

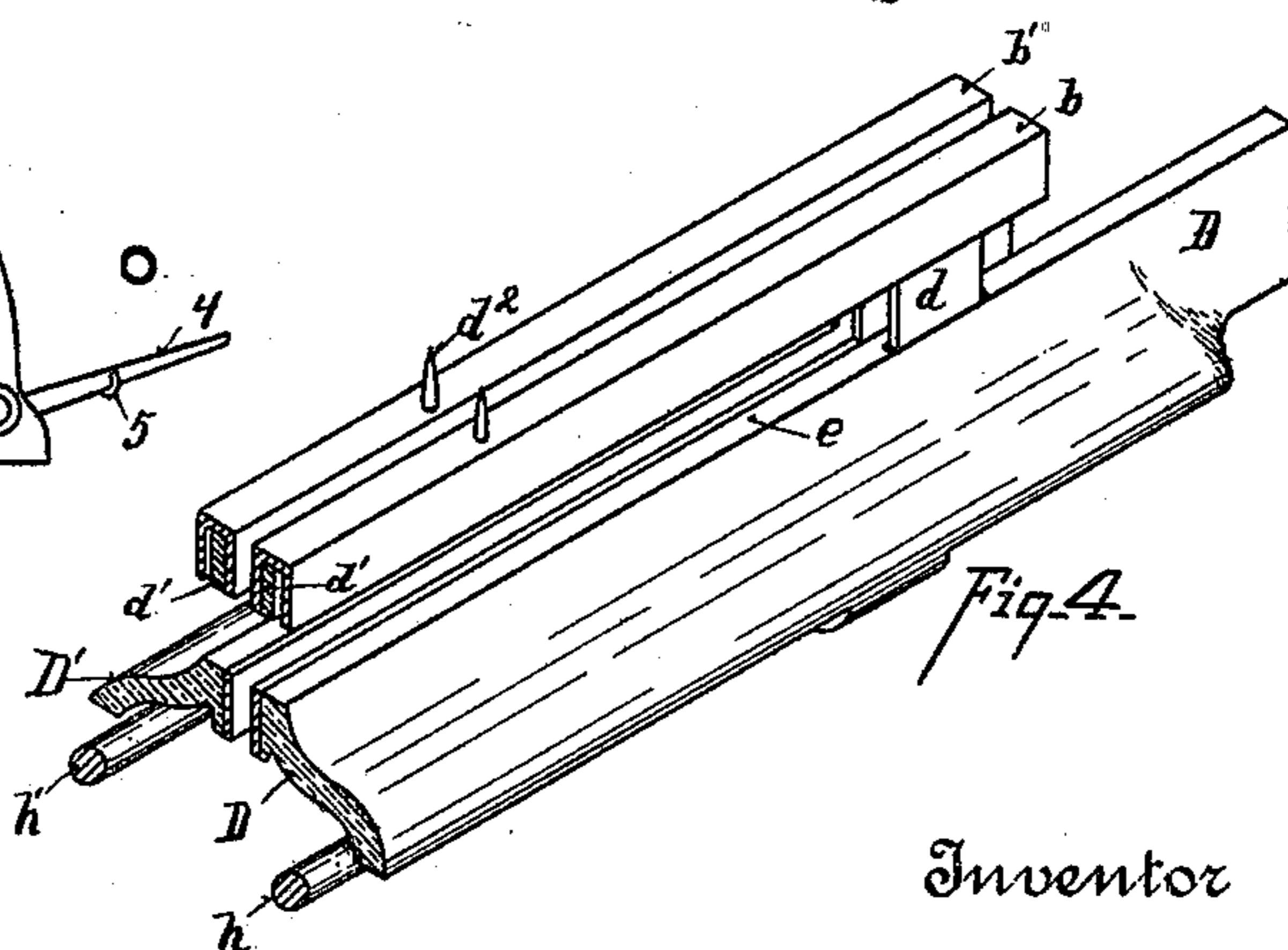
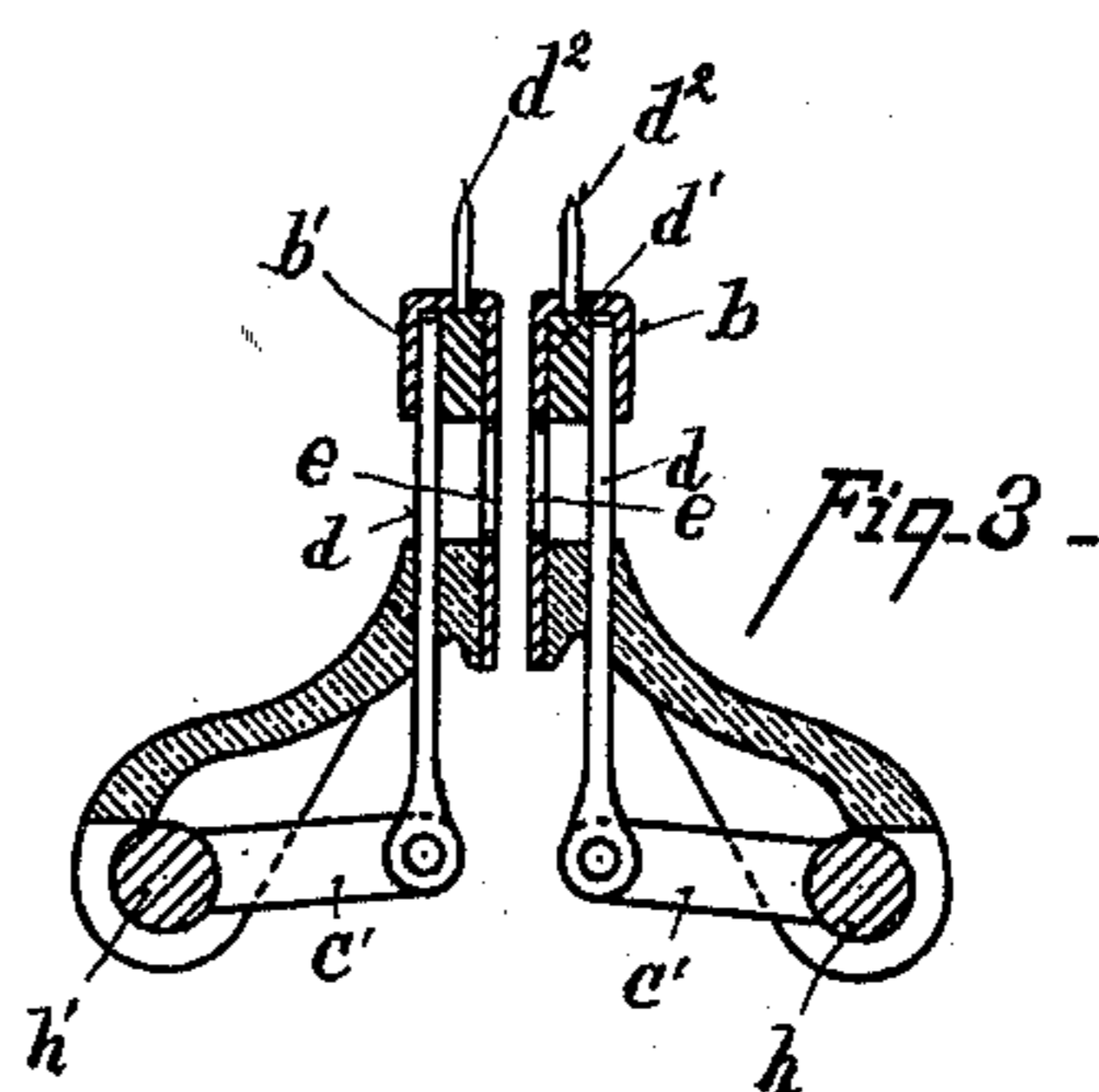
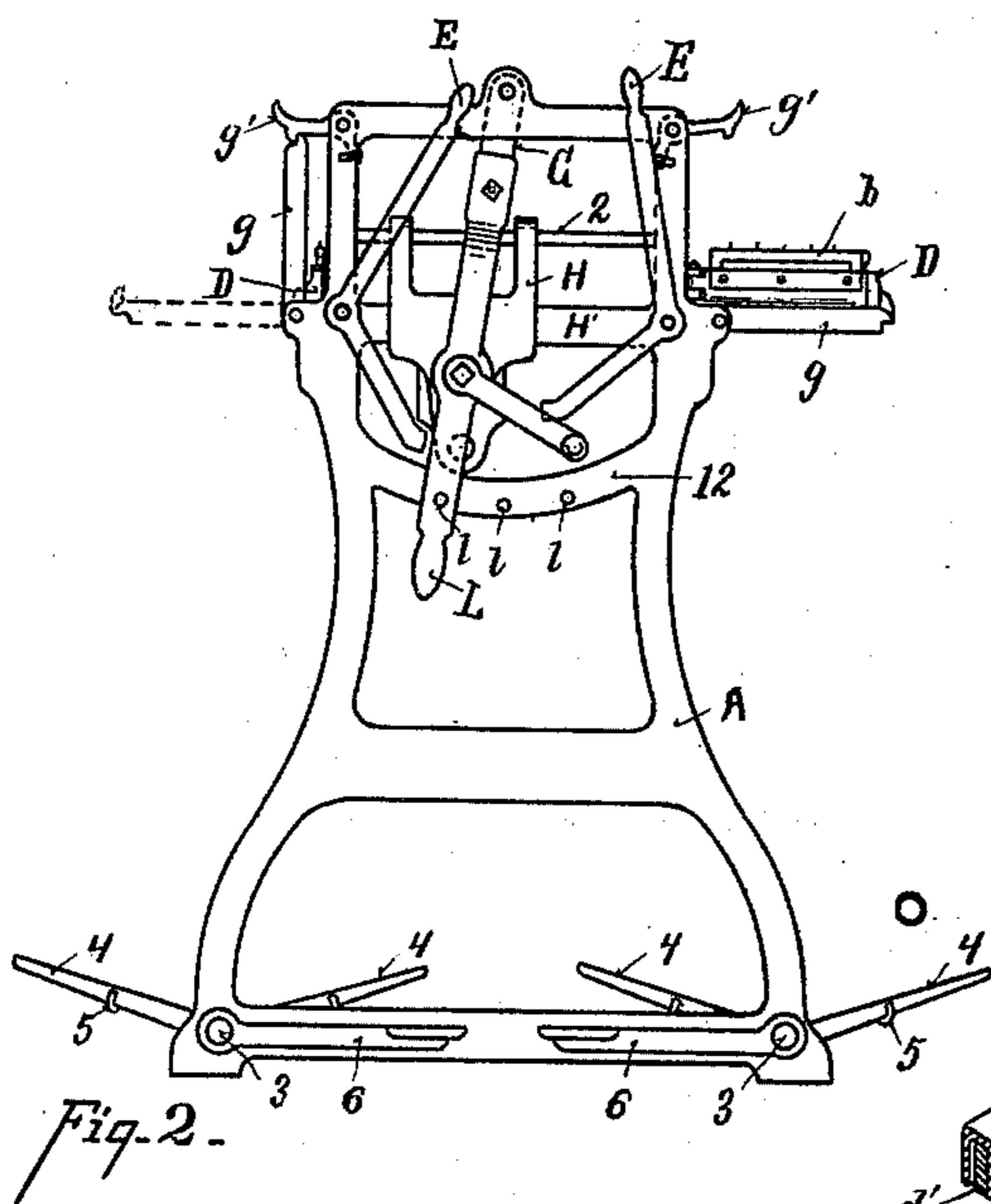
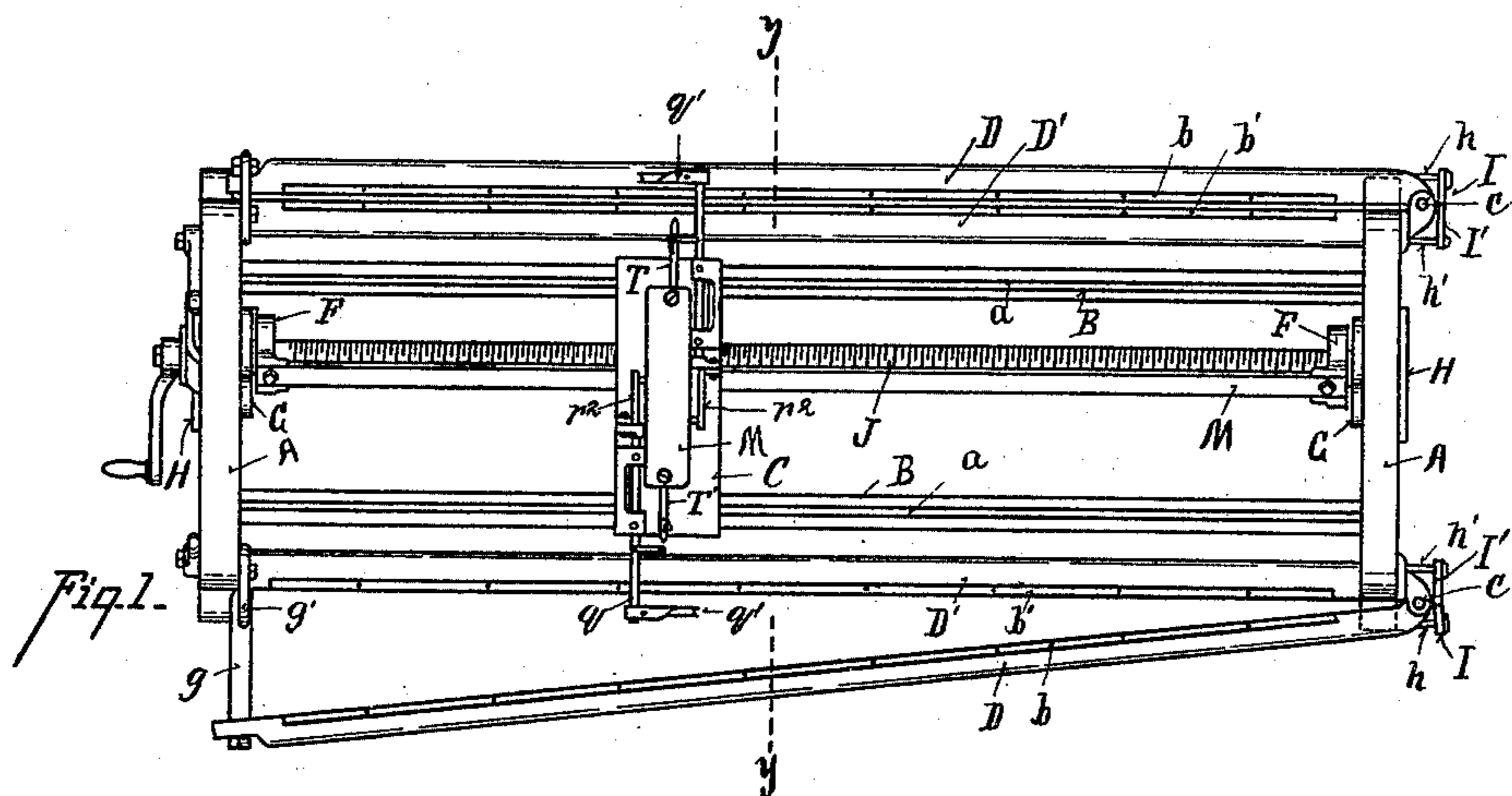
(No Model.)

3 Sheets—Sheet 1.

N. F. BECKER.
SEWING MACHINE.

No. 542,549.

Patented July 9, 1895.



Witnesses
C. Miles
Oliver D. Kaiser.

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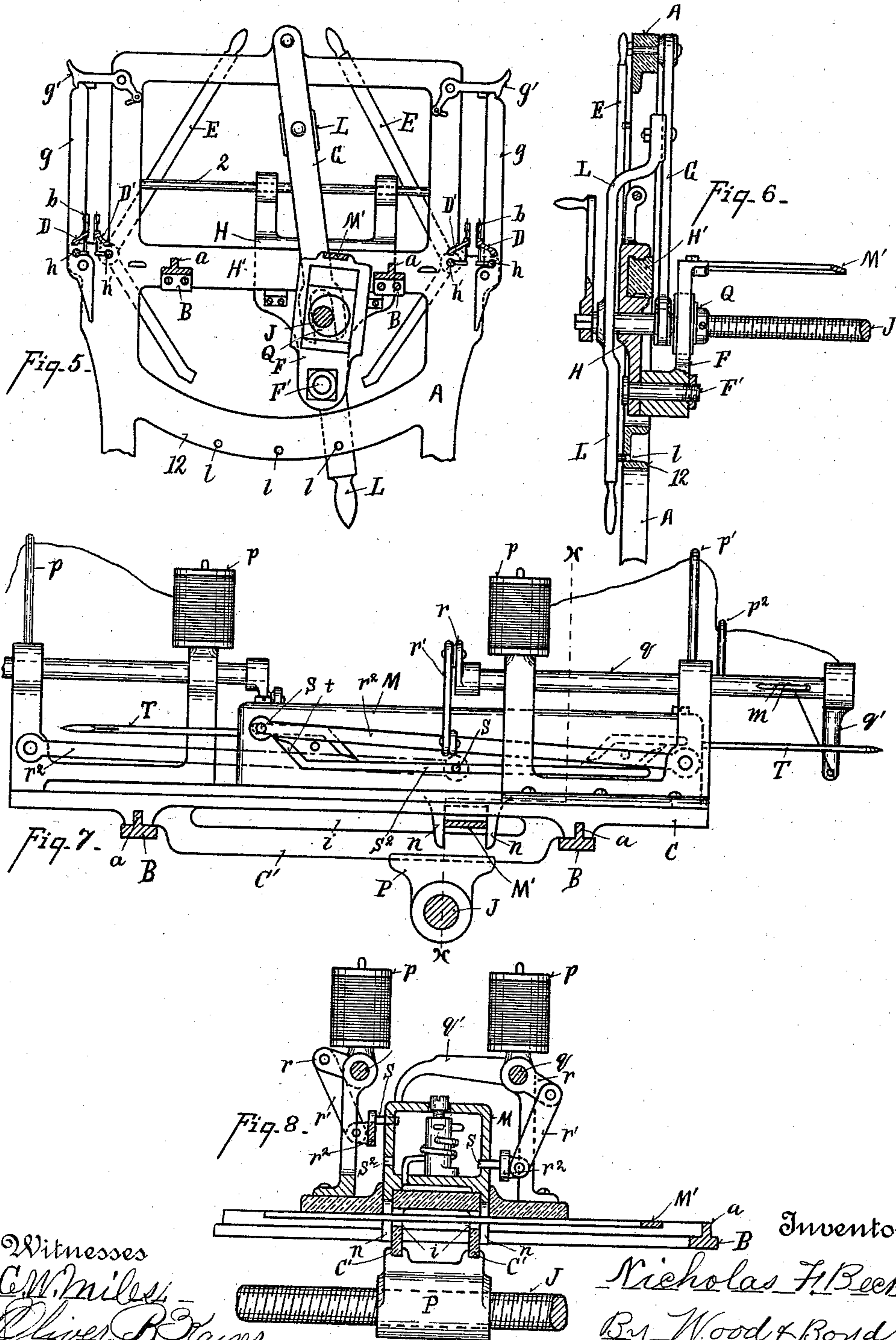
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3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

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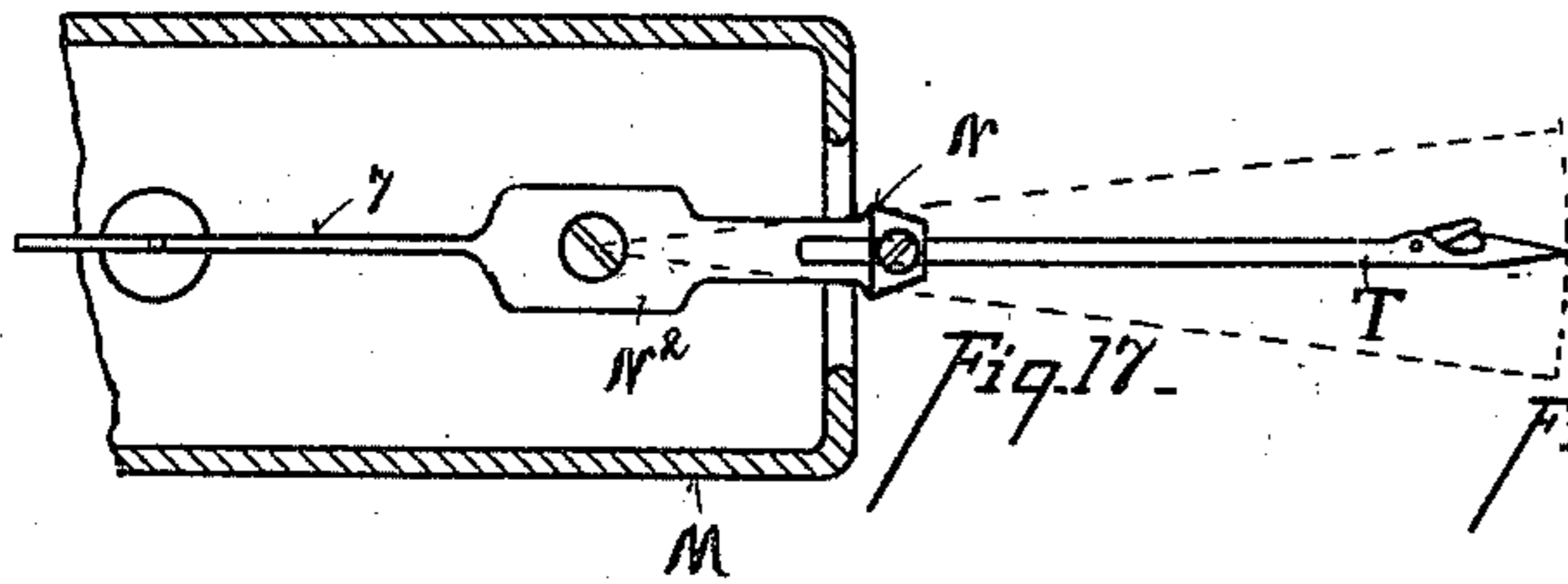


Fig. 9.

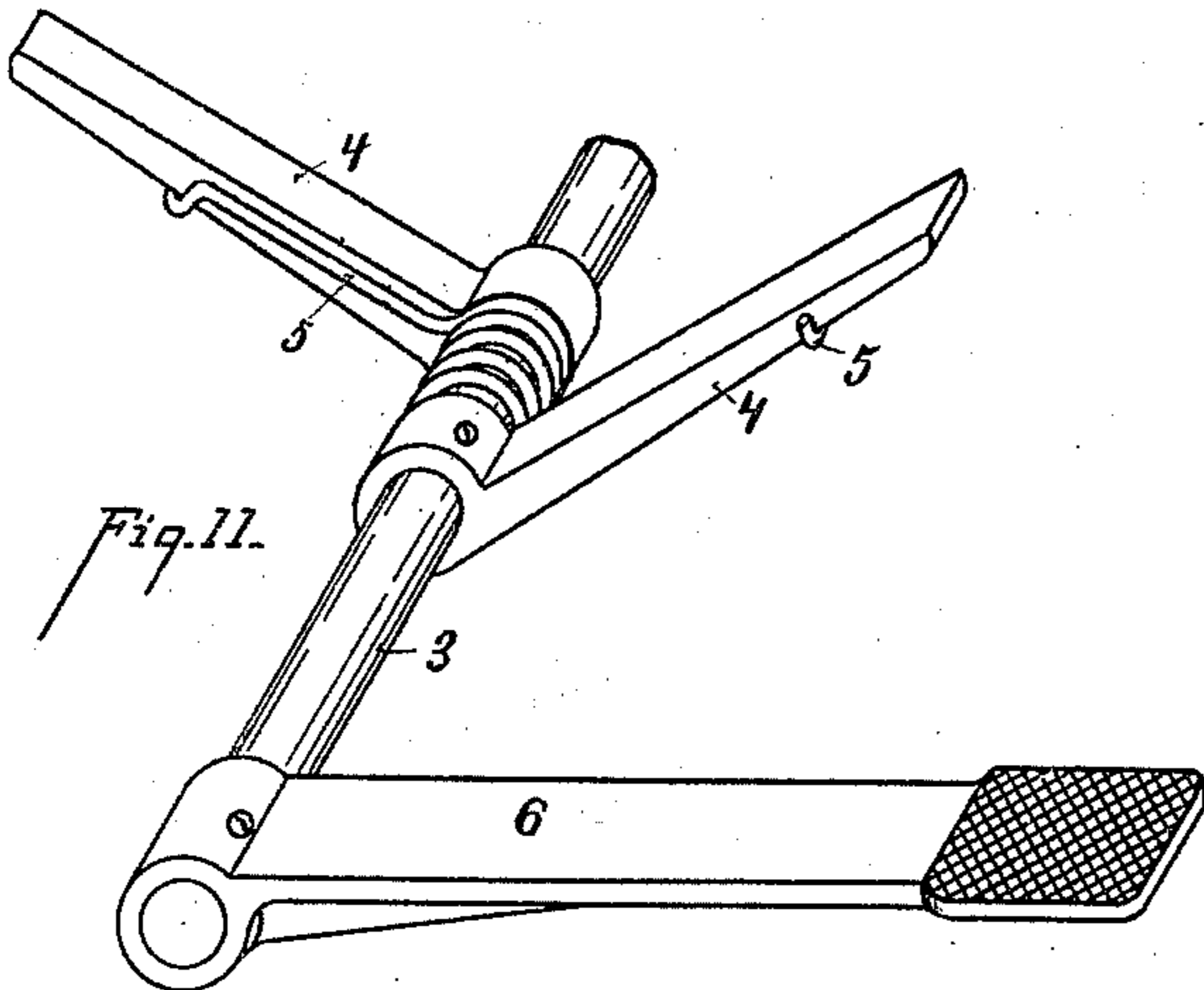
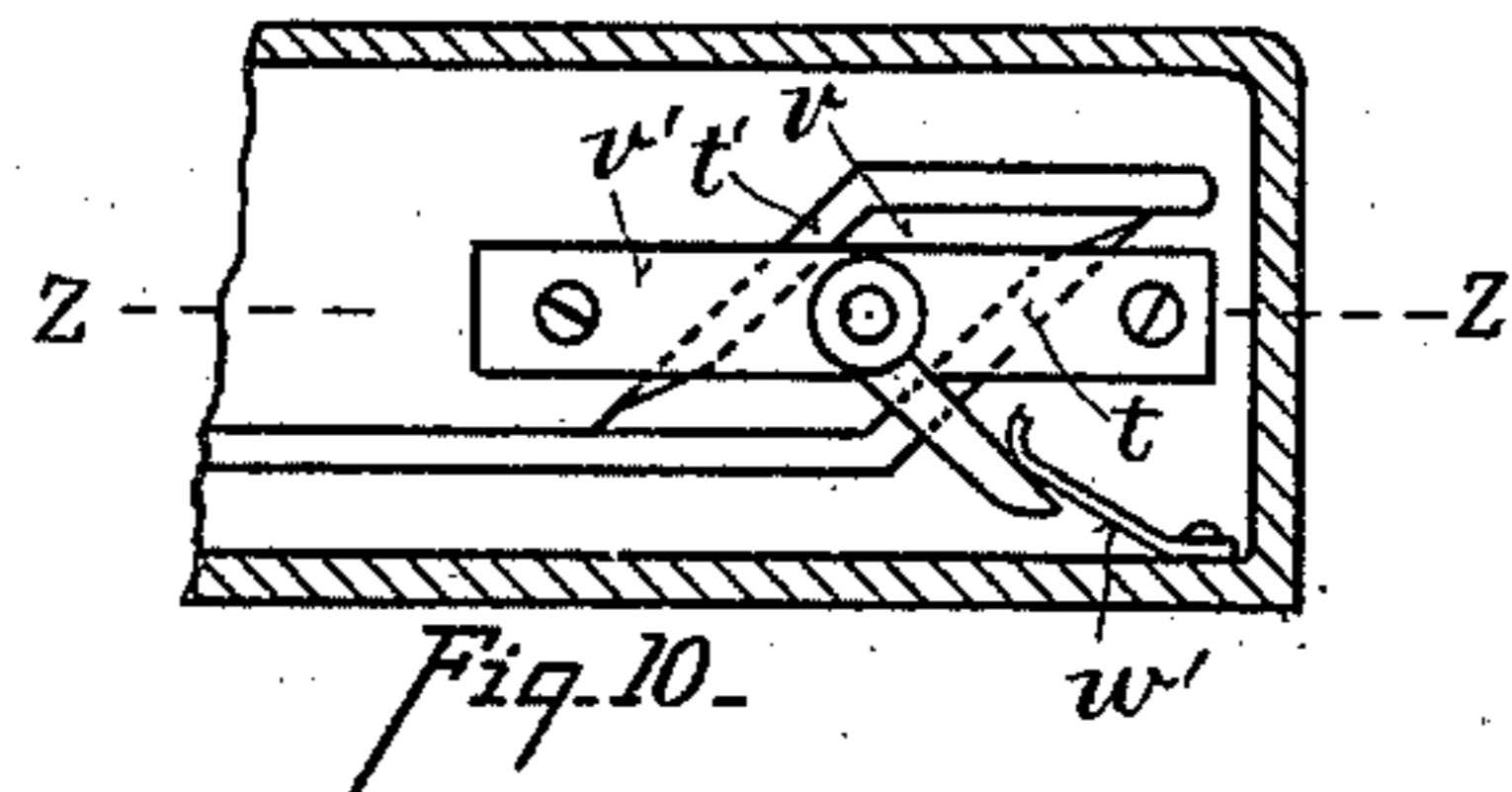
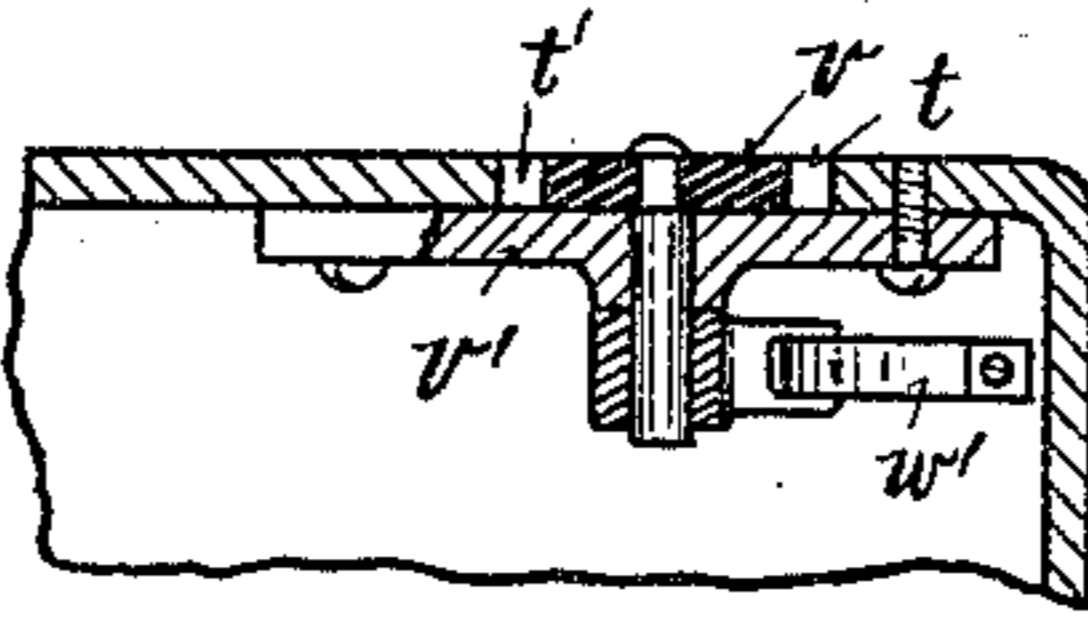
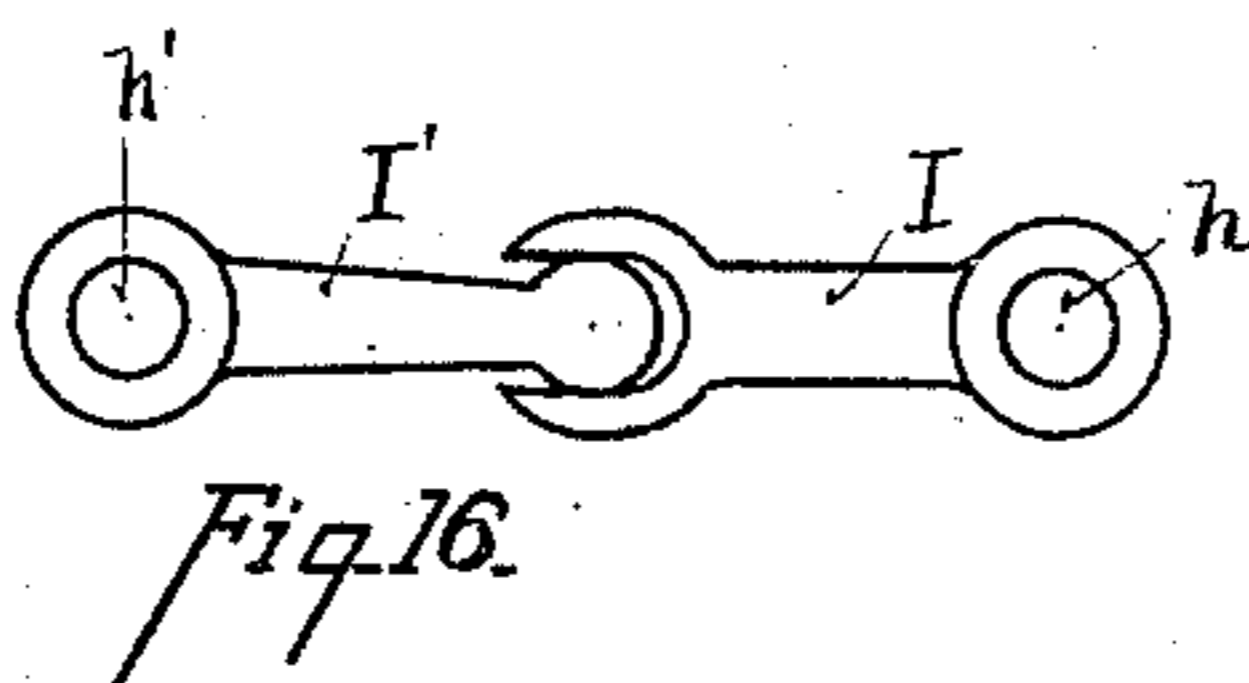
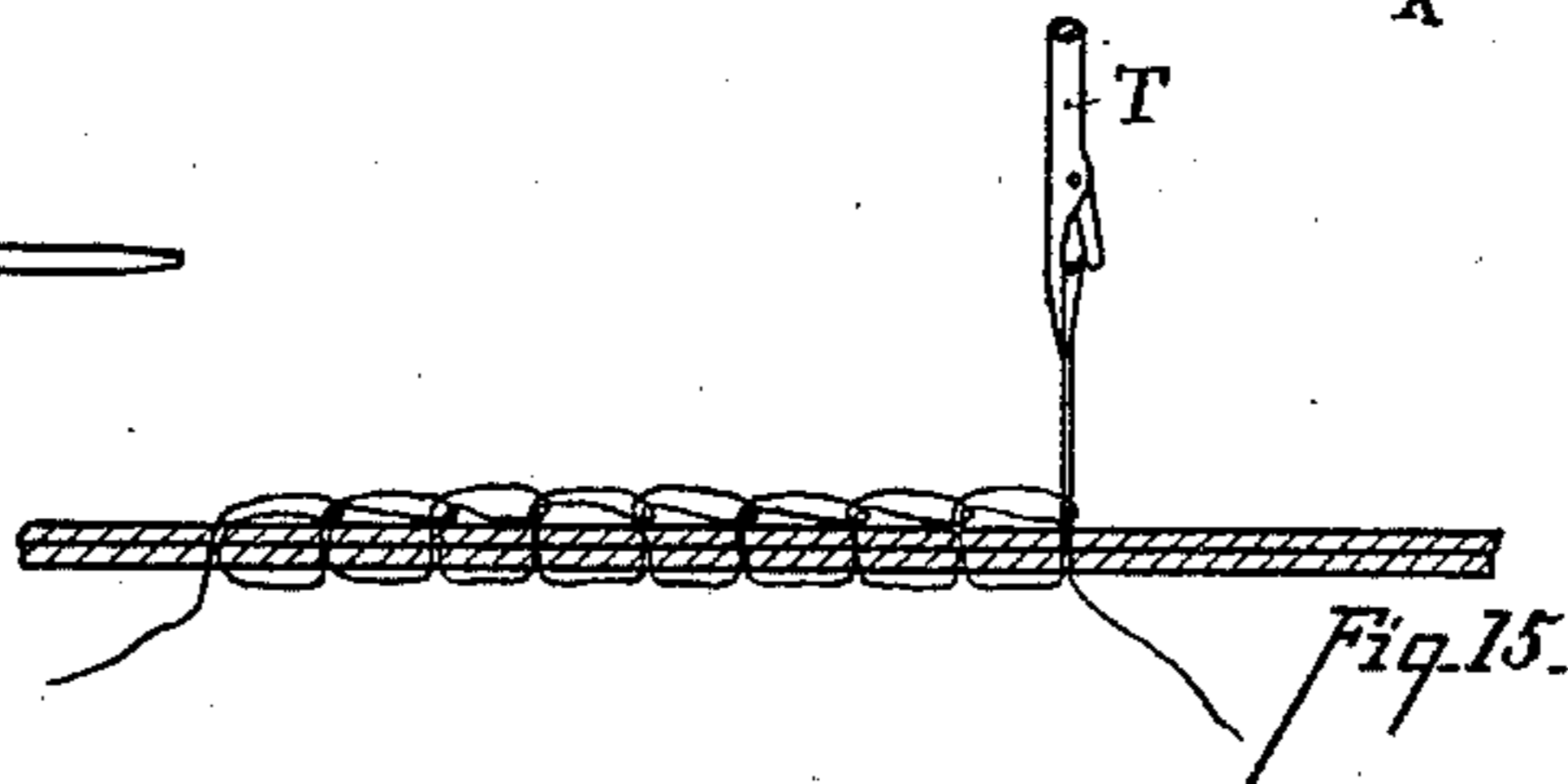
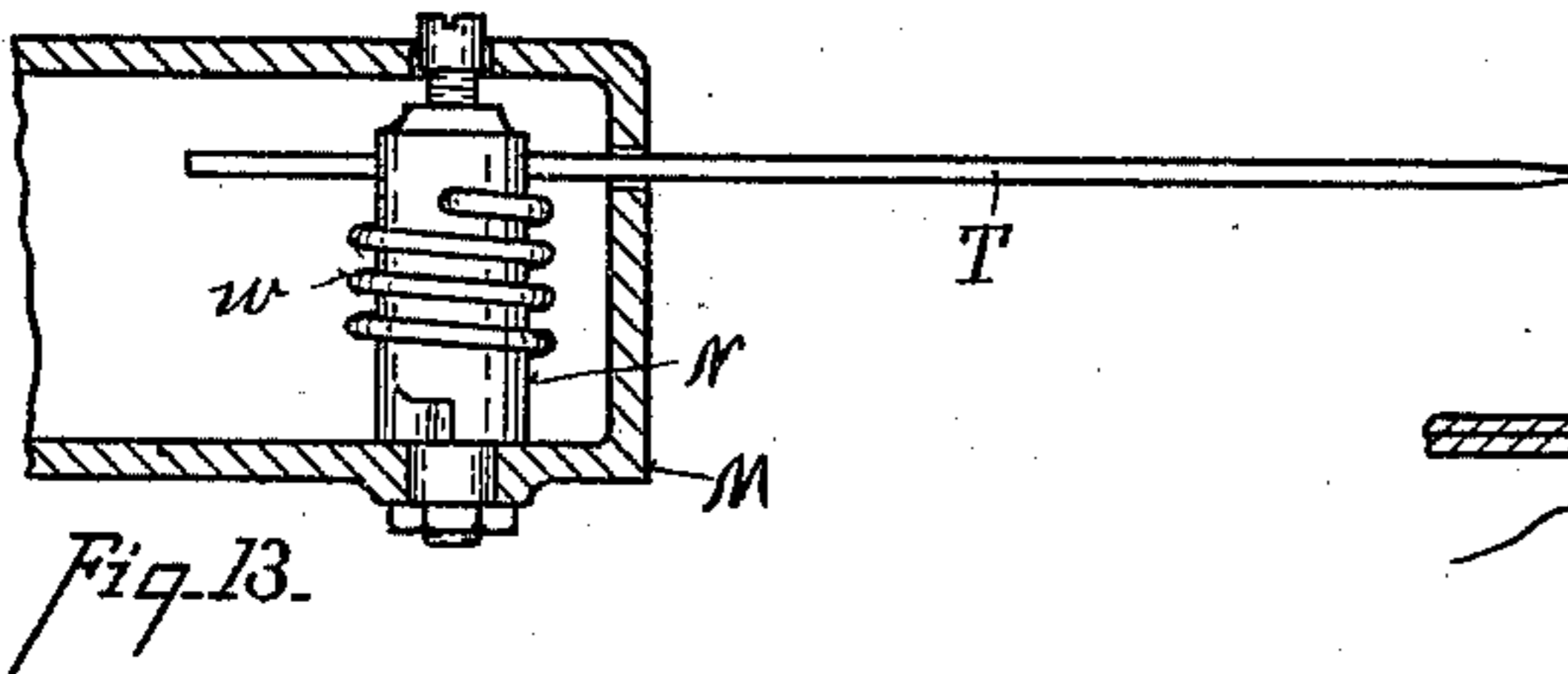
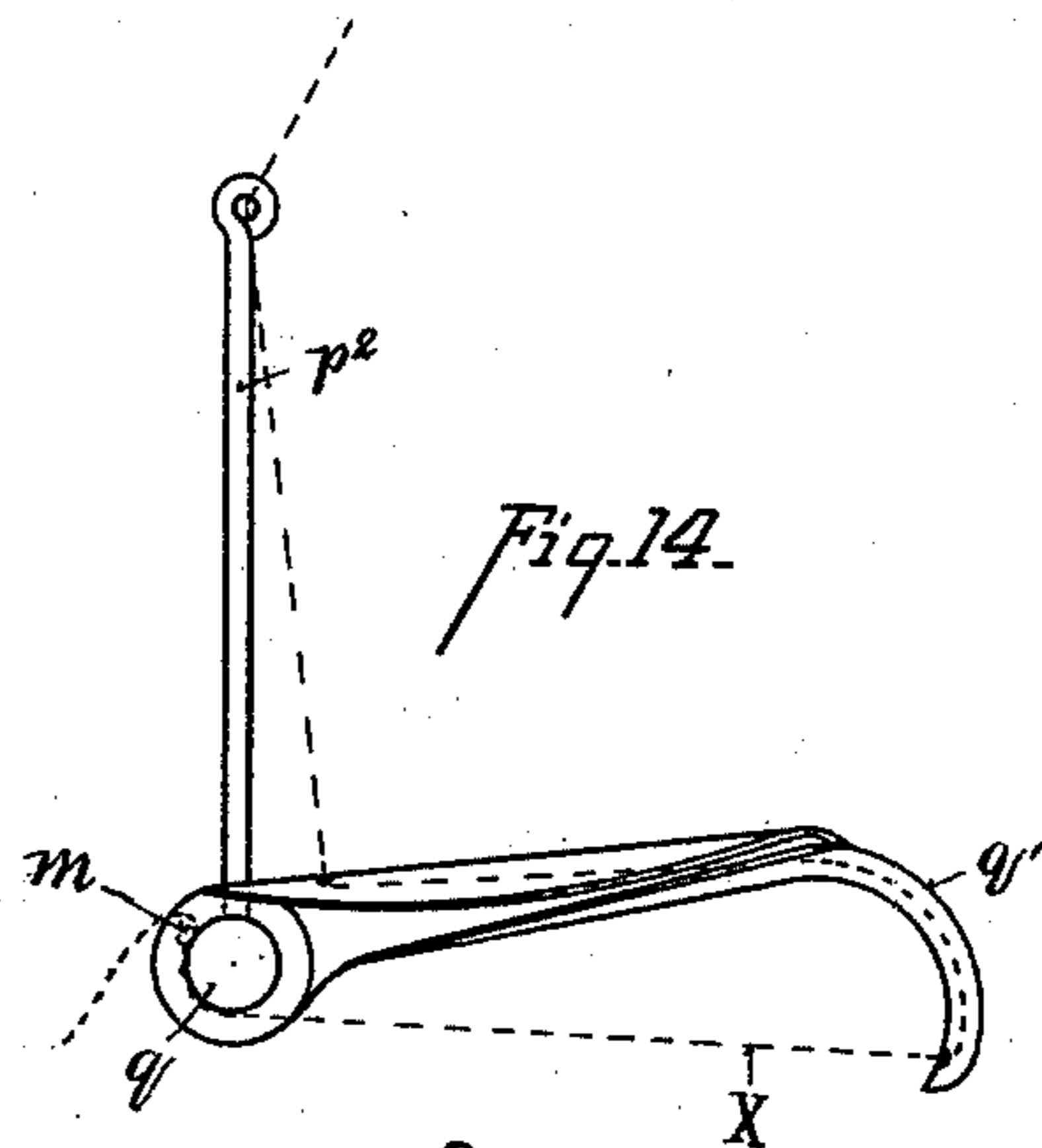
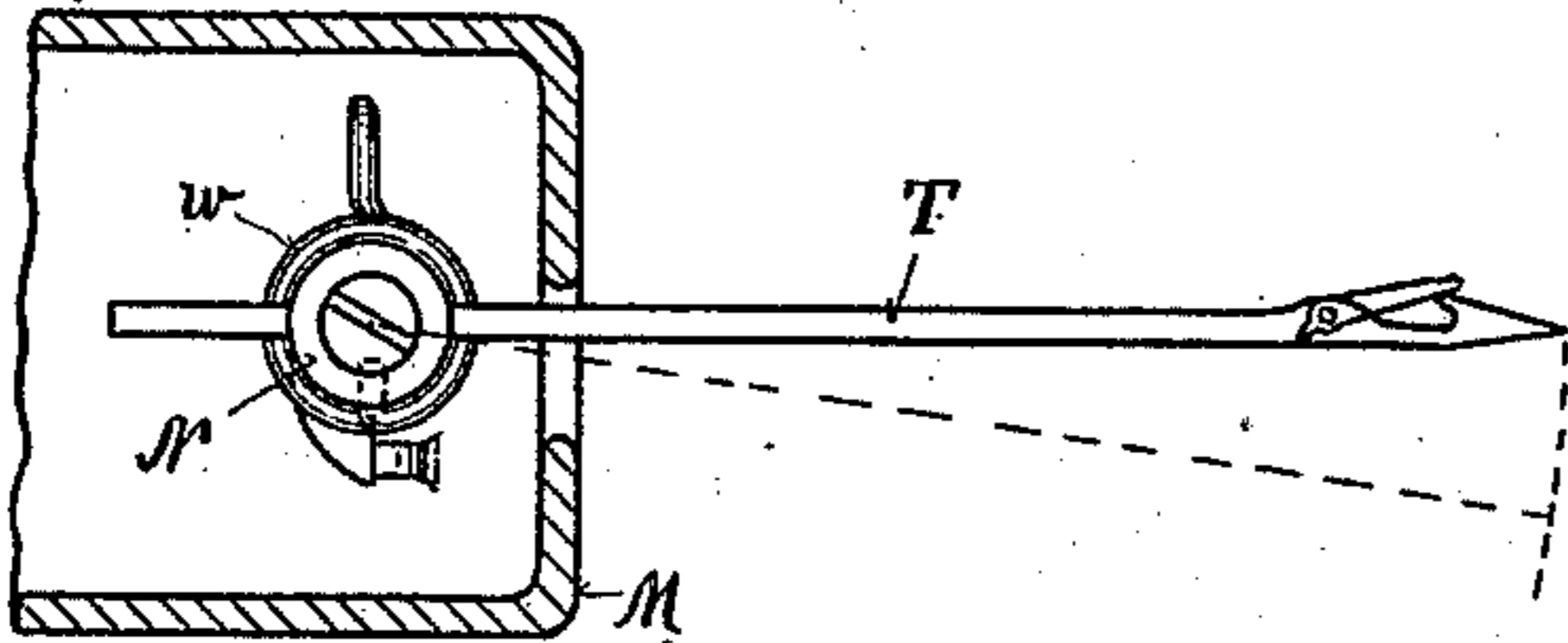


Fig. 12.



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UNITED STATES PATENT OFFICE.

NICHOLAS F. BECKER, OF CINCINNATI, OHIO.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 542,549, dated July 9, 1895.

Application filed September 13, 1894. Serial No. 522,912. (No model.)

To all whom it may concern:

Be it known that I, NICHOLAS F. BECKER, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

One of the objects of my invention is to provide a stitching-carriage on which a needle and threading devices are mounted and which are operated automatically by the reciprocation of the carriage.

Another object of my invention is to provide a traveling table and mechanism for propelling said table and reciprocating a stitching-carriage mounted thereon, whereby the sewing is performed by the travel of the carriage.

Another object of my invention is to provide a support for the needle, which yields laterally and allows the stitching-carriage to travel continuously without interfering with the operation of stitching.

Another object of my invention is to provide a machine primarily adapted to hold the mouths of sacks open in an upright position for filling and clamping mechanism for closing and holding the sacks in position for sewing up the mouths of the sacks.

The various features of my invention will be more fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top plan view of a machine embodying my invention. Fig. 2 is an end elevation of the same. Fig. 3 is a sectional elevation of the clamping-jaws. Fig. 4 is a perspective sectional view of Fig. 3. Fig. 5 is an enlarged inside sectional elevation of Fig. 2. Fig. 6 is a central vertical section of Fig. 5. Fig. 7 is an elevation of the needle-carriage on line *y y*, Fig. 1. Fig. 8 is a section on line *x x*, Fig. 7. Fig. 9 is a sectional view of the tripping-guides for rocking the threading-arms on line *z z*, Fig. 10. Fig. 10 is a side elevation of Fig. 9. Fig. 11 is a sectional perspective view of the sack-support. Fig. 12 is a top plan view of the needle and its yielding post-support. Fig. 13 is a side elevation of Fig. 12. Fig. 14 is an end elevation of the threading shaft and arms. Fig. 15 is a plan view of the stitch. Fig. 16 is an end eleva-

tion of the hinge-links of the rock-shafts of the clamping-jaws. Fig. 17 is a modification of the yielding needle-support.

A represents the end piece of the frame.

B represents the girders. *a* represents tracks mounted upon said girders. C represents a traveling table which, in the preferred form of construction, is mounted and travels upon said tracks.

When the machine is intended to sew up the mouths of sacks I provide the following mechanism for supporting and clamping the sacks: D D' represent clamping-jaws, one of which is rigidly connected to the side of the machine and the other is hinged upon the pivot *c* at the rear end of the machine. *b b'* represent supplemental clamps which are of shell form, and they are mounted upon the clamps D D', but elevated therefrom, leaving the recess or slot *e* between the said clamps for the needle to operate in when stitching the sacks.

In order that the mouth of a sack may be held open between the clamps, I provide the following mechanism: *h h'* represent rock-shafts, which are journaled upon the under side of the clamps D D'. *c'* represents crank-arms attached to said rock-shafts. *d* represents a connecting-rod hinged to said cranks at one end and attached to bars *d'*, which normally lie within the shell supplemental clamps *b b'*. *d²* represents a series of pins attached to the bars *d'* and which project up through the shell-clamps a sufficient distance to allow the sides of the sacks to be hooked thereto.

It is necessary for clamps D D' to be closed to clamp the sack to hold it in position for stitching, and it is also desirable to draw the pins *d²* out of the sacks to release the same, and to accomplish these movements I provide the following devices: Rock-shafts *h h'* are hinged at their rear ends by links I I', (see Fig. 16,) one end of each of said links being affixed to its appropriate rock-shaft, and they are hinged together at their inner ends by a loose joint, which will allow of the opening and closing of the clamps. E represents a lever affixed to one of said rock-shafts, which when it moves rocks the same. The links I I' oscillate and transmit motion to the opposite shaft and they are rocked downward. The cranks *c'* withdraw the pins *d²* below the face

of the supplemental clamps and release the sack, the clamps being closed upon the mouth of the sack before the pins are released to hold the same in position for stitching together.

The clamping-bars and their correlative parts are duplicated upon each side of the machine, so that they may be operated alternately.

The sacks are hooked on pins d^2 of the clamps, when they are opened out in the position shown in Fig. 1, and this holds the mouth of the sack open. g represents an arm on which the end of clamp D is supported when opened out. When the clamps are closed, the hinged arm g is turned up and engages with the weighted catch g' to lock the clamps in position for holding the sack between them.

The stitching mechanism in the preferred form is composed of a traveling table C, on which table is mounted the reciprocating needle-carriage M, which is reciprocated back and forth as the table C is progressively moved forward. In order that the stitching mechanism may operate, first, to sew the sack on one side of the machine and then to sew another sack on the opposite side of the machine on its backward travel, I provide two sets of stitching mechanism, each the duplicate of the other. These stitching mechanisms are mounted upon the laterally-moving stitching-supports, which are shifted from side to side to bring the parts into position for operation. The stitching-carriage is provided with lugs n on the bottom, which project through suitable gains formed in the table C, and the stitching devices are mounted on either end of said carriage and are operated as hereinafter explained. This carriage is adjustable from one side of the table to the other by means of the following mechanism.

G represents pendulous arms hinged at the top of the frame of the machine. The lower ends of said arms are slotted to span the driving-shaft J, which passes through the same.

H represents a bracket gained upon the cross-rail H' . The upper end of bracket H is preferably bifurcated and provided with ears, which are pierced with holes and reciprocated upon the rod 2.

L represents a setting-lever spanning the end of the driving-shaft, which journals in the stem of said bracket H . The upper end of said setting-lever is affixed to one of the pendulous arms G .

l represents holes in the segmental brace 12 for fastening the lever L to either of the adjusted positions.

F represents rock-arms, which are pivoted to the stem of bracket H by means of axial bolts F' . These arms are provided at either end of the machine and one is the duplicate of the other. They are provided with a gain or opening to receive the eccentric Q , mounted on the driving-shaft J, which when revolved oscillates said arms to reciprocate the stitching-carriage M by means of the follow-

ing devices: M' represents an oscillating bar affixed to said rock-arms F at either end. n represents downwardly-projected lugs on the under side of the stitching-carriage, with which lugs said bar engages and reciprocates the carriage. C' represents a bracket attached to the under side of the table. i represents a slot formed between said bracket and the table for the bar M' to travel in. P represents a nut provided with a grooved way, which engages the brackets C' . This nut is screw-threaded to engage with the threads of the screw-shaft J, so that if said shaft is revolved the table is moved backward and forward by the engagement of said shaft with the said nut. The revolving of said shaft by means of eccentric Q and rock-arms F likewise reciprocates the stitching-carriage, so that when said table is driven forward or backward the stitching-carriage is appropriately reciprocated.

The parts $G H 2 F F' Q$ are duplicated on the opposite end of the machine.

The stitching mechanism is constructed as follows: N represents a head, to which the needle is attached and by which it is supported. It is pivotally attached to the bottom of the carriage M and held in position by retractile spring w . The needle is held by the spring normally in a plane parallel to the line of the carriage movement, but it allows the needle to yield to strains which are imparted to it by the forward movement of the carriage while the needle is in the goods; but as soon as the needle is retracted from the goods the spring brings it backward in the position again for being thrust through the goods for a second stitch. In the support shown in Figs. 12 and 13 the needle-head N is allowed to yield in one direction only; but in the modification shown in Fig. 17 the needle-head N is attached to an oscillating bar N^2 and is provided with a flexible spring 7, which allows the needle to yield laterally in either direction, as indicated in dotted lines, so that the needle will reciprocate with the stitching-carriage, yielding laterally to the strains of the goods imparted to it by the traveling table.

$T T$ represent hook and latch needles suitably secured to their respective heads N , and they are operated to make a chain-stitch from a single thread of the form shown in Fig. 15 by means of the following devices:

q represents the needle-threading shaft and q' the threading-arm; p , the spool of twine mounted upon the table C; p' , a stationary eyelet; p^2 , an eyelet-arm on rock-shaft q ; m , a catch for holding one end of the twine or thread, so that the hook of the needle will catch it to form the first loop of the stitch.

The threading-arm q' is rocked forward to put the thread in the notch or eye of the needle and then rocked backward to keep the twine out of the way of the needle, as follows: r represents a crank-arm on shaft q ; r' , a connecting-rod hinged thereto and to the ear of guide r^2 . s represents a guide-pin projecting

into slots^s of the carriage M. *t* represents an incline and in said slot at the rear end for rocking arm *q'* backward. *v* represents a guide pivoted to bracket *v'* inside of the carriage M. *w'* represents a spring for bringing the tongue of guide *v* down as soon as it is tripped by pin *s* to direct the travel of the pin on the return stroke into incline *t'*, which rocks the threading-shaft backward.

The operation of stitching is as follows: By turning the driving-shaft J one-half of a revolution moves table C forward on said shaft. Eccentrics Q oscillate rock-arms F, which actuate bar M' and carriage M, driving needle

T through the goods, bringing the parts into position to engage the thread *x*. By completing the revolution of the shaft J the stitching-carriage and needle mounted thereon are retracted and the loop drawn through the goods. As table C is moved forward the needle, being supported on the yielding post N, moves backward on said post-center till it is drawn from the goods. The spring brings it back into position for being thrust through the sack by the next forward movement of carriage M. The first loop is not released, but slips over the latch of the needle, when it is thrust through the goods the second time, and when the needle is again withdrawn the latch is closed over the eye and the first loop is slipped over the needle and over the threads of the second loop in the usual manner of forming chain stitches with such needles.

Carriage M is armed with two sets of stitching mechanisms, one being the counterpart of the other, and they are worked on alternate sides of the machine.

In order to sew a sack the lever L is adjusted to one side of the machine, and when the sack has been sewed on one side and it is desired to sew a sack on the opposite side of the machine the setting-lever L is released and moved to the opposite side of the machine. This moves the brackets H, moving driving-shaft J and nut P (which is gained to the bracket C') transversely across the center of the machine, bringing the parts into position on the opposite side of the machine for stitching another sack.

In order to release the sack automatically when the sewing is complete, I provide the following mechanism: The tripping-levers E E', when they move outwardly, engage with the stem of the weighted catches *g'*, raise them up and release the supporting-bars *g*, which drop down into the position for holding the moving clamp D. When the pins *d*² are retracted from their normal position the slot *e* between the clamps D D' and *b b'* is closed by the bars *d'* which occupy a space opposite the said slot, and in this position it would be impossible to sew the sack. Hence the pin-bars must be in the position shown in Figs. 3 and 4, and the levers E must be in an appropriate position to prevent the adjustment of the parts to one side of the machine.

Unless the levers and bars are in the proper position, the free ends of the lever E are extended and inclined inward, so they would strike against the setting-lever L and prevent the adjustment of the apparatus until the levers E are retracted, bringing the parts into proper position. In order to support the sacks and to allow means to shake or agitate them slightly to pack the material in the sacks, I provide rock-arms 3 on either side of the machine, which are suitably journaled to the legs thereof. 4 represents supporting-arms, a series of which are provided, so as to hold the body of the sack on said arms. One of said arms is permanently secured to the shaft 3, the other yieldingly secured thereto by means of spring 5. 6 represents a treadle attached to said shaft to oscillate it. The spring brings the shaft back into position and the arms beat against the sack and shake it sufficiently for the purpose.

It will be observed that the needle-arm is dispensed with and the oscillating stitching-carriage is substituted therefor and that the needle-support is mounted upon this carriage and yields laterally to the line of reciprocation of the carriage. The preferred form of construction is to employ a traveling table on which the stitching-carriage reciprocates, and in this construction the needle has three movements. It is moved progressively forward with the carriage mounted upon the table. It reciprocates with the needle-carriage and yields laterally to the line of reciprocation and in the line of the forward travel of the table. In this preferred form of construction the stitching-carriage carries duplex stitching mechanism, and the entire stitching mechanism is adjustable to the opposite sides of the frame of the machine, so that the stitching mechanism is out of the way on the idle side and in position for use on the working side, and vice versa, according to the position in which the mechanism is adjusted.

I claim—

1. In a sewing-machine, the combination of a traveling table, and mechanism for propelling the same, a stitching carriage mounted upon said table, means for reciprocating said carriage transversely to the line of travel of the table, and a needle carried by a laterally yielding support swiveled upon said carriage, whereby the needle is fed forward continuously across the goods and simultaneously reciprocated transversely to stitch the goods, and is given a lateral, yielding movement to compensate for the forward movement of the table, substantially as described.

2. In a sewing-machine, the combination of a traveling table, and mechanism for propelling the same, a stitching carriage mounted upon said table, means for reciprocating said carriage transversely to the line of travel of the table, a laterally yielding needle support carried by the carriage and operating to permit the needle to yield in the line of travel of

the table, and means for restoring the needle support to its normal position, substantially as described.

3. In a sewing-machine, the combination of
5 a traveling table and mechanism for propelling the same, a stitching carriage mounted upon said table, means for reciprocating said carriage transversely to the line of travel of the table, a laterally yielding needle support
10 swiveled upon said table and carrying a needle, and a tension spring connected to said carriage and needle-support and operating to normally hold said needle in operative position for piercing the goods to be stitched, substantially as described.

4. In a sewing-machine, the combination of a traveling table and mechanism for propelling the same, a stitching carriage mounted upon said table, means for reciprocating said
20 carriage transversely to the line of travel of the table, a laterally yielding needle support mounted upon the carriage and carrying a hooked needle, and a threading device attached to the carriage and operating in conjunction with the needle to form the stitch,
25 substantially as described.

5. In a sewing machine employing a reciprocating stitching carriage a needle support swiveled upon said carriage a hook needle
30 carried by said support, a retractile spring connecting said support to said carriage, the oscillating threading device *q* mounted upon the table, mechanism connecting said device with the reciprocating carriage for operating
35 said threading device appropriately in time movements with the reciprocation of said carriage, substantially as specified.

6. In a sewing machine employing a reciprocating stitching carriage, the combination
40 of a needle support upon said carriage, the retractile spring for controlling said support and the needle mounted thereon, and threading mechanism consisting of the rock shaft *q* mounted upon the table and engaging with
45 the slotted cam devices on the carriage whereby said shaft is rocked forward and backward by the reciprocation of the carriage, substantially as specified.

7. In a sewing machine the sewing mechanism consisting of the reciprocating carriage
50 *M*, a needle mounted thereon, rock shaft *q* mounted on the table and oscillating mechanism connecting said rock arm with the said stitching-carriage of the carriage for oscillating
55 said arm in time movements with the thrusts of the needle, substantially as specified.

8. In a sewing machine the combination of a stitching carriage the threading mechanism
60 consisting of the rock shaft *q*, eyelet arm *q'*, crank *r*, connecting rod *r'*, slot *s*², guide pins *s*, and tripping guide plate *v*, substantially as specified.

9. In a sewing machine the combination of
65 the driving shaft *J* suspended from the pendulous arms *L*, the stitching carriage *M* attached to and laterally adjustable upon the

table *C*, and mechanism for reciprocating said carriage mounted upon laterally adjusted brackets whereby the stitching carriage and
70 the driving mechanism may be adjusted to operate on either side of the machine, substantially as specified.

10. In a sewing machine the combination of the stitching mechanism with adjustable driving mechanism secured to the frame of the
75 machine and means for adjusting and locking the said mechanisms at opposite sides of the machine, substantially as specified.

11. In a sewing machine the combination of
80 a traveling table a stitching carriage *M* provided with needle *T* at each end and duplex threading mechanism provided upon each side of the carriage, a table and the driving mechanism mounted upon laterally adjustable bearings whereby the stitching carriage
85 and the driving mechanism are adjusted across the table for sewing on either side of the machine, substantially as specified.

12. In a sewing machine, the combination
90 with a traveling table and a reciprocating stitching carriage, of the driving mechanism consisting of the screw shaft *J*, nut *P*, the rock arms *F*, and bar *M'* engaging with the stitching carriage, whereby the carriage is re-
95 ciprocated by the revolution of the driving shaft which propels the table, substantially as specified.

13. In combination with a sewing machine the sack holding mechanism applied to one
100 side of the frame thereof consisting of the hinged clamps *D*, *D'*, *b*, *b'*, the series of pins *d*², and the mechanism for raising and lowering the said pins, substantially as specified.

14. In a sewing machine a sack clamping
105 mechanism consisting of the hinged clamps *D*, *D'*, and supplemental clamps *b*, *b'*, provided with a slot *e* between said clamps opposite the path of the needle, substantially as specified.

15. In combination with the hinged clamping bars *D*, *D'*, the tripping lever *E*, rock
110 shafts *h*, *h'*, cranks *c'*, *c'*, connecting rods *d*, and pin bars *d'*, and hinged links *I*, *I'*, substantially as specified.

16. In combination with the sewing machine frame provided with adjustable rock
115 arms *F* the tripping levers *E* pivoted to said frame having their inner ends inclined and extended to serve as stops for the movement of said rock arms the hinged arms *g* for holding the sack clamping mechanism closed, and the weighted catches *g'* for engaging said arms and adapted to be tripped by said levers, sub-
120 stantially as specified.

17. In a sewing machine the combination with a traveling table, and a stitching carriage laterally adjustable thereon, of the adjustable driving mechanism consisting sub-
125 stantially of the screw threaded driving shaft, the nut *P* adjustably connected to the table, the lugs *n* of the carriage *M*, the rock arms *F* mounted upon the sliding brackets *H*, the bar *M'*, the eccentric *Q*, mounted upon the driv-

ing shaft and operating the rock arms F, substantially as specified.

18. In combination with the pendulous arms G, sliding brackets H, the driving mechanism supported thereon, the setting lever L connected to pendulous arm G, whereby the driving mechanism may be adjusted to either side of the frame of the machine, substantially as specified.

19. In a sack sewing machine, in combination with the frame thereof, mechanism for holding the mouth of a sack open in an upright position, slotted clamping mechanism for holding the mouth of the sack closed in po-

sition for stitching, and a reciprocating traveling stitching carriage armed with a needle mounted upon a yielding needle support, which needle is thrust through the sack along the line of the slot in said clamps by the reciprocation of said carriage, substantially as described.

In testimony whereof I have hereunto set my hand.

NICHOLAS F. BECKER.

Witnesses:

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OLIVER B. KAISER.