

3 Sheets—Sheet 1.

No. 583,387.

Patented May 25, 1897.

Fig. 1.

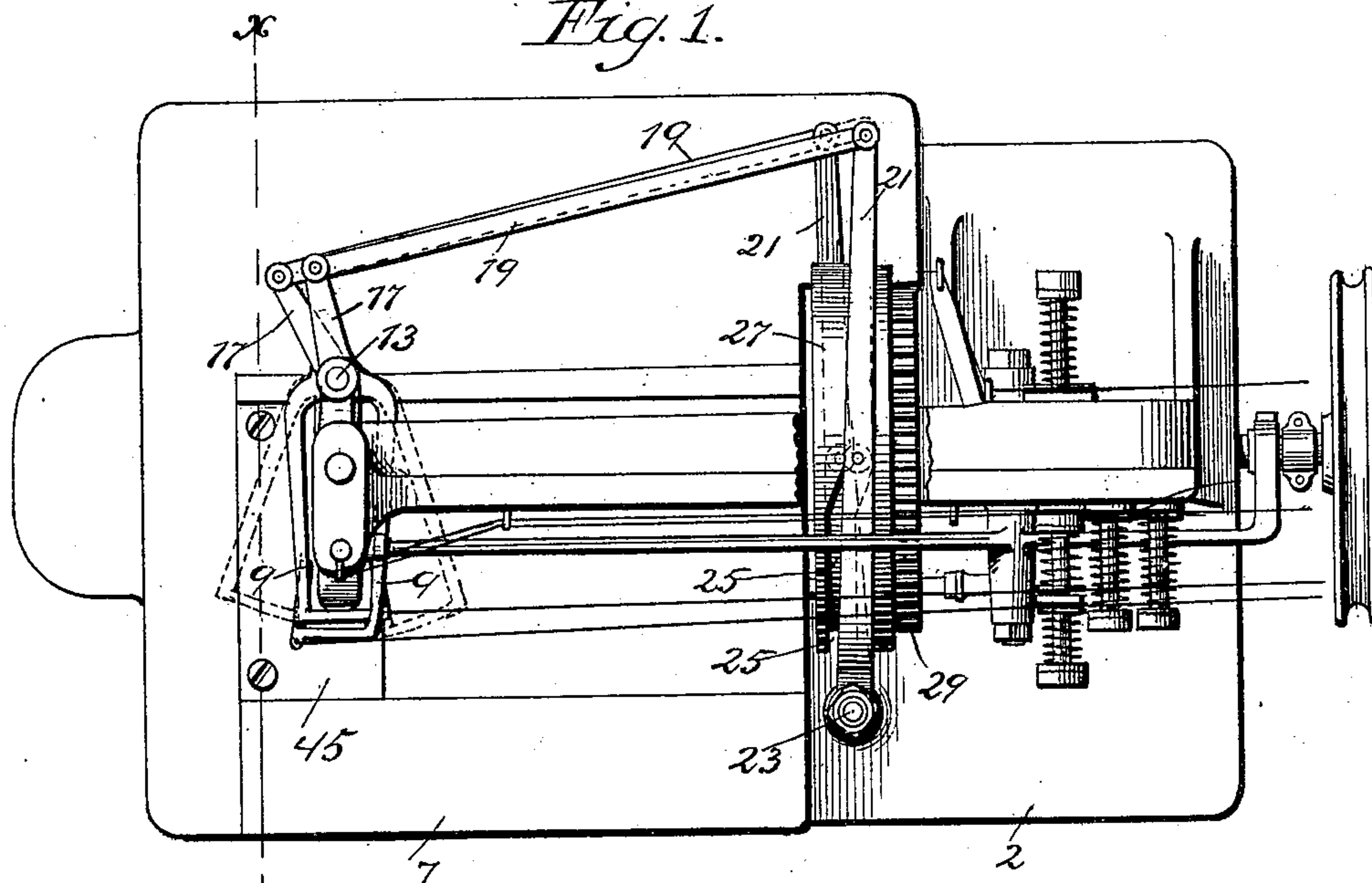
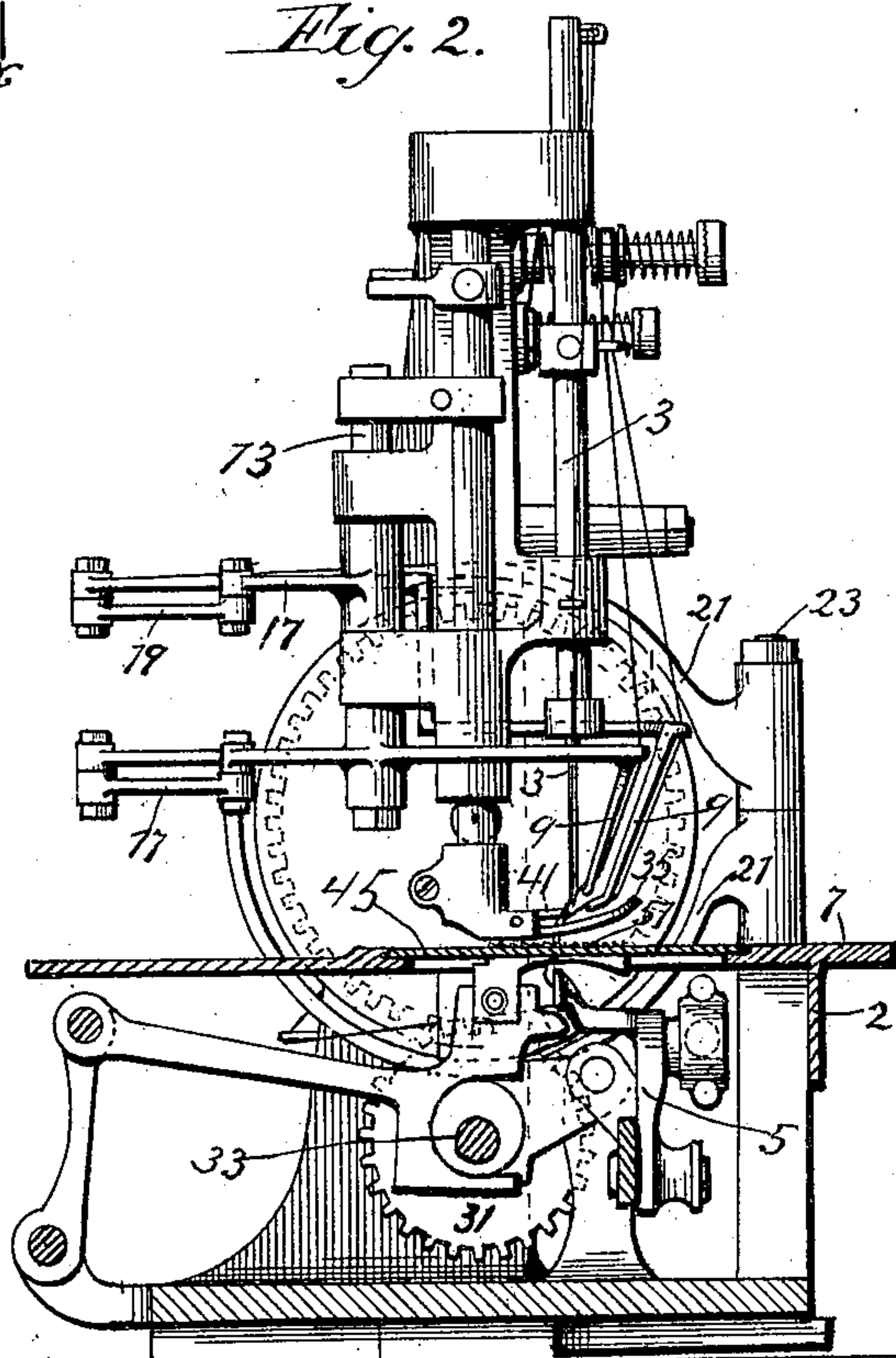


Fig. 2.



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(No Model.)

8 Sheets—Sheet 2.

G. D. MUNSING
SEWING MACHINE.

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Fig. 3.

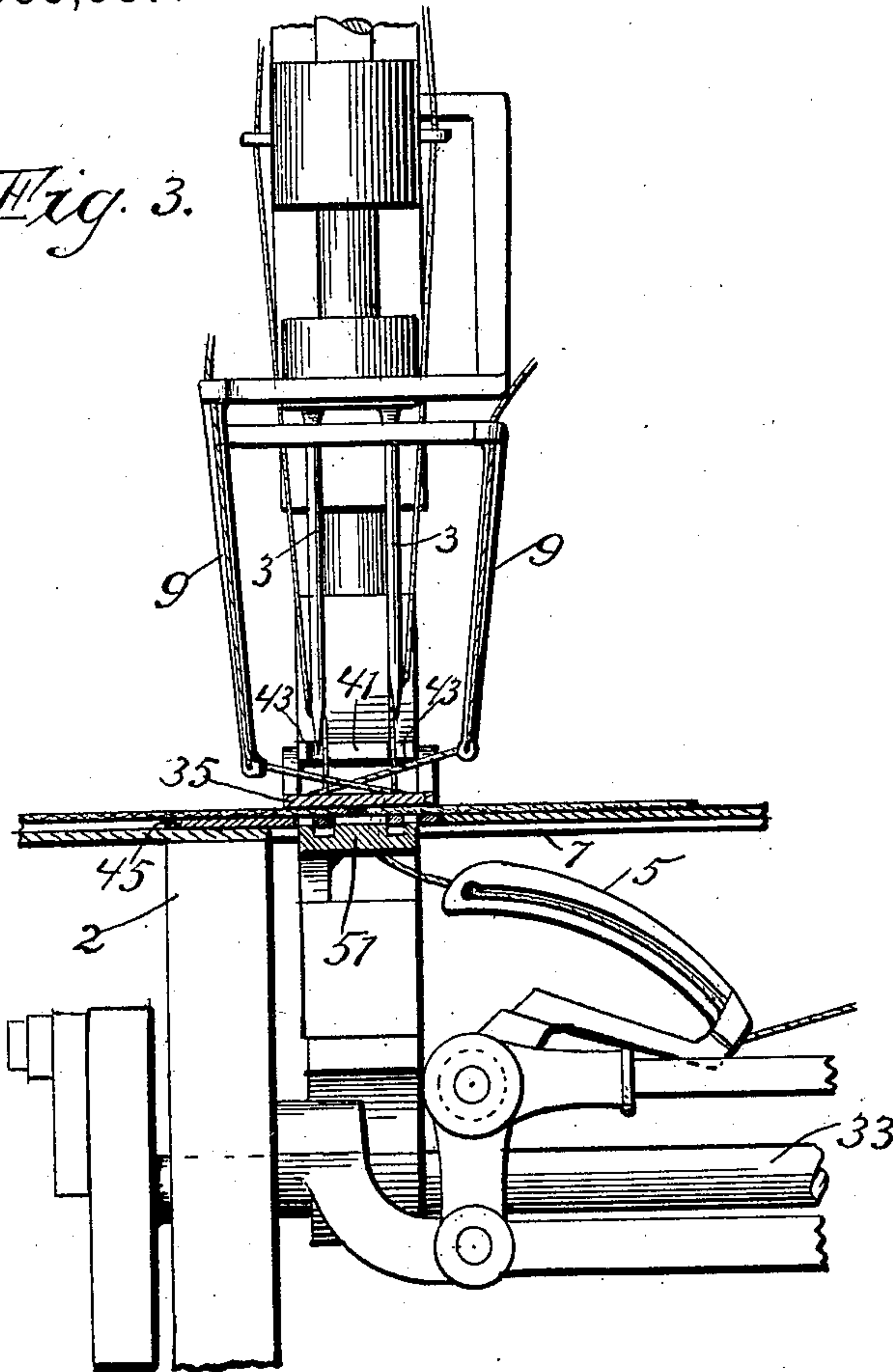


Fig. 4.

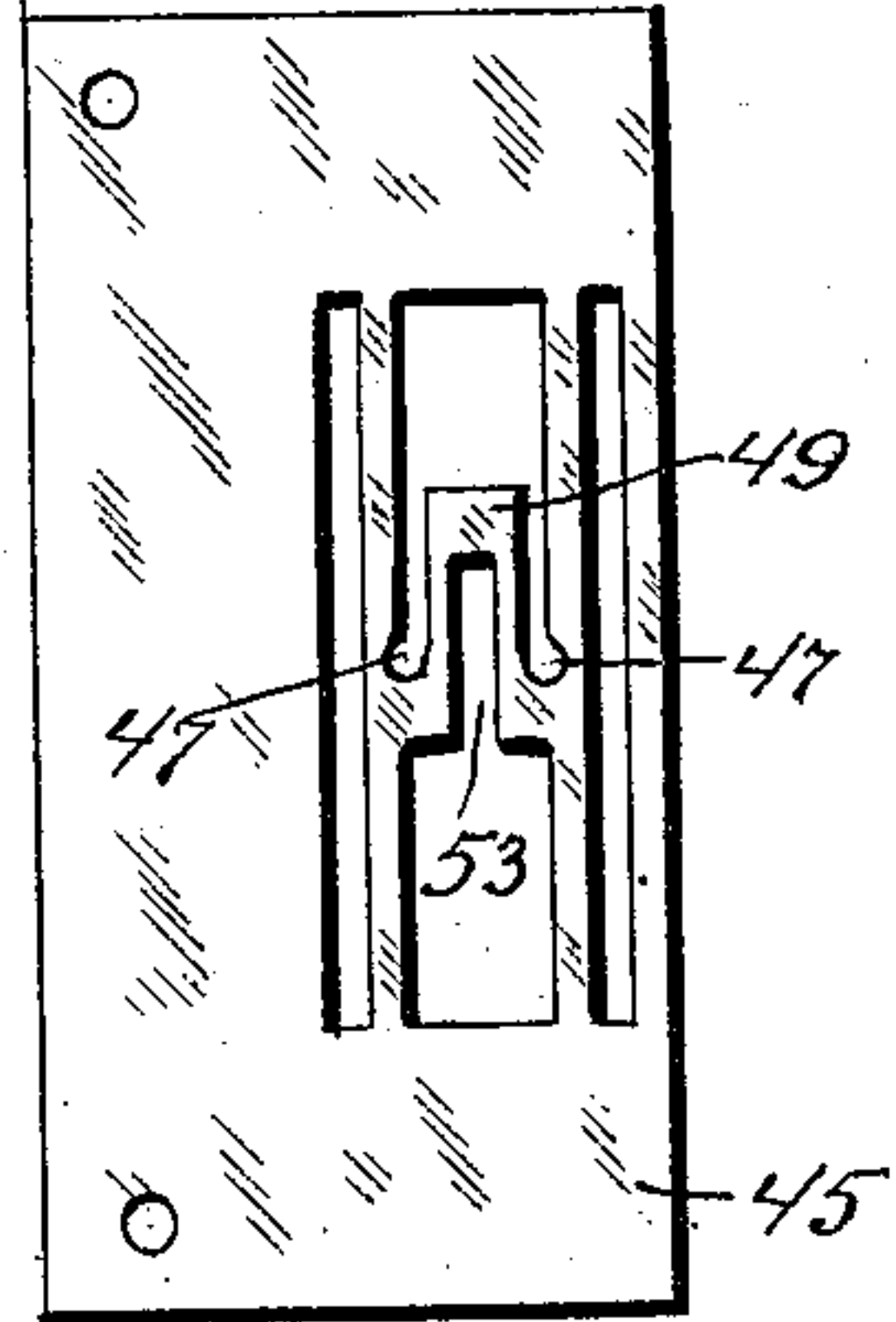


Fig. 5.

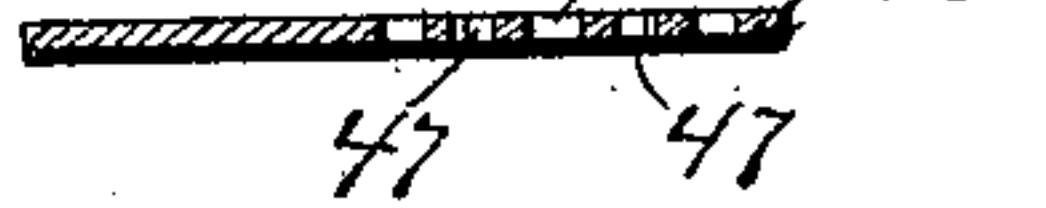


Fig. 6.

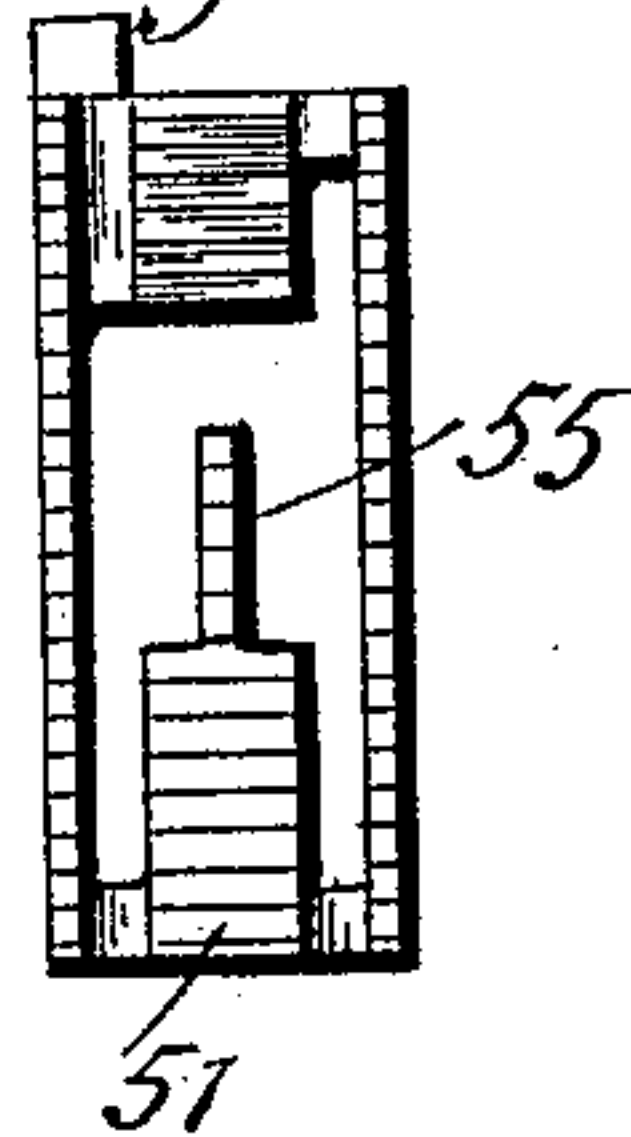


Fig. 7.

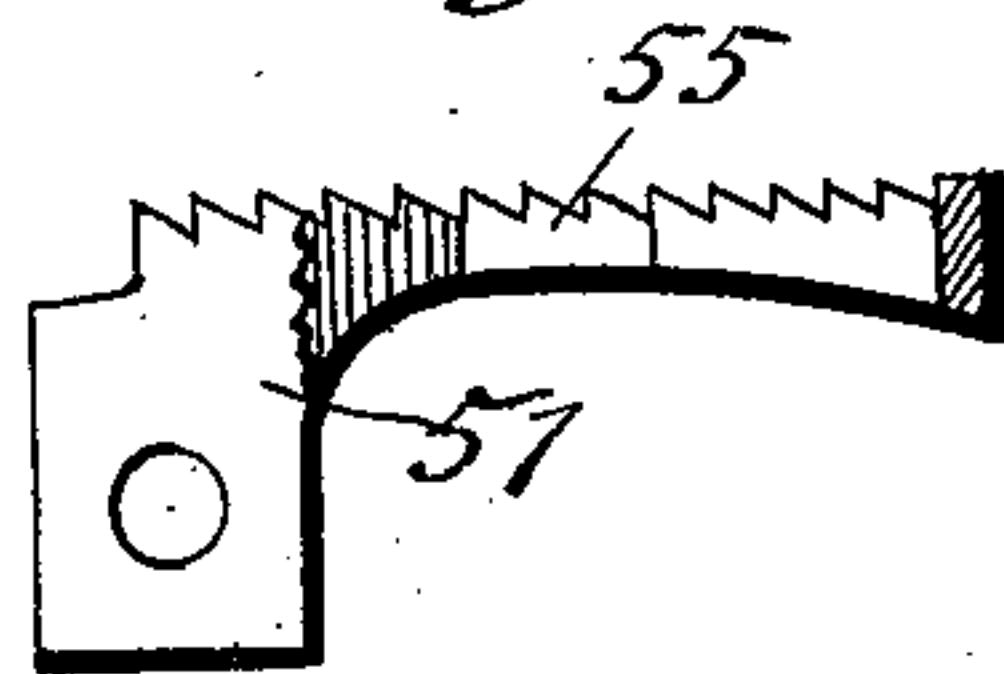


Fig. 8.

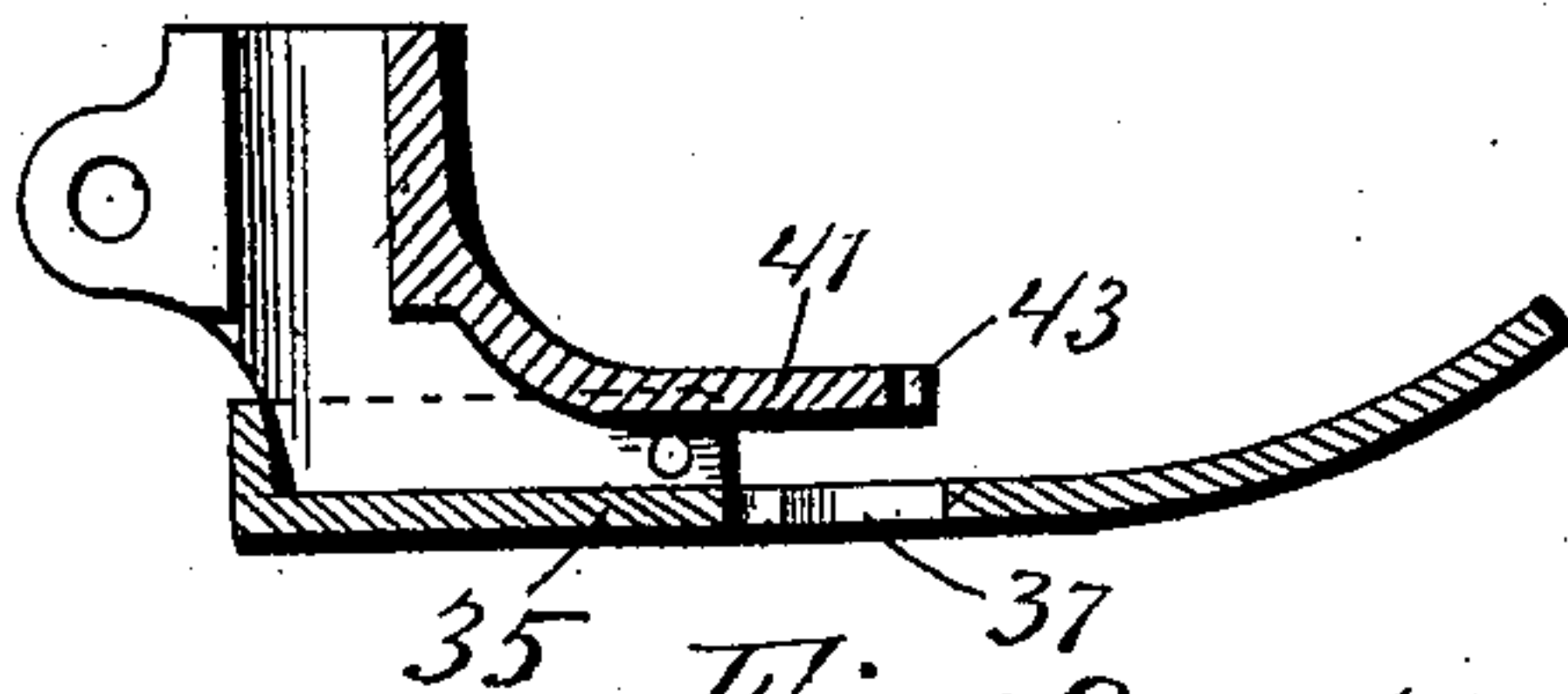
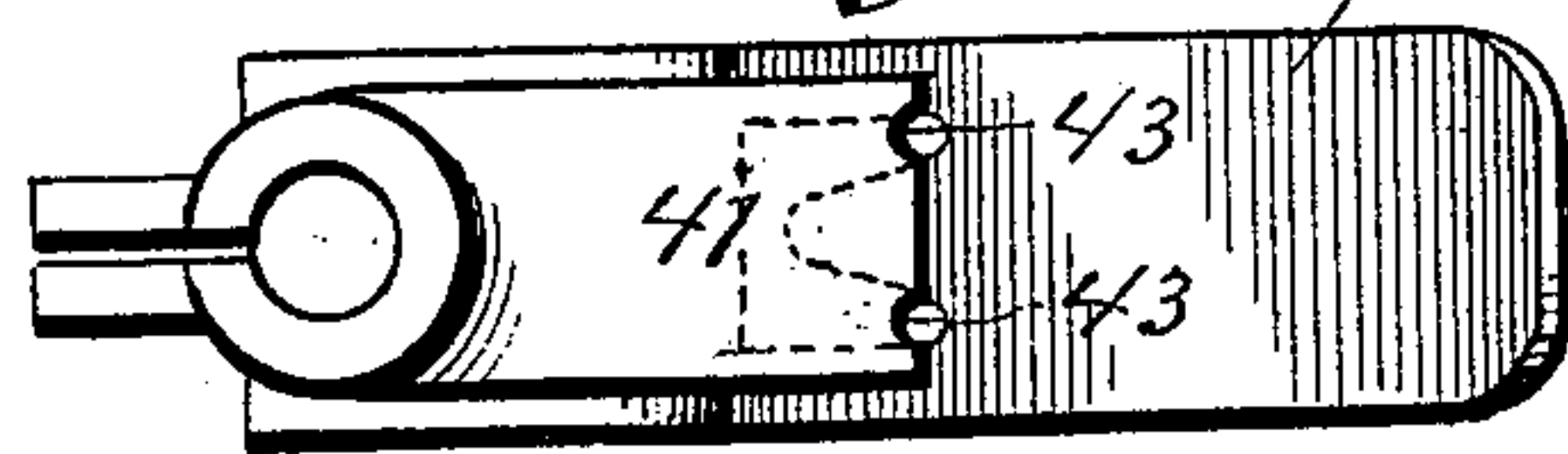


Fig. 9.



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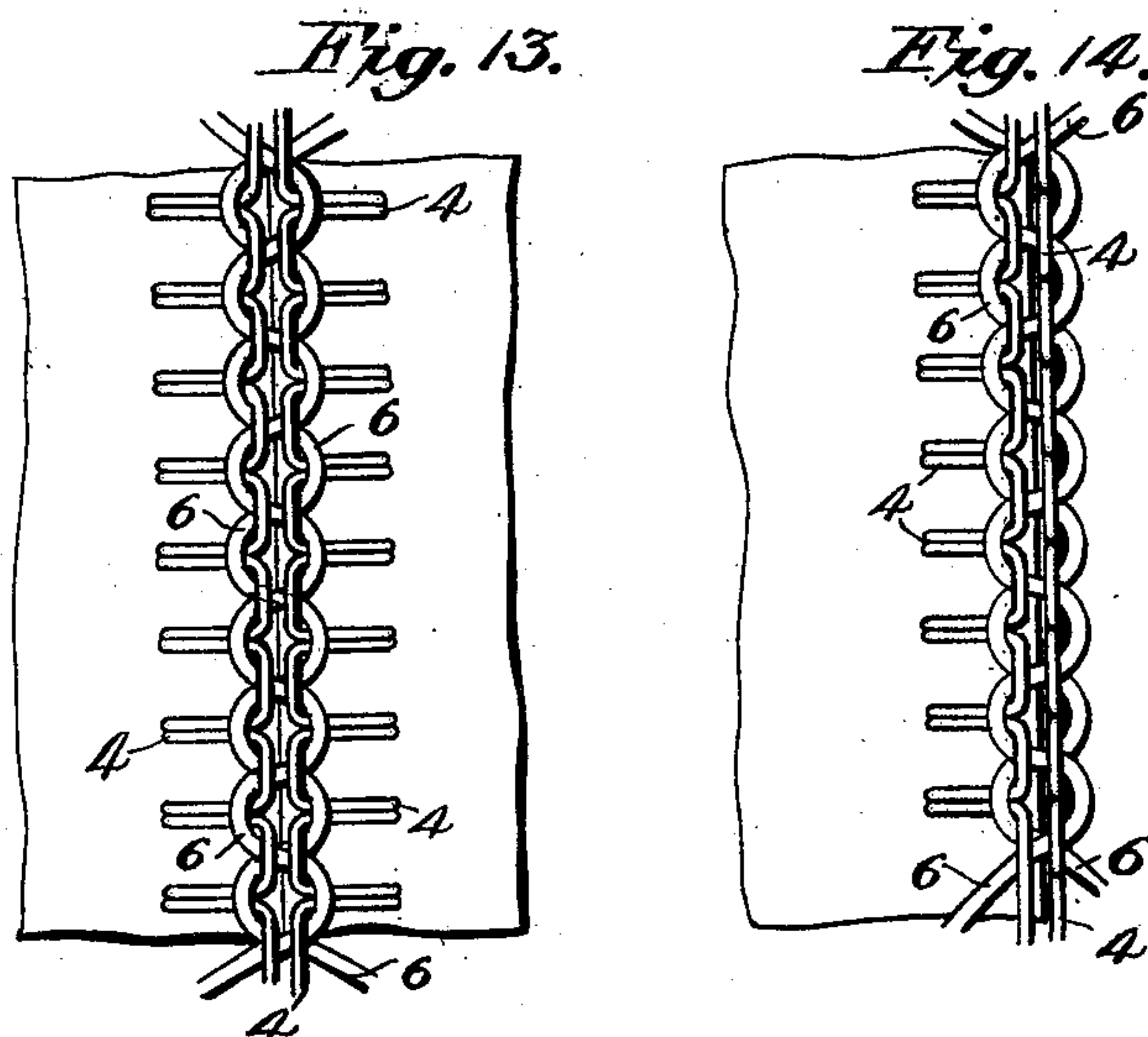
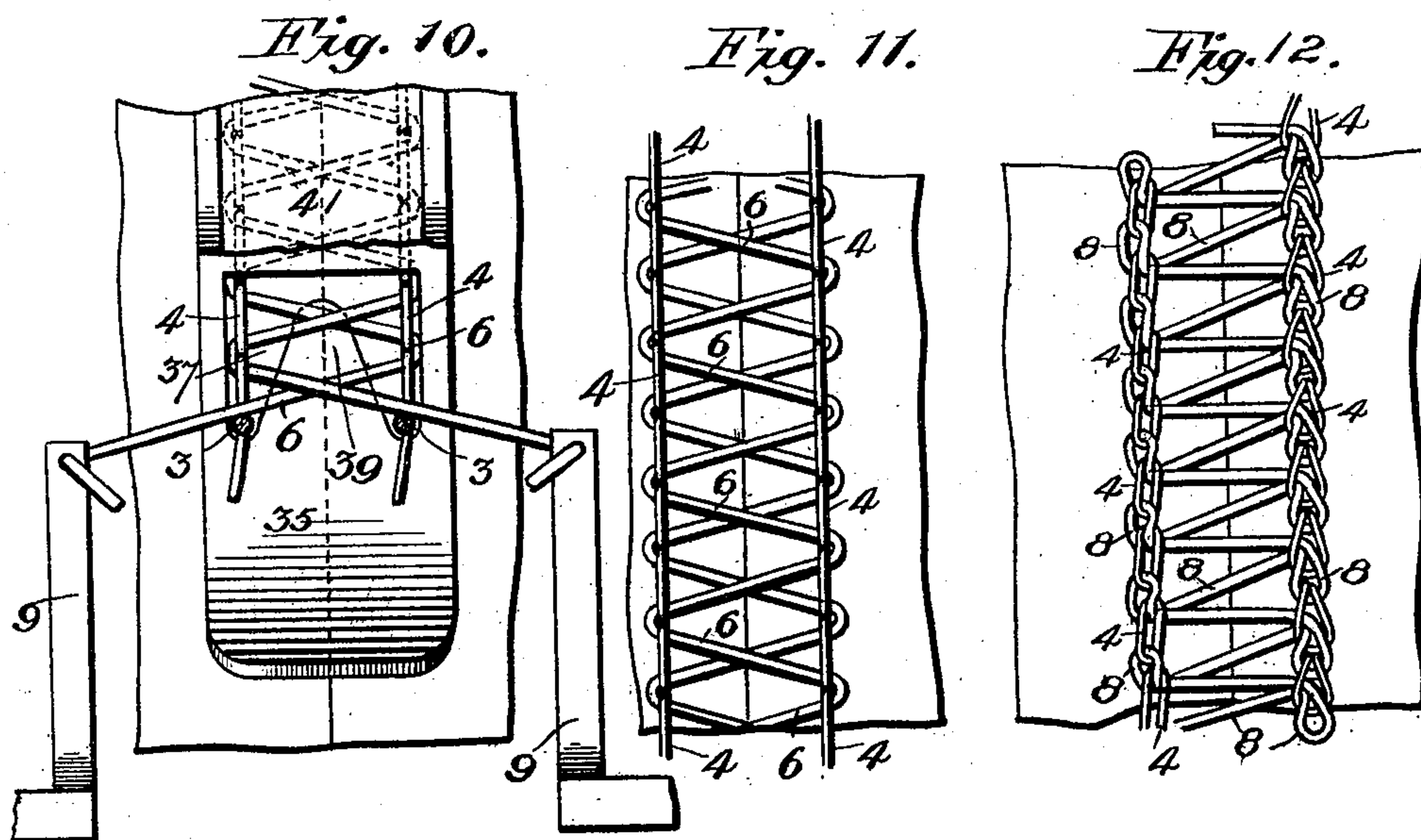
(No Model.)

8 Sheets—Sheet 3.

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SEWING MACHINE.

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UNITED STATES PATENT OFFICE.

GEORGE D. MUNSING, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE
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SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 583,387, dated May 25, 1897.

Application filed August 25, 1891. Serial No. 403,661. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. MUNSING, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Sewing-Machines, of which the following is a specification.

The object of this invention is to provide a special sewing-machine for forming an ornamental seam for securing together pieces of fabric.

The invention consists in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is plan view of a machine constructed in accordance with my invention. Fig. 2 is a transverse section of the same on the line *xx* of Fig. 1. Fig. 3 is a detail section through the throat-plate, presser-foot, and feed-dog and showing the carriers for laying in the cross-threads. Figs. 4 and 5 are details of the throat-plate. Figs. 6 and 7 are details of the feed-dog. Figs. 8 and 9 are details of the presser-foot. Fig. 10 is a detail showing the presser-foot and the thread-carriers for the cross-threads and showing also the manner of laying in the threads. Figs. 11, 12, 13, and 14 are details showing the work that is done by the machine.

In the drawings, 2 represents the frame of the machine, which may be of any ordinary or preferred construction, and it is provided with the parallel needles 3 3 and with the thread-carrier 5 and with the usual plate 7. The parallel needles and the thread-carrier 5 are each provided with a separate thread, and the machine is provided with mechanism whereby these parts are operated, and they produce parallel rows of stitches, (represented by the short stitches 4 in Fig. 11,) and these stitches are looped upon the under side with the thread 8, carried by the thread-carrier 5, as shown in Fig. 12. The parallel needles and the thread-carrier 5 and the parts that coöperate with them to produce the parallel stitches 4 (shown in Fig. 11) upon the under side of the work and interlooped with the thread 8 on the underside, as shown in Fig. 12, are not new with me, and hence I make no claim thereto. I provide this machine with

means whereby it crosses and interlocks the threads with the stitches 4 upon the upper side of the work, or by drawing the cross-threads 6 to the center I produce the work shown in Fig. 13, or by throwing them to one side that shown in Fig. 14. For the purpose of producing this work I provide the horizontally-movable thread-carriers 9, which are arranged in proximity to the needles and each of which carries a separate thread. These carriers occupy substantially the position shown in the detail, Fig. 10. After the needles ascend the carriers move horizontally until they pass each other and their positions are substantially reversed, when the thread carried by the carriers will be crossed and will be swung back of the needles and will be held by the stitches 4, formed by the descending needles. These carriers may be supported in any suitable manner. I have shown them as mounted upon a vertical pivot 13 upon the frame of the machine and each connected by an arm 17 to a link 19, that is in turn connected to a pivoted lever 21.

The levers 21 are secured by a vertical pivot 23, and they are each provided with a stud that engages a groove 25 in a cam 27, that is driven by a gear 29, connected therewith, this gear being driven by a pinion 31 on the main shaft 33 of the machine. By this means the carriers are held in the positions shown in full lines in Figs. 1 and 3, and they are then reversed, one passing by the other, so as to bring them into the positions shown by dotted lines in Fig. 1. These thread-carriers always move across and above the presser-foot, so that said threads are always carried above said presser-foot and are drawn to the under side through an open space in said presser-foot as the work advances. For the purpose of permitting the threads to pass above and through the presser-foot 35 I provide said presser-foot 35 with a transverse opening 37, that extends from one needle to the other and thus permits the cross-threads to slip through and pass along under the main portion of the presser-foot, as shown in Fig. 10. The presser-foot is preferably provided with a tongue 39, that extends into the opening 37, the points at which the needles descend

being substantially at the base of the tongue 39. When the threads in the carriers 9 are laid across the work from one row of stitches to another, as shown in Fig. 10, they are carried over this tongue, and as the work is fed forward the cross-threads slide off from the tongue 39 and pass through the opening 37 and thus pass beneath the presser-foot. As the needles pass through the opening 37 it will be seen that the presser-foot does not form a support for the needles at the back thereof, and for this reason as the work is advanced there is a tendency to pull on the needle, and this is apt to spring them out of position. To obviate this, I provide the presser-foot with a needle-supporting plate 41, that is arranged a short distance above and is substantially parallel to the main part of the presser-foot. This plate extends over the opening 37, as shown in Figs. 8 and 9, and its forward edge is provided with the notches 43, which receive the needles and form a bearing therefor on the back side of said needles. The threads that are carried by the carriers 9 are laid under this plate 41, so that they pass under this plate, over the tongue 39, and then slide through the opening 37 as the work is advanced, as heretofore described. The machine is also provided with the throat-plate 45, which has openings 47, through which the needles pass, and a tongue 49 between said openings 47. The serrated feed-dog 51 (shown in detail, Figs. 6 and 7) is arranged so as to project through the openings in the plate 45, and it is arranged to be operated from the main shaft of the machine in the usual manner. The plate 45 is provided with the narrow slot 53, extending between the openings 47 and into the tongue 49. The feed-dog 51 is also provided with a corresponding notched tongue 55, that extends into the said slot 53 and thus projects between the needles and is adapted to engage the under side of the fabric or work at a point between the needles and thus to assist in moving the cross-threads along the tongue 49, thereby preventing any catching of said threads upon said tongue.

It will be noticed that by providing a reciprocating tongue (herein shown as integral with the feed-dog) which is between the vertical planes of the two needles, the lower surface of said tongue being below the work-plate in the plane between the fabric and the looper, said tongue serves to prevent the thread 8 from being drawn too tightly, the same result as to elasticity of the stitch being provided as where the throat-plate alone has a tongue, thus increasing the elasticity of the stitch by providing a slack-forming finger, and as far as this result is concerned the throat-plate tongue might be omitted, the reciprocating tongue taking the place thereof, and in such case an additional advantage is attained over the ordinary throat-plate in that instead of drawing the goods off from a rigid tongue by the general feed movement the tongue itself is positively withdrawn from

between the lower thread and the fabric, thus preventing any danger of distorting or puckering the goods.

Although the throat-plate tongue may be omitted, as above mentioned, under certain circumstances, there is an advantage in using the tongue 49 with the feed-dog tongue fitting in its slot, for thereby is provided a stationary support for the work between the needles when the feed-dog is in its lowest position, while the tongue on the feed-dog provides a feed between the needles, and in addition to claiming the reciprocating slack-forming finger I also claim the feeding-tongue in combination with the slotted throat-plate tongue.

When the machine is operated with a normal tension, the upper side of the seam or work will have the appearance shown in Fig. 11, while the under side would be like that shown in Fig. 12. By increasing the tension on the threads that are put through the carriers 9 and lessening the tension on the threads carried by the parallel needles the stitches 4 will be drawn toward each other, as shown in Fig. 13, and the cross-threads will occupy substantially the position shown in Fig. 13, or by proper degree of tension they may be made to occupy any intermediate position. By making an unequal tension upon the threads carried by the needles the cross-threads may be drawn to one side, as shown in Fig. 14, thereby forming an ornamental edge upon the fabric to which it is applied. Instead of providing independent threads that are passed through the thread-carriers 9 said thread-carriers may be made to engage the threads carried by said parallel needles for the purpose of moving said threads across from one row of stitches to the other instead of laying across the separate threads.

I claim as my invention—

1. In a sewing-machine having a stitch-forming mechanism which includes a vertically-reciprocating needle or needles of a presser-foot having an opening for the passage of said needle or needles and having a tongue extending into said opening, of a needle-supporting plate above the plane of said presser-foot having bearing-notches formed in its forward end for the rear face or faces of said needle or needles; substantially as described.

2. The combination with mechanism for making parallel rows of stitches comprising a device for carrying a thread from one row of stitches to another of a combined slack forming and feeding finger reciprocating in the direction of the line of the seam and in a plane between the fabric and said thread-carrying device; substantially as described.

3. A sewing-machine having stitch-forming mechanism including means for passing rows of loops down through the fabric to be sewed, and also including mechanism cooperating therewith to form stitches and for carrying a thread back and forth from one row of loops to the other on the under surface of the fab-

ric, and a feeding device provided with a tongue which intersects the path of movement of the lower thread-carrying device; substantially as described.

5 4. A sewing-machine having a plurality of vertically-reciprocating needles and mechanism coöperating therewith to form rows of stitches, including a device for carrying a thread from one row of stitches to the other
10 on the under side of the fabric, and a feed-dog provided with a tongue intersecting the path of movement of the thread-carrying device; substantially as described.

5 5. A sewing-machine having a plurality of vertically-reciprocating needles and mechanism coöperating therewith to form rows of stitches and including devices for carrying threads back and forth from one row of stitches to the other on both sides of the fabric, and a feed-dog provided with a tongue
20 intersecting the vertical plane in which the needles lie; substantially as described.

6. A sewing-machine comprising two vertically-reciprocating thread-carrying eye-
25 pointed needles, a presser-foot having a tongue, thread-carrying fingers adapted to lay cross-threads above the tongue on the presser-foot, a feed-dog having a tongue and an under thread-carrying looper coöperating
30 with the needle-threads to form stitches and to lay its thread beneath the tongue on the feed-dog; substantially as described.

7. A sewing-machine comprising a throat-plate having suitable needle-openings and
35 having a tongue between said needle-openings, a feed-dog having a tongue extending

into a slot formed in the throat-plate tongue whereby both a feed-surface and a surface to support the fabric when the feed is lowered are provided between the needles; substan- 40 tially as described.

8. The combination in a sewing-machine, of two vertically-reciprocating needles, of a presser-foot having an opening for the passage of the needles, a tongue extending into 45 said opening, a throat-plate having also a tongue, a guiding-plate above the presser-foot for preventing deflection of the needles, and thread-carriers reciprocating laterally to carry threads from one row of stitches to the 50 other and depositing their threads upon the tongue of the presser beneath the guiding-plate; substantially as described.

9. The combination with the needles and means for operating the same, of the presser- 55 foot provided with the opening 37 and the plate 41 arranged above said opening 37 and forming bearing for the sides of the needles, substantially as described.

10. The combination with the parallel nee- 60 dles, of the plate 45 having the openings 47, the tongue 49 between said openings 47, and the slot 53 extending into said tongue 49 of the serrated feed-plate 51 provided with the notched tongue 55 arranged to extend into 65 the slot 53, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 21st day of August, 1891.

GEORGE D. MUNSING.

In presence of—

T. S. LYON,

C. E. VAN DOREN.