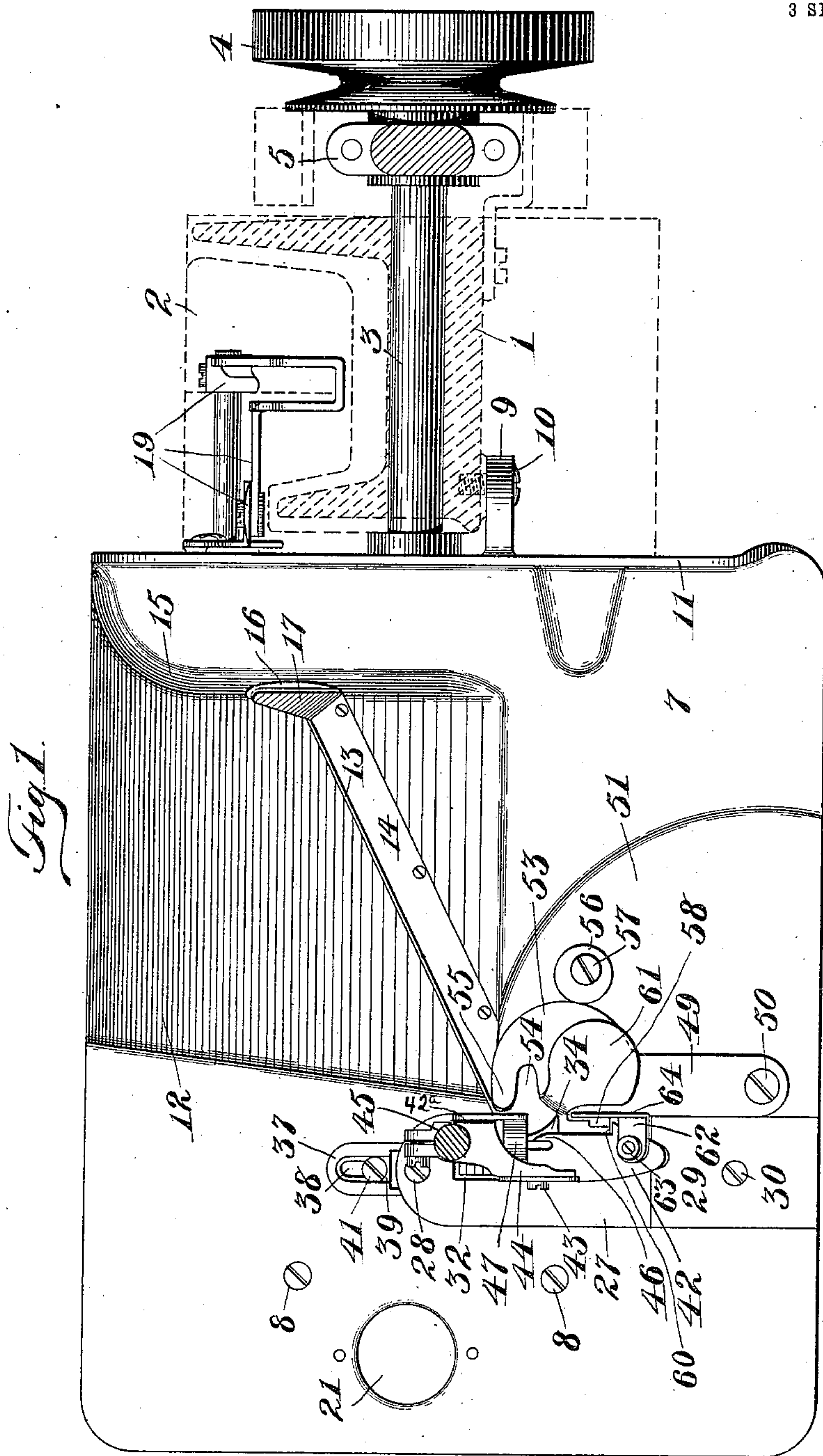


J. P. WEIS.
 WORK CONTROLLING MECHANISM.
 APPLICATION FILED AUG. 24, 1905.

990,411.

Patented Apr. 25, 1911.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

5 *Fig. 2.*

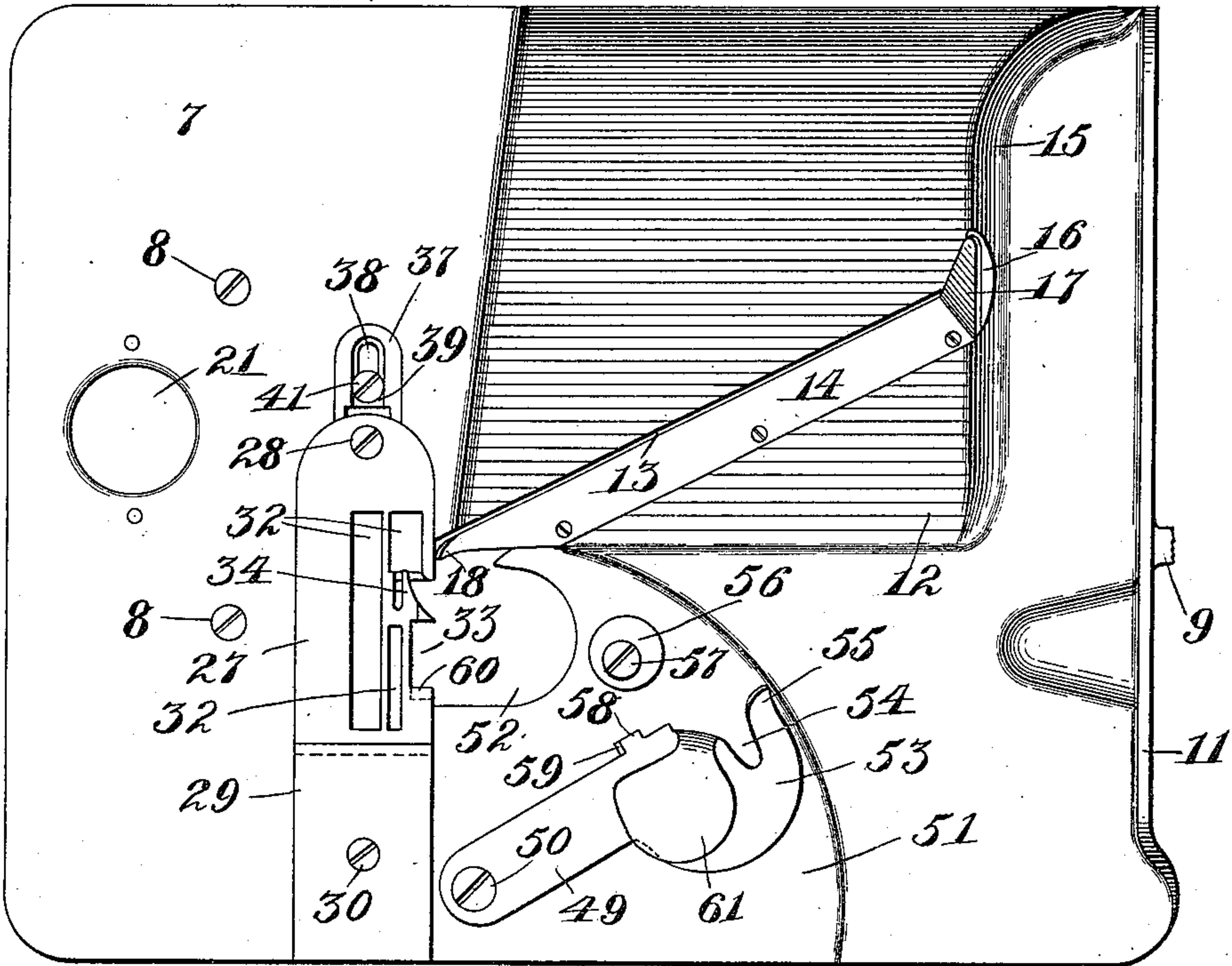
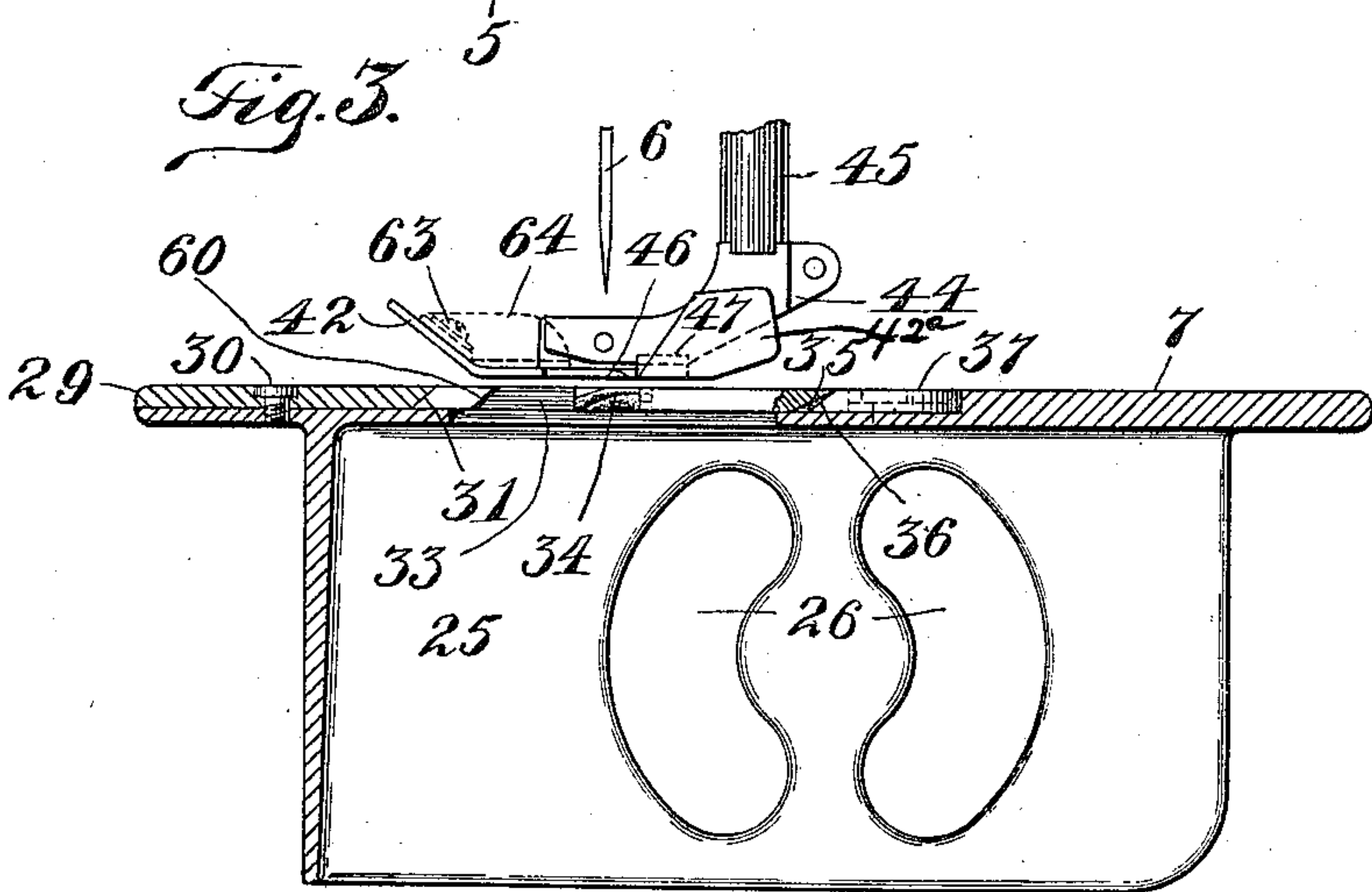


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

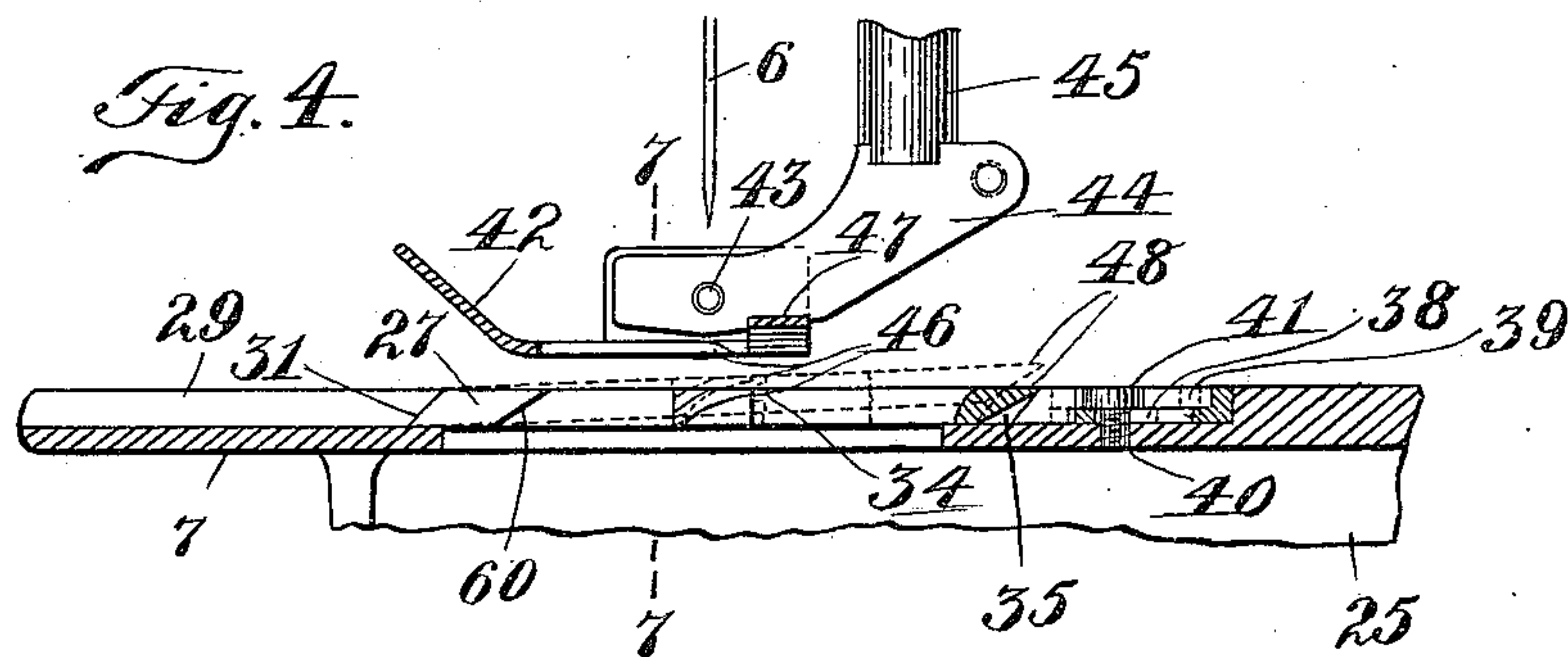


Fig. 5.

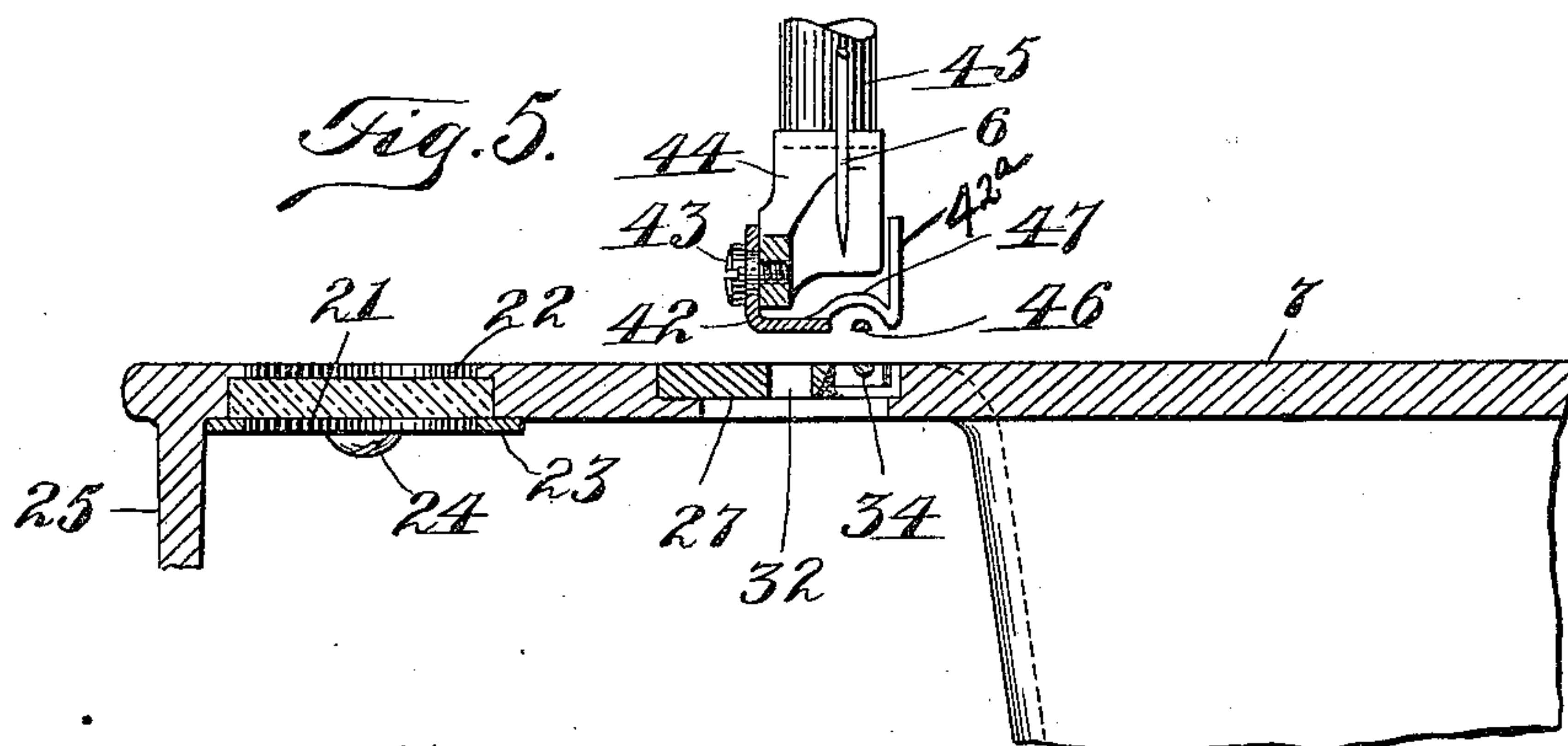


Fig. 6.

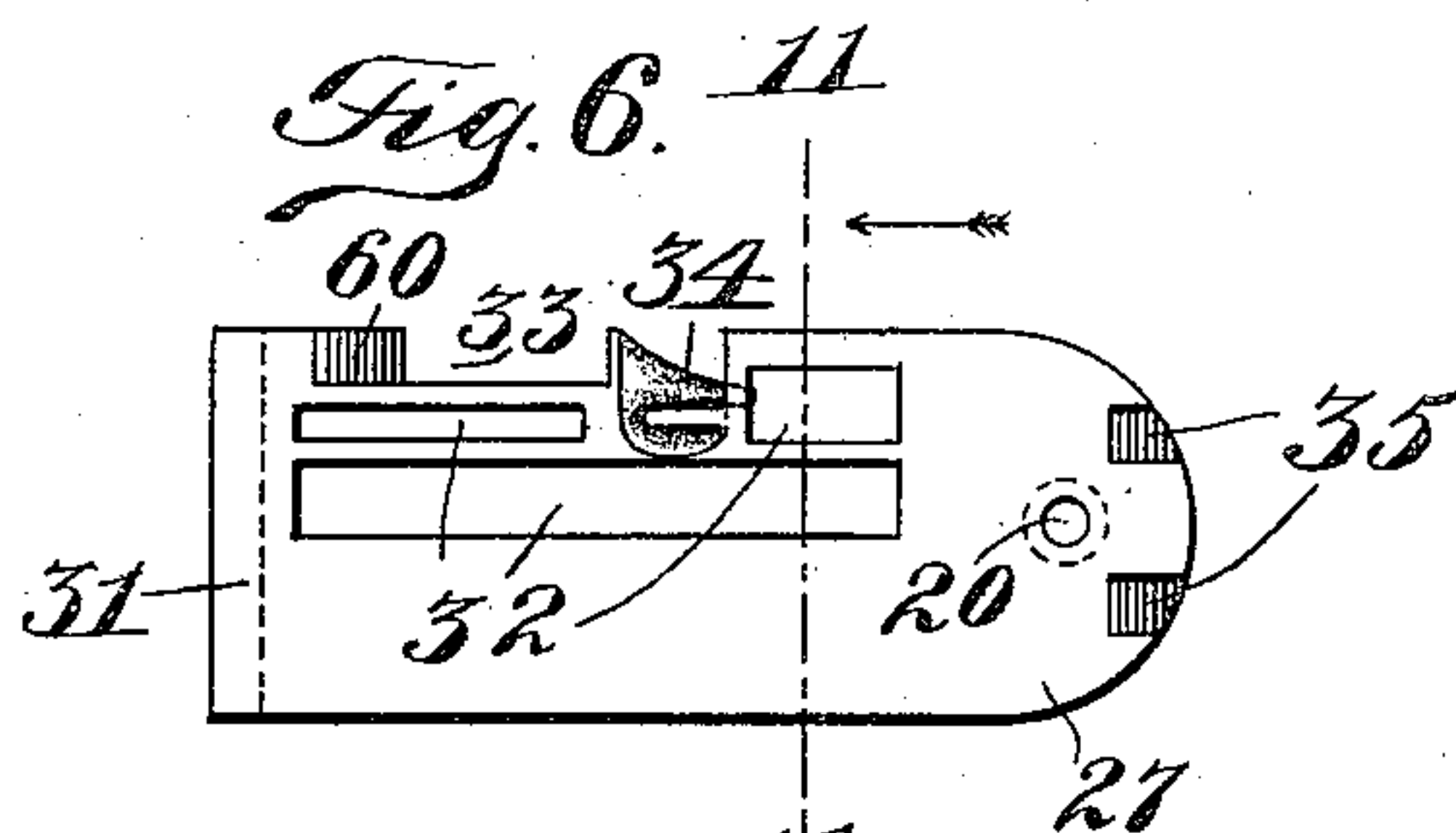


Fig. 7.

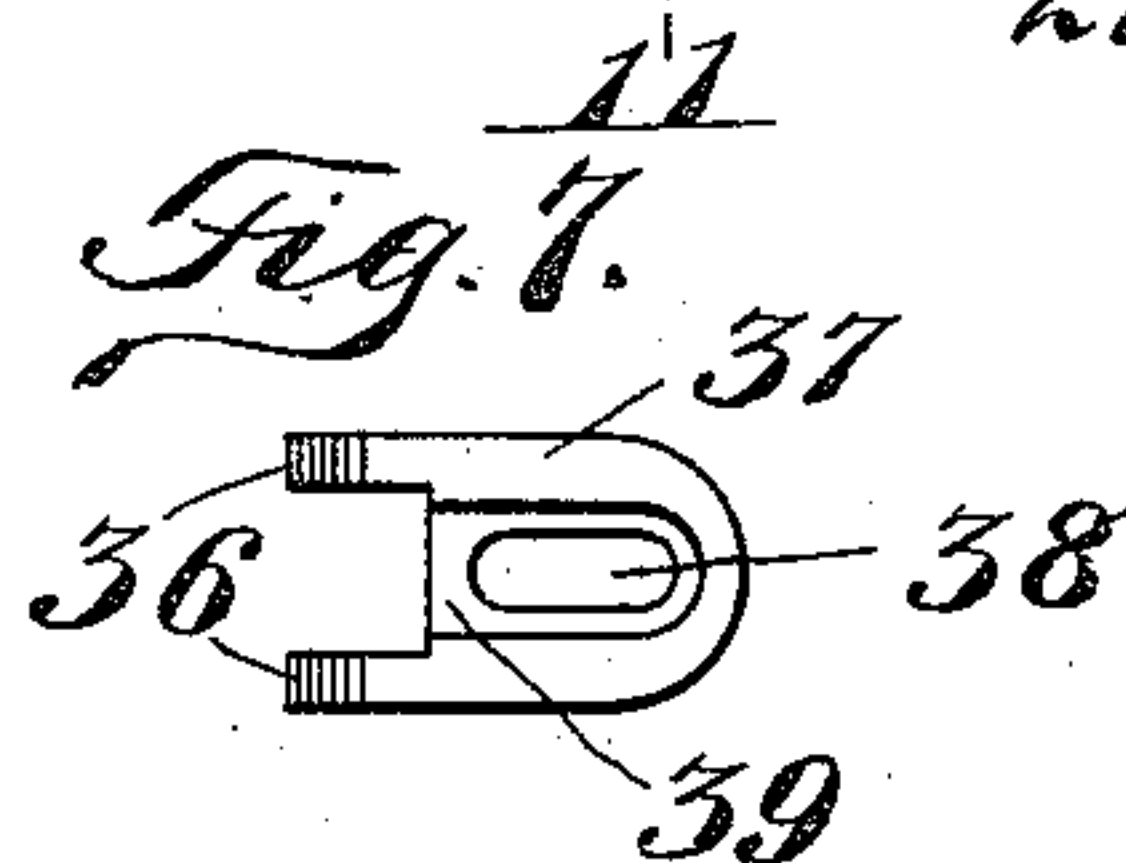
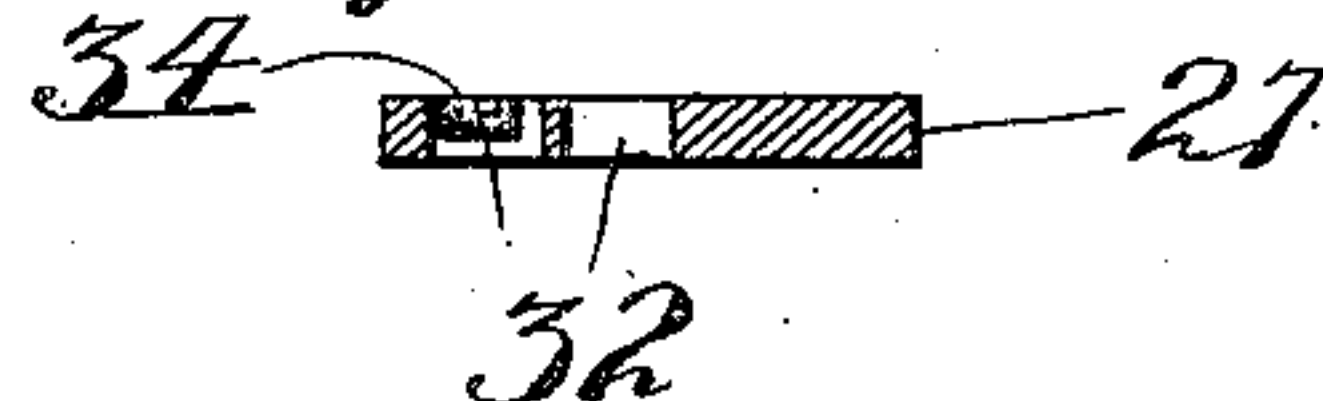


Fig. 8.



Fig. 9.



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UNITED STATES PATENT OFFICE.

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WORK-CONTROLLING MECHANISM.

990,411.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed August 24, 1905. Serial No. 275,524.

To all whom it may concern:

Be it known that I, JOHN P. WEIS, a citizen of the United States, residing in Nyack, county of Rockland, and State of New York, have invented a new and useful Improvement in Work-Controlling Mechanisms, of which the following is a description.

This invention relates to sewing machines and especially to the type of machines provided with mechanism for making an over-edge stitch.

Among the objects of this invention the following may be noted: to provide means for retarding the work during its passage over the cloth-plate so as to produce small puckers, or shirring at the stitching point, whereby ornamental effects may be produced in the body of the work, or along the edges of the latter, or whereby one piece of work may be fullered or shirred upon the body or edge of another; to provide means whereby shirring or fulling of the work may be produced by the mere adjustment of the throat-plate and this to a controlled and regulated degree; to provide mechanism by means of which shirring or fulling can be produced without affecting the operation of the feeding mechanism; and to provide means whereby, in an overedge stitching machine, the thread for the lower stitch-forming devices may be easily led and properly guided to position for threading and stitching purposes.

With the above and other objects in view, which will be detailed during the course of this description, my invention consists in the parts, features and combinations of elements hereinafter described and claimed.

Referring to the drawings: Figure 1 is a top plan view of so much of the machine as is deemed necessary to illustrate my invention, the presser-bar being in section and the overhanging arm being shown removed and its base in section; Fig. 2 is a top plan view of the throat-plate, certain parts carried thereby being shown in a different position from that of Fig. 1; Fig. 3 is a transverse section on the line 5—5 of Fig. 2, and showing the presser-foot and needle in coöperative position; Fig. 4 is a view similar to Fig. 3 showing the adjustable throat-plate in two positions, one represented by dotted lines; Fig. 5 is a longitudinal section taken on the line 7—7 of Fig. 4; Fig. 6 is a bottom plan of the throat-plate; Fig. 7 is a top plan of

the adjusting device for the throat-plate; Fig. 8 is a rear end elevation of the throat-plate; and Fig. 9 is a section on the line 11—11 of Fig. 6.

The frame of the machine, shown in dotted lines, is indicated by the numeral 1, the bed-plate by the numeral 2, the driving-shaft, which is only partially shown, by 3, and 4 is the driving-pulley, 5 the needle-bar actuating strap which is usually driven by an eccentric on the shaft 3 and suitably connected with the needle-bar to give to the needle 6 vertical reciprocations. The cloth-plate 7, in the form shown, is secured by screws 8 to the usual standard of the bed-plate, and by means of a lug 9 and a screw 10 passing therethrough to the arm or frame of the machine. The cloth-plate is provided with the rear vertically extending flange 11 and adjacent thereto with the downwardly inclined chute-portion 12 which extends substantially half the length of the cloth-plate and also half the width of the latter from the middle to the rear edge thereof. This chute is also provided with the diagonal slot or groove 13 extending from about midway of the rear end of the chute to the corner at the junction of the front side and front end of said chute. The slot 13 is covered by the guard-plate 14, which latter is countersunk in, so as to be flush with the surface of, the bottom of the chute 12, adjacent the slot, and also extends over the latter to nearly its rear edge, leaving the guard 14 free from the bottom of the chute to thus provide the open slot 13 clearly shown in Figs. 1 and 2. At the rear end of the chute in the wall 15, an aperture 16 is provided over which partially extends the angular end 17 of the guard-plate, the other end of which guard-plate is also upturned as at 18, Fig. 2, to provide a guide for the trimming of the work and also to prevent said end 18 from catching or snagging the edge of the work as it is fed over the cloth-plate. The function of the thread-slot and guard is to lead the thread from the pull-off generally indicated by 19, which may be of any conventional form, but in this instance is in all material respects identical with that made the subject-matter of my application, Serial No. 275,525, filed of even date herewith. The thread, passing from the pull-off, is passed from below the cloth-plate through the opening 16 under the angular end 17 of

the guard 14, and then slid along under the latter in the groove 13, in which latter it lies along the bottom of the chute 12. Being led past the upper end of the guard-plate 14, the thread is passed through the eyes of either a spreader or looper and is then in position for coöperation with the other elements of the stitch-forming mechanism. Obviously, the thread referred to may go to a looper, a spreader, or any other lower thread-manipulating device of a stitch-forming organization.

The cloth-plate of the machine, at its front end, is provided with the lens or transparent disk 21, held in place by the flange 22 at the top of the cloth-plate and by the ring 23 at the bottom of the cloth-plate which is suitably held by the screw 24, see Fig. 5. This construction enables the operator to get a view of the feed-adjusting device which is ordinarily located on the outer end of the driving-shaft and immediately below the lens 21. The depending web 25 at the front end of the cloth-plate, see Fig. 3, is provided with the hand-holes 26, through which the operator may extend his fingers for the purpose of adjusting the feed-regulating device which is in view through the lens 21.

The cloth-plate is provided at its front end with the throat-plate 27, the same being set down therein so that the surfaces of both are flush. The throat-plate is held in place by means of the screw 28 passing through an aperture 20 in the rear end thereof and tapped into the cloth-plate, and at its front end is held by means of the plate 29 secured in place by the screw 30 passing there-through and tapped into the cloth-plate. The coöperating ends of the holding-plate 29 and of the throat-plate 27 are correspondingly beveled at 31 so as to fit closely and have their surfaces flush. The throat-plate is provided with the usual feed-slots 32, with a cut-out portion 33 at one side for the operation of trimmer-blades, and with a tongue 34 over which the loops of an overedge stitch are formed and over which a spreader may operate as usual. At its rear end, on the bottom, the throat-plate is provided with the two beveled depressions or grooves 35 in which operate the beveled ends 36 of the adjusting plate 37, the latter being provided with the elongated slot 38 and surrounding countersink 39, the slot being for the reception of the shank of the screw 40 and the countersink for the reception of the head 41 of said screw. The adjusting plate is sunk in the cloth-plate so that its upper surface will be flush with the surface of the throat-plate and at the rear end of the latter so that the ends 36 may coöperate with the beveled grooves 35 for the purpose of raising or lowering the throat-plate in its seat. Coöperating with

the throat-plate is the presser-foot 42 pivoted at 43 so as to swing vertically on the foot-shank 44 carried by the presser-bar 45. It will be noted that the pivot 43 of the foot on its shank is in the vertical plane which cuts the longitudinal axis of the needle and the axis of the pivot longitudinally. The presser-foot 42 is provided with the usual upturned toe at its forward end and also with the tongue 46 which coöperates with the tongue on the throat-plate, and just in rear of said tongue is provided with the convexed or inverted U-shaped portion 47 which has the function of permitting the bulk of the work in the stitching-line to pass the presser-foot without drag or retardation; that is to say, when the overedge stitch has been applied to the work, the latter becomes materially thickened at the edge and would, if the foot were flat, exert considerable friction thereon. By arching the foot, as shown and described, in rear of the stitching-point and beyond the tongues over which the loops are formed, retardation of the work is avoided as well as drag upon and lateral sag of the work, and this notwithstanding vertical adjustments of the throat-plate. By pivoting the foot as described, adjustments of the throat-plate may be made, as, for example, shown by the dotted lines 48 in Fig. 4, without changing the relative coöperative action of the foot therewith. In other words, as the throat-plate is adjusted vertically, the foot accommodates itself to the latter and maintains its coöperative relation therewith; and, in addition, the pivotal connection of the foot with its shank enables it to yield both at its front and rear ends to varying thicknesses of work passing thereunder, and irrespective of the action of the foot, independently or in coöperation with the throat-plate, the arch thereof at 47 permits the free passage of the work along and adjacent the stitching line. Moreover, by pivoting the foot in the plane of the longitudinal axis of the needle, its pressure upon the work about the stitching point is uniform at all times and under all conditions and especially if care is taken to so proportion the foot, as contemplated by my invention, as to cause a balance of the same upon its pivot. In order to prevent lateral twist of the foot upon its shank and strain upon the pivot 43, the foot, at the side of the arch 47, is provided with a vertical portion 42^a constituting a brace which coöperates with the adjacent side of the shank 44, said brace 42^a extending somewhat in rear and above the said arch and, by its weight, helping to balance the foot properly upon its pivot.

Beside the holding-plate 29 is pivoted the guard-plate 49 by means of screw 50 passed therethrough and tapped into the cloth-plate, the plate 49 being set in a recess or

sunken portion 51 of said cloth-plate. Adjacent the stitching and trimming points, the cloth-plate is provided with the opening 52, Fig. 2, which is almost completely covered by the head 53 of the guard-plate 49, said head being provided with the notch or recess 54 in its front edge and with the upturned tongue 55 at its free end. Viewing Fig. 1 it will be seen that the head of the guard-plate, when in position, leaves but a small space at 54 through which a spreader may operate, it being found that this small space is all that is required for the proper operation of said spreader which is constructed and actuated in accordance with my invention made the subject of my application, Serial No. 227,755, filed September 9, 1905. But when the guard-plate is withdrawn as shown in Fig. 2, the larger opening 52 in the cloth-plate is disclosed, and through this opening adjustments of the spreader may be made and the latter may also be threaded. The guard-plate is held in position by means of the rotary eccentric disk 56 suitably held by the screw 57, said disk engaging the outer edge of the head 53 of the guard-plate. The upturned tongue 55 of the guard-plate coöperates with the upturned end 18 of the thread-guard and assists in shunting the trimming of the edge of the work into the chute. The front edge of the guard-plate 49 is provided with the lug 58 beveled at 59 which coöperates with the correspondingly beveled portion 60 of the throat-plate, the two parts thus interlocking for intimate relation of the parts, neat finish and securing proper coöperation. The head of the guard-plate is provided with the overhanging guard 61 so located as to prevent the fingers of the operator reaching a position which might result in injury from the trimmer blades. Moreover, this guard-plate operates as a handle by means of which the plate, which is resilient, may be sprung over the disk 56, to assume the position as shown in Fig. 2. Also, for the purpose of preventing injury to the fingers of the operator, the presser-foot is provided with a guard 62, secured to the top of its toe by a screw 63, said guard being angular in form and having the vertical portion 64, Figs. 1 and 3, extending longitudinally of the foot and substantially in parallelism with the guard-plate 49.

From the foregoing detailed description, it will be seen that the throat-plate is adjustable on, and relatively to, the work-plate by tilting the same at its rear end through the medium of the plate 37, which is adjustable longitudinally in the countersink of the work-plate. This results in causing the throat-plate to, so to speak, pivot on the work-plate at its forward end. The tilting or lifting of the throat-plate vertically on the work-plate results in a retarding action

on the work passing thereover about and behind the stitching point, or path of reciprocation of the needle. Coöperating with the said throat-plate, to aid in effecting the retardation of the work, is the pivotally-supported presser-foot, the pivot of which is in a plane cutting the presser-foot at a right-angle to its length and also the longitudinal axis of the needle. By thus pivoting the foot, the pressure thereof is imposed upon the work around the needle-penetrating point and, in consequence, when the throat-plate is tilted vertically, as shown by dotted lines in Fig. 4, the action of the foot and throat-plate is to impede the progress of the work under the presser-foot and over the throat-plate. This retarding action results in permitting the feed to push the work up to the stitching point faster than it carries the work away from the stitching point. As a result of this operation of the feed, the work, if it be knit-goods, will be fullered or crowded, which means that, if the work is stretched during its travel to the stitching position, such stretch will be eliminated, or, if the work approaches the stitching position in normal position, the wales thereof will be crowded together so as to compact the same and produce what is technically known as fulling. If the work be woven fabric, the result of feeding the same to the stitching position faster than it is carried away therefrom, or the result of retarding the work at and in rear of the stitching position, is shirring or crimping the work in contradistinction to both fulling and ruffling, or gathering. The pivotal action of the presser-foot compensates for varying thicknesses and maintains the proper coöperative action of said foot with the throat-plate under all its adjustments. The arching of the foot, as indicated at 47, permits the seam to pass freely without extraordinary retardation beyond such as is produced by the tilting of the throat-plate. The guard-plate 49, in the matter of its structural features, closes a somewhat large opening in the work-plate, reducing it to a size which is just sufficient to permit the free action of the spreader of an overedge stitching mechanism and prevents the work from being interfered with or becoming soiled, and at the same time permits the spreader and looper below the cloth-plate to be reached without the necessity of removing the cloth-plate and obviating the necessity of having the usual sliding cover-plates, which are so common in sewing machines and which are objectionable, since they add to the cost of the machine in many ways.

From the above description it will be seen that I have produced a combination of elements and coöperating parts, having among other advantages the following: ready means are provided for manipulating the spreader

or looper thread and for "threading" said elements and said thread lies guarded from soil, entanglement or interference; a simple means is provided by which the work may be
 5 retarded to any extent desired for the purpose of fulling or shirring the same; a combination of coöperating parts is produced whereby, irrespective of the amount of adjustment of the throat-plate for the purposes
 10 stated, and irrespective of varying thicknesses of work, the action of the presser-foot on the work and relatively to the throat-plate remains unchanged; simple and efficient means are provided for guarding the
 15 opening through which the spreader works; efficient means are provided for carrying off the trimming of the work to prevent it from interfering with the stitch-forming mechanism; the operator is guarded from injury
 20 by the trimmer-blades; means are provided which enable the spreader or looper to be threaded, adjusted, or examined without removing the cloth-plate; the work can be fed under and past the presser-foot without
 25 drag, retardation or lateral sag; and convenient means are provided for manipulating the feed-adjusting device and seeing the latter during the adjusting operation.

Having thus described my invention, what
 30 I claim and desire to secure by Letters Patent is:

1. A thread-guide for sewing machines comprising a work-plate provided with a groove or depression therein in which the
 35 thread runs, and a guard-plate extending partially over said groove to shield the thread but permit the instant threading thereof.

2. In combination with the work-plate of
 40 a sewing machine provided with a depression adjacent the stitching point, and an opening in the depressed portion beside the stitching point, a guard-plate pivoted to the work-plate and located in the depressed portion,
 45 said guard-plate having a head which substantially closes the said opening of the work-plate, but leaves a sufficient opening through which a spreader may operate.

3. In combination with the work-plate of
 50 a sewing machine, of a throat-plate carried by the work-plate, the latter being provided with a depressed portion, and an opening adjacent the throat-plate, and a guard-plate carried by the work-plate having a portion
 55 for substantially closing the said opening in

the latter, but leaving a sufficient opening through which a spreader may operate, and coöperating means on the guard-plate and the throat-plate for holding the former in proper position. 60

4. In combination with the work-plate of a sewing machine, having an opening adjacent the stitching point through which a spreader may extend, of a guard-plate pivotally supported on the work-plate and having a portion
 65 which substantially closes said opening, but leaves a sufficient opening through which a spreader may operate, and means on the work-plate for engaging the guard-plate to hold it positively in proper position. 70

5. In combination with the work-plate of a sewing machine having an opening therein adjacent the stitching point through which a spreader may operate, of a guard-plate pivoted to the work-plate, and having a portion
 75 for substantially closing the said opening, said guard-plate having a notch or recess in its side adjacent the stitching point through which said spreader may work when the guard-plate is in position to cover the opening in the work-plate. 80

6. In combination with the work-plate of a sewing machine having an opening therein adjacent the stitching point, of a guard-plate pivoted to the work-plate and having
 85 a head for substantially closing the said opening, but leaving a sufficient opening through which a spreader may operate, means for holding the guard-plate in position to close the said opening, and said
 90 guard-plate being made of flexible material whereby it may be sprung so as to pass the said holding means.

7. In combination with the work-plate of a sewing machine having an opening therein
 95 adjacent the stitching point, of a guard-plate carried by the work-plate and having a head for covering said opening, means for holding the guard-plate in operative position, and said guard-plate being provided
 100 with a handle for lifting the guard-plate over the holding means.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN P. WEIS.

Witnesses:

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 W. J. REED.