

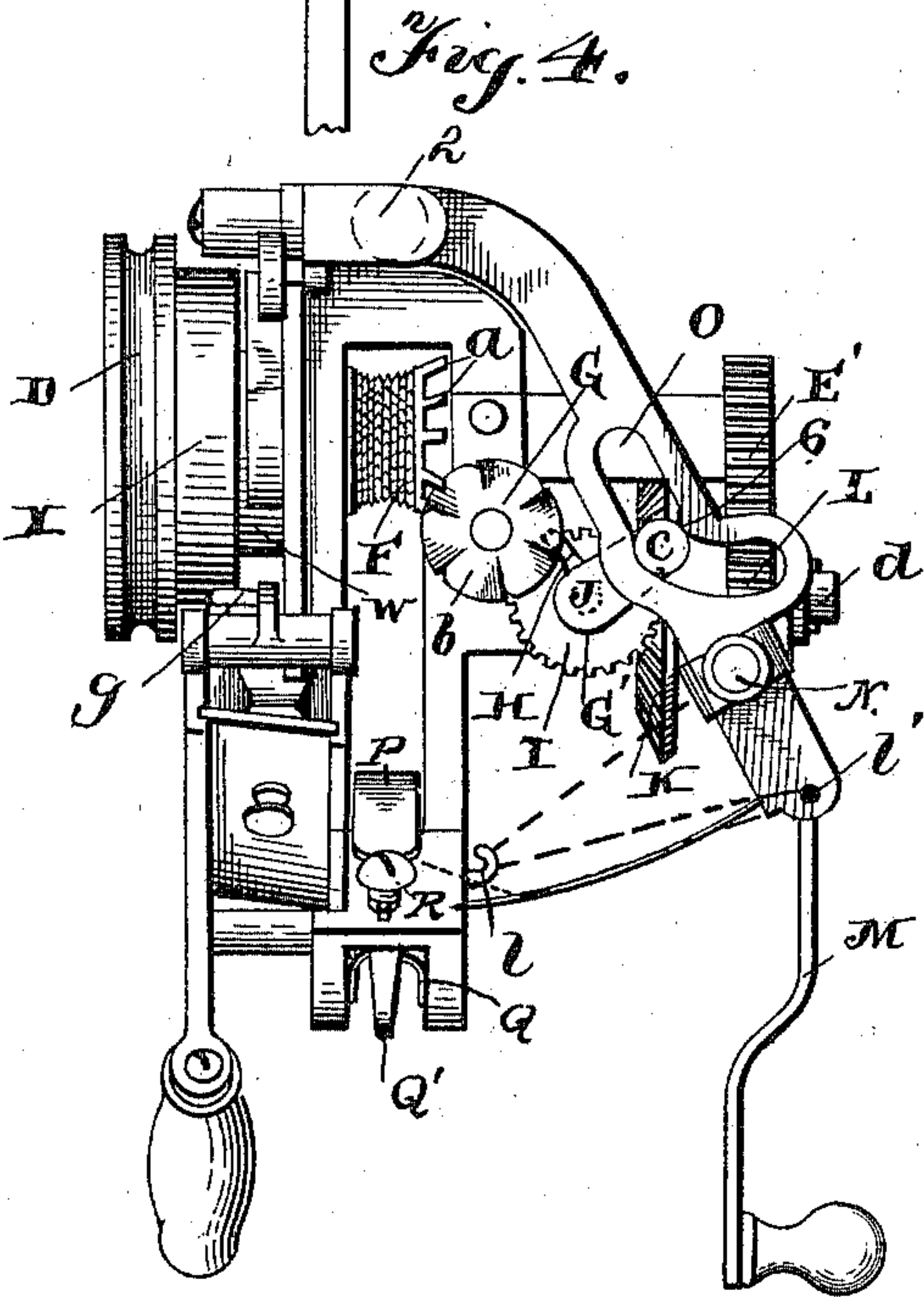
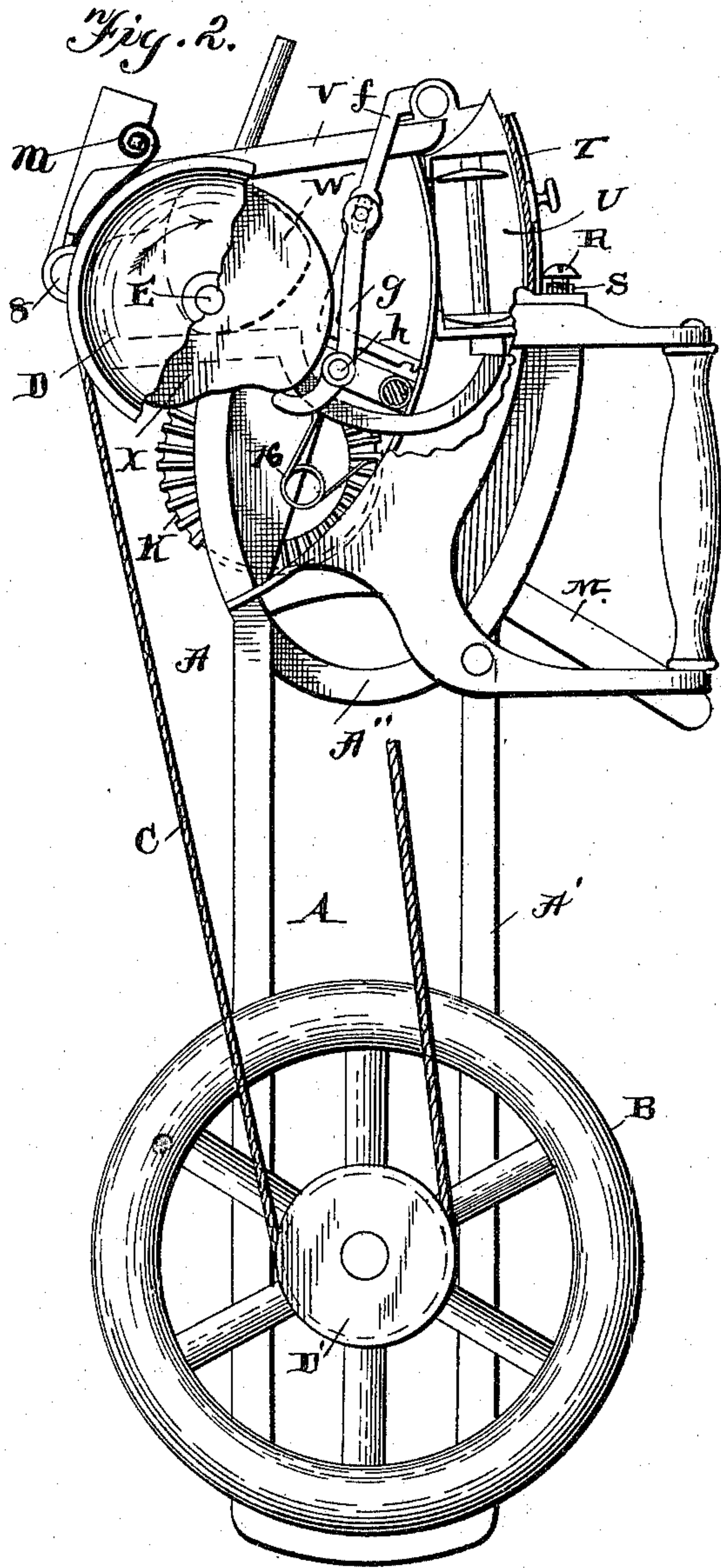
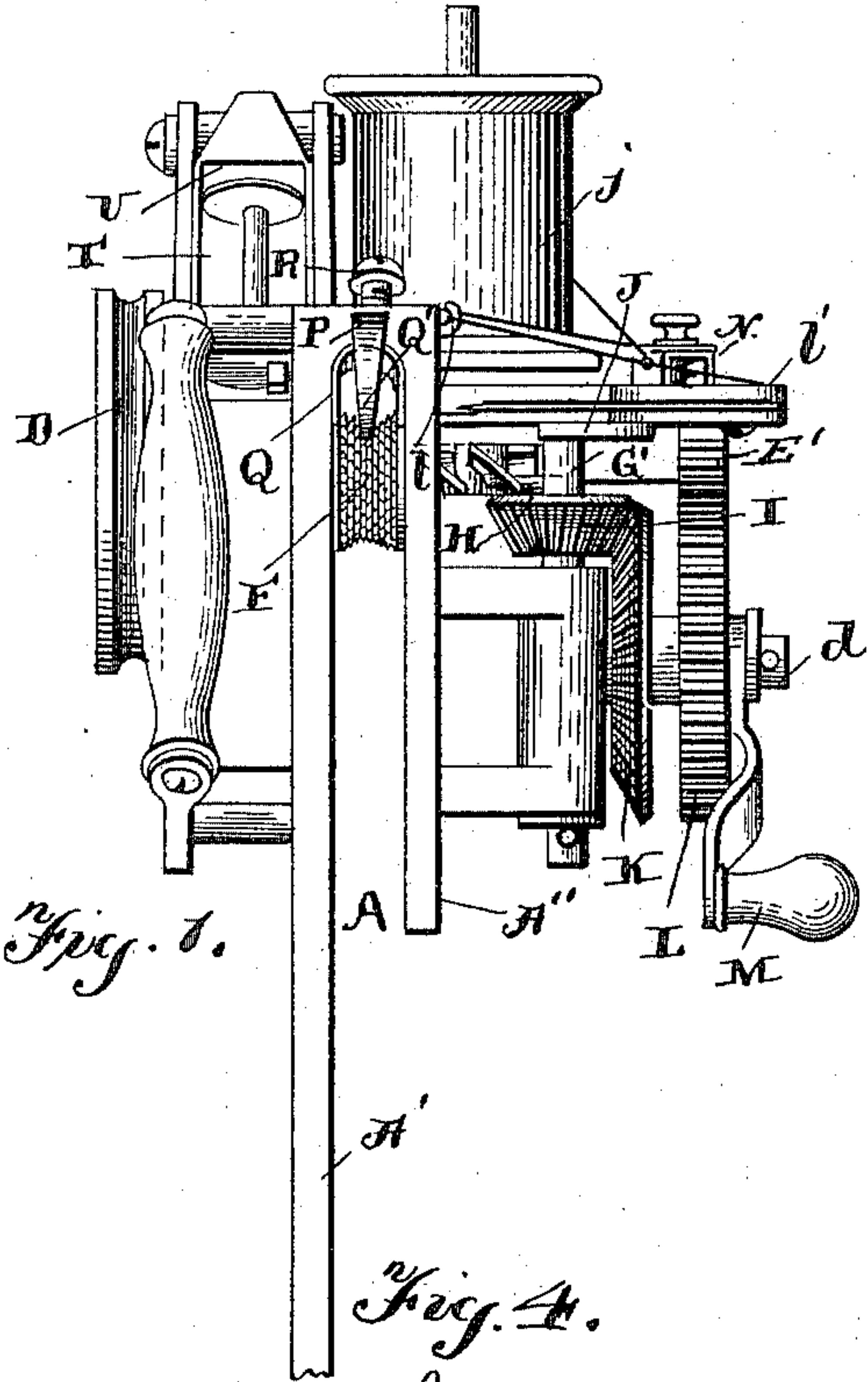
(No Model.)

2 Sheets—Sheet 1.

H. ESCHWEILER.  
CARPET SEWING MACHINE.

No. 582,118.

Patented May 4, 1897.



Witnesses  
Geo. C. French,  
J. Edw. Dowler

Inventor  
Henry Eschweiler  
by T. Walter Fowler  
his Attorney

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

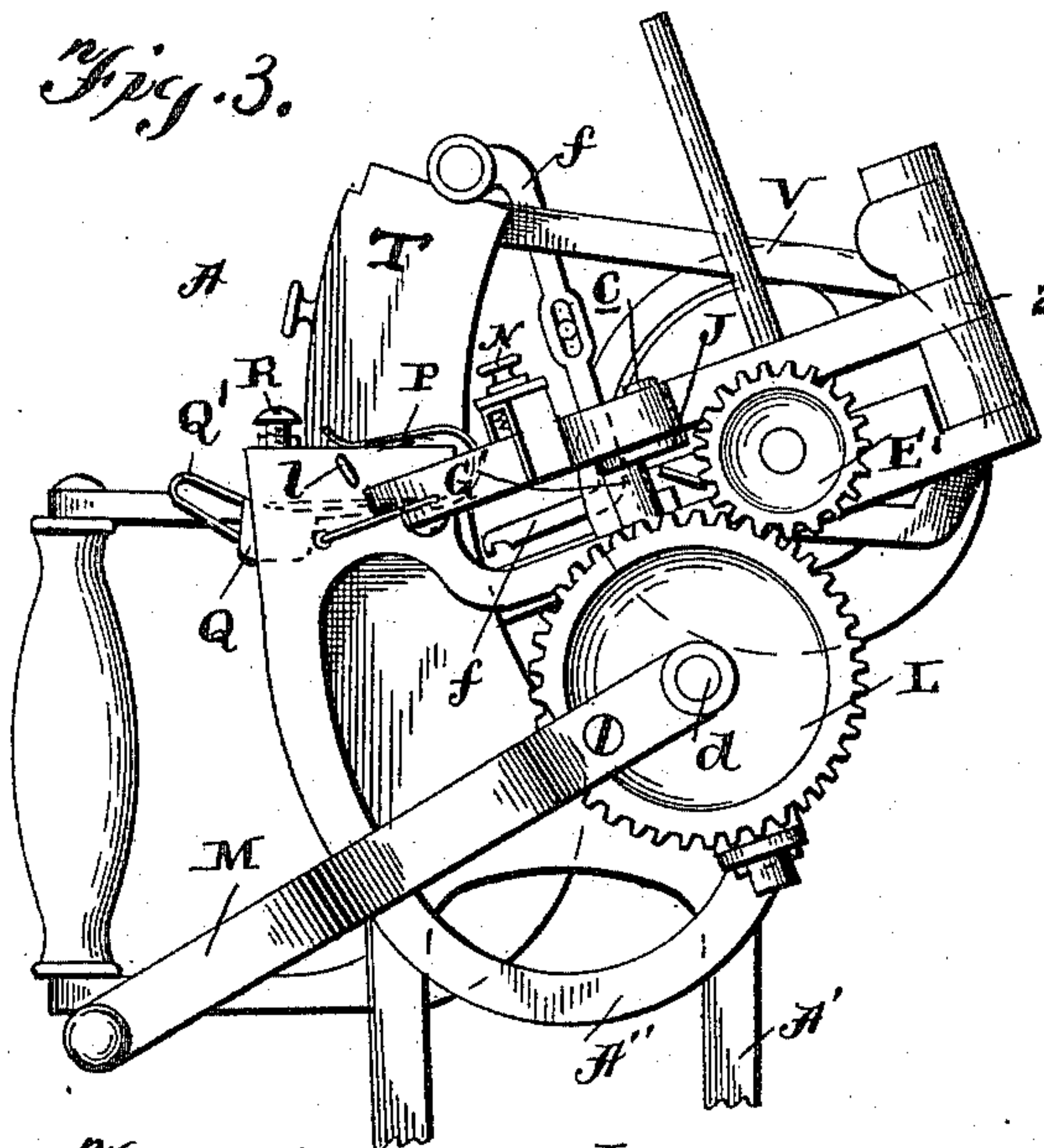


Fig. 9.

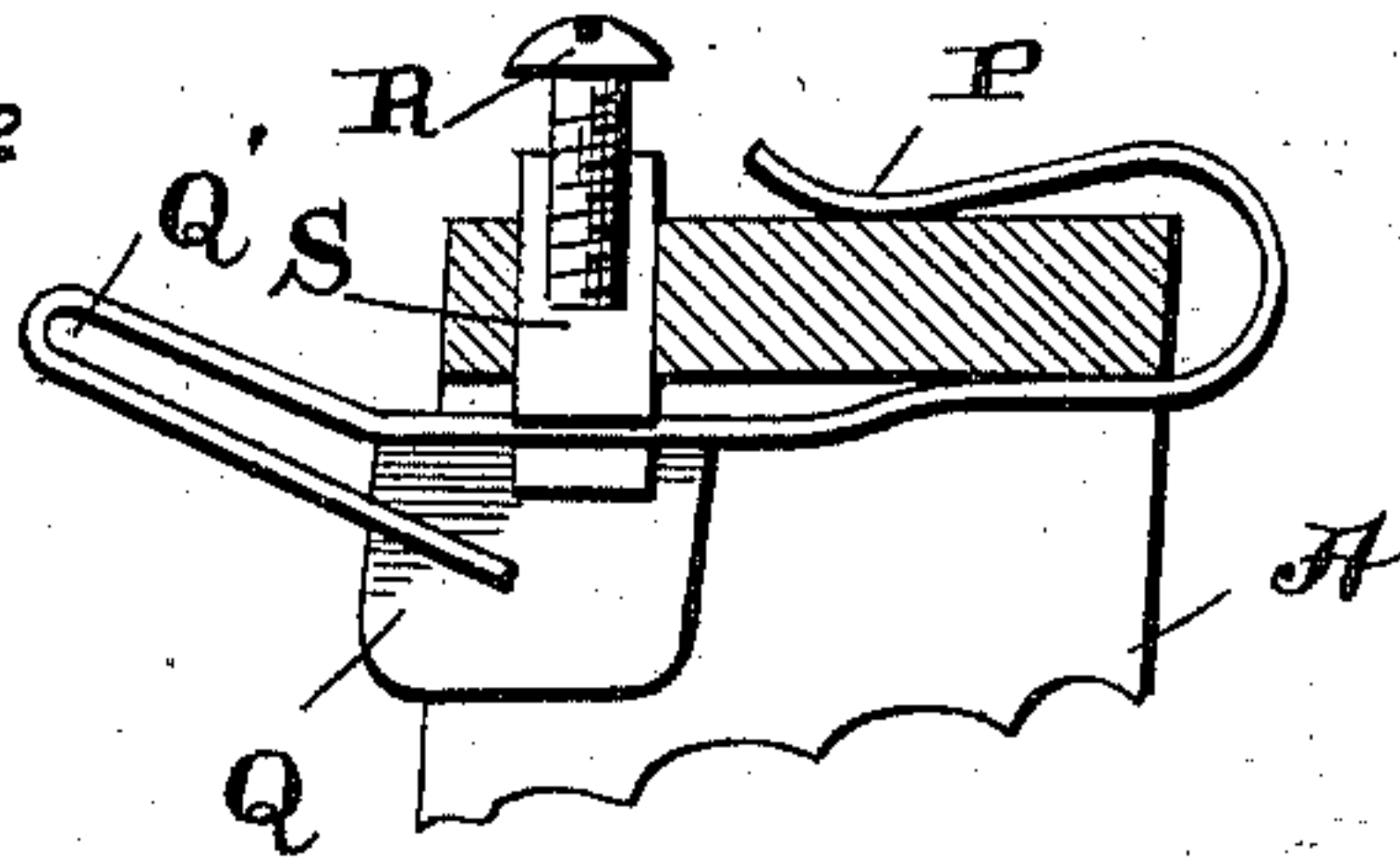


Fig. 7.

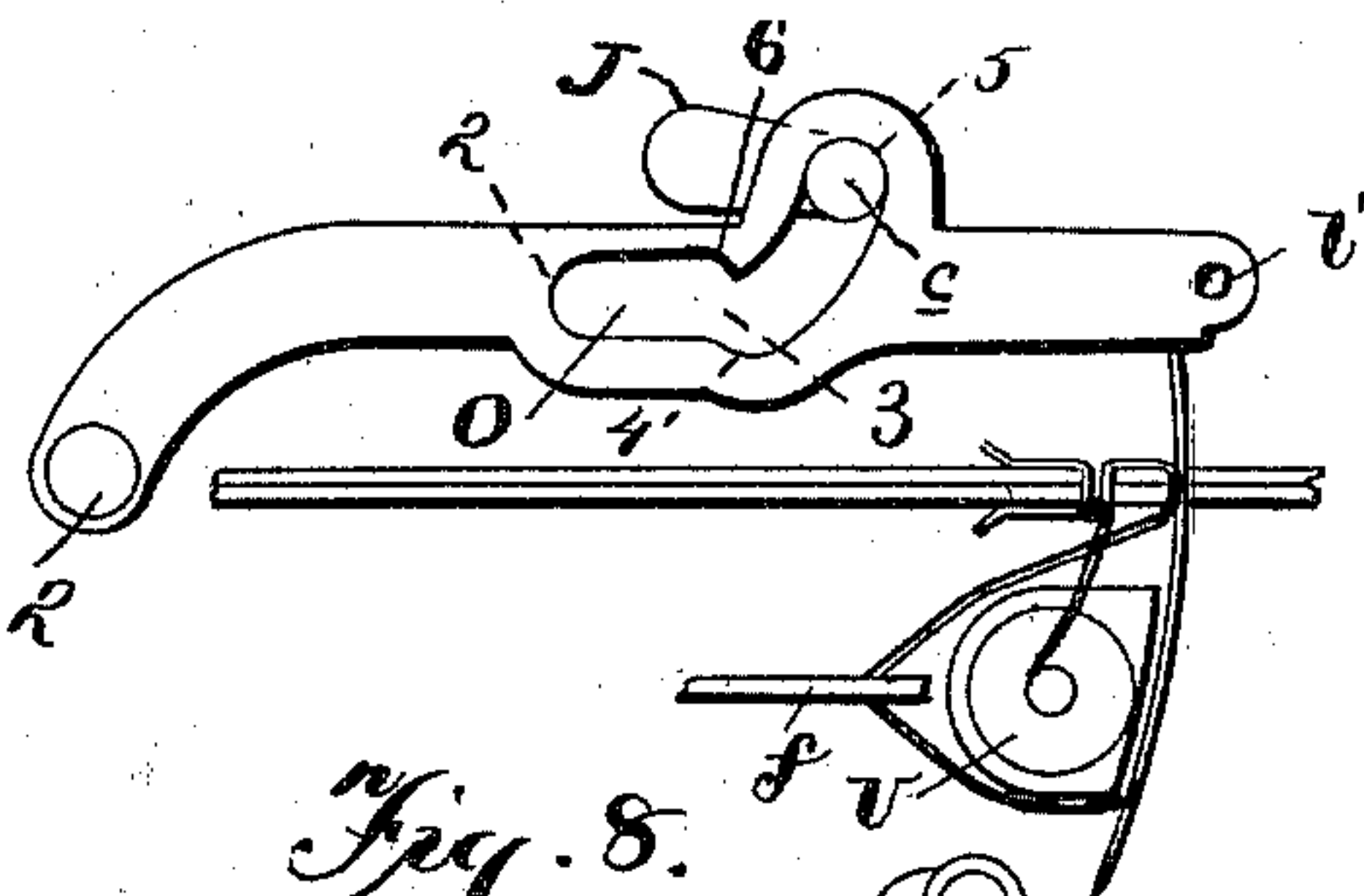


Fig. 5.

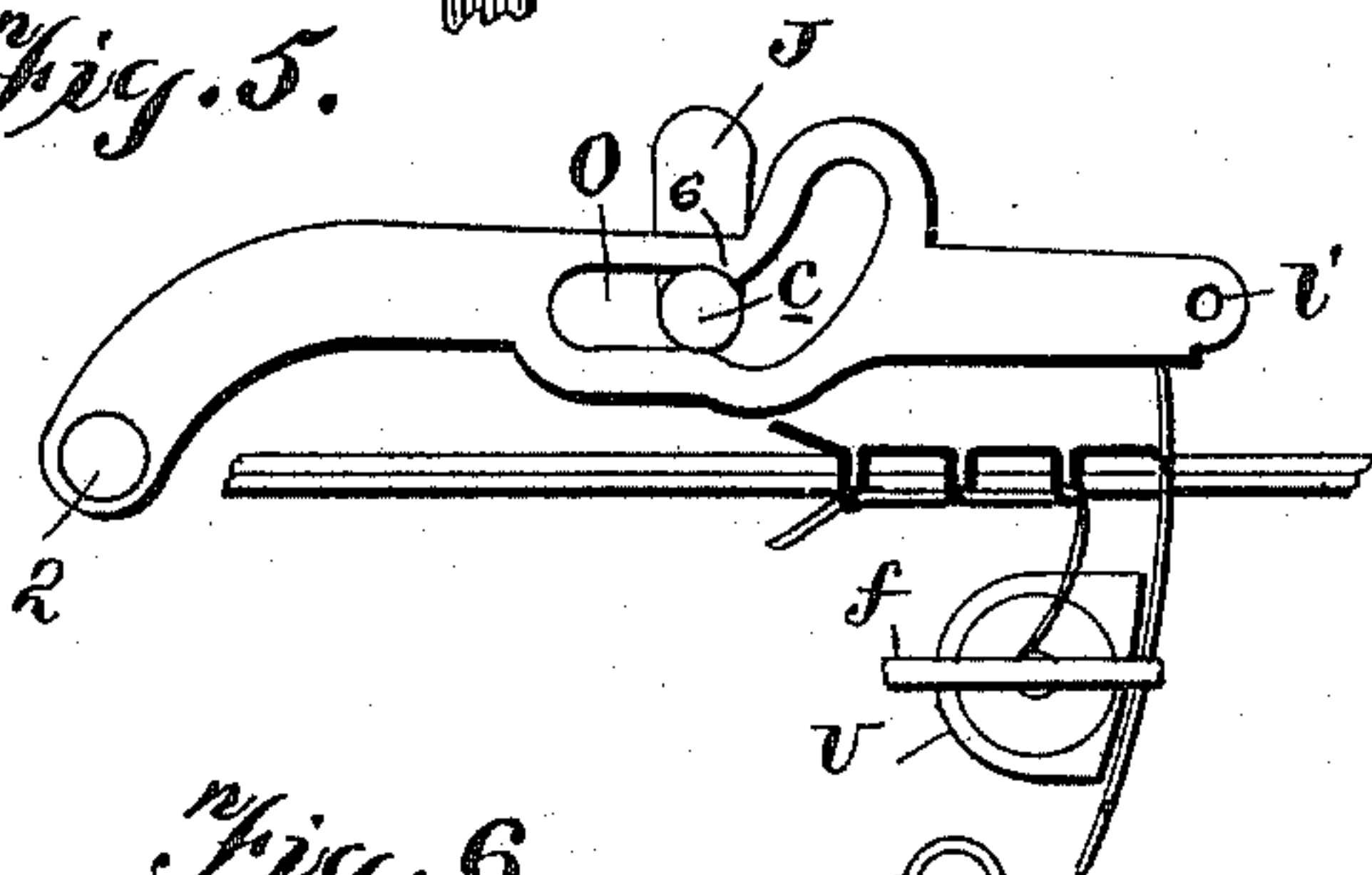


Fig. 6.

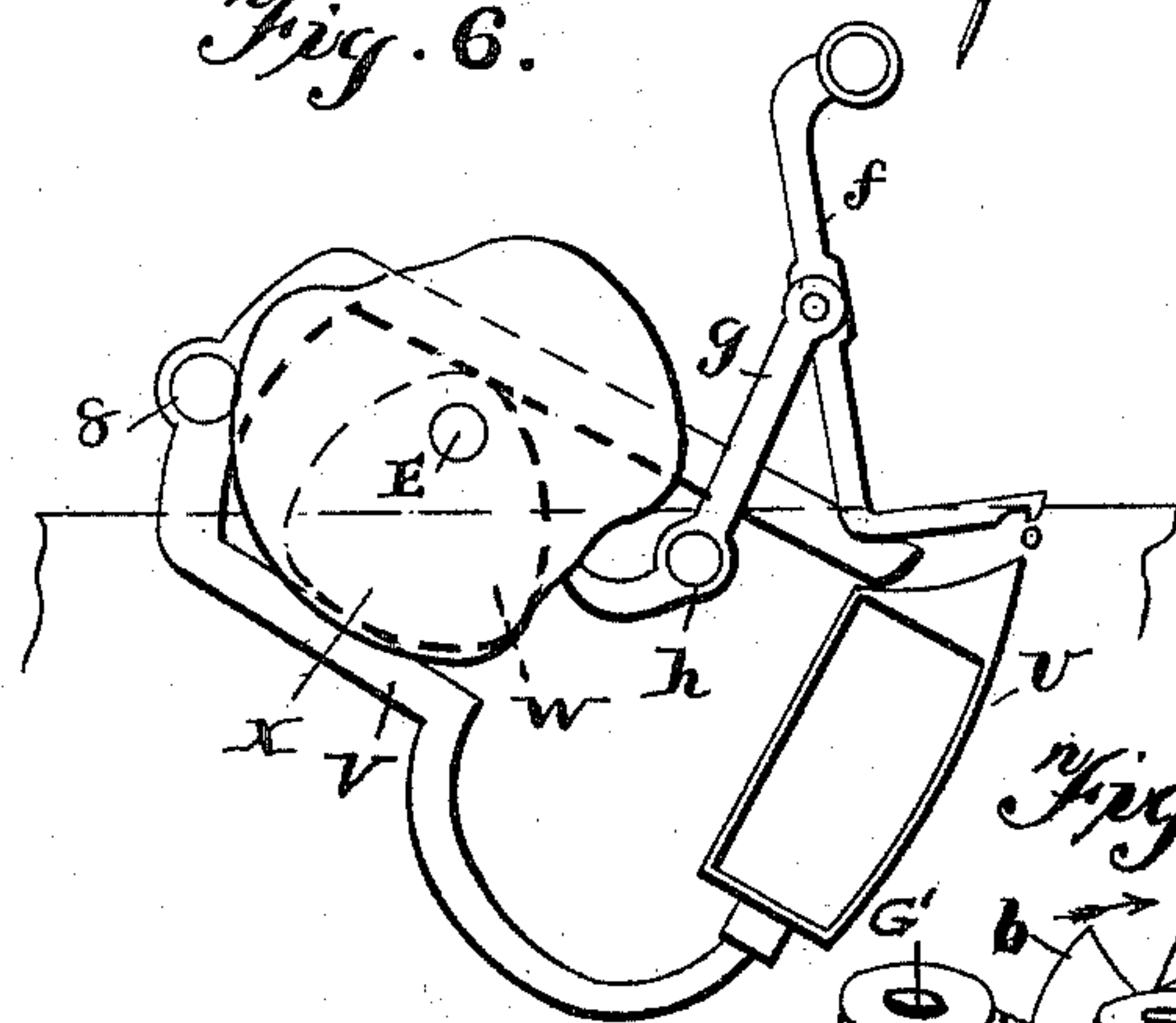


Fig. 8.

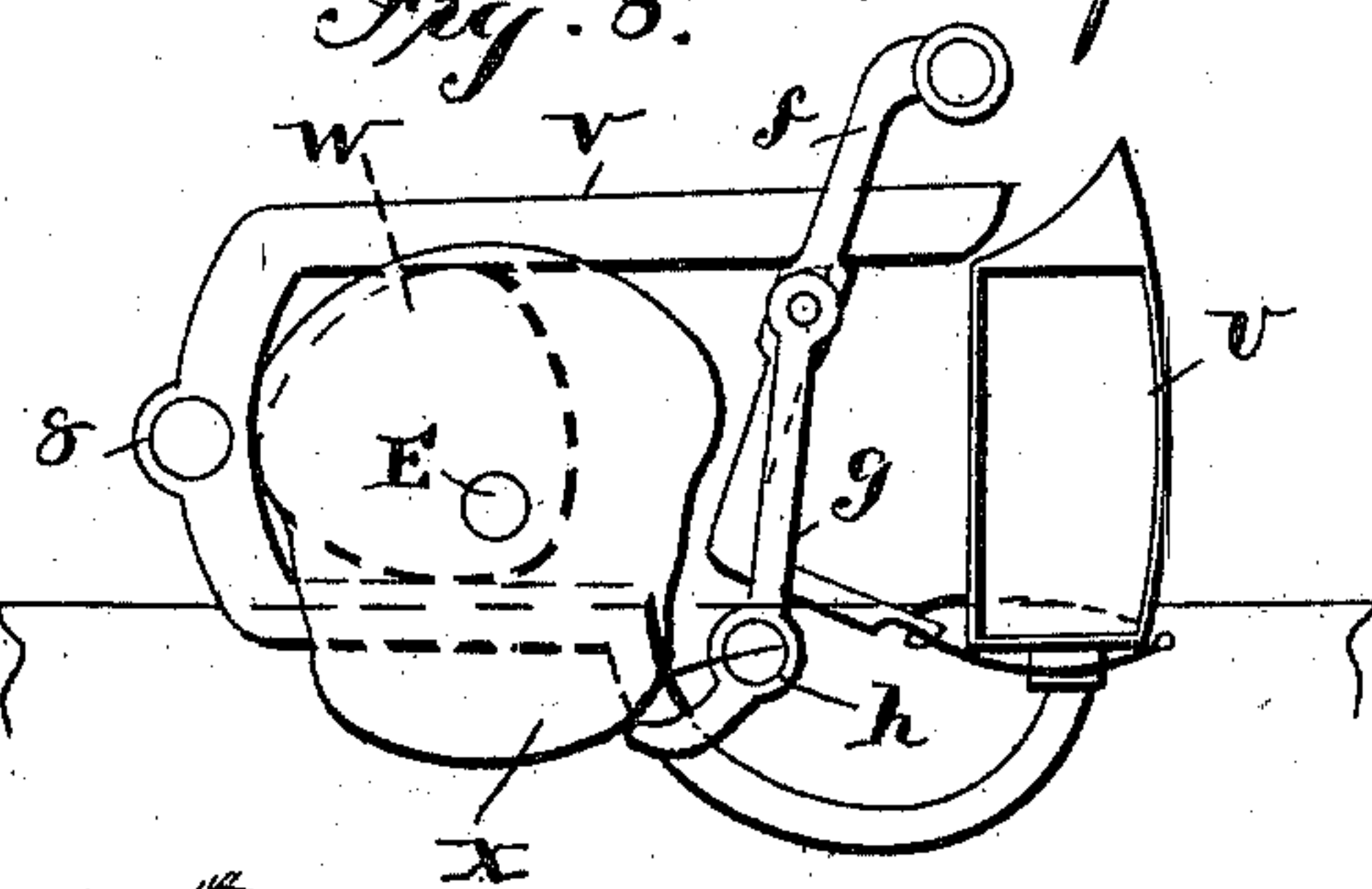
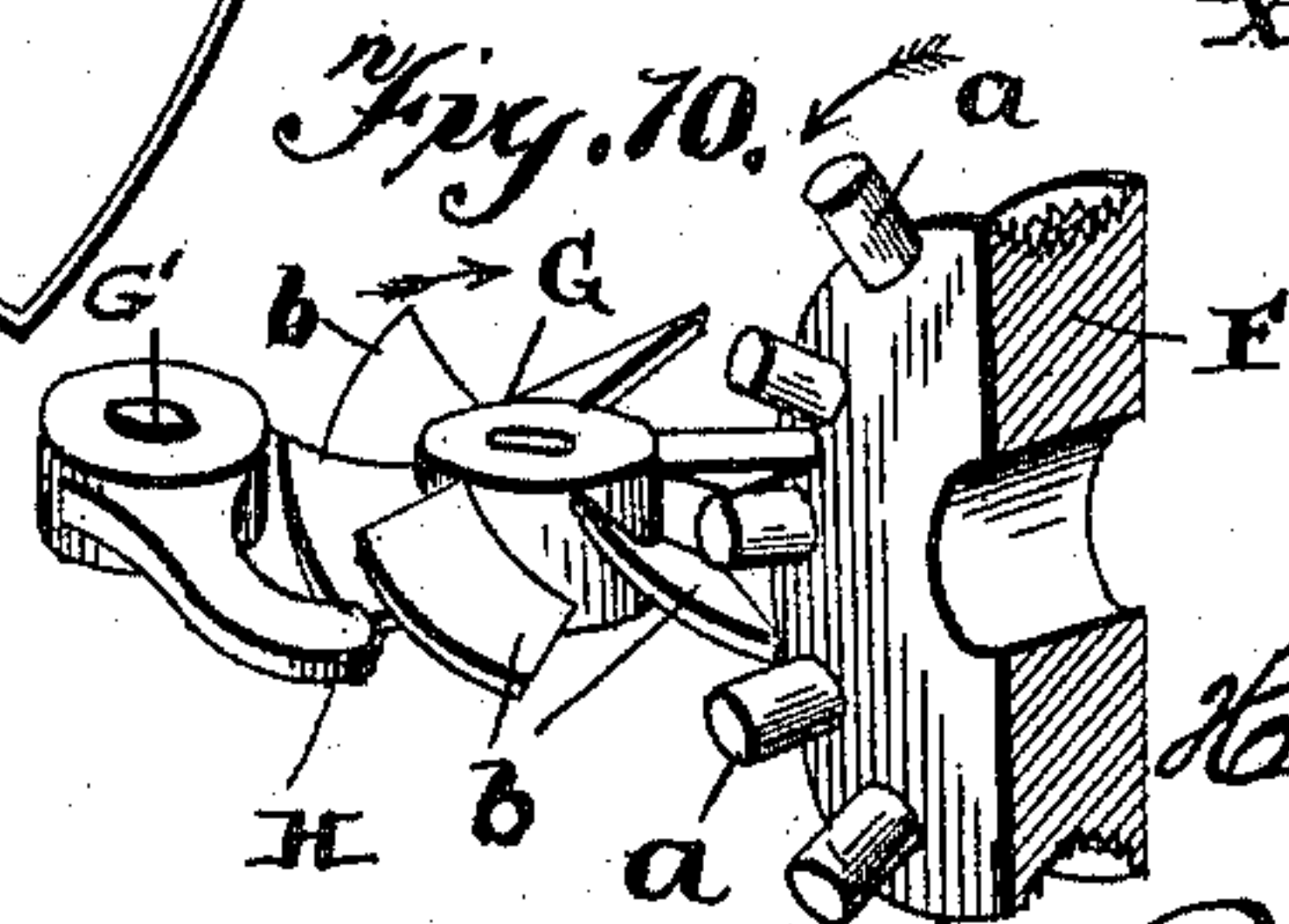


Fig. 10.



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# UNITED STATES PATENT OFFICE.

HENRY ESCHWEILER, OF SAN FRANCISCO, CALIFORNIA.

## CARPET-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 582,118, dated May 4, 1897.

Application filed September 9, 1895. Serial No. 561,984. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY ESCHWEILER, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Carpet-Sewing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to machines for sewing carpets, especially when two pieces of fabric are placed side by side, with their edges, exposed and horizontal and stretched taut, presented upwardly, whereby the machine is supported upon said edges and its feed-roller made to directly engage said exposed edges to feed the machine along the same; and my invention consists of the parts and the constructions, arrangements, and combinations of parts which I shall hereinafter fully describe and claim.

Figure 1 is an edge view of the upper portion of a carpet-sewing machine embodying my invention. Fig. 2 is a side view of the same. Fig. 3 is a side view of the opposite side of the machine, showing the cams removed. Fig. 4 is a top plan view of the machine. Figs. 5 and 6 are diagrammatic figures showing the relative positions of the needle-arm and stitch-forming mechanism when the looper is about to retract. Figs. 7 and 8 are similar views showing the looper retracted and the shuttle passing through the loop. Fig. 9 is an enlarged sectional view of the support P and its attachments. Fig. 10 illustrates the means for feeding the machine forward.

In the accompanying drawings, A represents the frame of the machine, preferably of yoke shape, having one side or arm A' extending down alongside the carpet to be sewed when the machine is in its operative position, with the fabric stretched so that its edges will lie side to side in an approximately-horizontal position, whereby the machine is supported upon the edges which are to be united. At the lower end of the arm A' of the frame is journaled a balance-wheel B, and a belt C passes around a pulley D' upon the balance-wheel shaft and thence

around a pulley D upon a pinion-shaft E at the upper part of the machine. The other side or arm A'' of the frame is turned over and extends downwardly a short distance from the upper part of the frame parallel with the part A' and forming a space or channel between said arms of suitable width to allow the carpeting to pass through it.

On the pinion-shaft E, which is at the upper part of one end of the machine, is loosely mounted a concaved-faced radially-pointed feed-roller F, which receives the pieces of fabric edgewise and whose teeth are sharp and are adapted to directly engage the edges of the fabric and by the weight of the machine to sink into said edges and form a positive engagement, whereby the feeding forward of the machine will be insured without slippage and without lateral displacement.

One end of the feed-roller is formed or provided with lugs or pins *a*, set in a direction to be properly engaged by the inclined wings or blades *b* of a wheel G, mounted nearly horizontally on the frame A in such a position that when this wheel G is turned a partial revolution, by means hereinafter described, one of its wings or blades, which at the time being in contact with one of the lugs or pinions of the feed-roller, will in riding over said lug or pin depress it and cause the feed-roller to be rotated a partial revolution to advance the machine ready for the succeeding stitch. The wheel G is actuated by a spur or arm H, projecting from an approximately upright shaft G' or from a collar on said shaft, the said shaft having fixed to it a bevel-pinion I and having at its upper end a crank-arm J, from which a wrist-pin *c* projects, and is designed to engage and operate the needle-arm hereinafter described, said wrist-pin being provided with an antifriction-roller.

The bevel-pinion I meshes with a bevel-gear K on a horizontal shaft *d*, and to this bevel-gear K or to the shaft thereof is fixedly secured the driving-gear L, which is in mesh with a pinion E' on the shaft E. By means of a crank M on the driving-gear power is communicated to the train of gearing just described, and the pinion I is driven to cause the spur or arm H to periodically contact with and actuate the wheel G by engaging one end of one of the wings and throughout the me-



dium of the inclined planes between the wheel G and the feed-roll to intermittently operate the latter.

The horizontal needle-arm is fulcrumed near one end of the frame at 2, the said arm extending across the frame and having its opposite or free end provided with a needle in the usual manner. This arm also serves as a take-up for the slack thread which invariably exists in shuttle-machines. The needle-arm carries a tension device N, and back of this the arm is preferably mounted at an incline, is widened, and provided with a cam-slot O for the wrist-pin *c*, said slot being essentially of the form shown in Figs. 4, 5, and 7, said slot consisting, essentially, of a portion 4 5, struck on a radius of which the axis of the crank-arm J is the center, and a portion 2 3, which is approximately straight and parallel with the major axis of the needle-arm, the junction of the two slotted portions 2 3 and 4 5 at one side resulting in the forming of a shoulder or projection 6, the purpose of which and the peculiar curvature of the cam-slot being hereinafter specially referred to in the operation of the stitch-forming mechanism. The construction and arrangement of these parts are such that the wrist-pin and its roller are caused to travel in the cam-slot and to reciprocate the needle-arm from side to side to produce two reciprocations for each revolution of the driving-gear.

In order to regulate the distance of the stitch from the edge of the goods, I employ an elastic spring-arm P, elastically held to the frame A near the end where the needle operates and having saddle-shaped flaps or wings Q, adapted to receive the edges of the fabric between them, the said spring-arm having an upwardly-inclined horn or forward projection Q', adapted to hold down the nap or rough fibers of the edges adjacent to the point where the needle enters the goods.

R is a screw which fits into a slot in a plate S, and the exterior threaded portion of the screw engages corresponding threads made on opposite sides in the frame, within which the screw is movable. A shoulder on the plate S presses upon the top of the spring-arm P when the screw R is turned down, and thus raises the frame and the needle, so that the stitch is brought nearer to the edge, and when the screw R is turned the opposite way the spring-arm P will act to depress the frame, thus bringing the needle and the stitch farther from the edge of the goods.

T is the shuttle-race, and U is the shuttle, of the usual form and carrying a spool-bobbin and thread in the manner usual for such shuttles. The shuttle is carried by the lower arm of the shuttle-carrier V, fulcrumed at 8, and it is designed to reciprocate within the shuttle-race by means of a cam W, located between the arms of the shuttle-carrier and adapted to alternately engage said arms. The form of the cam is shown in Figs. 2, 6, and 8, and it is fixed to and is adapted to ro-

tate with the shaft E of the pulley D, whereby when the cam is driven it operates the shuttle-carrier and alternately impels the shuttle from one end to the other of its range of travel in the shuttle-race.

In conjunction with the shuttle and the needle is the looper *f*, which in the present instance is pivotally hung from the upper portion of the shuttle-race to enable the looper to pass with its hooked end through the shuttle-race at about right angles with the curvature of the race. This change in the hanging of the looper enables me to make the shuttle nearly square, which results in increasing its capacity and amount of thread it will hold. The free end of the looper has the usual hook to engage the slack of the needle-thread, and the central portion of the looper is engaged by one end of a lever *g* of a form essentially like a bell-crank lever, the said lever being fulcrumed at *h* and having its opposite end engaged by a cam *xx*, fixed on the shaft E adjacent the cam W, so that it may rotate with the latter cam, the two cams being so arranged with relation to each other that the movements of the looper and the shuttle are properly timed with relation to each other and the movement of the needle itself. The needle-thread is carried upon a spool *j*, the thread passing from it, as shown in Fig. 1, guided between the plates of the tension device, then through guide *l* and a guide *l'* on the swinging needle-arm, which carries the tension device, and finally through the eye of the needle.

At the rear end of the shuttle-carrier is a spring *m*, the purpose of which is to counter-balance the carrier and the weight of the shuttle and its adjuncts.

The operation of this machine is substantially the same as the machine described and shown in my former application, Serial No. 535,382, filed January 18, 1895, except as to the devices which actuate the needle-arm and feeding devices. The formation of the slot in the needle-arm is important in this case, and to make this part of my invention plain I will now describe the operation of forming the stitch. Figs. 2 and 4 show the position of the mechanism just previous to the beginning of a stitch. The wrist-pin *c* is at this moment in contact with the shoulder 6 in the slot and has caused the needle-arm to withdraw the needle to its fullest extent. Spur H in revolving with shaft G has at the same moment engaged the corner of one of the inclined blades of the wheel G, which in turning and exerting with one of its blades a screw-like action upon one of the lugs or pins *a*, connected with the feed-roller F, causes the machine to advance the length of one stitch; also at the same moment the looper *f*, which by the action of the cam X, the spring 16, and the lever *g* is intermittently caused to advance and retreat, is held in its retreated position, so as to clear the shuttle, which at the said moment begins to descend, being



carried by the lower arm of shuttle-carrier V, which is operated by the cam W.

Fig. 5 shows that the wrist-pin has pushed the needle to its extreme end through the fabric and is about to engage the shoulder 6 in the slot and in operating against the shoulder cause an immediate partial retraction of the needle, which retraction will cause a slack or loop to be formed in the needle-thread between the needle-eye and the fabric. This occurs simultaneously with the advancing of the looper, which will immediately, by hooking into the slack thread and retreating therewith, form a loop through which the shuttle, which during the just-described actions has remained stationary, will now be lifted.

While the shuttle is making its upward course, the wrist-pin c passes through the curved part of the slot from the shoulder 6 to the point 5; but as this particular part of the slot is struck from the center of the crank-shaft J the needle-arm remains stationary until the wrist-pin arrives at the point 5 and the shuttle has almost reached its highest position, which is shown in Fig. 8. Fig. 7 shows where the wrist-pin begins to act against the wall of the slot from point 5 to shoulder 6 and thereby cause the needle to withdraw rapidly. The looper is on the point of advancing to release the thread, and the shuttle having carried its own thread upward through the loop remains stationary above until the needle is fully withdrawn and the needle-thread has by the action of the tension device been drawn tightly around the shuttle-thread against the fabric. This last-described action finishes the stitch and puts the sewing mechanism in the initial position.

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

1. In a carpet-sewing machine, the combination, of stitch-forming mechanism, a feed-roller mounted on a horizontal axis, having radial points to engage the edge of the fabric, and having spaced pins projecting from one of its sides, a rotatable wheel adjacent to said roller and mounted upon a vertical axis whereby it operates in a plane at right angles with the plane of rotation of the roller, said wheel having wings or blades adapted to periodically engage said pins and intermittently operate said roller, and means for operating said wheel.

2. In a carpet-sewing machine, the combination, with a frame, a horizontally-reciprocating needle-arm and needle and actuating mechanism, a complementary stitch-forming mechanism and a feed mechanism comprising a radially-pointed feed-roller having spaced pins projecting from one of its sides, a wheel adjacent to and operating in a plane at right angles with the axis of the feed-roller, and having wings or blades forming inclined planes adapted to engage the pins of the feed-roller, and to operate said roller as they ride

past the pins, a device rotatable in the path of the wings or blades adapted to engage said wings or blades and thereby intermittently rotate said wheel and operate the feed-roller, and means for operating said device.

3. In a carpet-sewing machine, a yoke-shaped frame to be supported upon the up-turned edges of the fabric to be sewed, when two pieces of fabric are placed side to side so that their upper edges are presented outwardly, and exposed, a concaved-faced feed-roller mounted upon a horizontal axis at one end of the frame above said edges, having radially-extending points adapted, by the weight of the machine, to be pressed into said edges, said feed-roller having spaced pins projecting from one of its sides, a wheel mounted upon a vertical axis contiguous to said roller, having inclined wings or blades adapted to engage the pins on the feed-roller and intermittently actuate said roller, a shaft having an arm for engaging said inclined wings and imparting a partial revolution to said wheel, a needle-arm and needle actuated by said shaft, means for rotating the shaft, and complementary stitch-forming mechanism.

4. In a carpet-sewing machine, the combination, of a yoke-shaped frame to be supported upon the upper edge of the fabric to be sewed, when two pieces of fabric are placed side to side so that the upper edges of both pieces are presented outwardly, and exposed, a concaved-faced feed-roller near the upper portion of one end of the frame, a needle-arm and needle and means for operating the same, complementary stitch-forming mechanism, and a support near the opposite end of the upper part of the frame consisting of a spring-arm having wings or flaps between which the edges of the fabric pass, a forward extension of the spring-arm forming a horn operating on the edges of the fabric to depress the nap in advance of the needle, and means acting on said spring-arm for adjusting this end of the frame with reference to the edge of the fabric.

5. In a carpet-sewing machine, a frame to be supported upon the exposed edges of two pieces of fabric placed side to side with their edges exposed, a horizontal feed-roller having spaced projections from one of its sides, a wheel rotatable in a plane at right angles with the plane of rotation of the feed-roller, having inclined wings or blades to engage the projections from the feed-roller, and operate said roller, a vertical shaft having an arm to engage said wings or blades and having a crank at its upper end provided with a wrist-pin, a horizontally-reciprocating needle-arm carrying a needle and provided with an irregular slot, one portion of which has its center on an arc whose radius is equal to the distance from the center of the shaft to the center of the wrist-pin, while the other portion is substantially parallel with the length of the



needle-arm, said slot adapted to receive said wrist-pin, complementary stitch-forming mechanism and means for rotating said shaft.

6. In a carpet-sewing machine, a yoke-shaped frame to be supported upon the exposed edges of two pieces of fabric placed side to side with their edges exposed, a feed-roller having pins projecting from one side and means comprising a horizontally-mounted wheel having wings or blades engaging said pins, a horizontally-rotatable arm for engaging said wings or blades and means for operating said arm, a horizontally-reciprocating needle-arm and needle, a tension device on the free end of and movable with the arm, means for reciprocating the arm, at one side of the frame, and complementary stitch-forming mechanism at the opposite side of the frame.

7. In a carpet-sewing machine, a yoke-shaped frame to be supported upon the exposed edges of two pieces of fabric placed side by side with their edges upturned, and exposed, a radially-pointed feed-roller having a concave face to receive said edges edgewise, said roller having spaced pins projecting from one of its sides, a wheel rotatable in a plane at right angles with the plane of rotation of

the feed-roller, having inclined wings or blades to pass between adjacent lugs on the feed-roller, and operate said roller during their passage, a shaft having an arm to operate against said wings or blades, and carrying a crank at its upper end, a reciprocating needle-arm carrying a needle and having an irregular slot for the crank-arm to work in, means for rotating the shaft and complementary stitch-forming mechanism.

8. In a carpet-sewing machine, a yoke-shaped frame, a feed mechanism, a reciprocating needle-arm and needle, means for operating the needle-arm and feed mechanism, a shuttle movable in a curved race upon the frame, a shuttle-carrier, a spring at the fulcrumed end thereof for counterbalancing the opposite end, a looper pivotally hung from the upper part of the shuttle-race, a lever connected with the looper and cams for operating the looper and shuttle-carrier.

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

HENRY ESCHWEILER.

Witnesses:

T. WALTER FOWLER,  
CHAPMAN FOWLER.