

(No Model.)

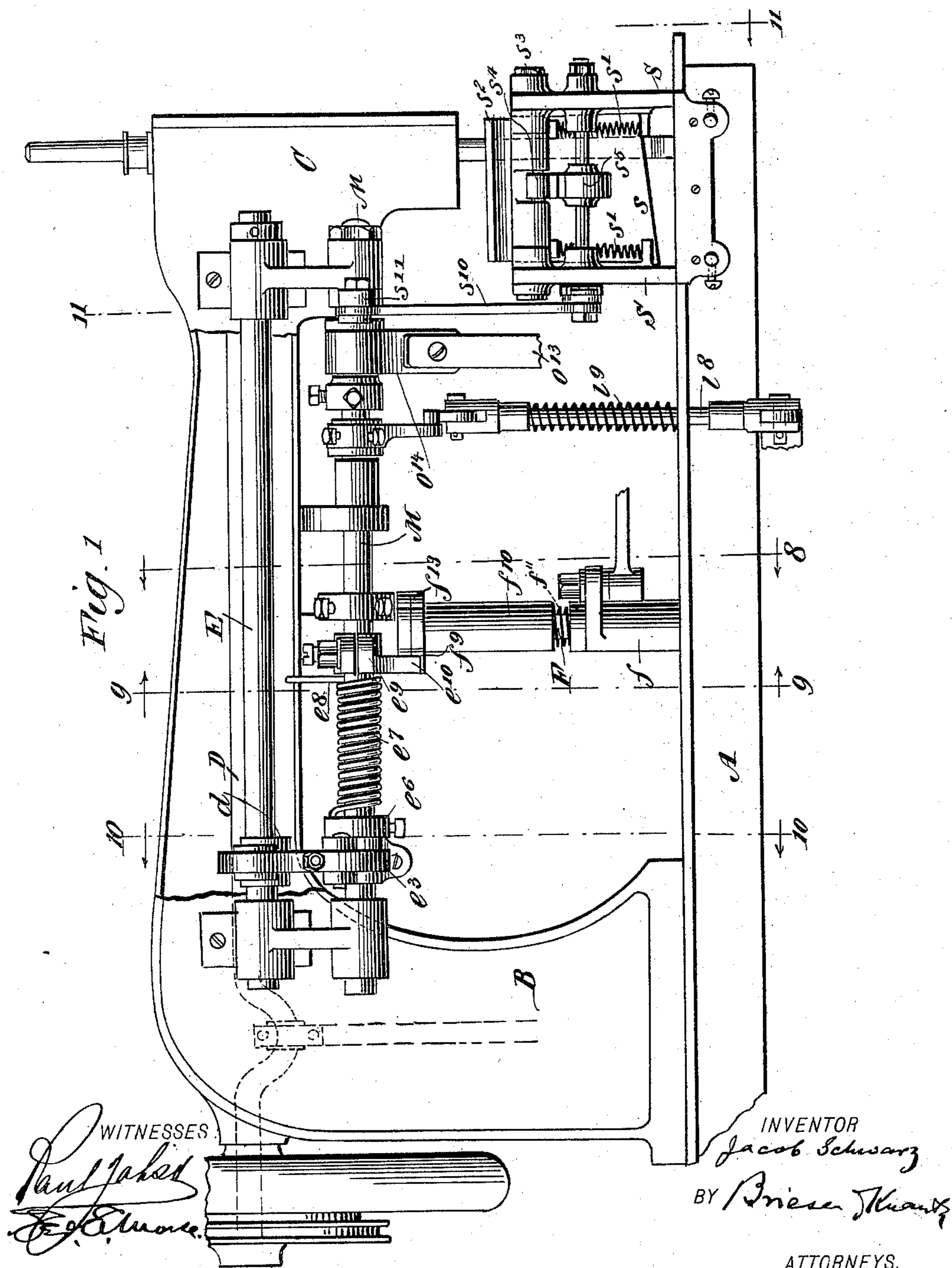
6 Sheets—Sheet 1.

J. SCHWARZ.

MACHINE FOR FORMING LOOPS AND SEWING SAME TO FABRICS.

No. 598,682.

Patented Feb. 8, 1898.



(No Model.)

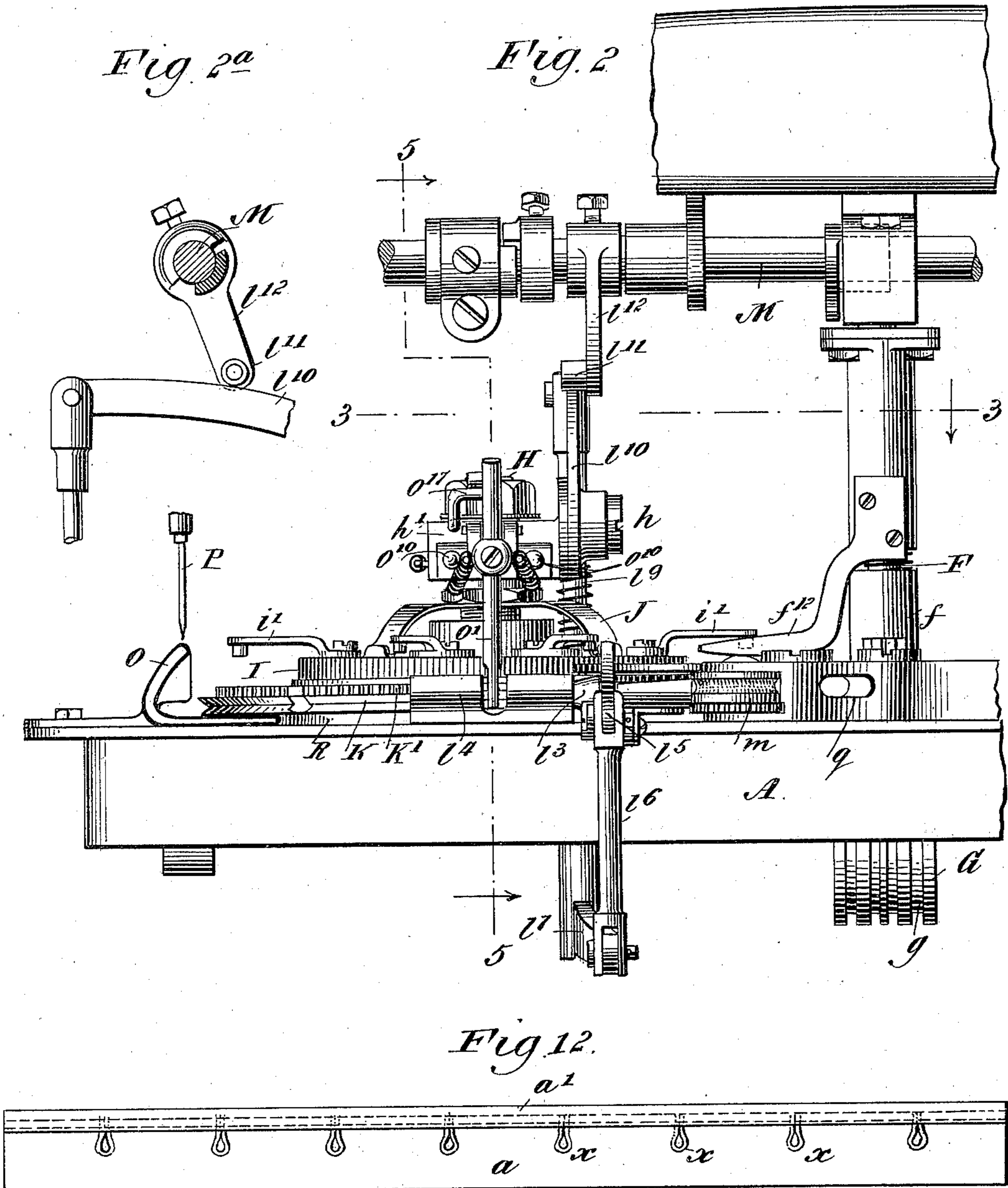
6 Sheets—Sheet 2.

J. SCHWARZ.

MACHINE FOR FORMING LOOPS AND SEWING SAME TO FABRICS.

No. 598,682.

Patented Feb. 8, 1898.



WITNESSES:
Paul J. Schmitt
Edw. C. Morris

INVENTOR
Jacob Schwarz
BY *Briesen Knautz*
ATTORNEYS.

(No Model.)

6 Sheets—Sheet 3.

J. SCHWARZ.

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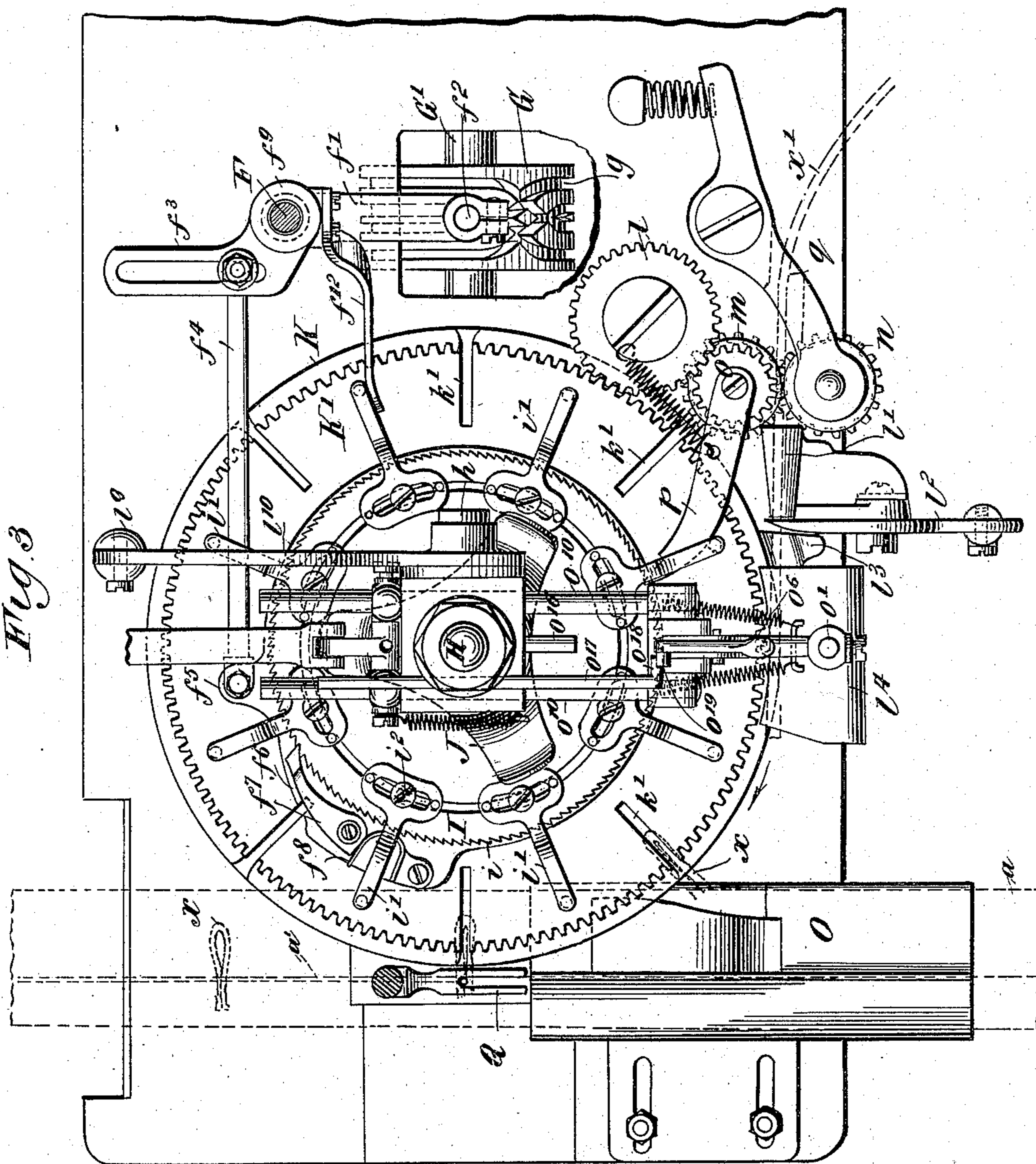
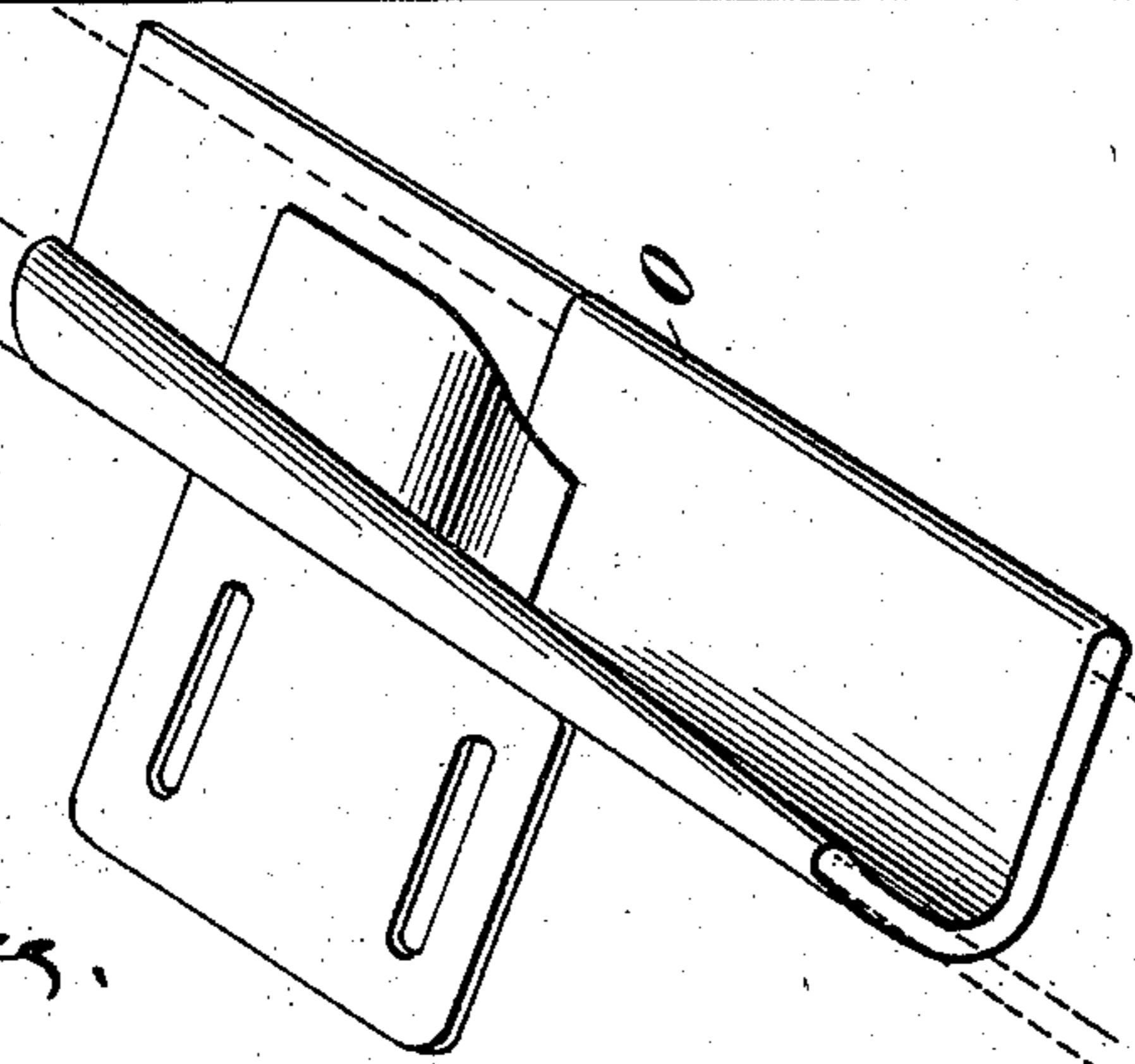


Fig. 3a

WITNESSES:
Laufjaker
Ed. C. Moore



INVENTOR
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BY *Briesen Knauth*
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(No Model.)

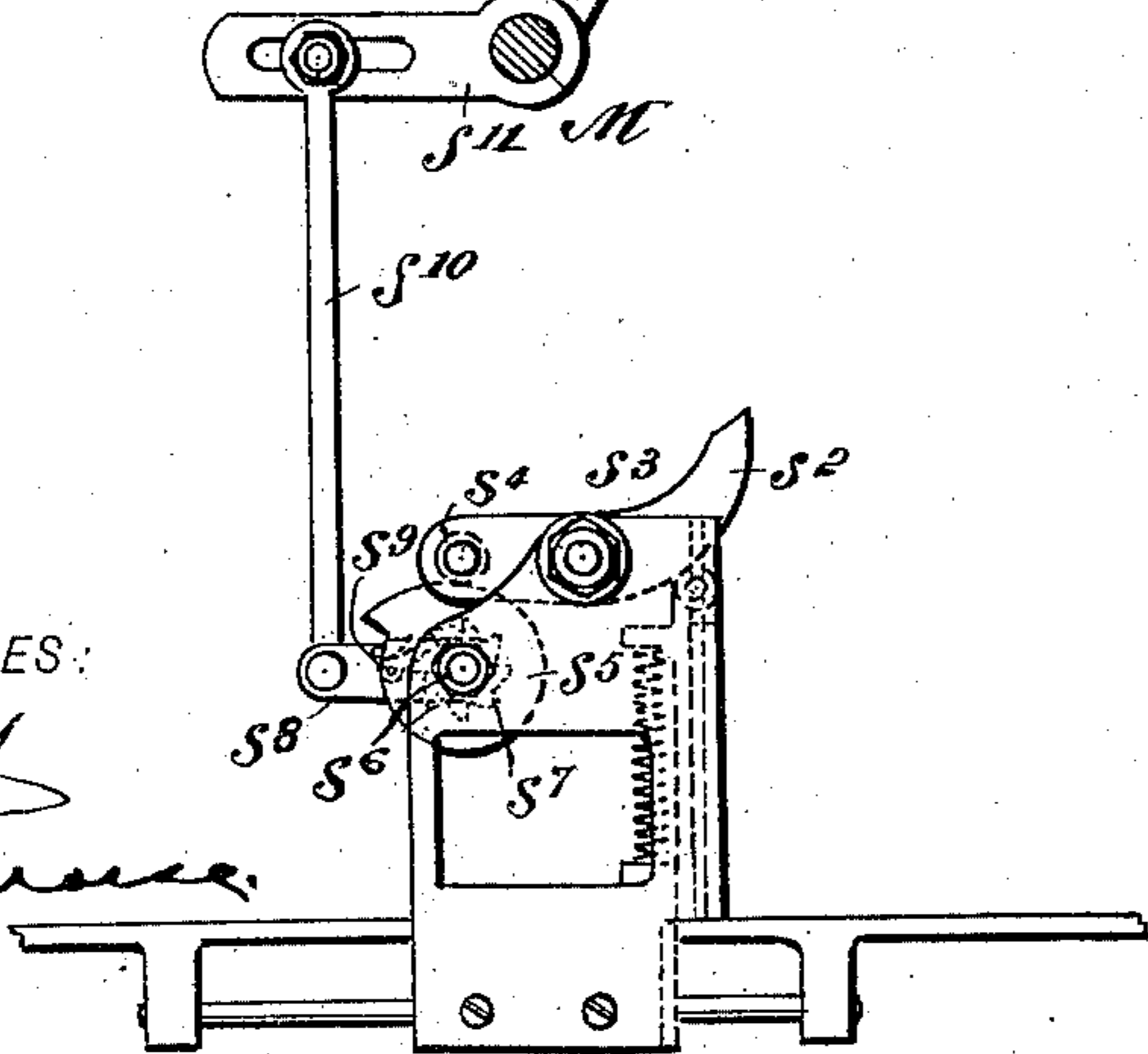
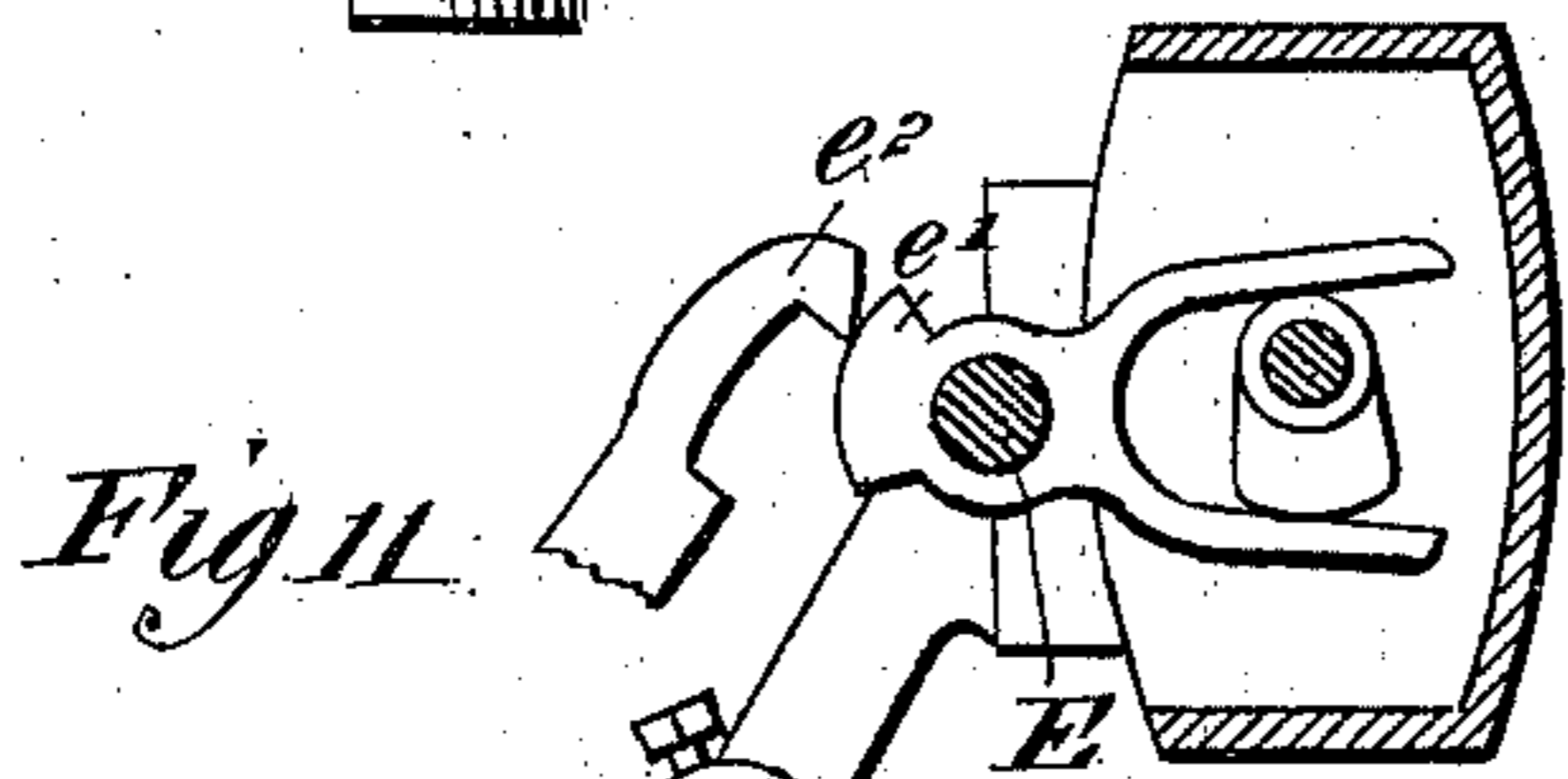
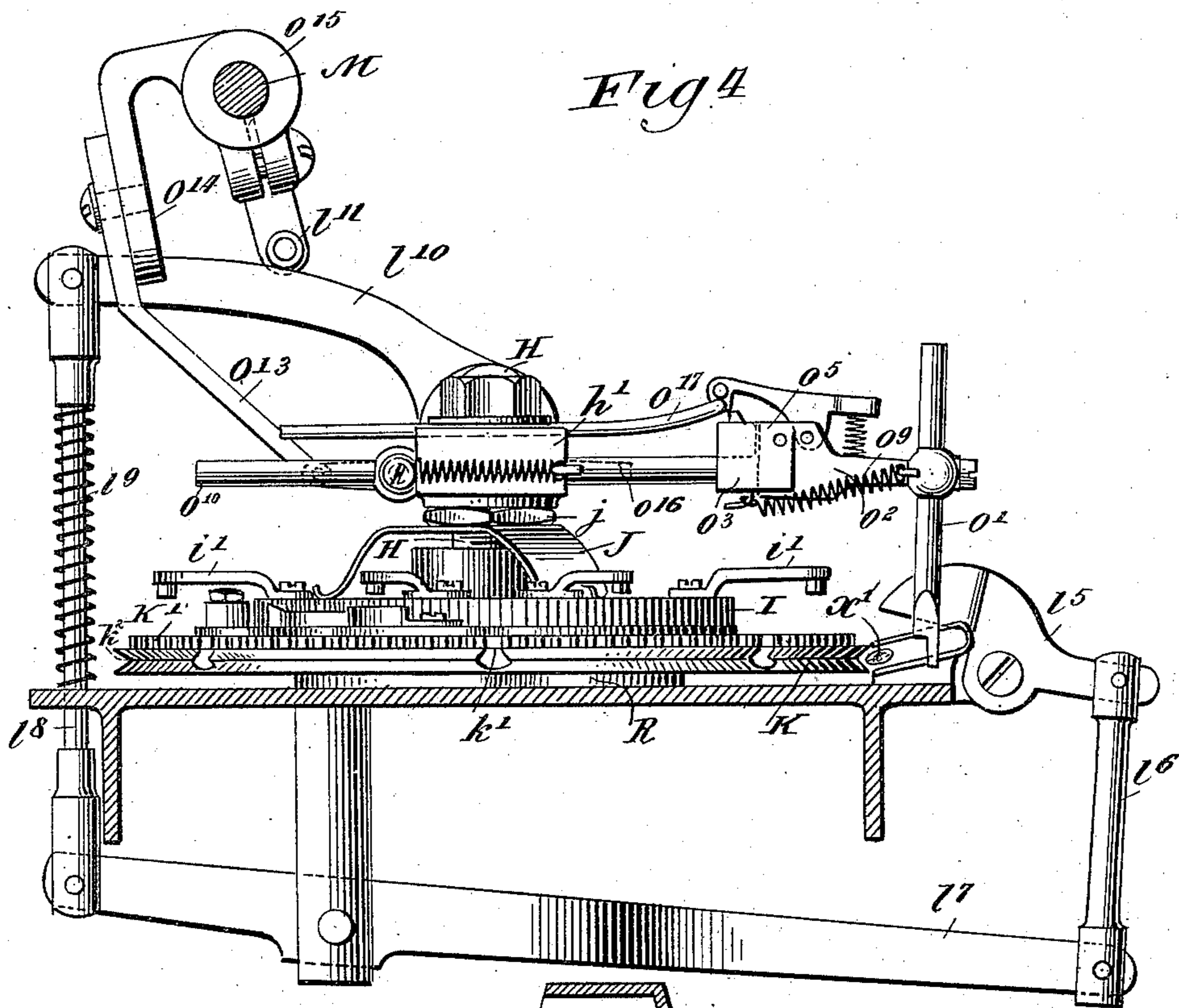
6 Sheets—Sheet 4.

J. SCHWARZ.

MACHINE FOR FORMING LOOPS AND SEWING SAME TO FABRICS.

No. 598,682.

Patented Feb. 8, 1898.



WITNESSES:

WITNESSES:
Paul Jones
Geo. C. Thomas

INVENTOR

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(No Model.)

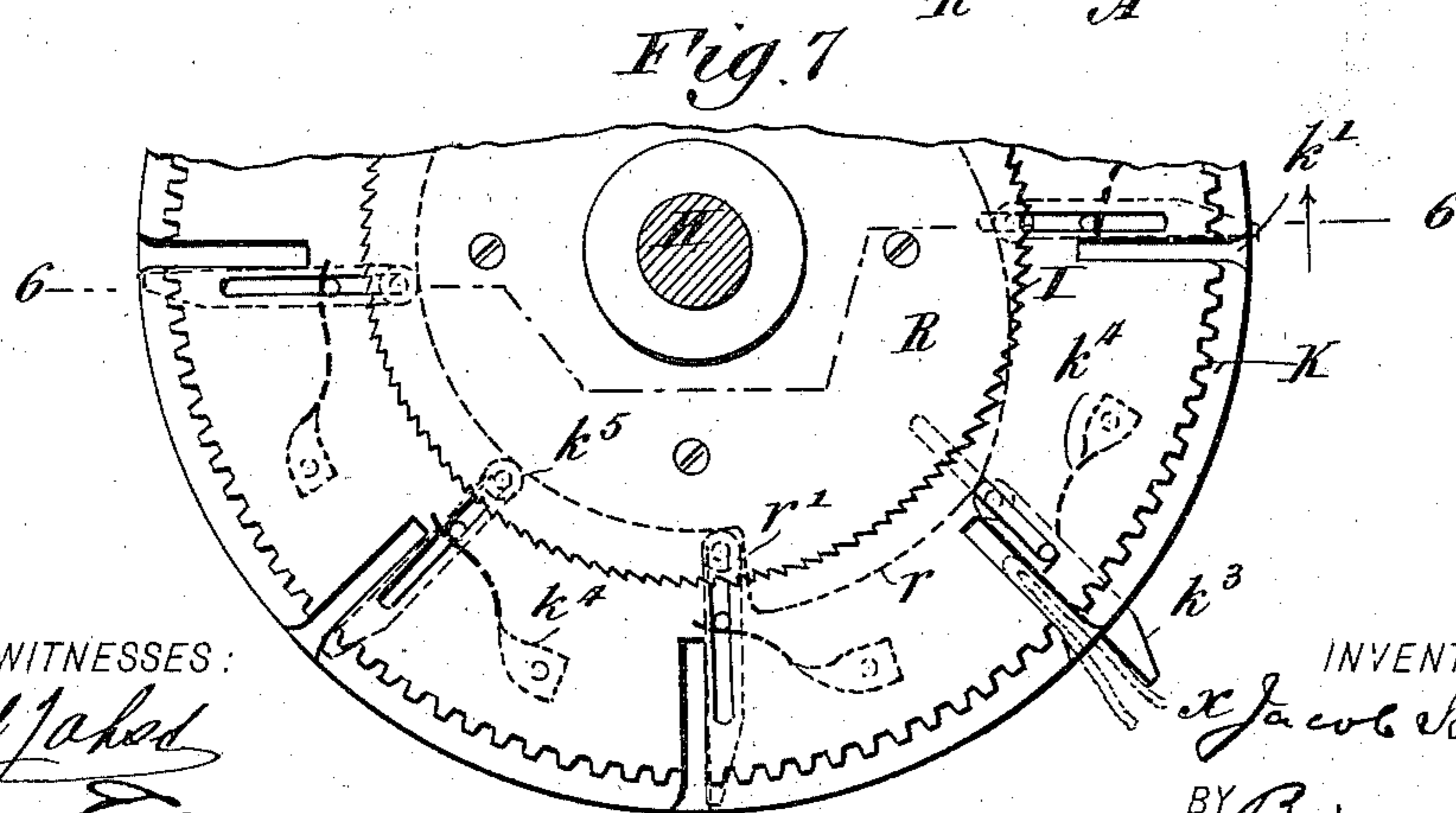
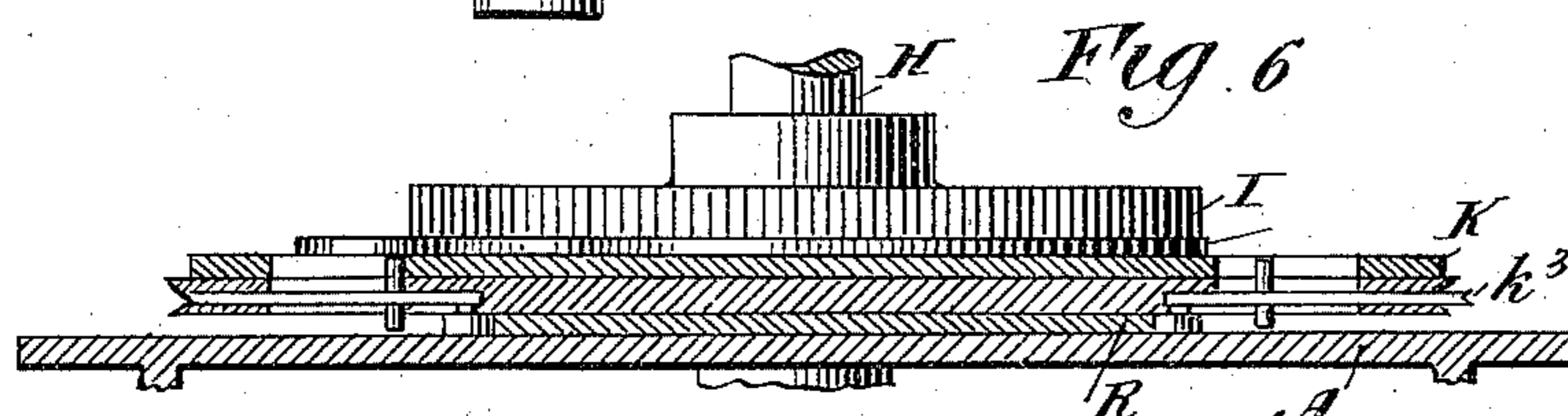
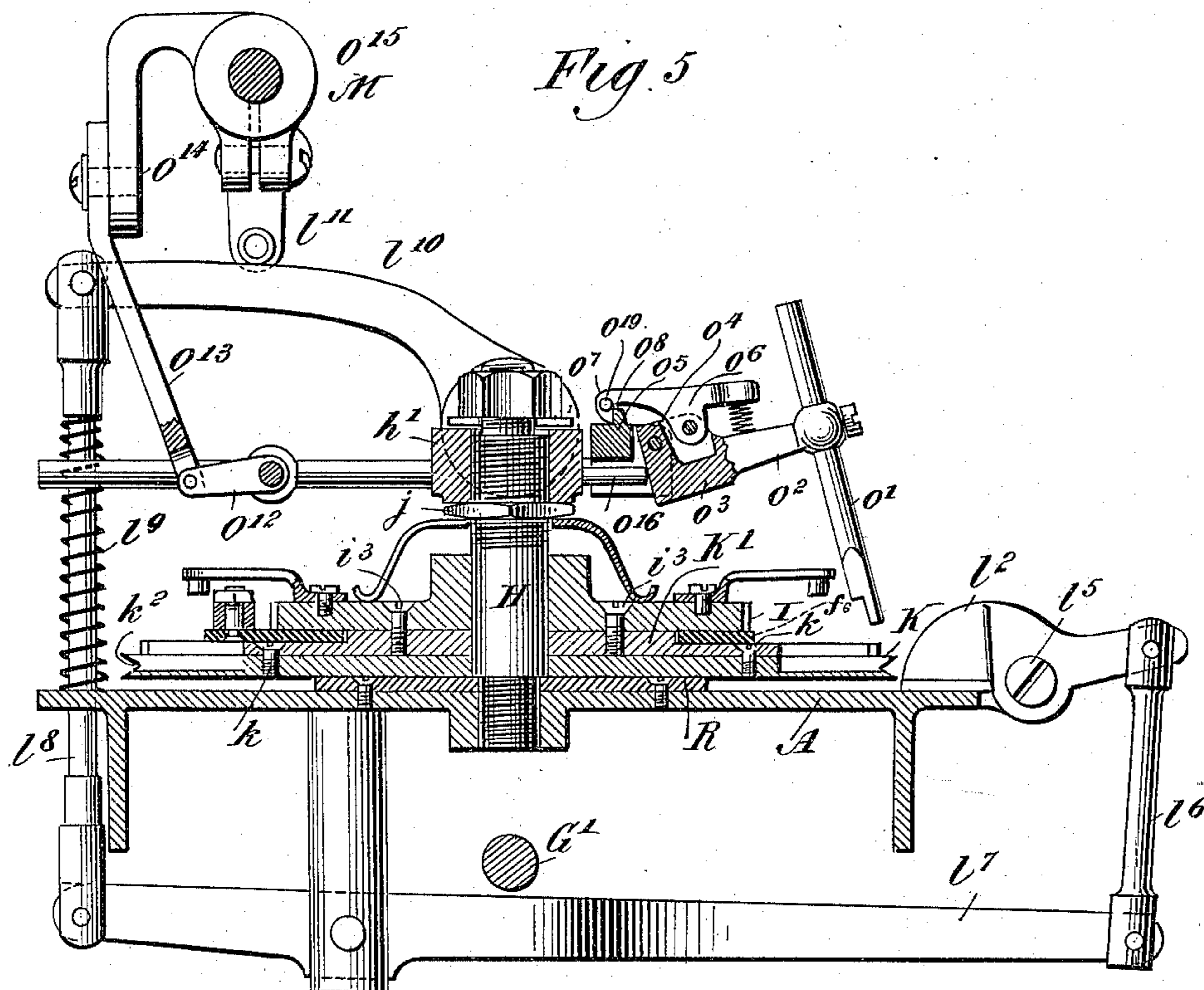
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J. SCHWARZ.

MACHINE FOR FORMING LOOPS AND SEWING SAME TO FABRICS.

No. 598,682

Patented Feb. 8, 1898.



WITNESSES:

WITNESSES:
Paul J. [Signature]
[Signature]

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ATTORNEYS.

ATTORNEYS.

(No Model.)

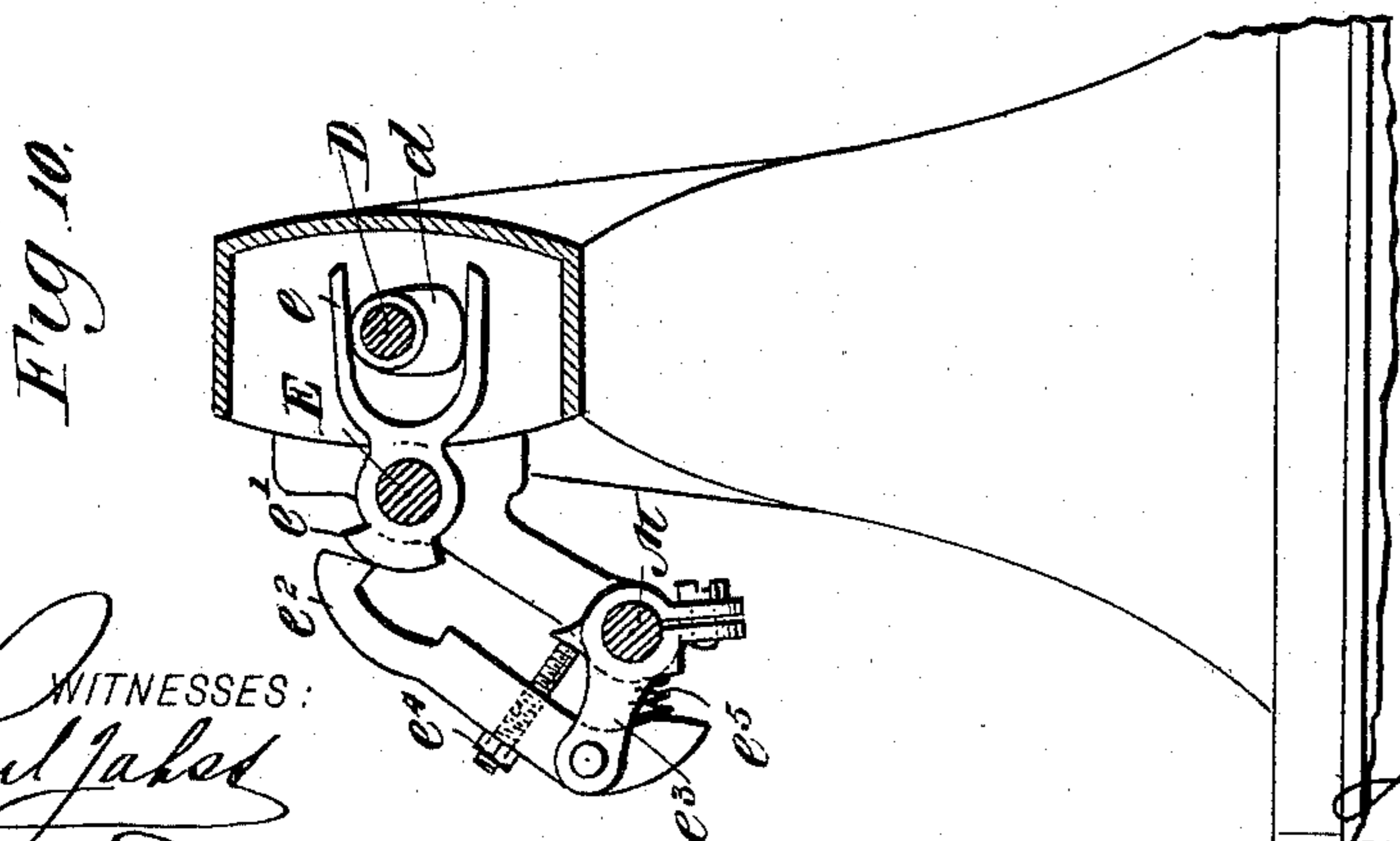
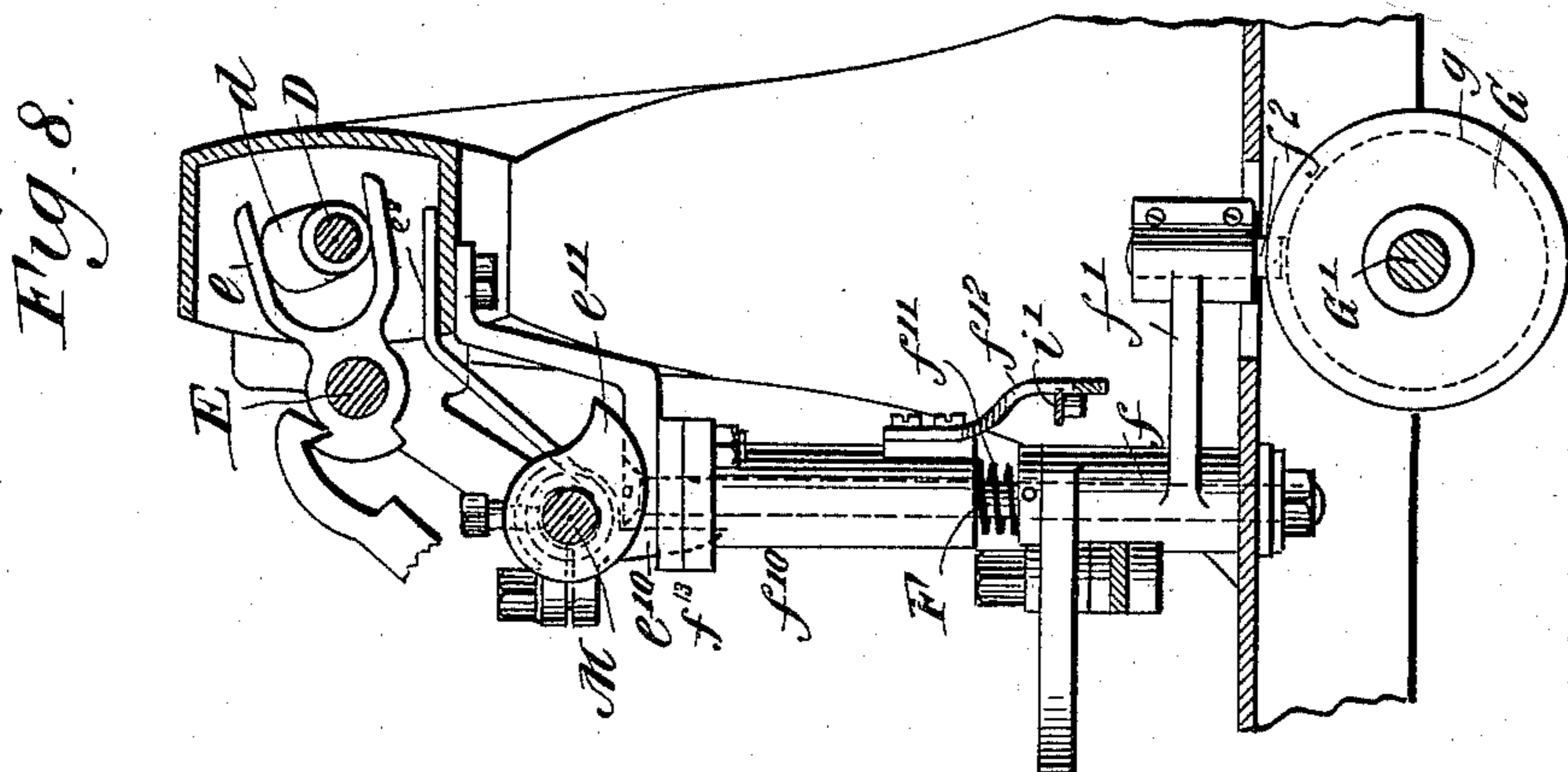
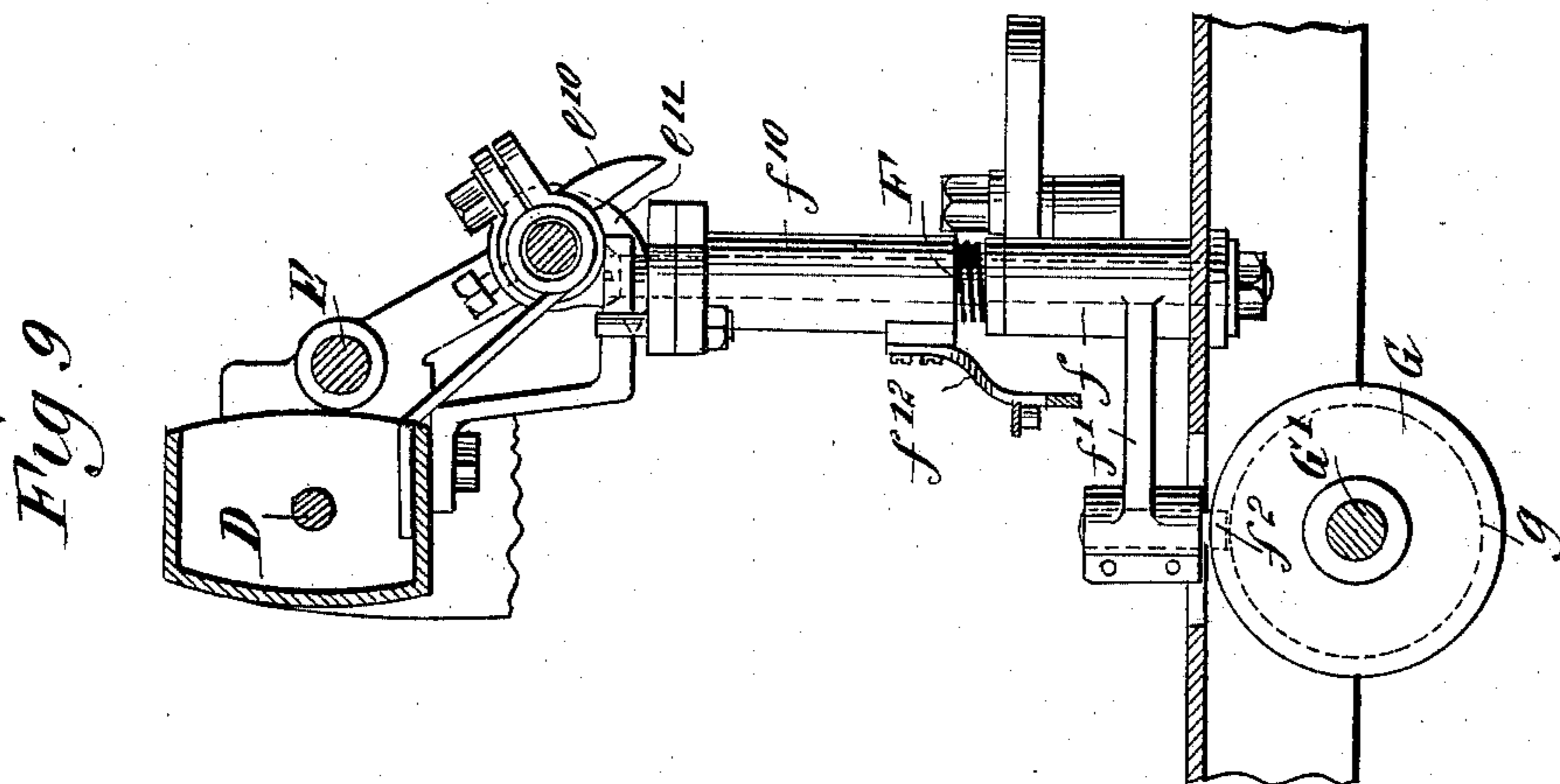
6 Sheets—Sheet 6.

J. SCHWARZ.

MACHINE FOR FORMING LOOPS AND SEWING SAME TO FABRICS.

No. 598,682.

Patented Feb. 8, 1898.



WITNESSES:

Paul Jakes
Ed. C. Munn

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Jacob Schwarz
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

JACOB SCHWARZ, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO JULIUS SCHWARZ, OF SAME PLACE.

MACHINE FOR FORMING LOOPS AND SEWING SAME TO FABRICS.

SPECIFICATION forming part of Letters Patent No. 598,682, dated February 8, 1898.

Application filed May 10, 1897. Serial No. 635,862. (No model.)

To all whom it may concern:

Be it known that I, JACOB SCHWARZ, a resident of the city, county, and State of New York, have invented certain new and useful

5 Improvements in Sewing-Machines, of which the following is a specification.

In the drawings, Figure 1 is a broken-away rear elevation of a sewing-machine embodying my invention. Fig. 2 is a fragmentary front elevation, on an enlarged scale, of a portion of the sewing-machine, showing the loop carrier and former and their correlated mechanisms. Fig. 2^a is a fragmentary side elevation of the cord-cutter-operating devices. Fig. 15 3 is a plan view, partly in section, of the parts shown in Fig. 2, the section being taken on line 3 3 of Fig. 2. Fig. 3^a is the guide for the work. Fig. 4 is a side view of the parts illustrated in Figs. 2 and 3. Fig. 5 is a sectional view of some of the parts shown in Fig. 4, the section being taken on line 5 5 of Fig. 2, showing in detail the loop forming and carrying mechanism. Fig. 6 is a sectional view of the loop-carrier. Fig. 7 is a broken-away plan view thereof, the said figure also showing the line 6 6, on which the section Fig. 6 is taken. Fig. 8 is a section on line 8 8 of Fig. 1, looking in the direction of the arrow and exhibiting the rotary and oscillating shafts and their 30 connected mechanisms. Fig. 9 is a section on line 9 9 of Fig. 1, looking in the direction of the arrow, the said view, Fig. 9, showing the same parts as are shown in Fig. 8, the direction of view being opposite to the direction of view in Fig. 8. Fig. 10 is a section on line 10 10 of Fig. 1, looking in the direction of the arrow. Fig. 11 is an elevation of the band-severing mechanism for cutting the band as it comes from the needle, the said 40 figure being partly in section and the section being taken on line 11 11 of Fig. 1. Fig. 12 is a face view of a waistband produced by the machine illustrated.

My invention relates to sewing-machines, and has for its particular object to produce a sewing-machine which will sew loops on bands of cloth, although the apparatus may be used for other purposes.

The machine shown in the drawings is especially adapted for use in sewing loops on 50 folded bands of cloth and for cutting the said

folded bands of cloth into lengths, so as to produce what is known as "children's waistbands." To this end the mechanism feeds the band, feeds the loops successively to the 55 sewing-point, and sews the said loops into a folded part of the band, as will clearly appear from an inspection of Fig. 12, wherein *a* represents a band of fabric, either folded or doubled, having a folded edge *a'*, under 60 which edge the ends of loops *x* are inserted and the said edge hemmed down to hold the said loops in place. This band comes to the needles in one continuous strip, which is severed at the end of each run of eight loops, 65 so as to constitute a waistband having eight or, if desired, any other suitable number of loops. The machine also feeds cord, which is cut into lengths and supplied to the loop-former, which loop-former forms the loops, 70 which are carried by a loop-carrier to the sewing-point—that is to say, beneath the needle—where the needle stitches the said loops to the work. These operations will be understood by referring to the accompanying 75 drawings, in which a machine embodying my invention is clearly shown.

In the drawings, *A* is the bed of the sewing-machine, from which rises any usual arm *B*, having a head *C*, in which the needle-operating parts are carried. Working in this head and arm I have shown a rotary shaft *D*, which operates the needle *P* (see Fig. 2) in any usual manner and communicates motion to an oscillating shaft *E* by means of a cam 85 *d*, working in a yoke *e*, (see Figs. 8, 9, and 10,) fast on the oscillating shaft *E*, or in any other proper manner. These two shafts are constantly-moving shafts, and from the oscillating shaft the motions for operating the 90 loop-former, the band-cutter, and cord-cutter are taken at predetermined times, as will be hereinafter explained.

Rising from the bed-plate of the machine is a stud *F*, (shown clearly in dotted lines in 95 Fig. 8,) which carries at its lower end a sleeve *f*, provided with an arm *f'*, carrying a lug *f*², which enters a cam *g* in a cam-wheel *G* on the main shaft *G'* of the sewing-machine. This cam is clearly shown in plan in Fig. 3 100 and serves to oscillate the arm *f'* and sleeve *f*. This sleeve *f* (see Fig. 3) carries a slotted

arm f^3 , in whose slot the end of a link f^4 is adjustably connected. This link f^4 is secured at its opposite end to an ear f^5 , secured on a plate f^6 , which swings the loop-carrier plate K' , attached to the loop-carrier journaled on the stud H, as will hereinafter appear. This plate f^6 carries a pawl f^7 , which is pressed by a spring f^8 into the teeth i of a ratchet I, which is also hung upon the stud H. This ratchet I carries trips i' , which are adjustably held thereto by means of set-screws i^2 . A spring J, hung upon the stud H and bearing against a nut j , (see Figs. 4 and 5,) bears frictionally against the ratchet I. By this means the oscillating motion imparted to the sleeve f will communicate a step-by-step movement to the ratchet I, so as to step the said ratchet around.

Located below the ratchet I and secured thereto by screws i^3 or otherwise is a loop-carrier plate K' , which is hung upon the stud H and secured to the loop-carrier K by screws k or otherwise, the whole rotating structure comprising the ratchet, the plate K' , the plate f^6 , and the loop-carrier K, being thus secured to rotate together by the movement of the pawl-and-ratchet mechanism worked from the oscillating sleeve f . This structure is bedded upon a cam-plate R on the bed-plate A. The loop-carrier K is shown in the present instance as provided with slots or loop-receivers k' for receiving the loop and loop-former and a toothed periphery for meshing with a removable gear-wheel l , which in turn meshes with one of a pair of feeder-wheels $m n$, the feeder-wheel m being carried upon a stud o , to which a click p is pivoted, which click enters the teeth of the ratchet I, so as to prevent backward movement thereof. The other feeder-wheel n is carried upon a spring-pressed pivoted lever q . The cord x' , from which the loops are to be formed, passes between these wheels and is fed through the guide l' , beneath the pivoted knife or cutter l^2 , into the guide l^3 and the slotted guide l^4 , in which the loop-former works. This slotted guide l^4 is clearly shown in the side view, Fig. 2. By this means the cord is brought up to the grooved loop-carrier K, entering the peripheral groove k^2 thereof in front of a slot or loop-receiver k' .

The knife or cutter l^2 is pivoted at l^5 and is pivotally connected at its rear end to a link l^6 , which is pivoted to one end of a horizontally-pivoted rod or lever l^7 , (see Fig. 5,) which in turn is pivoted to an upright link or rod l^8 , held up by a spiral spring l^9 and pivoted at its upper end to a cam-lever l^{10} , (see Figs. 4, 5, and 2^a,) pivoted at one end to a stud h , carried upon the head h' , mounted upon the stud H. The lever l^{10} receives the impact of a bowl l^{11} , carried upon an arm l^{12} , mounted upon the rock-shaft M, so that whenever the rock-shaft M is rocked it will cause the bowl l^{11} to strike the cam-lever l^{10} and swing the same downward, throwing the link l^8 down-

ward and the link l^6 upward and causing the cutter l^2 to descend and cut the cord.

Having now described the mechanism for bringing the cord up to the loop-carrier and the cord-cutter, which mechanism supplies the loop-forming mechanism with short lengths of cord, I will now proceed to describe the said loop-forming mechanism, which operates to form individually distinct or what I call "isolated" loops, meaning thereby loops which are separate and distinct from each other and from the fabric from which they were formed. This loop-forming mechanism is shown in the present instance as a loop-forming finger o' , which is adjustably carried in a swinging arm o^2 , which swinging arm o^2 is secured to a block o^3 , pivoted at o^4 to a head o^5 . The block o^3 has pivoted thereto a spring-pressed lever o^6 , provided with a hook o^7 for fitting over a lug o^8 on the head o^5 , so as to hold the lever o^2 and finger o' swung upward in the elevated position shown in Fig. 5 at predetermined times, the said arm being also provided with a restoring-spring o^9 , (see Fig. 4,) which is secured to the head o^5 , so as to throw the said head downward into the position shown in the said Fig. 4 when the latch or hook o^7 has been released from the lug o^8 , as will be presently explained. The head o^5 is supported by a carriage shown as comprising a pair of rods o^{10} , sliding in the head h' and coupled at the rear by a rod to which an arm o^{12} is pivotally connected. This arm is also pivotally connected to a draw-bar o^{13} , which is secured to an arm o^{14} , carried by a hub o^{15} on the oscillating shaft M. An abutment o^{16} (shown in plan in Fig. 3 and in side elevation in Fig. 5) projects from the head h' into the path of the block o^3 , which carries the arm o^2 and the finger o' . This abutment strikes against the rear face of the block o^3 when the carriage has moved the head o^5 and block o^3 to their rear retracted positions, as shown in Fig. 5, and swings the said block o^3 so as to tilt the finger o' from the position shown in Fig. 4 to the position shown in Fig. 5 and causes the latch or hook o^7 to engage over the lug o^8 on the block o^5 . The head h' also carries a trip-arm, shown in the present instance as an arm o^{17} , (shown in plan in Fig. 3 and in side view in Fig. 4,) provided at its forward end with an intumed cam-finger o^{18} , adapted to contact with a pin o^{19} on the latch o^7 , so that as the carriage moves the head and the parts carried thereby forward from the position shown in Fig. 5 to the position shown in Figs. 3 and 4 the pin o^{19} on the latch o^7 will strike on the cam-finger o^{18} , thereby lifting the said latch and allowing the finger o' to drop forward into the position shown in Fig. 4.

The operation of the loop-former is as follows: A piece of cord having been brought forward by the feeders into the groove k^2 in the loop-carrier and the loop-carrier being in such position that a slot k' thereof is in line

with the slot in the guide l^4 , the shaft M is oscillated by means presently to be described and pulls upon the draw-bar o^{13} , thereby drawing the carriage backward through the head h' and causing the finger o' to come against the section of cord and to draw the same into the slot k' , thus forming the loop x , which remains in the slot, as shown in Fig. 3. When the loop has been pulled sufficiently far into the slot k' to allow its ends to project therefrom a predetermined distance, the face of the block o^3 comes against the abutment o^{16} which rocks the block, thereby swinging the arm o^2 and finger o' upward clear of the loop-carrier, so that as the loop-former is returned to its initial position by the oscillating shaft M, which occurs immediately, the arm o^2 remains swung up until the pin o^{19} strikes the cam-finger o^{18} to release the latch o^7 and allow the loop-former to drop forward into the position shown in Fig. 4, which operation will occur when the finger o' is beyond the periphery of the loop-carrier, so that it will fall outside the new section of cord x' , which has meantime been fed into position.

Having described the loop-forming and loop-carrying mechanisms and their interaction, I will now proceed to describe the means whereby they are set in operation. It will be obvious that as long as the main shaft G' of the sewing-machine revolves the sleeve f will be rocked and will continuously step the loop-carrier around, which loop-carrier, meshing with the pinion l , will drive the feed-wheels m n to feed the cord x' into the guides, and at predetermined times the loop former and cutter are operated. This loop former and cutter, as will be remembered, are operated from the rock-shaft M, which is rocked at predetermined times by the oscillating shaft E in the following manner: The yoke e , which is carried on the oscillating shaft E, is provided with a lug e' , with which a hook e^2 coöperates. This hook e^2 is pivoted on an arm e^3 on the rock-shaft M and is shown as provided with an adjusting-screw e^4 and a spring e^5 . The arm e^3 is carried upon the rock-shaft M and is secured to a collar e^6 on the said rock-shaft, which carries a helical spring e^7 , surrounding the rock-shaft and having its end e^8 abutting against the framework of the arm B. A collar e^9 is mounted on the rock-shaft in proximity to the spring e^7 and is provided with a downwardly-projecting toe e^{10} . (See Figs. 1, 8, and 9.) This toe extends downward into the path of a cam f^9 , carried upon a sleeve f^{10} , hung upon the vertical stud F and supported above the sleeve f thereon by the spiral spring f^{11} . The sleeve f^9 is provided with an arm f^{12} , (see Figs. 3, 8, and 9,) which arm extends into the path of the trips i' , carried by the feed-ratchet I of the loop-carrier. The rock-shaft M also carries a cam e^{11} , (see Figs. 8 and 9,) which cam bears upon the head f^{13} of the sleeve f^{10} , so that when the rock-shaft M is rocked this cam e^{11} will depress the said head and sleeve f^{10} . The swinging sleeve and cam e^{10} just de-

scribed operate to engage the hook e^2 with the lug e' and to disengage the said hook therefrom, so that when the hook is engaged with the lug e' the said lug e' will haul upon the hook by reason of the oscillation of the oscillating shaft E, thereby rocking the rock-shaft M, operating the cord-cutter l^2 , as explained, and the loop-former.

The engagement and disengagement of the hook from its lug e' are effected in the following manner: As the loop-carrier rotates in the direction of the arrow in Fig. 3 it will presently bring one of the trips i' against the lever f^{12} , whereupon as the loop-carrier continues to rotate the trip i' will swing the lever f^{12} to the right, (see Fig. 3,) thereby rocking the sleeve f^{10} and bringing the cam f^9 against the toe e^{10} , which will have the effect of swinging the said toe and rotating the spring e^7 , the sleeve e^6 , and arm e^3 to swing the hook e^2 and engage it over the lug e' , and as the oscillating shaft E causes the lug e' to make an upward movement it will thereby rock the shaft M and cause the said shaft to operate the cord-cutter and loop-former, as has been explained. As the rock-shaft M rocks it will bring the cam e^{11} against the head f^{13} of the sleeve f^{10} and depress the said head and sleeve, thereby moving the arm f^{12} below the path of movement of the trip-lever i' , which engages it, thereby releasing the said trip-lever, which, moving on, allows the arm f^{12} and sleeve f^{10} to swing around to their original positions, to which they are restored by the spiral spring f^{11} . As soon as the oscillating shaft swings the lug e' downward the spring e^7 , being uninfluenced by the toe e^{10} and its collar e^9 , will throw the hook e^2 outward clear of the path of movement of the oscillating lug e' , so that the said lug e' will not communicate any further motion to the hook until the said hook has been reengaged therewith by another trip i' coming in contact with the lever f^{12} and swinging the sleeve f^{10} and its connected parts, as described.

Before describing the band-cutter I will proceed to describe the *seriatim* operations of producing the waistband. The work a comes in a strip or band to a guide or folder O, where it is folded and passes beneath the needle-bar and needle P and work-advancing mechanism or presser-foot Q. The loops t are inserted beneath the edge a' by the loop-carrier and the said edge felled or hemmed down by the needle, the loop-carrier revolving continuously and being filled with loops by means of the loop-former, which as the loop-carrier revolves is given a quick oscillating motion, as explained, drawing a length of cord which has been fed to the loop-carrier and chopped off by the knife or cutter l^2 into a slot or loop-receiver k' of the loop-carrier, from which its ends project, the loop-former returning to its initial position by another quick movement, as explained, the feed-wheels meantime feeding forward the cord to bring another short length up to the loop-carrier, which short

length is cut off by the cutter l^2 before the loop-former again operates.

In order to make certain that the ends of the loops are fully inserted between the folded edge a' of the band and the body a thereof, I provide the loop-carrier with sliding bolts k^3 alongside the slots k' , (see Figs. 6 and 7,) so that when the ends of the sliding bolts k^3 project beyond the periphery of the loop-carrier they will serve to brace the ends of the loop, so as to insert them properly in the band being sewed. It is essential, however, that the bolts be withdrawn within the periphery of the loop-carrier before the loops reach the needle. This I have provided for as follows: Each bolt is provided with a spring k^4 , forcing it inward, and also with a bowl k^5 , bearing against the stationary cam R on the bed-plate, which cam is so located with respect to the needle that as the loop-carrier rotates the bowls of the sliding bolts will come against the portion r' of the cam, so as to thrust the said bolts outward to support the loop laterally until when the loop is about to go under the needle the bolts come opposite the trip r' of the cam and are sprung inward by their springs, so that they will not interfere with the sewing of the loop by the needle. The band comes from the needle with the loops sewed thereon, as shown in Fig. 3, and the band passes through a cutter, (shown in Figs. 1 and 11,) which cutter is shown as consisting of parallel guides S S, in which a knife s works vertically. This knife is normally held up by springs s' and receives the thrust of a cam-lever s^2 , which is pivoted at s^3 and has its rear end s^4 projecting into the path of a cam s^5 , carried upon an arbor s^6 , which arbor carries a ratchet s^7 . Located adjacent to the ratchet is a pivoted lever s^8 , which carries a pawl s^9 , engaging with the ratchet. The lever s^8 is oscillated by a link s^{10} , which receives an oscillating motion from an arm s^{11} , which is fast on the rock-shaft M, which, as it will be remembered, is oscillated at predetermined times by the hook e^2 engaging with the lug e' on the oscillating shaft E.

The operation of this band-cutter is as follows: At each oscillation of the rock-shaft M the pawl steps the ratchet s^7 around one tooth, so that the said ratchet makes one complete revolution for every eight oscillations of the shaft M, and on the eighth step the knife s is forced down by the cam-lever s^2 , which works in response to the cam s^5 , so that since as each loop is sewed in the band the rock-shaft M is oscillated through the medium of a trip z' of the loop-carrier it will be readily apparent that the band-cutter s will divide or sever the band at the end of each section of eight loops, so as to produce a waistband such as is exhibited in Fig. 12. It will be apparent, however, that I have simply adopted eight loops arbitrarily and that the machine can be adjusted to cut the band into any desired length.

Having described my invention, what I

claim, and desire to secure by Letters Patent, is—

1. In a machine for attaching individually separate loops to work, the combination of work-advancing mechanism with means for severing sections from a cord and forming the said sections into loops and means for bringing the said individual loops thus formed up to the sewing-point and sewing mechanism for sewing the loops to the work.

2. In a machine of the character described, the combination of work-advancing mechanism and sewing mechanism, a loop-carrier and means for forming an isolated loop with severed ends, a loop-carrier for carrying the said loop to the sewing-point and means for operating the loop-former and loop-carrier in harmony with each other.

3. In a machine of the character described, the combination of means for bringing a fabric to the sewing-point in a folded condition, a stitch-forming mechanism, a work-advancing mechanism and means for severing sections from a continuous fabric, and forming the said sections into loops, and means for carrying the said loops to the sewing-point where they are stitched to the work.

4. In a machine of the character described, the combination of stitch-forming and work-advancing mechanism, of a loop-carrier and means for forming loops and inserting them into the carrier, comprising reciprocating loop-forming mechanism operated independently of the operation of the loop-carrier but in harmony therewith, substantially as described.

5. In a machine of the character described, the combination of stitch-forming and work-advancing mechanism, of loop-carrying mechanism and means for inserting a loop into the loop-carrying mechanism, comprising a reciprocating finger separate from and operating independently of the loop-carrier but in harmony therewith, substantially as described.

6. In a machine of the character described, the combination of stitch-forming and work-advancing mechanism, of a continuously-operating loop-carrier for bringing loops up to the stitch-forming mechanism and an intermittently-operating loop-former operating independently of the loop-carrier but in harmony therewith so as to supply the said loop-carrier with loops, substantially as described and for the purposes set forth.

7. In a machine of the character described, the combination of a folding mechanism for bringing work up to the sewing-point in a folded condition, stitch-forming mechanism, work-advancing mechanism, means for forming isolated loops with free or unconnected ends, and a loop-carrying mechanism arranged to carry a loop and to insert the severed ends of the same within the fold of the folded fabric in advance of the stitch-forming mechanism.

8. In a machine for making loop-bands, the

combination of sewing and work-advancing mechanism, of means for forming and supplying to the work loops having free or unconnected ends and a work-severing mechanism for severing the work, whereby the loops will be brought up to the work and sewed thereto by their ends and the work will be severed into the desired lengths, substantially as described and for the purposes set forth.

9. In a machine of the character described, the combination of work-advancing and stitch-forming mechanism, of a rotary loop-carrier and means for forming a loop and inserting the same in the loop-carrier, comprising a reciprocating finger operating wholly independently of the operation of the loop-carrier, substantially as described and for the purposes set forth.

10. In a sewing-machine, the combination of a sewing mechanism, a rotating loop-carrier and cord-feeder operated by the loop-carrier and an intermittently-operating loop-former moving independently of the loop-carrier but actuated therefrom, substantially as described and for the purposes set forth.

11. In a sewing-machine, the combination of work-advancing mechanism, a stitch-forming mechanism, a loop-carrier operated continuously from the main shaft of the sewing-machine to carry loops to be sewed to the work, a loop-former operated by an auxiliary shaft of the machine and means for causing the said auxiliary shaft to operate the loop-former at predetermined times.

12. In a sewing-machine, the combination of sewing mechanism, a cord-feeder, a cord-cutter, a loop-former for forming loops in the severed sections of cord and a loop-carrier for bringing the loops up to the sewing-point.

13. In a sewing-machine, the combination of sewing mechanism, a cord-feeder, a cord-cutter, a loop-former for forming loops in the severed sections of cord, a loop-carrier for bringing the loops up to the sewing-point and a fabric-folding mechanism for folding the fabric to receive the loops.

14. In a loop-forming mechanism, the combination of a moving loop-receiver, a loop-forming finger, means for reciprocating the loop-forming finger independently of the motion of the loop-receiver to enter the said loop-forming finger into the loop-receiver and means for restoring the loop-forming finger to its original position by reciprocating it clear of the loop-receiver.

15. The combination with a sewing mechanism, of a loop-former comprising a loop-receiver, a pivoted loop-forming finger, means for reciprocating the said loop-forming finger, and means for elevating the same clear of the loop-receiver when the said loop-forming finger has reached the extremity of its stroke.

16. The combination with a sewing mechanism, of a loop-former comprising a loop-receiver, a pivoted loop-forming finger, means for reciprocating the said loop-forming finger, means for elevating the same clear of the loop-

receiver when the said loop-forming finger has reached the extremity of its stroke, and means for holding the said loop-forming finger in its elevated position.

17. The combination with a sewing mechanism, of a loop-former comprising a loop-receiver, a pivoted loop-forming finger, means for reciprocating the said loop-forming finger, means for elevating the same clear of the loop-receiver when the said loop-forming finger has reached the extremity of its stroke, means for holding the said loop-forming finger in its elevated position, and means for releasing the said finger to drop the same.

18. The combination with a sewing mechanism, of a loop-forming mechanism comprising a loop-receiver, a loop-forming finger co-operating with the said loop-receiver, means for swinging and holding the loop-forming finger in an elevated position clear of the loop-carrier at predetermined times, and means for reciprocating the loop-forming finger to its original position and releasing the same, substantially as described.

19. In a sewing-machine, the combination of a sewing mechanism, a main shaft, a loop-receiver, a reciprocating loop-former actuated from the main shaft, a catch for holding the loop-former in an elevated position, and means for engaging and releasing the catch.

20. In a sewing-machine, the combination of sewing mechanism, a loop-receiver, a reciprocating carriage, a pivoted loop-former carried upon the carriage and means for holding the loop-former in an elevated position.

21. The combination of sewing mechanism, a loop-receiver, a reciprocating carriage, a pivoted loop-former carried by the said carriage, a catch carried also by the carriage for holding the pivoted loop-former in an elevated position, and stationary tripping mechanism for tripping the catch.

22. In a sewing-machine, the combination with sewing mechanism, of a loop carrier and receiver, comprising a rotary slotted plate, means for rotating the same, a loop-forming mechanism comprised in part by a loop-former adapted to enter the slots in the loop-carrier and means for reciprocating the loop-former independently of the movement of the carrier as and for the purposes described.

23. In a sewing-machine, the combination with a sewing mechanism and a loop-former, of a loop-carrier comprising a rotary slotted plate, movable fingers for bracing the loop in the loop-carrier, and means for moving the fingers independently of the movement of the plate.

24. In a sewing-machine, the combination of a sewing mechanism, a loop-former and a loop-carrier, comprising a rotary slotted plate and longitudinally-moving fingers carried by the plate and extending beyond the periphery thereof so as to brace a loop laterally.

25. In a sewing-machine, the combination of a sewing mechanism, a loop-carrier comprising a rotary slotted plate and bracing-fin-

gers for the loop extending beyond the periphery of the plate and adapted to brace a loop laterally.

26. In a sewing-machine, the combination
5 of a sewing mechanism, a loop-former and a loop-carrier comprising a rotary slotted plate, reciprocating fingers carried by the plate and adapted to brace a loop laterally, and a cam coöperating with the fingers to move the same.

10 27. In a sewing-machine, the combination of a sewing mechanism, a loop-carrier and a loop-former, comprising means for forming a loop with severed ends and means for inserting the said loop into the loop-carrier so that
15 the free ends project therefrom, substantially as described and for the purposes set forth.

28. In a machine of the character described, the combination of a loop-carrier, comprising
20 a swinging slotted plate, a loop-former, comprising means for severing sections from a continuous fabric and forming the same into loops and inserting the same into the loop-carrier and means for operating the loop-carrier and loop-former in harmony with each other.

25 29. In a sewing-machine, the combination of sewing mechanism, of loop carrying and forming mechanism, of a cord-feeder for continuously advancing cord to the loop-forming mechanism, and a cord-cutter operated at pre-
30 determined times to sever the cord, leaving

the said severed cord under control of the loop-forming mechanism.

30. In a machine of the character described, the combination of mechanism for forming isolated loops, a sewing mechanism, a work-
35 advancing mechanism and means for bringing the said loops successively to the sewing-point, whereby they may be stitched to the work.

31. In a machine of the character described, 40 the combination of work-advancing mechanism, means for forming isolated loops with free or unconnected ends and for bringing the same up to the work, means for operating the said loop forming and carrying devices in har-
45 mony with each other and means for securing the loops to the work, substantially as described and for the purposes set forth.

32. In a machine of the character described, the combination of work advancing and stitch-
50 ing mechanism, of a work-folding mechanism and means for forming individually separate loops from a continuous fabric and for carrying the same to the work and inserting a portion of each loop beneath the folded edge
55 of the work, substantially as set forth.

JACOB SCHWARZ.

Witnesses:

MAURICE BLOCK,
GEO. E. MORSE.