

No. 692,017.

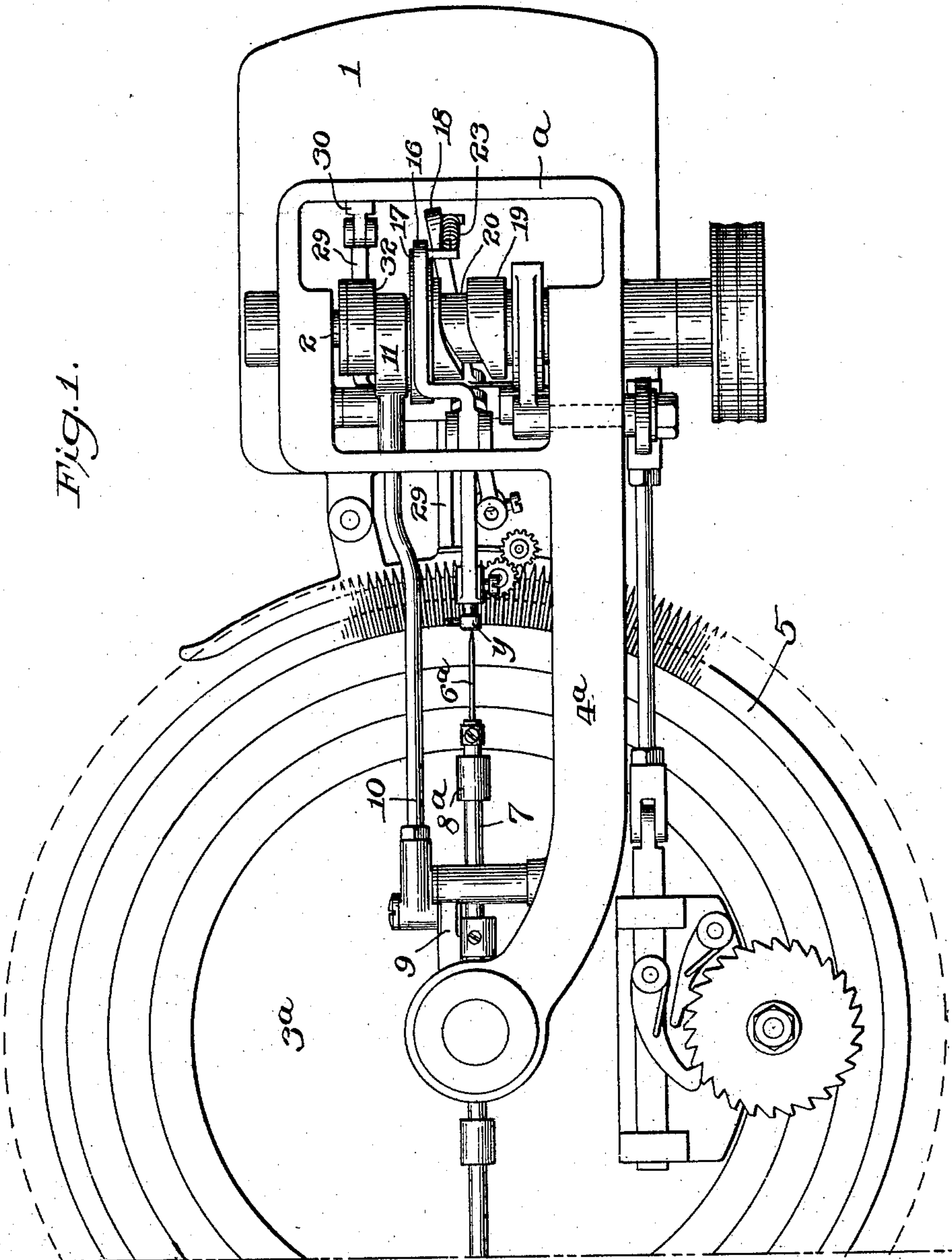
Patented Jan. 28, 1902.

G. KEYSER.
MACHINE FOR SEWING LOOPED FABRICS.

(Application filed June 6, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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Fig. 2.

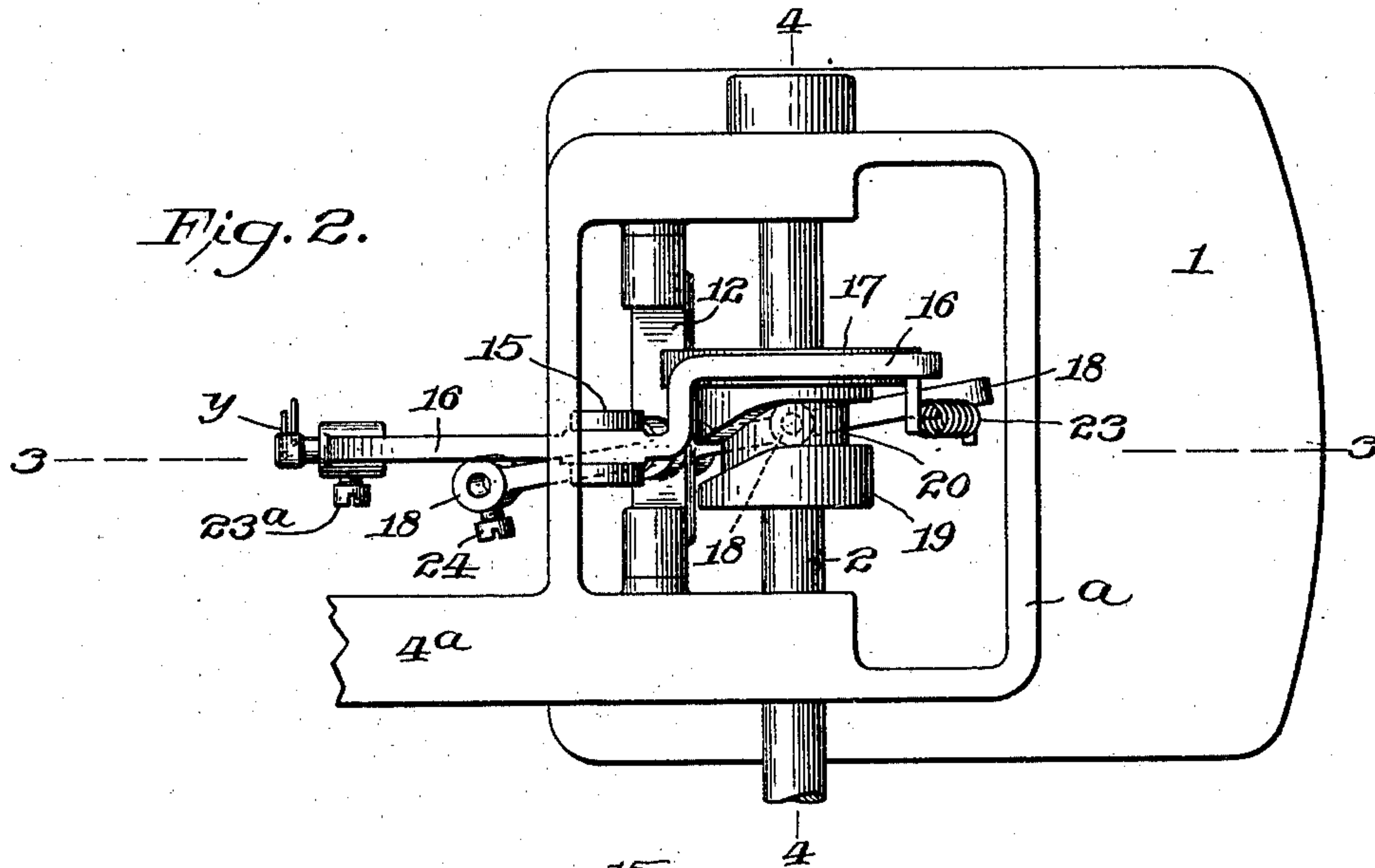


Fig. 3.

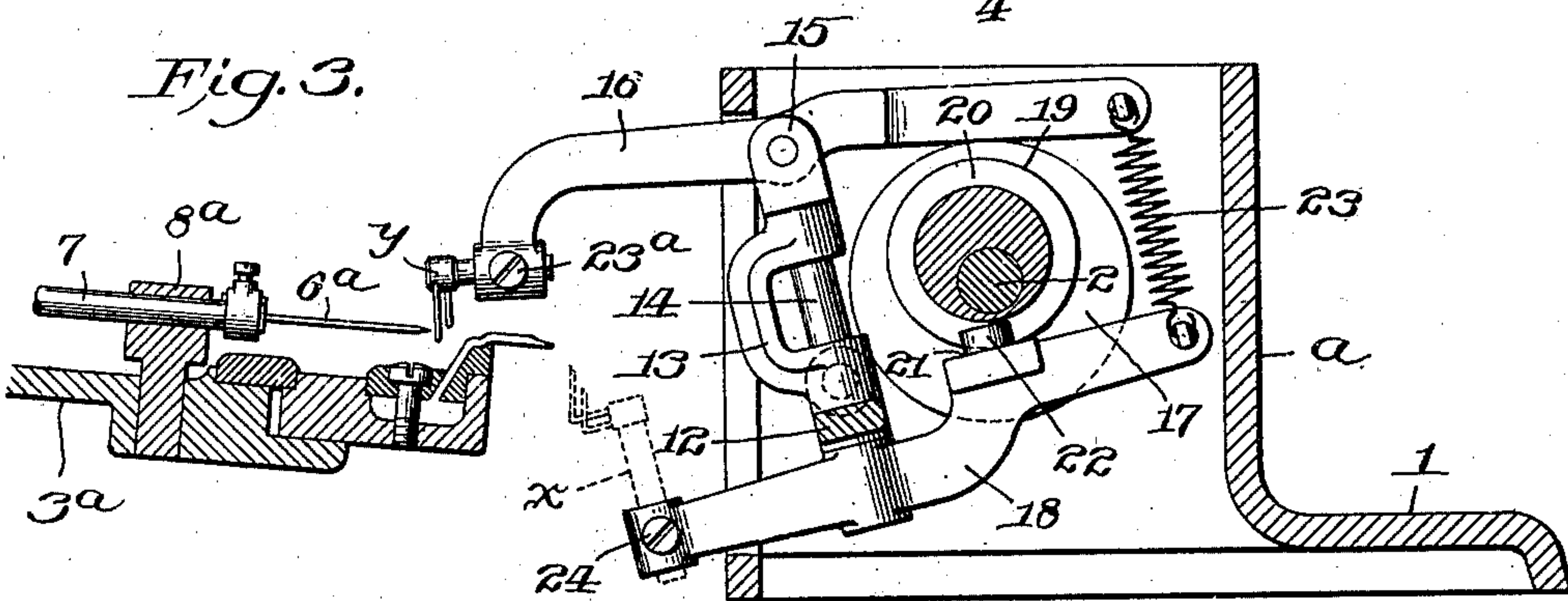
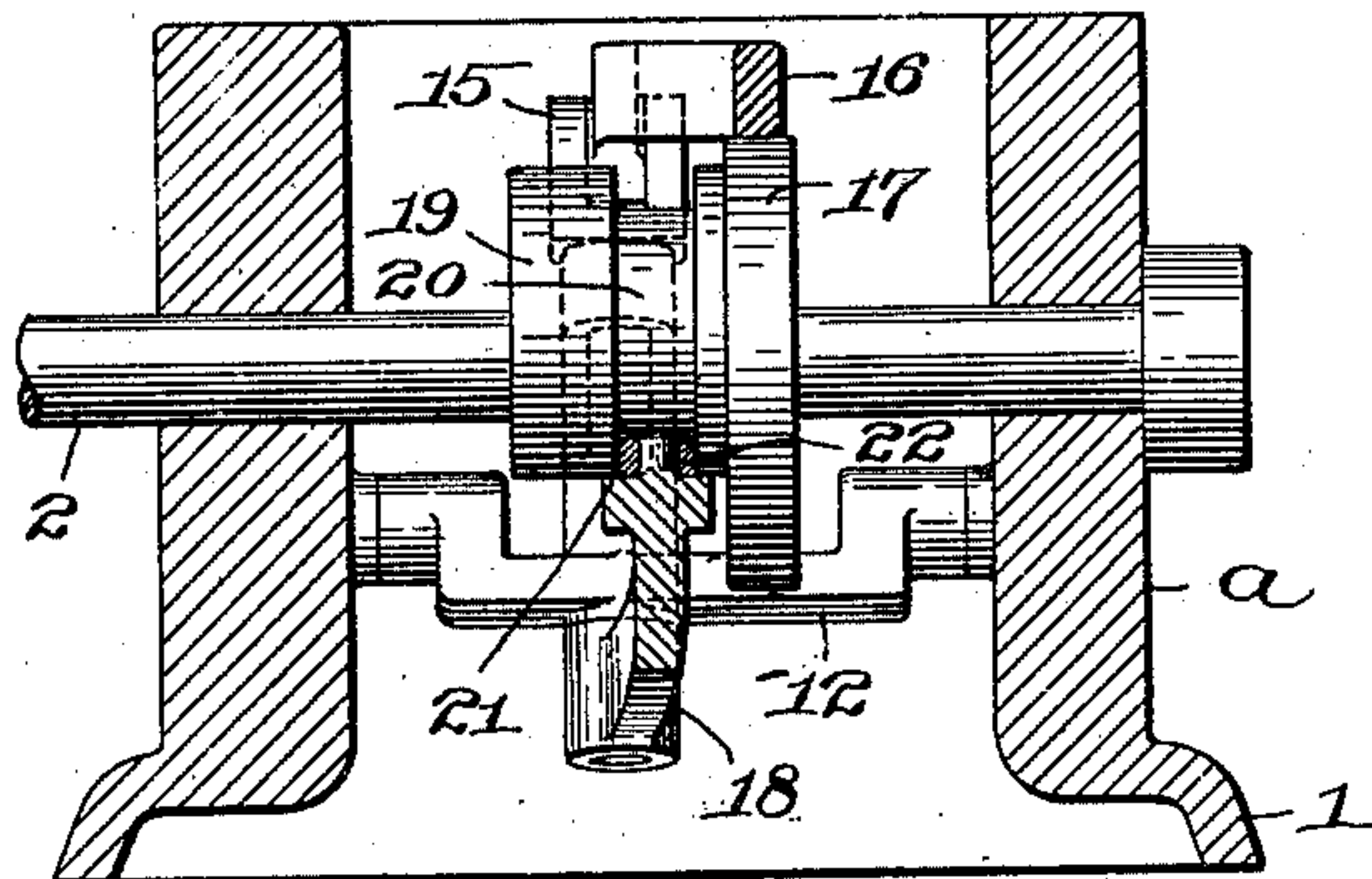


Fig. 4.



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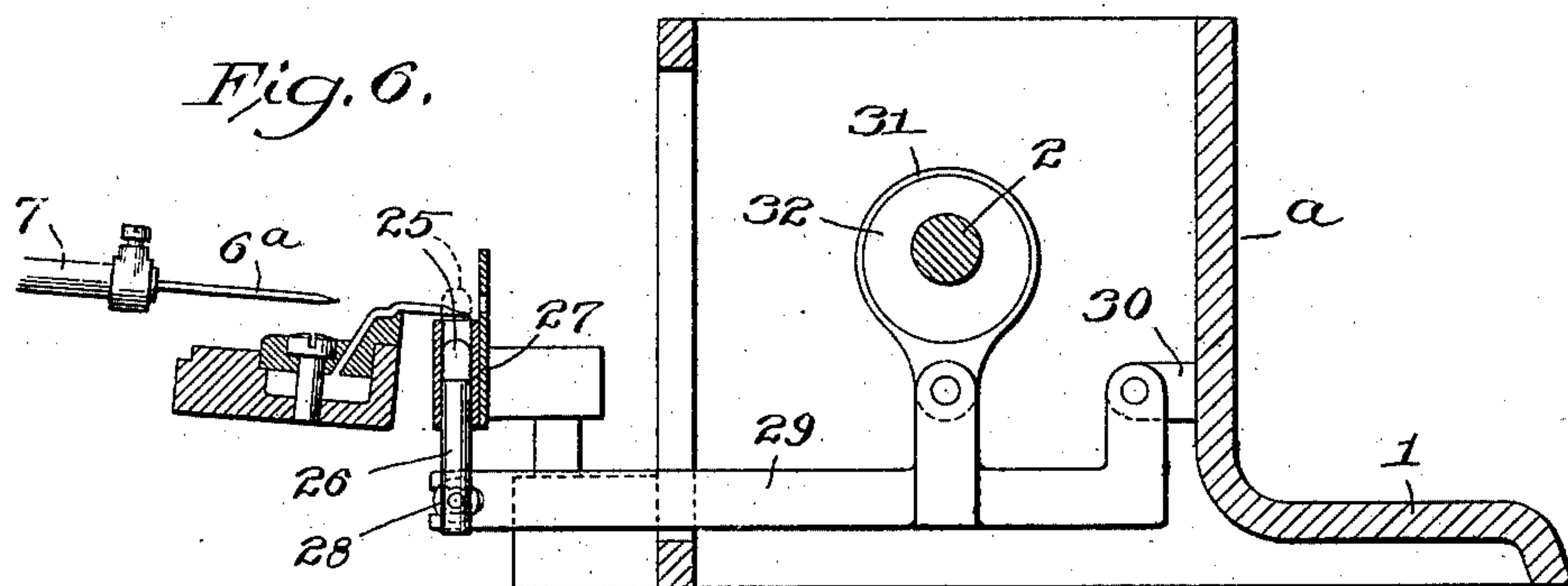
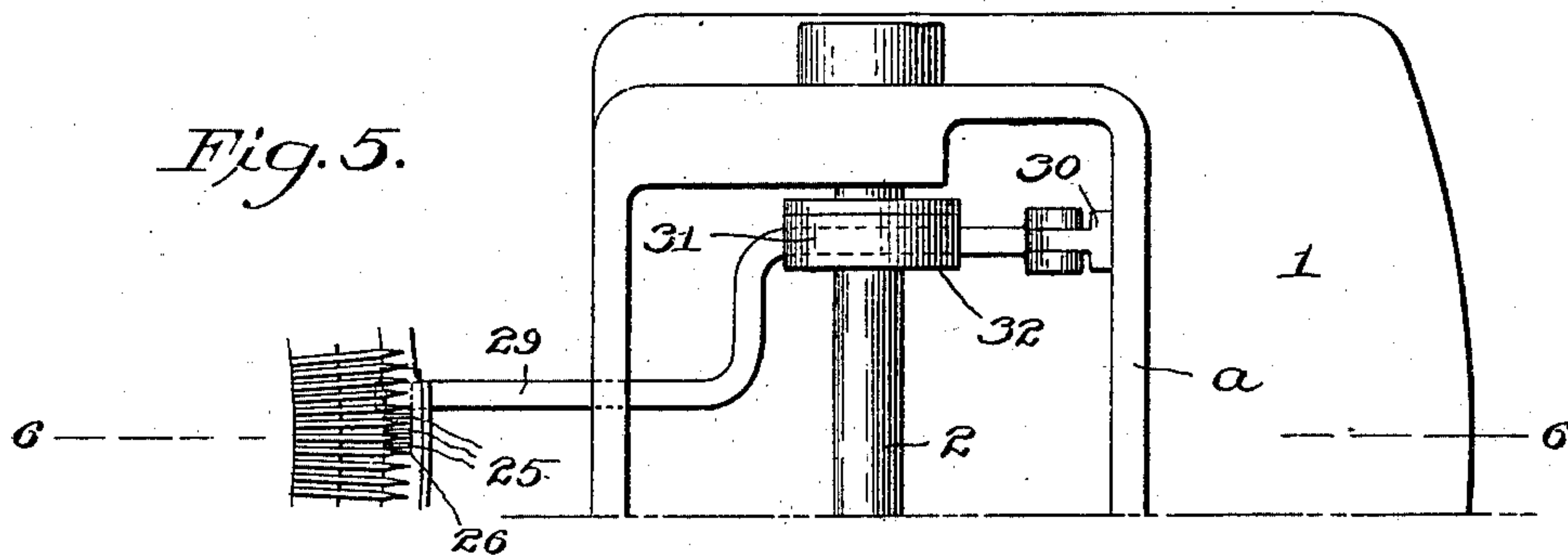
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Fig. 7.

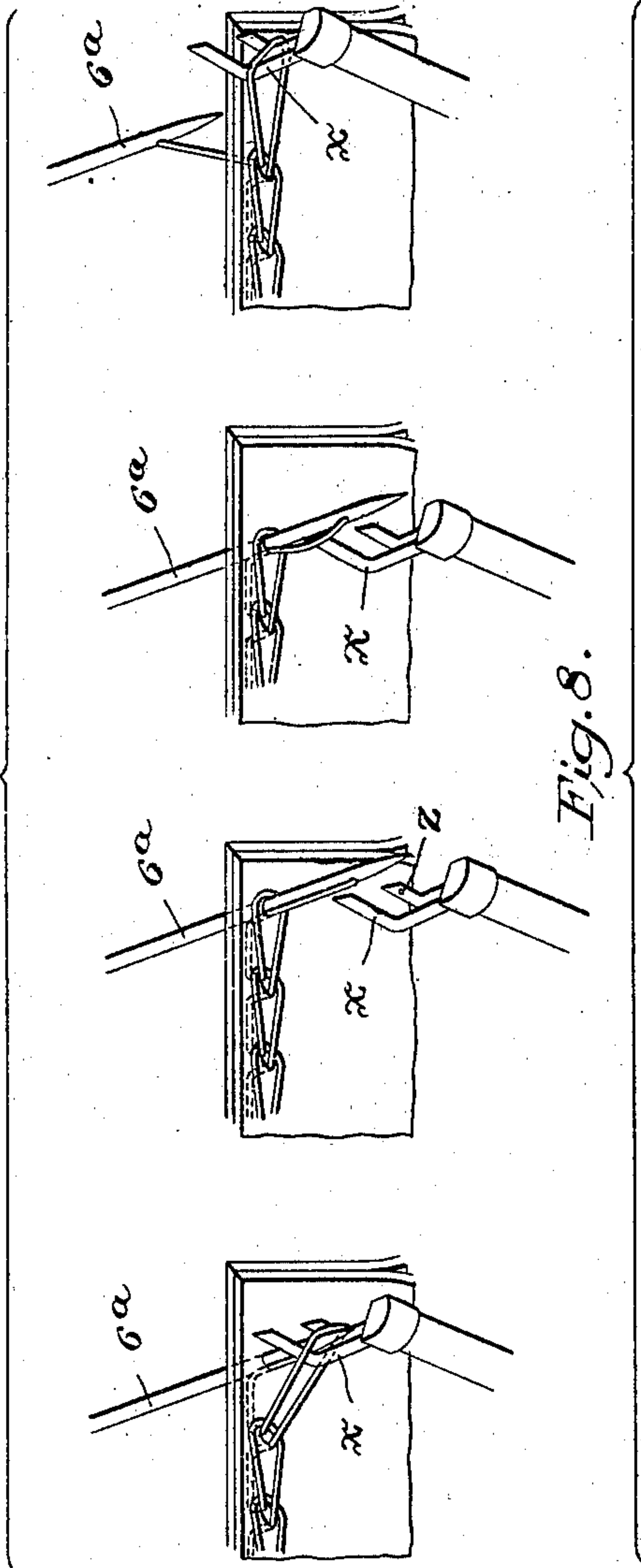
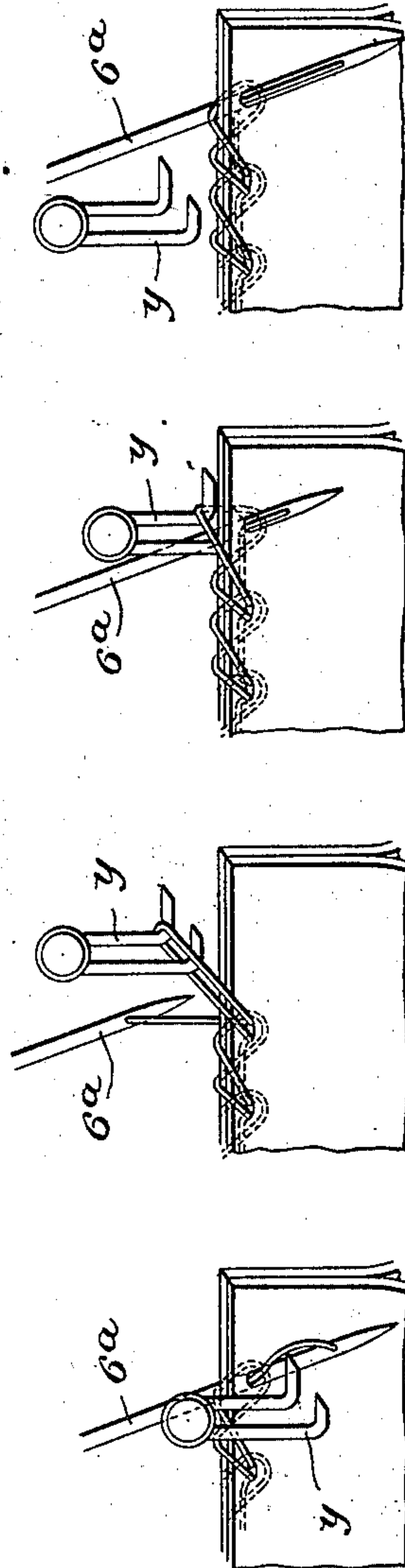


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE KEYSER, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR SEWING LOOPED FABRICS.

SPECIFICATION forming part of Letters Patent No. 692,017, dated January 28, 1902.

Application filed June 6, 1901. Serial No. 63,371. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KEYSER, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Machines for Sewing Looped Fabrics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to that class of machines for uniting knitted fabrics wherein sewing mechanism is combined with an intermittently-rotatable circular series of radial pins upon which are impaled the edges of the fabric to be united.

The primary object of my invention is to provide a novel construction and organization of looper mechanism whereby the machine may be readily adapted to the efficient production of either side or overedge stitching for the sewing together of the impaled edges of the fabric.

A further object of my invention is to provide simple and efficient means to insure the passage of the thread above the impaling-pins during the retraction of the needle in the sewing operation.

With these objects in view my invention comprises various novel constructions and combinations of parts, which will be hereinafter fully set forth and duly claimed.

In the drawings, Figure 1 is a plan of a machine embodying my invention. Fig. 2 is a plan of the improved looper mechanism. Fig. 3 is a longitudinal vertical section, as on the line 3 3 of Fig. 2, including a portion of the pin-carrier and adjuncts. Fig. 4 is a transverse vertical section as on the line 4 4 of Fig. 2. Fig. 5 is a plan of a portion of the machine, showing the devices for directing the thread above the impaling-pins. Fig. 6 is a longitudinal vertical section as on the line 6 6 of Fig. 5. Fig. 7 is a diagram showing the different stages of the sewing operation in the formation of side stitches. Fig. 8 is a similar diagram in respect to the formation of overedge stitches.

1 designates a bed-plate, from which rises a frame or housing *a*, 2 a main shaft journaled in suitable bearings in the frame or housing,

and 3^a a fixed circular base sustained by an overhanging arm 4^a, extending from said frame or housing. On this base is supported the pin-bearing annulus 5, which is intermittently rotated in the usual manner to advance the impaled fabric point by point to the co-acting needle and looper devices of the sewing mechanism.

In the present instance the needle 6^a is carried by a radially-reciprocative bar 7, guided in bearings 8^a on the base 3^a, which bar is connected with a rock-lever 9, that is in turn connected by means of a rod 10 with an eccentric 11 on the main shaft, as usual. Journaled in bearings in the side walls of the housing is the horizontal member 12 of an oscillatory T-shaped frame. In the vertical member 13 of this frame is mounted a rock-shaft 14, the upper extremity of which carries a bracket 15, in which is pivoted a lever 16, whereof one arm rests upon the periphery of a disk 17 on the main shaft, while the other arm overhangs the impaling-pins. On the lower extremity of the rock-shaft is affixed a lever 18, whereof one arm extends beneath the main shaft, while the other arm extends toward the pin-carrier. On the main shaft, adjacent to the disk, is fixed an eccentric 19, in which is formed a peripheral camway 20, the arm of the lower lever being provided with a bearing-surface 21, that contacts with the periphery of the eccentric, and also with a stud 22, that registers with the camway in the eccentric. Yielding engagement of the levers with the eccentric and disk, respectively, is effected by means of a spiral spring 23, uniting the outer arms of said levers.

By the above-described construction it will be seen that during the rotation of the main shaft the eccentric thereon will oscillate the lever 18 vertically through the fulcrum of the frame 12 13, thereby not only swinging the lower lever toward and from the impaling-pins, but also correspondingly moving the upper lever, the latter in its movements being supported upon the periphery of the disk. It will also be seen that during the backward and forward motions of the two levers the camway 20, through its connection with the lower lever, will laterally oscillate the latter

in conjunction with its rock-shaft 14, thereby correspondingly actuating the upper lever on said shaft.

The inner arms of the levers are constructed to receive and carry looper-hooks x and y , respectively, which are adapted to be used separately and independently of each other in coöperation with the reciprocating needle as the character of the stitch to be produced may require, the looper x on the lower lever operating to produce a row of side stitches and the looper y on the upper lever a row of overedge-stitches.

The upper looper-hook is carried by a horizontal stem adapted to be fitted to a horizontal orifice in the end of the lever 16 and detachably secured thereto by a set-screw 23^a, the said hook when thus applied to the lever having imparted thereto a "loop motion" adjacent to the impaling-pins and across the path of the reciprocating needle, so as to effect the union of the impaled edges of the fabric by a row of overedge-stitches, as diagrammatically illustrated in Fig. 8.

The lower looper-hook is carried by a vertical stem adapted to be fitted to a vertical orifice in the lever 18 and detachably secured in place by a set-screw 24. When the looper-hook is thus applied, it is actuated adjacent to the pins and across the path of the reciprocating needle to effect the union of the impaled edges of the fabric by a row of laterally-enchained stitches, as diagrammatically illustrated in Fig. 7. In this figure it will be seen that as the hook, with the engaged loop, descends the needle moves forward between the prongs of the hook and receives the loop. The needle then recedes and the hook ascends diagonally across the path of the needle and takes from the latter a succeeding loop, whereupon the fabric is advanced and the needle again comes forward to meet the hook for another operation, and so on.

From the foregoing it will be seen that by merely detaching the looper-hook from the upper lever and applying a looper-hook to the lower lever the machine may be readily converted from an overedge-stitch to a side-stitch machine, and vice versa.

If it be desired to employ an additional or locking thread in the production of either of the stitches indicated, the looper-hook is provided with an eye z for the passage of the additional thread.

As a simple and efficient means to insure the passage of the needle-thread above the impaling-pins during the retraction of the needle, and thereby obviate the otherwise liability of the drawing of the thread against the extremities of or under the pins, I provide a series of reciprocative bits 25, which preparatory to each movement of the pin-bearing annulus are moved between and above adjacent pins in a manner to intercept the thread and guide the same above the pins during the retraction of the needle. These bits in their preferred construction comprise

thin pieces of steel, with rounded upper edges, carried by a stem 26, slidably fitted to a bracket 27, supported by the bed-plate. The lower end of the stem has a pin-and-slot connection 28 with one end of a lever 29, which is fulcrumed to a lug 30 within the housing and connected with the strap 31 of an eccentric 32 on the main shaft. Hence during the operation of the machine the lever 29 is oscillated and the stem thereby vertically reciprocated in a manner to move the bits between, above, and below the impaling-pins for the purpose stated.

I claim—

1. In a machine of the class recited, the combination with the impaling-pins and their support, of the needle, operating means therefor, a pair of levers one arranged above and the other below said pins, and each constructed to receive a looper-hook to coöperate with the needle, looper-hooks for said levers and means to actuate said levers.

2. In a machine of the class recited, the combination with the impaling-pins and their support, of the needle, operating means therefor, a pair of levers one arranged above and the other below said pins, and each constructed to receive a looper-hook to coöperate with the needle, looper-hooks for said levers, a shaft, and cam mechanism thereon coacting with said levers to actuate their hook-carrying portions.

3. In a machine of the class recited, the combination with the impaling-pins and their support, of the needle, operating means therefor, a pair of levers one arranged above and the other below said pins, and each constructed to receive a looper-hook to coöperate with the needle, looper-hooks for said levers, a shaft, a disk thereon upon which rests the upper lever, an eccentric on said shaft provided with a peripheral camway, said eccentric and camway being engaged with the lower lever, means to maintain said levers in normal position, a rock-frame, and pivot-supports thereon for said levers.

4. In a machine of the class recited, the combination with the impaling-pins and their support, of the needle, operating means therefor, a lever extending above said pins, and constructed to receive a looper-hook, a looper-hook for said lever, a shaft, a disk thereon upon which said lever rests, an eccentric on said shaft provided with a peripheral camway, a lower lever engaged by said eccentric and camway, means to maintain said latter lever in engagement with the eccentric and the upper lever in engagement with the disk, a rock-frame, and the pivot-supports thereon for the upper and lower levers.

5. In a machine of the class recited, the combination with the impaling-pins and their support, of the needle, operating means therefor, a lever extending below said pins and constructed to receive a looper-hook to coöperate with the needle, a looper-hook for said lever, a rock-frame to which said lever is piv-

oted, a shaft, an eccentric thereon provided with a camway, said eccentric and camway being engaged with the lever, and means to maintain said lever in normal position.

5 6. In a machine of the class recited, the combination with the impaling-pins, their support, the needle and operating means therefor, of a device movable between the adjacent pins and in the path of the needle
10 so as to direct the thread above the said pins during the retraction of the needle and means for operating said device.

15 7. In a machine of the class recited, the combination with the impaling-pins, their support, the needle and operating means therefor, of bits movable between adjacent pins and in the path of the needle so as to direct the thread above said pins during the retraction of the needle, a vertically-recipro-

cative stem carrying said bits, and means for 20 reciprocating said stem.

8. In a machine of the class recited, the combination with the impaling-pins, their support, the needle and operating means therefor, of bits movable between adjacent 25 pins and in the path of the needle so as to direct the thread above said pins during the retraction of the needle, a vertically-recipro-cative stem carrying said bits, a lever con-
30 nected with said stem, a shaft, and an eccen- tric thereon connected with said lever.

In testimony whereof I have hereunto af- fixed my signature in the presence of two subscribing witnesses.

GEORGE KEYSER.

Witnesses:

ANDREW V. GROUPE,
JOHN R. NOLAN.