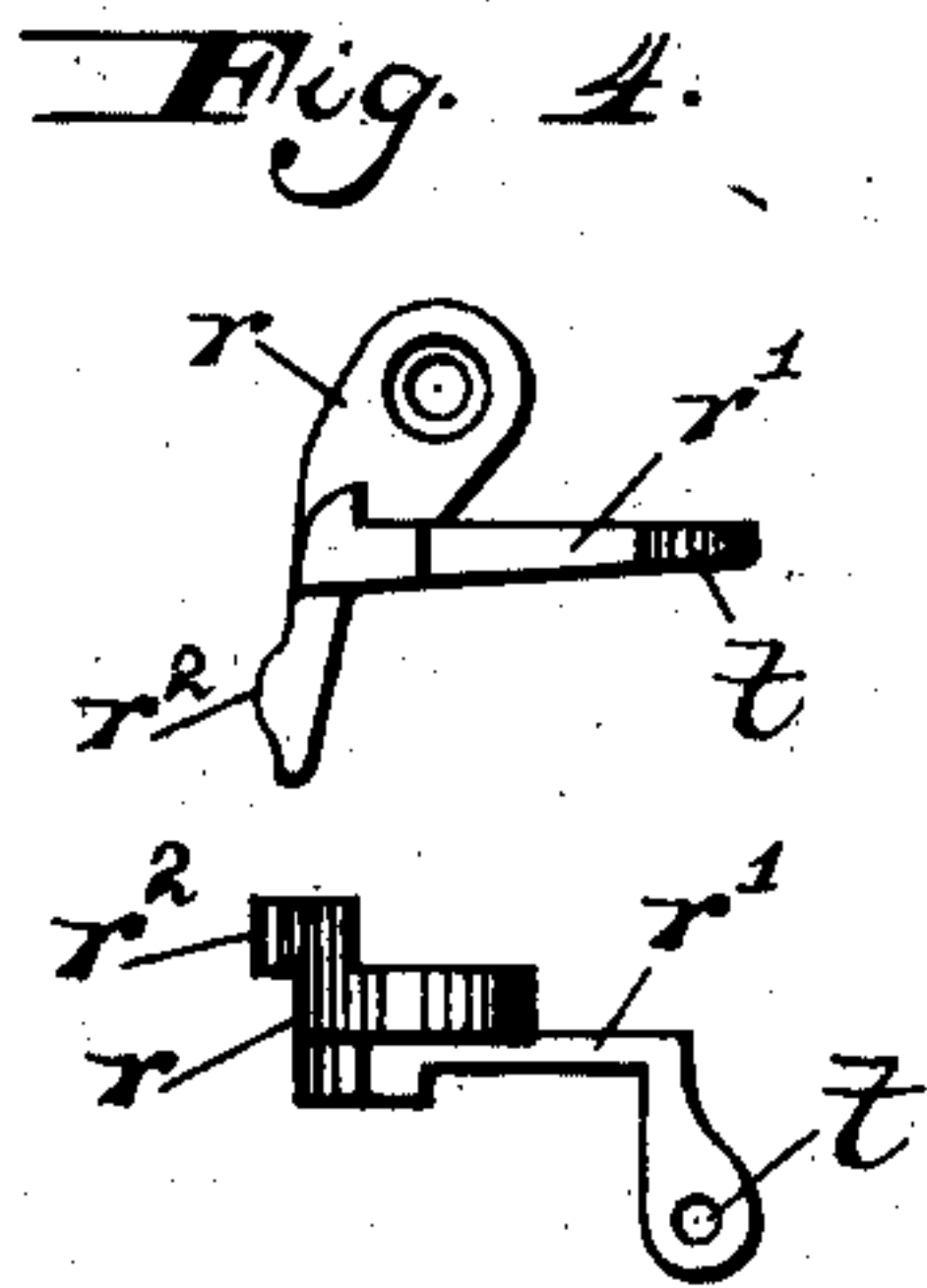
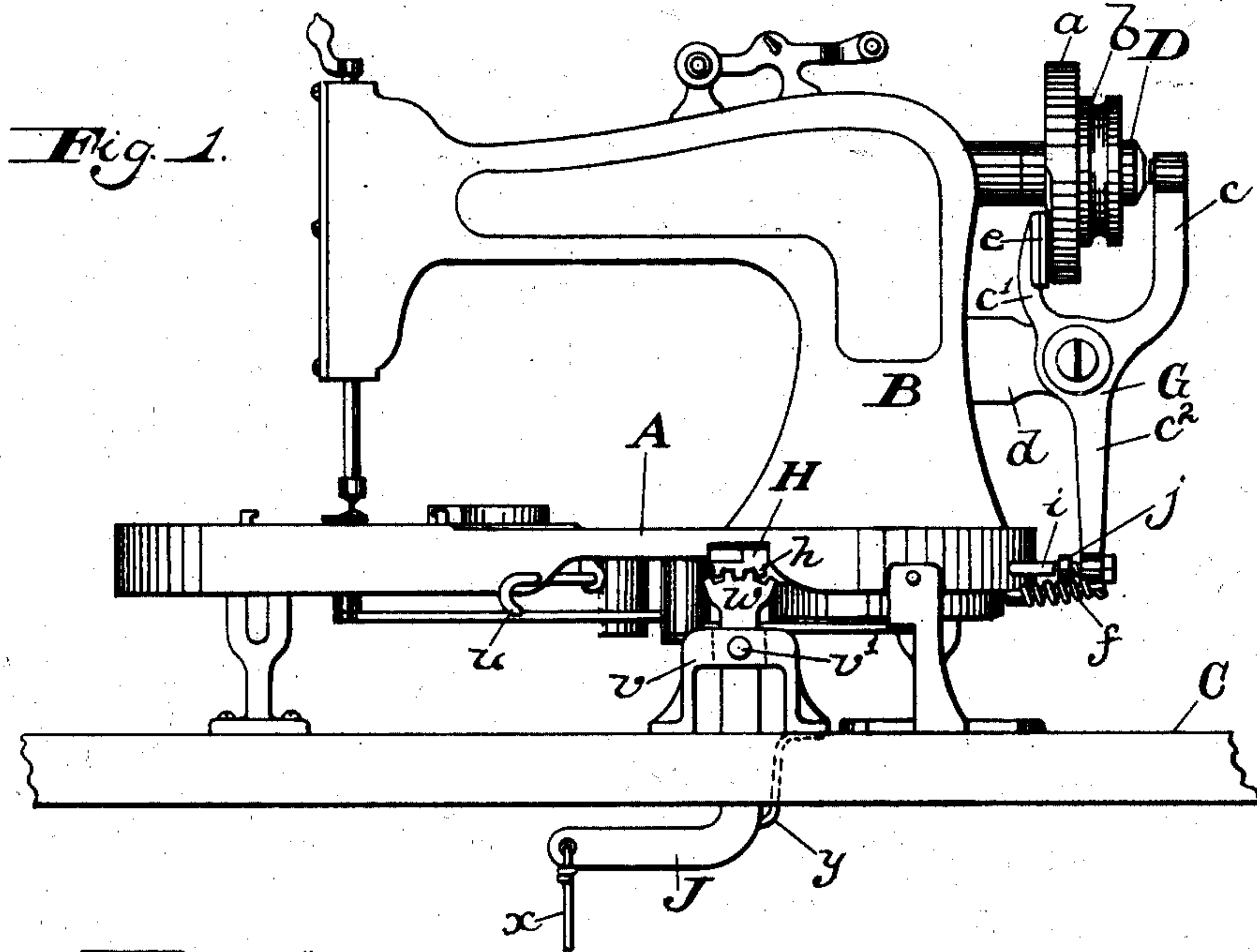
P. FABISCH.

AUTOMATIC STOP MECHANISM FOR BUTTONHOLE MACHINES.

(Application filed Oct. 21, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.
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2 Sheets—Sheet 2

Fig. 2.

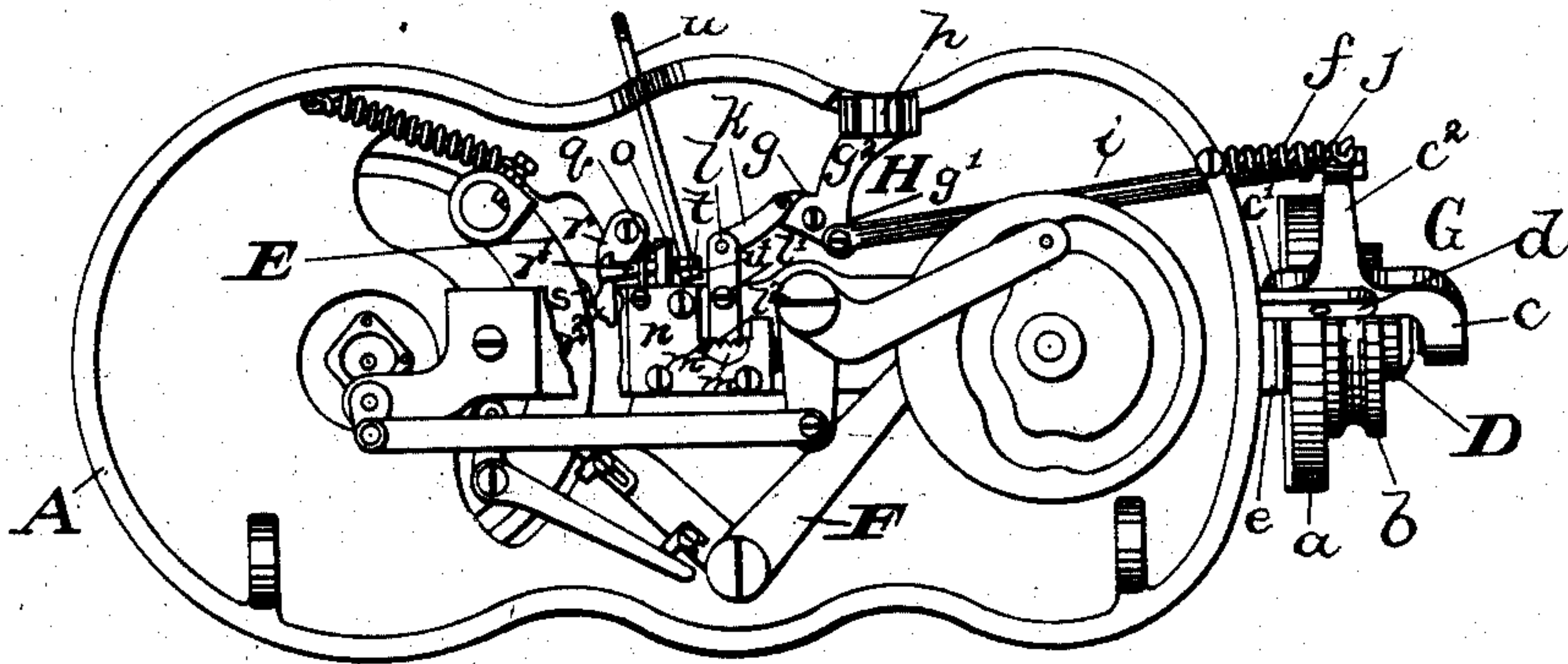
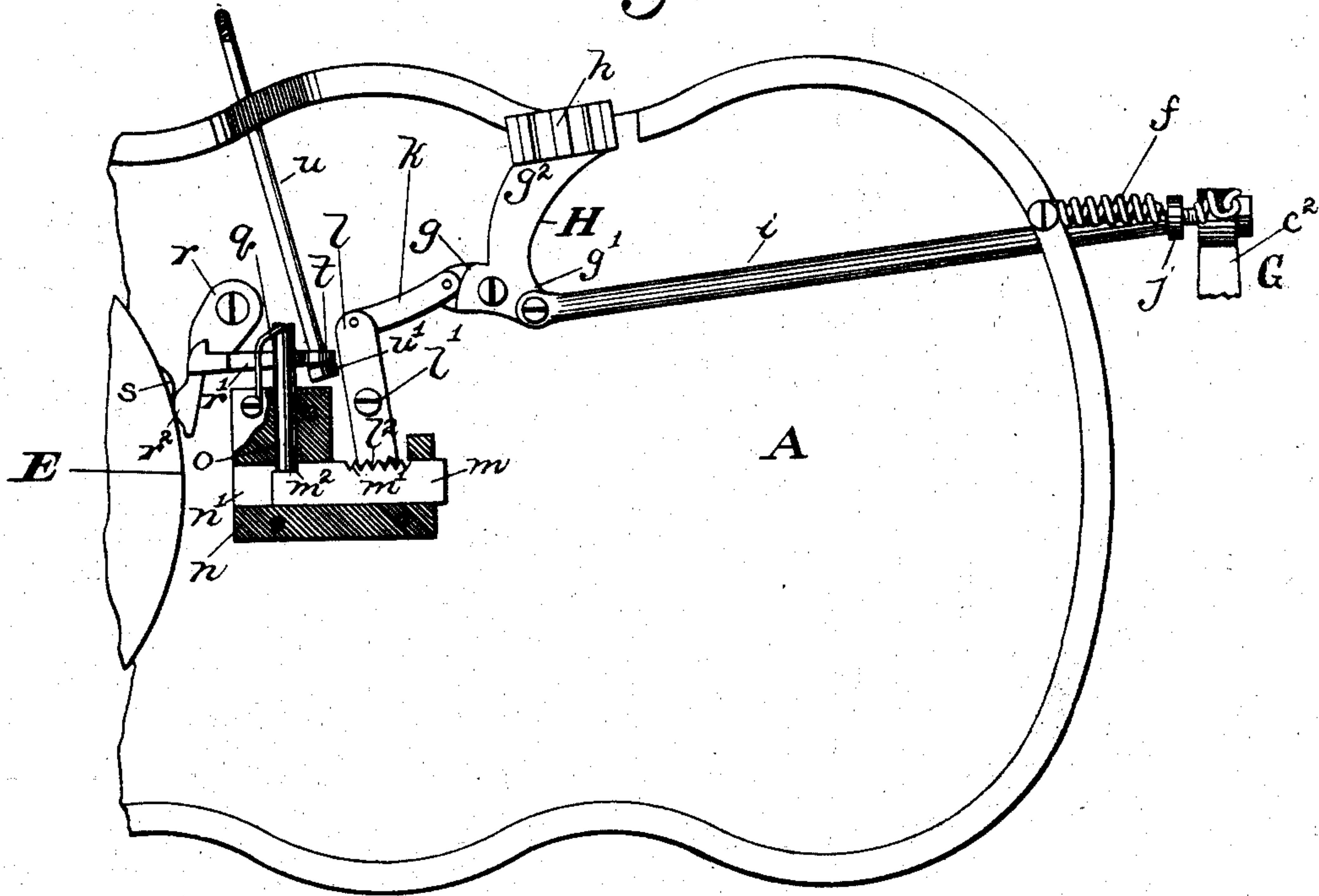


Fig. 3.



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UNITED STATES PATENT OFFICE.

PHILIP FABISCH, OF BALTIMORE, MARYLAND.

AUTOMATIC STOP MECHANISM FOR BUTTONHOLE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 706,646, dated August 12, 1902.

Application filed October 21, 1901. Serial No. 79,398. (No model.)

To all whom it may concern:

Be it known that I, PHILIP FABISCH, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Automatic Stop Mechanism for Buttonhole-Sewing Machines, of which the following is a specification.

This invention relates to buttonhole-sewing machines; and its object is to provide in a machine of this character an improved mechanism for automatically stopping the machine when the working of the buttonhole has been completed.

The invention consists in certain constructions, arrangements, and combinations of the parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a buttonhole-sewing machine provided with the automatic stop mechanism of my invention. Fig. 2 is a bottom plan view thereof inverted. Fig. 3 is an enlarged bottom plan view of the bed-plate of the machine, showing only such parts as are necessary to illustrate the automatic stop mechanism. Fig. 4 illustrates two detail views of the dog for tripping the mechanism which locks the driving-clutch in operative position. Fig. 5 illustrates in detail the locking pin or detent which is retracted by said tripping-dog. Fig. 6 is a detail inner face view of the casing for part of the clutch-locking mechanism. Fig. 7 is a detail side view of a foot-operated lever for throwing the clutch-locking mechanism into operation. Fig. 8 is a detail side view of the bracket for said lever.

Referring to the drawings by reference-letters, A designates the bed-plate, and B the arm, of a buttonhole-sewing machine of the ordinary type, and C designates the table on which the machine is mounted.

Journaled in the machine-arm B is a horizontal driving-shaft D, which operates the feed-wheel E by means of the vibrating feed-lever F and which also operates the other parts of the stitch-forming mechanism which it is not deemed necessary to fully illustrate or describe, as it forms no part of the present invention except in combination as a whole with the automatic stop mechanism.

The said driving-shaft D is provided with the usual clutch mechanism, comprising a fly-wheel *a*, fast on said shaft, and a driving-pulley *b*, loose on said shaft and having a friction-face adapted to contact with the fly-wheel. The driving-pulley *b*, which is intended to be driven continuously by means of any suitable power, is pressed into frictional engagement with the fly-wheel *a* by one of the upwardly-extending arms *c* of a Y-shape lever G, fulcrumed on a bracket *d*, secured to the machine-arm B. The other upwardly-extending arm *c'* of said lever carries a brake device *e*, adapted for frictional engagement with the fly-wheel to stop the driving-shaft at the same time the lever-arm *c* removes its pressure from the driving-pulley *b*, and the downwardly-extending arm *c''* of said lever is secured to one end of a coil-spring *f*, whose other end is secured to the bed-plate A, the said spring tending to pull said lever into position to release the driving-pulley from the fly-wheel and to apply the brake device. In combination with these parts of the machine hereinbefore described, which are not new and which form by themselves no part of the present invention, I have provided an improved mechanism which will hold the clutch-operating lever G against the tension of the spring *f* in position to press the driving-pulley *b* against the fly-wheel *a* until the buttonhole has been worked and which will then at once automatically allow the said spring to pull said lever whereby to remove the pressure from the driving-pulley and apply the brake to stop the machine. This mechanism will now be described.

Fulcrumed on the lower face of the machine bed-plate A, so as to move in a plane parallel with said face, is a three-armed lever H, having two oppositely-extending short arms *g* *g'* and a longer arm *g''*, which latter is provided at its end with vertically down-projecting teeth *h*, for a purpose hereinafter described. To one short arm *g'* of the lever H is pivotally connected one end of a rod *i*, whose other end projects out through a down-flange on the rim of the bed-plate, as indicated in the drawings, in juxtaposition to an adjustable bearing-head *j* on the end of the downwardly-extending arm *c''* of the clutch-operating lever G. The other short arm *g*

of the said lever H is pivotally connected by means of a link k to an oscillating bar l , pivoted at l' to the lower face of the bed-plate and provided at one end with teeth l^2 , meshing with teeth m' on one edge of a rack-bar m , which reciprocates in a channel n' , formed in a casing n , secured rigidly to the bed-plate. The rack-bar is provided at one end with a notch m^2 , adapted to receive, when it is at one limit of its reciprocating movement, a detent in the form of a pin o , as indicated in Fig. 3, so that it will be locked and prevented from moving.

The detent o (shown in detail in Fig. 5 of the drawings) is fitted to slide in a recess p , which is formed in the casing n and which extends at right angles to and communicates with the rack-bar channel n' , and said detent is pressed by a spring q toward said rack-bar m and is provided on one side with a recess o' . A tripping-dog r is pivoted to the lower face of the bed-plate A, adjacent said detent, and is provided with a notched tripping-arm r' , taking in the notch o' of said detent, (see Fig. 3,) whereby it may retract the latter from engagement with the rack-bar, and said dog r is also provided with a nose r^2 , which when the machine operates lies in the path of a shoulder s on the intermittently-operated feed-wheel E, so that when said shoulder comes into engagement with the said nose r^2 of the dog r the latter will be swung to retract the detent and release the rack-bar. In order to retract said detent at any time independent of the feed-wheel, the notched arm r' of the tripping-dog r is provided at its extremity with an eye t , and a rod u has one end retained in said eye by means of a nut u' , and said rod extends out through the down-flange of the bed-plate to the front thereof, whereby it may be grasped by the operator of the machine.

A bracket v is secured on top of the table C just underneath the toothed arm of the lever H. A foot-operated lever J is fulcrumed at v' in said bracket, and its upper end is provided with a toothed end w , meshing with the down-projecting teeth h of the lever H, and a wire x is secured to the lower end of said foot-operated lever J and is secured also to a foot-treadle. (Not shown.) A spring y returns the lever J to its normal vertical position.

In practical operation the lever J is rocked by the foot of the operator, and it in turn moves the three-armed lever H—in the present instance to the left—which causes the projecting end of the rod i to push against the downwardly-extending arm c^2 of the clutch-operating lever G, and thereby press the continuously-rotating driving-pulley b into frictional engagement with the fly-wheel a on the driving-shaft D and cause the latter to rotate. At the same time the movement of the three-armed lever H also imparts an oscillating motion to the toothed bar l , which

as it meshes with the rack-bar m slides the latter toward the right until the notch m^2 registers with the end of the detent o , whereupon said detent is forced by its spring q into said notch and locks the rack-bar, thereby preventing the same from sliding back to the left and holding the rod i rigidly against the clutch-operating lever G. In this manner it will be seen that the drive-shaft D is caused to rotate. On account of the interengagement of the detent o and tripping-dog r the latter will when the detent is drawn into the notch in the rack-bar be swung into such position that its nose r^2 will lie in the path of the shoulder s on the periphery of the feed-wheel E. The said shoulder is so located on the feed-wheel that just at the time the working of the buttonhole is completed it (the shoulder) will ride on the nose of the dog and swing the latter, so as to retract the detent o from engagement with the rack-bar m , which will thus release the said rack-bar and allow the coil-spring f to move the clutch-operating lever in a direction to stop the machine.

While the accompanying drawings illustrate one form of the invention, it is to be understood that changes in the details of construction may be made without departing from the scope of the invention as defined in the appended claims.

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

1. In a buttonhole-sewing machine, the combination with the feed-wheel, driving-shaft, and spring-released clutch mechanism adapted to drive said shaft, of a rod adapted to move said clutch mechanism, against the action of its spring, into operative engagement with said shaft; a lever connected to said rod to move the same; a lock-bar also adapted to be moved by said lever; a detent automatically moved into locking engagement with said bar when the latter and said rod are moved by said lever to throw the clutch mechanism into engagement with said shaft; and a tripping-dog adapted to retract said detent and arranged for actuation by said feed-wheel, as set forth.

2. In a buttonhole-sewing machine, the combination with a driving-shaft, feed-wheel, and spring-released clutch mechanism adapted to drive said shaft, of a rod adapted to move said clutch mechanism, against the action of its spring, into operative engagement with said shaft; a three-armed lever, H, having one arm connected to said rod to move the same; means connected to another arm of said lever for moving the latter; an oscillating toothed bar connected to the third arm of said lever; a reciprocating rack-bar meshing with said oscillating bar and provided with a notch; a pin spring-pressed toward said rack-bar and adapted to enter said notch to lock said rack-bar against movement; and a tripping-arm connected to said pin to re-

tract the same from the said notch, and arranged for actuation by the feed-wheel, as set forth.

3. In a buttonhole-sewing machine, the combination with the driving-shaft, of spring-released clutch mechanism for driving said shaft; means including a lever, for throwing said clutch mechanism against the action of its spring, into operative engagement with said driving-shaft; an oscillating toothed bar connected to said lever; a reciprocating rack-bar meshing with said oscillating bar; a detent automatically moved into locking engagement with said rack-bar when the lever and oscillating bar are moved to throw the clutch mechanism into operative engagement with said driving-shaft; and a tripping-dog automatically actuated to retract said detent, as set forth.

4. In a buttonhole-sewing machine, the combination with the bed-plate, driving-shaft, feed-wheel, and spring-released clutch mechanism adapted to actuate said shaft, of a reciprocating bar; an oscillating bar movable with said reciprocating bar; means connected with said oscillating bar for holding said clutch mechanism, against the action of its spring, in operative engagement with said driving-shaft; a detent spring-pressed into engagement with said reciprocating bar; and a tripping-dog connected with said detent and actuated by said feed-wheel to withdraw the detent from said reciprocating bar, as set forth.

5. In a buttonhole-sewing machine, the combination with a driving-shaft and feed-wheel, of spring-released clutch mechanism adapted to drive said shaft; a rod adapted to move said clutch mechanism, against the action of its spring, into operative engagement with said shaft; a lever connected to said rod to move the same; an oscillating toothed bar also connected to said lever; a reciprocating rack-bar meshing with said oscillating bar and provided with a notch; a pin spring-pressed toward said rack-bar and adapted to enter said notch to lock said rack-bar against movement; and a tripping-arm connected to said pin to retract the same from the said notch and arranged for actuation by the feed-wheel, as set forth.

6. In a buttonhole-sewing machine provided with a bed-plate, drive-shaft, and feed-wheel, means for driving said shaft; a casing secured to the bed-plate adjacent the feed-wheel and provided with a channel and a recess opening into said channel; a bar slidable in said channel and provided with a notch; a detent mounted in said recess and spring-pressed toward said bar, whereby when the bar is moved in one direction to bring its notch in registry with said detent, the latter will enter said notch and prevent the return move-

ment of said bar; a tripping-dog pivoted to the bed-plate and adapted to automatically retract said detent; and a connection between said bar and the shaft-driving means, as set forth.

7. In a buttonhole-sewing machine, the combination with the drive-shaft, and spring-released clutch for the same, of means for locking said clutch in operative engagement with said drive-shaft, said means including a detent or locking-pin provided on one side with a recess; and a tripping-dog adapted to be moved by a shoulder on the feed-wheel of the machine and provided with an arm taking in said recess, whereby to move said pin, as set forth.

8. In a buttonhole-sewing machine, the combination with the drive-shaft, and spring-released clutch for the same, of means for locking said clutch in operative engagement with said drive-shaft, said means including a detent or locking-pin provided on one side with a recess; a tripping-dog adapted to be moved by a shoulder on the feed-wheel of the machine and provided with an arm taking in said recess, whereby to move said pin; and a rod, *u*, connected to said arm for moving said tripping-dog independently of the feed-wheel, as set forth.

9. In a buttonhole-sewing machine, the combination with the drive-shaft, and clutch mechanism therefor, of a rod for pressing said clutch mechanism into operative engagement with said drive-shaft; a lever connected to said rod to move the same, and provided with a toothed arm; means connected to said lever for automatically locking and releasing said rod respectively into and from pressing engagement with said clutch mechanism; and a lever, *J*, provided with teeth meshing with the toothed arm of said first-named lever whereby to move the latter and the said rod and said locking and releasing means, as set forth.

10. In a buttonhole-sewing machine, the combination with the drive-shaft clutch mechanism, of a clutch-pressing rod; an automatically-released locking mechanism for holding said rod into pressing engagement with said clutch mechanism; a lever for moving said rod and locking mechanism into operative position, said lever being provided with a toothed arm; and a foot-operated lever, *J*, provided with teeth meshing with the toothed arm of the first-named lever, as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

PHILIP FABISCH.

Witnesses:

FREDERICK S. STITT,
CHARLES L. VIETSCH.