

(No Model.)

7 Sheets—Sheet 1.

H. H. CUMMINGS.
SEWING MACHINE FOR BARRING BUTTON HOLES.

No. 435,686.

Patented Sept. 2, 1890.

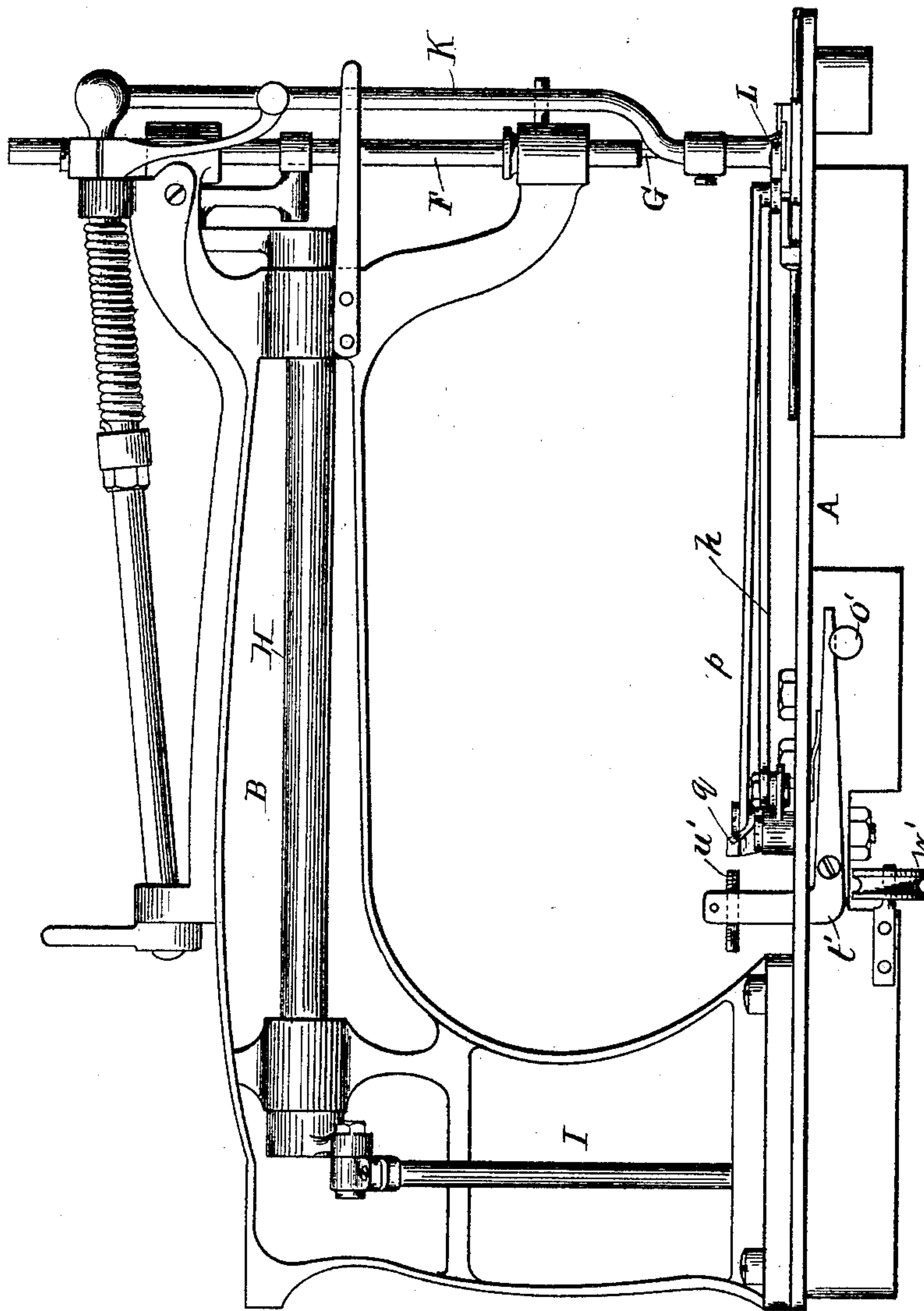
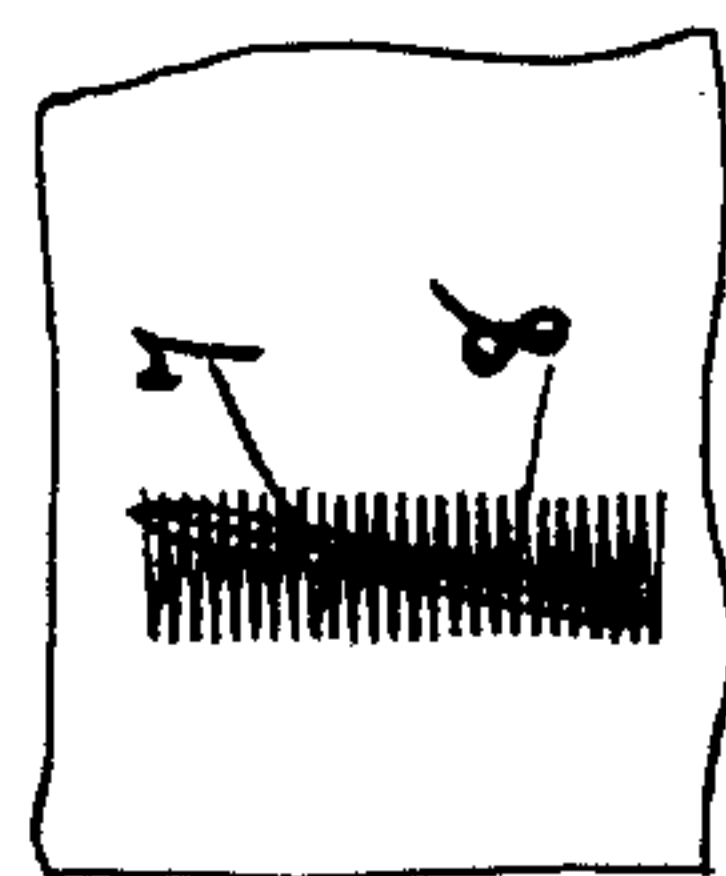


Fig. 1

Fig. 12.



WITNESSES:

A. D. Harrison.
W. B. Ramsay.

INVENTOR:

H. H. Cummings

By

Wm. Brown & Co.

Attys.

(No Model.)

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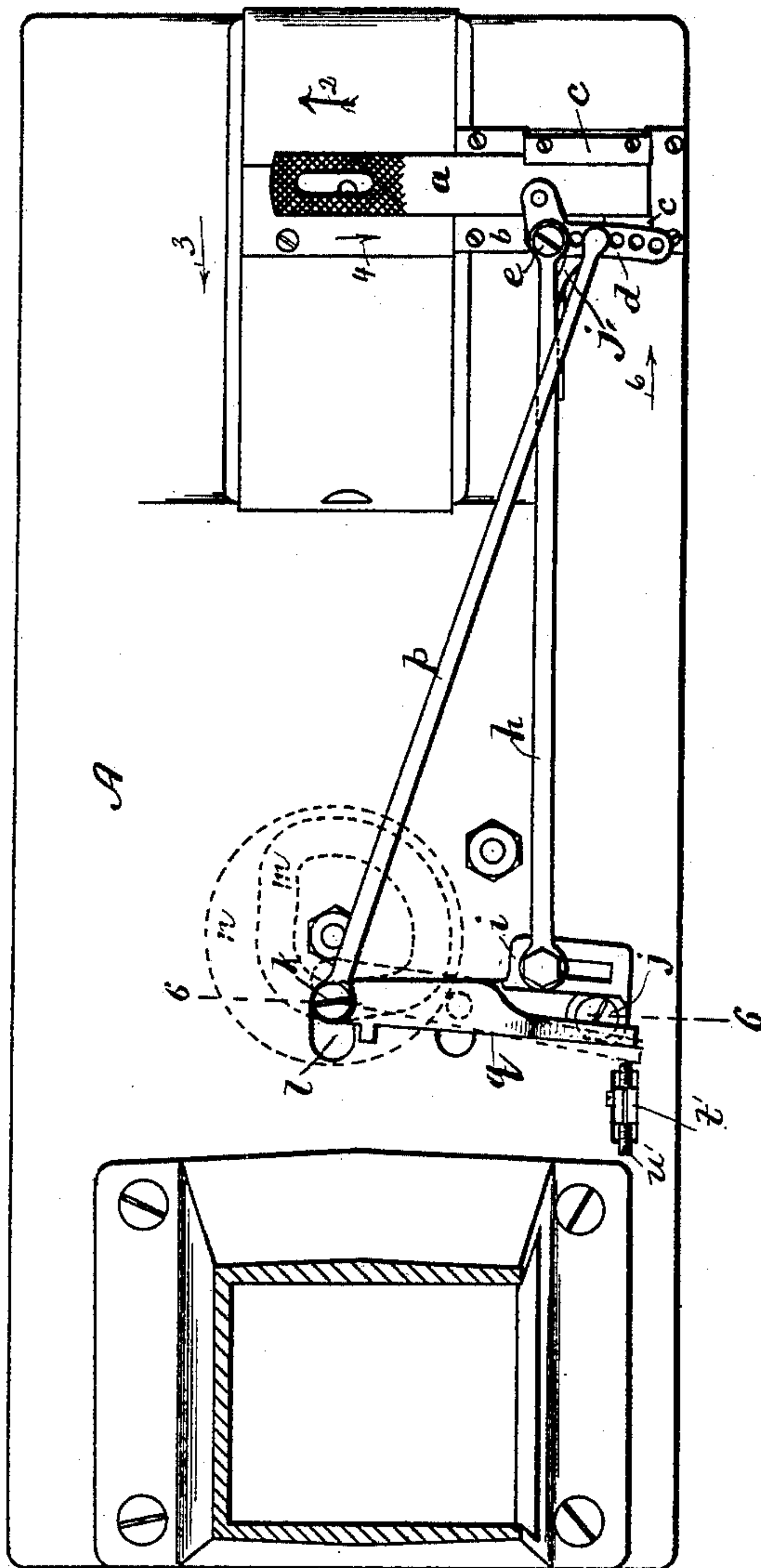
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FIG-2-



WITNESSES:

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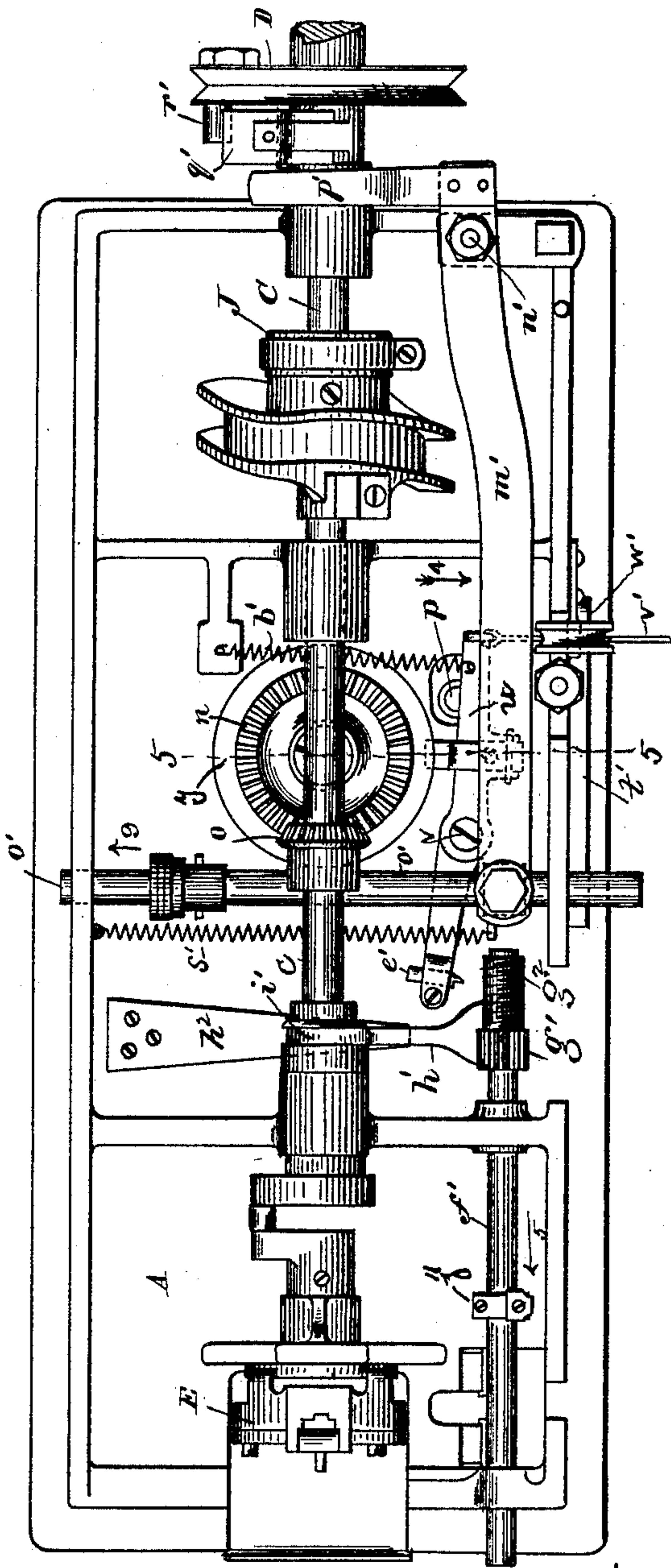
7 Sheets—Sheet 3.

H. H. CUMMINGS.

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Patented Sept. 2, 1890.



35

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INVENTOR:

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(No Model.)

7 Sheets—Sheet 4.

H. H. CUMMINGS.

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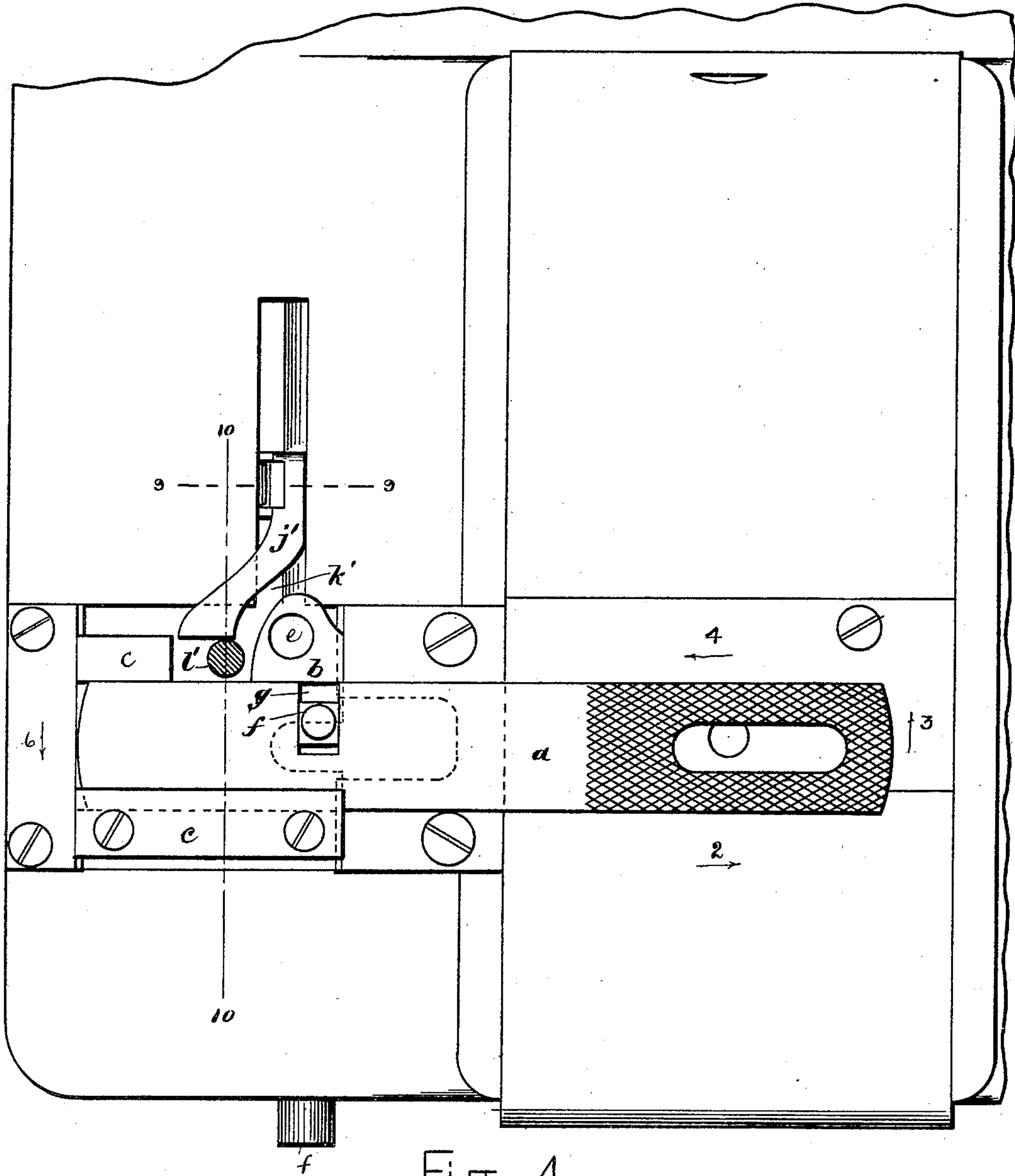


Fig. 4.

WITNESSES:

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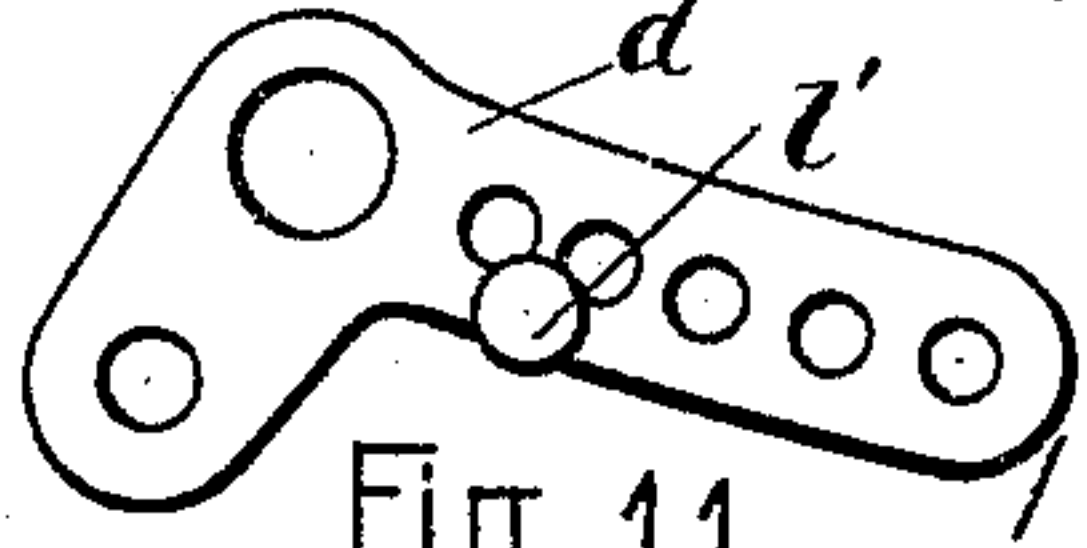


Fig. 11.

(No Model.)

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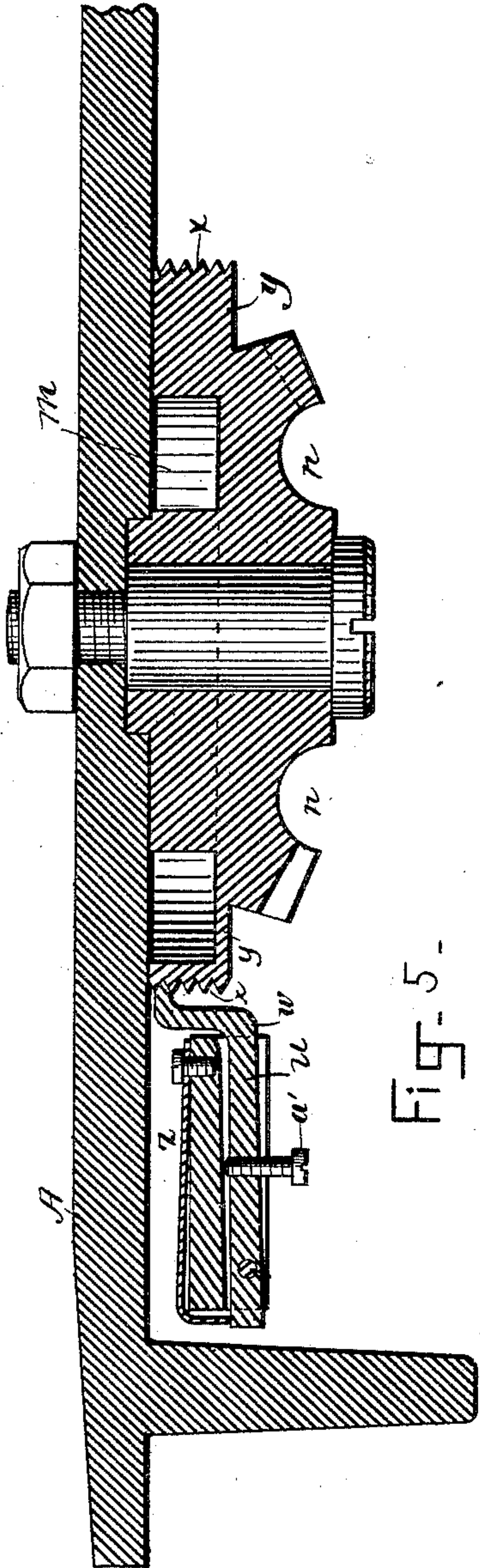


Fig. 5-

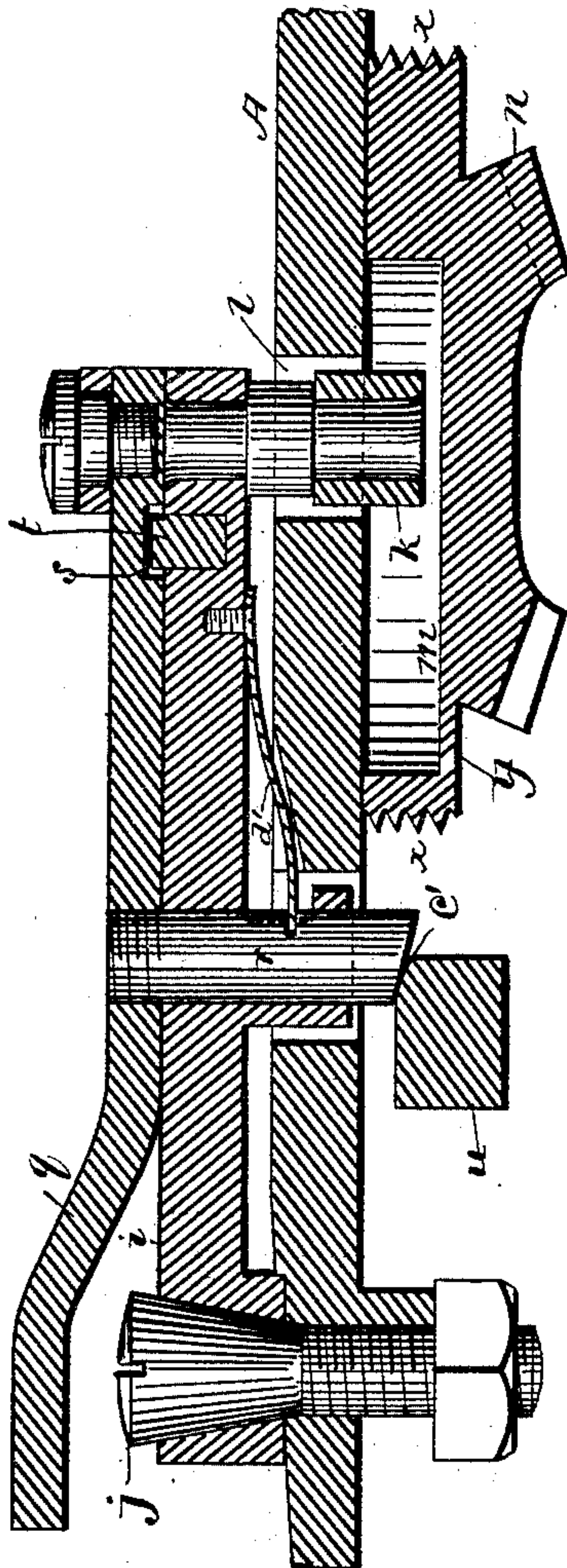


Fig. 6-

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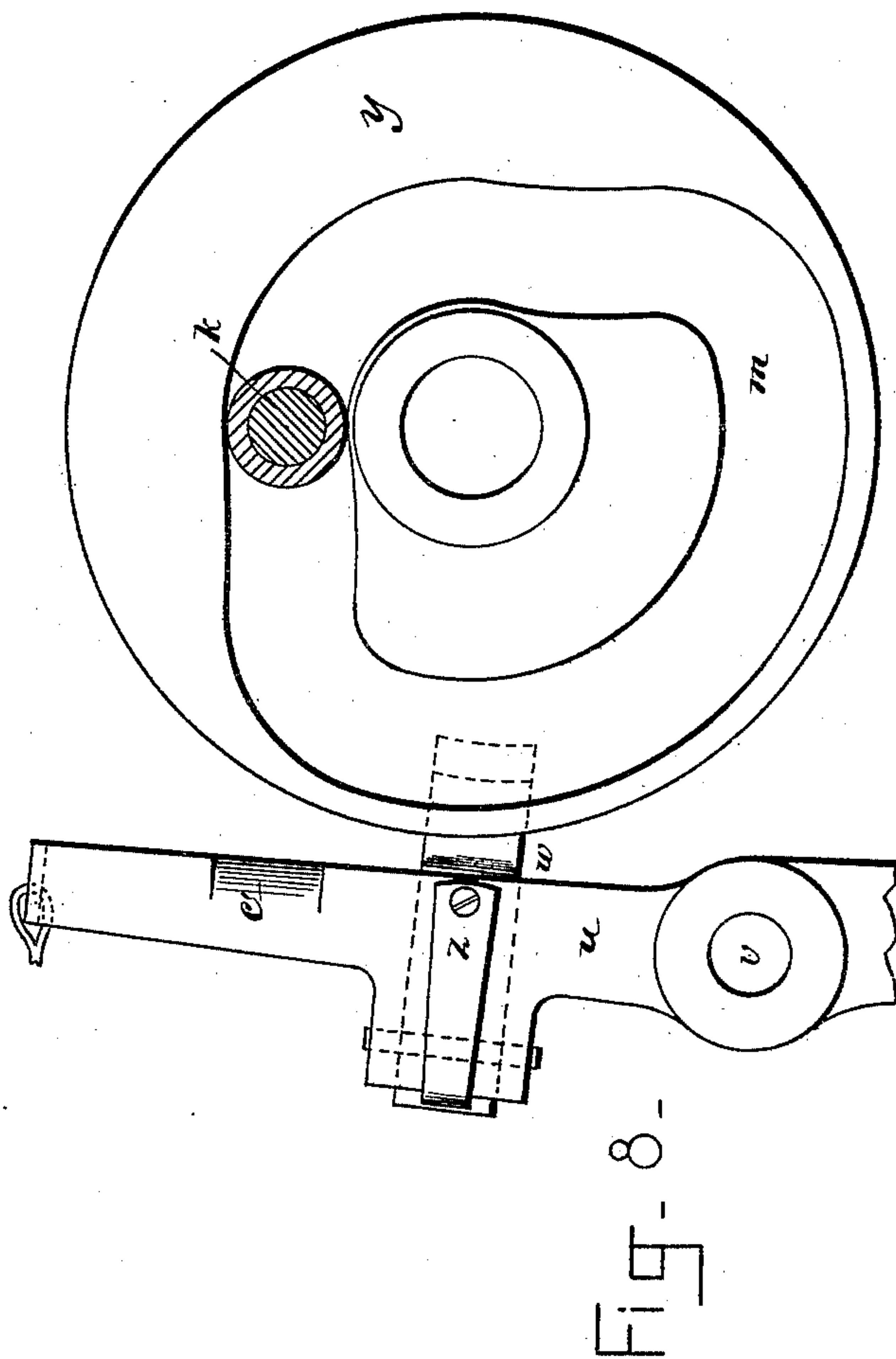
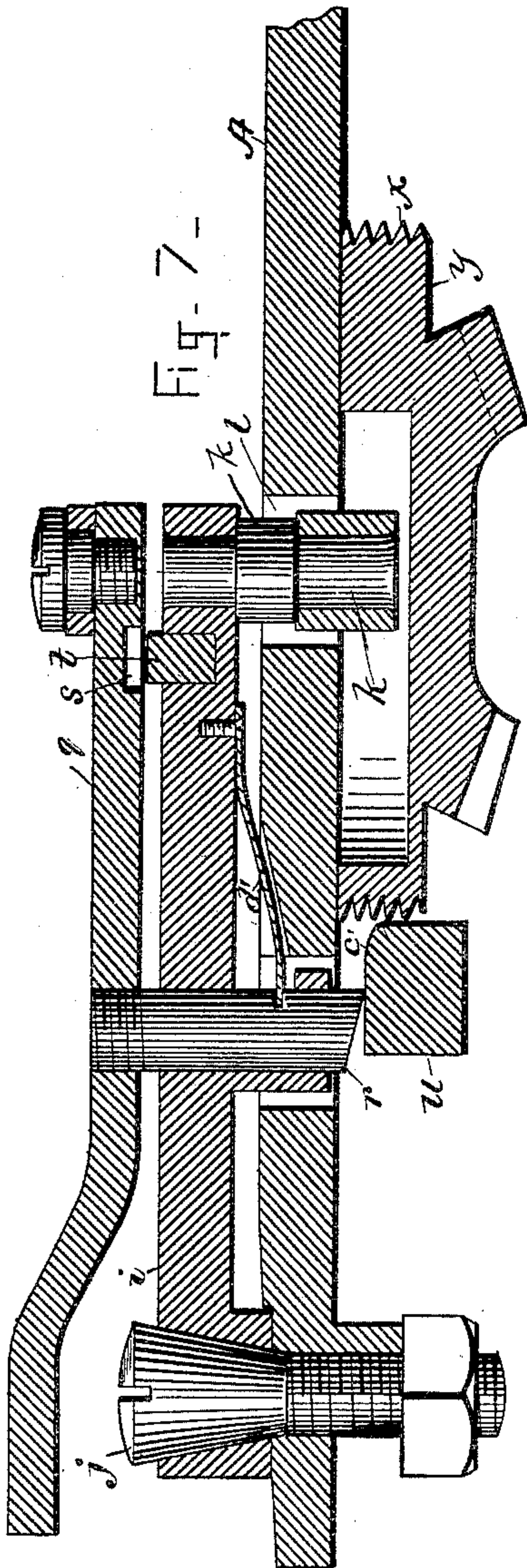
7 Sheets—Sheet 6.

H. H. CUMMINGS.

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WITNESSES:
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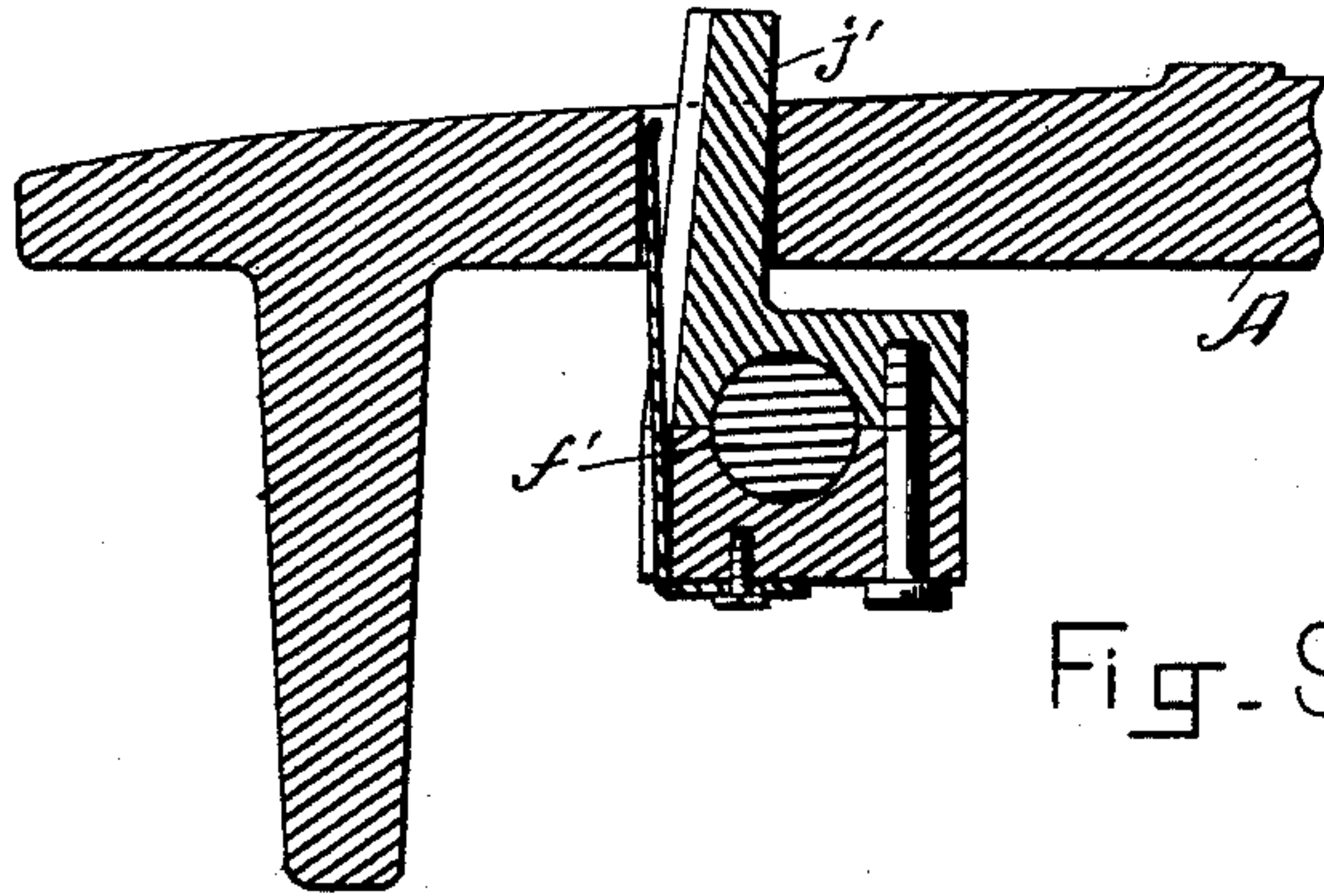


Fig. 9.

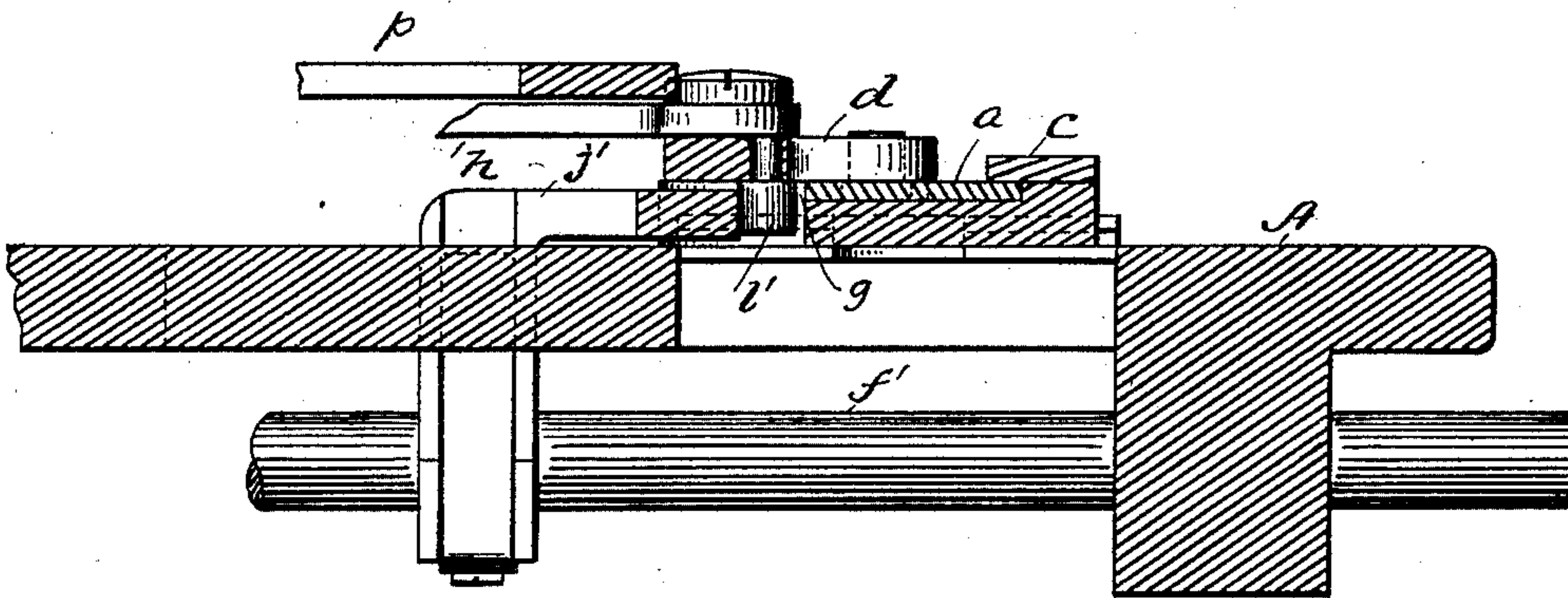


Fig. 10.

WITNESSES

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INVENTOR

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Attys.

UNITED STATES PATENT OFFICE.

HENRY H. CUMMINGS, OF MALDEN, ASSIGNOR TO THE UNION BUTTON SEWING MACHINE COMPANY, OF BOSTON, MASSACHUSETTS.

SEWING-MACHINE FOR BARRING BUTTON-HOLES.

SPECIFICATION forming part of Letters Patent No. 435,686, dated September 2, 1890.

Application filed April 2, 1889. Serial No. 305,735. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. CUMMINGS, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Barring and Tacking Sewing-Machines, of which the following is a specification.

My invention has relation to that class of sewing-machines commonly known as "barring" or "tacking" machines—that is, machines adapted to form a bar or tacking at the base or across the inner end of a button-hole, the ends of pockets, &c.—said bar being commonly formed by taking one or more long stitches at the point and in the direction that the bar is to be made and then stitching back and forth across such long stitches from end to end thereof.

My invention consists of improvements in machines of the class aforesaid, whereby their construction is greatly simplified, their operation rendered certain, and their adjustments readily effected, all as is hereinafter fully described, and pointed out in the appended claims.

In the drawings hereunto annexed and forming a part of this specification, Figure 1 is a side elevation of a machine embodying my improvements. Fig. 2 is a top plan view of the same, the overhanging arm and its attached parts being removed or cut away. Fig. 3 is a bottom plan view. Fig. 4 is a top plan view of a portion of the parts shown in Fig. 2. Fig. 5 is a sectional view taken on the line 5 5, Fig. 3. Fig. 6 is a sectional view taken on the line 6 6, Fig. 2. Fig. 7 is a sectional view similar to Fig. 6, but showing some of the parts in a different position. Fig. 8 is a sectional detail view of the cloth-plate-actuating cam and its immediately-associated parts. Fig. 9 is a sectional detail view taken on the line 9 9 of Fig. 4. Fig. 10 is a sectional detail view taken on the line 10 10 of Fig. 4. Fig. 11 is a bottom plan view of the lever immediately connected with the cloth-plate and support to actuate the same. Fig. 12 is a diagram showing the character of the stitching performed.

The same letters and figures designate the same parts in all of the views.

In the drawings, A designates the bed of the machine; B, the overhanging arm; C, the

main shaft; D, the driving-pulley on the main shaft; E, the shuttle mechanism on the forward end of the main shaft; F, the needle-bar; G, the needle; H, the needle-bar-operating shaft; I, the pitman connecting the shaft H with the main shaft; J, the eccentric on the main shaft for actuating the pitman I; K, the presser-bar, and L the presser-foot.

All of the parts so far mentioned constitute a sewing mechanism and may be of common construction and function.

a designates a reciprocating cloth-plate, between which and the presser-foot L the cloth to be operated upon is clamped, the presser-bar being loosely hung in any appropriate manner to adapt it to travel in any direction with said cloth-plate. The cloth-plate is first given reciprocating movements in the direction of the arrow 2 (see Figs. 2 and 4) to form the long stitches 7, Fig. 12, and then a reciprocating movement in the direction of the arrow 3 and a slow advancing movement in the direction of the arrow 4 to form the stitches 8 across the stitches 7 to complete the bar. The means to produce these functions will first be described.

b designates a slide provided with gibs *c*, upon which slide and between which gibs the cloth-plate *a* is adapted to operate in its reciprocating movements in the direction of the arrow 2, the slide *b* being constructed and arranged to move on the bed-plate so as to reciprocate the cloth-plate *a* in the direction of the arrow 3. (See Figs. 2, 3, 10 and 11.)

d designates an elbow-lever fulcrumed at *e* upon the slide *b* and provided on what is here shown as its short arm with a stud *f*, squared at its lower end, which squared portion of said stud extends through a slot or notch *g*, formed in the cloth-plate *a*.

h designates a pitman or rod connected at its forward end with the elbow-lever *d* at its fulcrum-point *e* and adjustably pivoted at its rearward end to a lever *i*, fulcrumed at *j* upon the bed of the machine, Figs. 2, 6, and 7. Said lever *i* is provided on its end opposite its fulcrum-point with a stud *k*, which extends down through a slot *l* in the bed of the machine and into a cam-groove *m*, formed in the upper face of a horizontally-arranged gear *n*, driven by a gear *o*, Fig. 3, on the main shaft C.

p designates a rod or pitman adjustably connected at one end with the long arm of elbow-lever *d* and pivoted at its opposite end to the forward end of a lever *q*, fulcrumed upon a stud *r*, which extends loosely through lever *i* and through a slot in the bed of a machine. Lever *q* is provided on the under face of its forward end with a recess or notch *s*, adapted to receive a stud *t*, projecting up from the forward end of lever *i*, so that by moving lever *q* down upon lever *i* said two levers may be connected and operated practically as one lever, and by raising lever *q* it may be disconnected from lever *i*, so that the former may be operated on stud *r* as a fulcrum and the latter upon stud *j*, moving lever *q* slightly at the same time. It will now be seen that if levers *q* and *i* should be connected and the machine should be operated cloth-plate *a* would be moved in the direction of the arrow 2, Figs. 2 and 4, to form long stitches 7 and slightly in the direction of the arrow 3, so as to lay said long stitches 7 in a diagonal direction, (see Fig. 12,) considered with respect to the cloth-plate and the needle-slot formed therein, and if lever *q* should be raised to the position in which it is represented in Fig. 7 it would be disconnected from lever *i* and the cloth-plate *a* would be reciprocated through the medium of rod *h* and its actuating mechanism only in the direction of arrow 3, forming the short stitches 8 across the long stitches 7. Now, after forming the long stitches 7 and beginning to form the short, cross, or binding stitches 8 the cloth-plate should be gradually advanced (as is done in this my invention) from its rearward to its forward position, the cross or binding stitches 8 may be made over the long stitches 7 from end to end of the latter. The means by which these functions are accomplished by my improvements will next be described.

u designates a lever fulcrumed at *v* beneath the bed of the machine and provided a little rearward of its fulcrum-point with a laterally-extending dog *w*, adapted to engage a screw-thread *x*, formed on the periphery of an enlarged hub of or disk *y*, attached to gear *n*. Said dog *w* is pivoted to lever *u*, and its free end is forced upward by a spring *z*, secured to lever *u* and bearing on the outer end of the dog. A set-screw *a'*, tapped through the dog and bearing at its upper end against the lever *u*, affords a means for adjusting the dog so that its free end may be made to engage a greater or less number of the screw-threads *x*, counting from the bottom, all of which will be clearly understood by an inspection of Fig. 5 of the drawings. A spring *b'* is attached at one end to the bed of the machine and at the other end to the arm or portion of the lever *u* beyond the fulcrum-point *v*, to which the dog *w* is attached, (see Fig. 3,) which spring tends to draw the dog *w* toward the hub *y* of gear *n* and hold said dog in engagement with the screw-threads *x* or draw it under the hub *y*, as the case may be. The

inner upper edge of lever *u* is beveled or provided with an inclined cam-swell *c'* near the point where the dog *w* is secured thereto, which beveled portion of the lever is arranged to move under the fulcrum-pin *r* of lever *q* and raise said lever, as shown in Fig. 7, or to move out or partially out from under said pin *r* and allow lever *q* to be brought down on lever *i*, as it will be by the action of spring *d'*, and so as to engage lug or pin *t* with notch or recess *s*, as shown in Fig. 6. The end of lever *u* opposite that to which spring *b'* is attached thereto is provided with a dog *e'*, (see Fig. 3,) adapted to be brought into or thrown out of engagement with a screw-threaded hub or sleeve *g²*, connected with a broad ratchet-wheel *g'*, turning loosely on the inner end of the shaft *f'*, but not allowed to move longitudinally thereon. The shaft *f'* is arranged in bearings connected with the machine-bed, so as to move longitudinally therein.

h' designates a pawl arranged to engage the teeth of ratchet-wheel *g'* and to be actuated by an eccentric *i'* on the main shaft *C*, the said pawl being held down in engagement with the teeth of said ratchet-wheel by a spring *h²*.

Shaft *f'* is provided with what I term a "creeper" *j'*, which consists of an angular finger arranged to extend through a slot *k'*, formed in the bed *A*, (see Figs. 4, 9, and 10,) and to operate against a downwardly-extending lug *l'*, formed on the long arm of the elbow-lever *d*, so that when the dog *e'* is engaged with the screw-threaded sleeve *g²* of ratchet-wheel *g'* on the shaft *f'* and said ratchet-wheel and sleeve are rotated and the shaft is gradually moved longitudinally (as it will be under such circumstances) in the direction of the arrow 5, Fig. 3, the creeper *j'*, acting on the lug *l'* of elbow-lever *d*, will gradually move said lever on its fulcrum *e*, so as to advance the cloth-plate *a* from its rearward to its forward position, or, in other words, in the direction of arrow 2, Figs. 2 and 4. Supposing now that the cloth or other material to be operated upon has been clamped in proper position between the presser-foot *L* and the cloth-plate *a*, and the arm or end of lever *u* is drawn back in the direction of the arrow 4, Fig. 3, against the tension of the spring *b'* and the dog *w* brought into engagement with the screw-thread *x* on the periphery of the hub or disk *y* of gear *n*, pin *r* of lever *q* will have ridden down on the incline *c'* of lever *u* and brought said lever *q* down upon lever *i* and pin *t* of the latter lever into engagement with the notch or recess *s* of the former lever, permitting said levers to be actuated in unison. By the movement of lever *u* as aforesaid, dog *e'* will have been disengaged from the screw-threaded sleeve *g²* and elbow-lever *d* will have been moved through the medium of rod *p* after lug *t* shall have engaged the notch or recess *s*, so that the lug *l'* shall have operated against the creeper *j'* to move shaft *f'* longitudinally in a direction opposite to the

arrow 5, Fig. 3. With this adjustment or arrangement of parts the machine may be started, when the cam-groove *m*, acting on the stud *k*, will actuate the levers *i* *q*, and through the medium of said levers the elbow-lever *d* and the connecting-rods *p* *h* reciprocate the cloth-plate *a* in the direction of the arrow 2 and slightly in the direction of the arrow 3 to form the long diagonal stitches 7, Fig. 12. This operation will continue until dog *w* travels down and out of engagement with screw-threads *x* on hub *y* and said dog is drawn under said hub by spring *b'*, moving lever *u* on its fulcrum *v*, bringing dog *e'* into engagement with the screw-threaded sleeve *g*² and raising pin *r* by bringing incline *c'* thereunder, so as to disconnect lever *q* from lever *i*, as shown in Fig. 7. The number of long diagonal stitches 7 which will be taken will depend upon the number of screw-threads *x* of hub *y*, counting from the bottom, with which dog *w* is allowed by adjusting screw *a'* to engage. With the parts in the position last described, upon the further operation of the machine cloth-plate *a* will be actuated by lever *i* and its connections and be in no wise affected by the operation of lever *q*, so that said cloth-plate will be reciprocated from side to side or in the direction of the arrow 3 and will be gradually advanced from its rearward position in the direction of the arrow 2, Fig. 2, by the operation of the creeper *j'* on the lug *l'* of elbow-lever *d*, whereby the cross or binding stitches 8 will be formed across the long diagonal stitches 7, drawing in said long stitches at the ends thereof and forming a perfect bar or "tack," as shown in Fig. 12. The length of the long stitches 7, and consequently of the bar, will depend upon the point of the long arm of elbow-lever *d*, at which the rod *t* is pivoted thereto, as will be readily understood by an inspection of Fig. 2. After the cross or binding stitches 8 shall have been taken along the long diagonal stitches 7 the machine is stopped automatically, and this is accomplished by the means which I will next describe.

m' designates a lever fulcrumed at *u'* beneath the bed of the machine and loosely connected at its inner end with a longitudinally-movable rod *o'* and provided at its opposite end with an arm *p'*, adapted to move a clutch member *q'*, splined on craft C into and out of engagement with a clutch-member *r'*, connected with pulley D, arranged to turn loosely on said shaft. Rod *o'* has a spring *s'* connected therewith, which tends to draw said rod in the direction of the arrow 9, Fig. 3.

t', Figs. 1 and 3, designates a lever, of bell-crank form, fulcrumed on the bed of the machine, the horizontal arm of which is constructed and arranged to engage a notch formed in rod *o'*. When said rod is moved in a direction opposite to arrow 9 and against the stress of spring *s'*, the vertical arm of said lever *t'* projects up through a slot in the bed A and is provided on its upper end with

a cross-pin *u'*, which extends in the path of movement of the outer end of lever *q*, (see dotted lines in Fig. 2,) when cloth-plate *a* is moved to its extreme forward position. Upon adjusting lever *u*, as shown in Fig. 3, the arm of lever *m'*, connected with rod *o'*, may be drawn outward in the direction of the arrow 4, moving rod *o'* in a direction opposite to the arrow 9 and causing clutch member *q'* to be engaged by the member *r'*, thus rotating main shaft C. At the same time the horizontal arm of elbow-lever *t'* will catch into the notch formed in rod *o'* and hold the parts locked in operative position until the creeper *j'* moves the cloth-holder *a* to its extreme forward position, which operation will bring the outer end of lever *q* into such position that it will strike the pin *u'*, rocking lever *t'* on its fulcrum and raising the horizontal arm of said lever out of the notch in rod *o'* and allowing spring *s'* to move said rod and lever *m'*, so as to disengage the clutch member *q'* from the member *r'* and stop the rotation of shaft C.

A chain or rod *v'*, Fig. 3, may be attached to the end of lever *u* opposite that provided with the dog *e'*, passed over a pulley *w'*, and attached to a treadle (not shown) on the floor, whereby the parts may be adjusted in operative position by the mere movement of the foot of the operator.

It is obvious that the form and arrangements of parts constituting my improvements may be varied without departing from the nature or spirit of the invention.

Having thus set forth the nature and purposes of my improvements in barring and tacking machines, I declare that what I claim is—

1. In a barring and tacking machine, the combination, with a sewing mechanism, of a reciprocating slide and means for reciprocating the same, a cloth-plate carried by and adapted to be reciprocated on said slide in a line at right angles to the line of movement of the latter, means for holding the cloth on the cloth-plate, an elbow-lever fulcrumed on said slide and having one of its arms pivoted to said cloth-plate, a rod pivoted at the apex of said elbow-lever, a lever to which the other end of said rod is pivoted, and means for oscillating said lever and reciprocating the cloth-plate, as hereinbefore set forth.

2. In a barring and tacking machine, the combination, with a sewing mechanism, of a reciprocating cloth-plate, means for reciprocating the same and means for holding the cloth on the plate, a slide carrying said plate and constructed and arranged to be reciprocated at right angles to the line of reciprocation of the cloth-plate, a rod pivotally connected with said slide, a lever to which the other end of said rod is pivoted, a stud projecting from said lever, another lever having a slot into which said stud engages, and means for oscillating the slotted lever, as hereinbefore set forth.

3. In a barring and tacking machine, the combination of a slide, an elbow-lever fulcrumed thereon, a cloth-plate supported upon and carried by said slide, means for holding
 5 the cloth on the cloth-plate, one arm of said elbow-lever being pivoted to said cloth-plate, a rod adjustably connected with the other arm of said lever, a rotary cam, connections between said cam and rod for actuating said
 10 lever to reciprocate said cloth-plate, a second rod pivotally connected with said slide, and connections between said cam and said last-mentioned rod to reciprocate said slide at right angles to the line of reciprocation of
 15 said cloth-plate, as hereinbefore set forth.

4. In a barring and tacking machine, the combination, with a sewing mechanism, of the slide *c*, the elbow-lever *d*, pivoted thereon, cloth-plate *a*, supported and adapted to move
 20 upon said slide, one arm of said lever *d* being pivoted to said cloth-plate, rod *p*, pivotally connected with the other arm of said lever, rod *h*, pivotally connected with said elbow-lever, lever *i*, pivotally connected with rod *h*
 25 and provided with the studs *k* and *t*, lever *q*, provided with the stud *r*, extending through

lever *i*, and with the recess or notch *s*, and a lever *v*, provided with the incline or cam *c'*, as hereinbefore set forth.

5. In a barring and tacking machine, the
 30 combination of a reciprocating slide and means for reciprocating the same, a cloth-plate supported upon said slide and adapted to be slid thereon, means for holding the
 35 cloth on said plate, an elbow-lever pivoted on said slide having one arm pivotally connected with said cloth-plate and a stud extending from the longer arm of said lever, a longitudinally-movable shaft, and a finger con-
 40 nected with said shaft and adapted to bear against said stud and to move said lever, whereby the cloth-plate is slid at right angles to the slide, as hereinbefore set forth.

In testimony whereof I have signed my name to this specification, in the presence of
 45 two subscribing witnesses, this 26th day of March, A. D. 1889.

HENRY H. CUMMINGS.

Witnesses:

ARTHUR W. CROSSLEY,
 A. D. HARRISON.