

F. T. STRÖBECK.

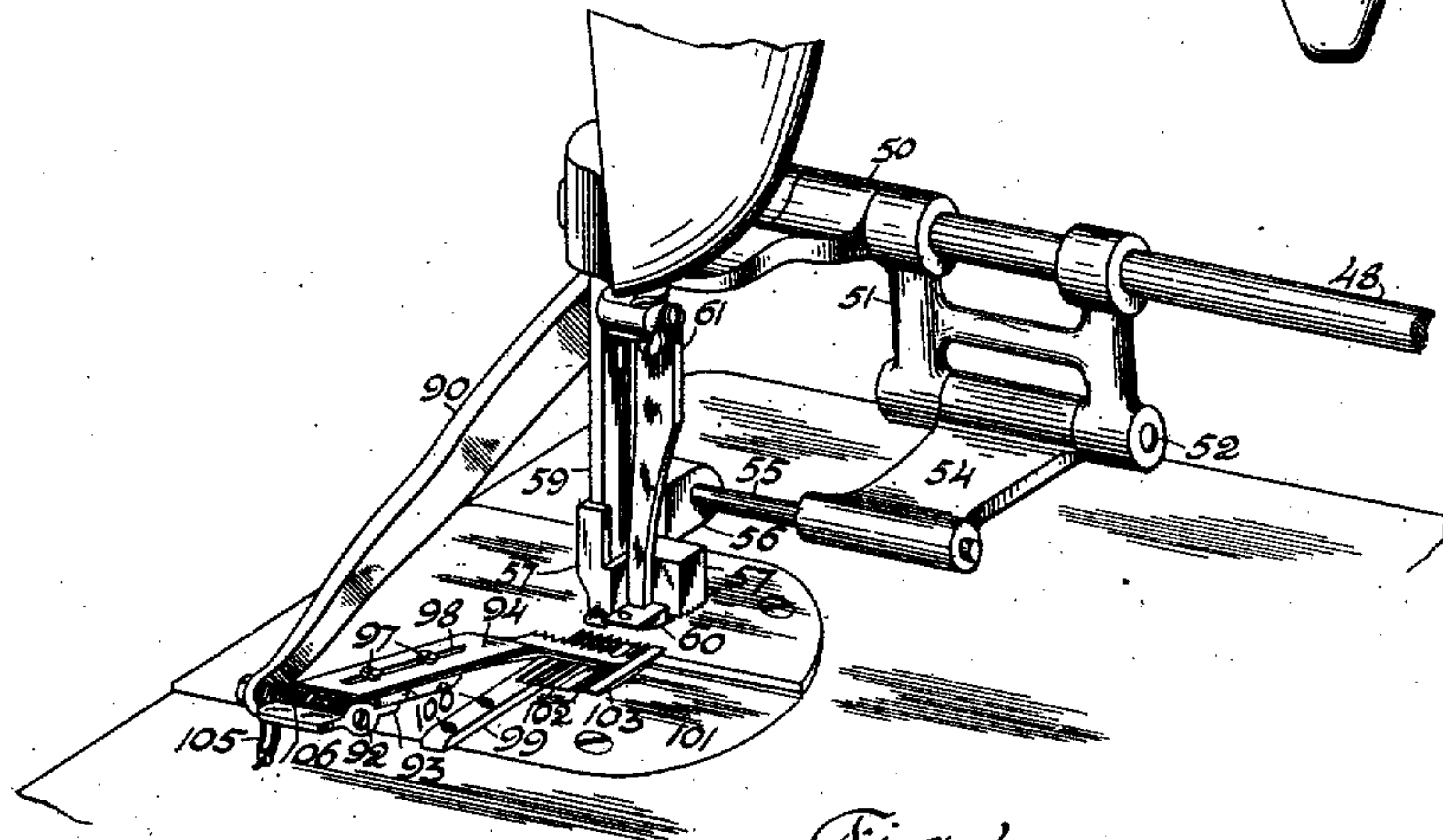
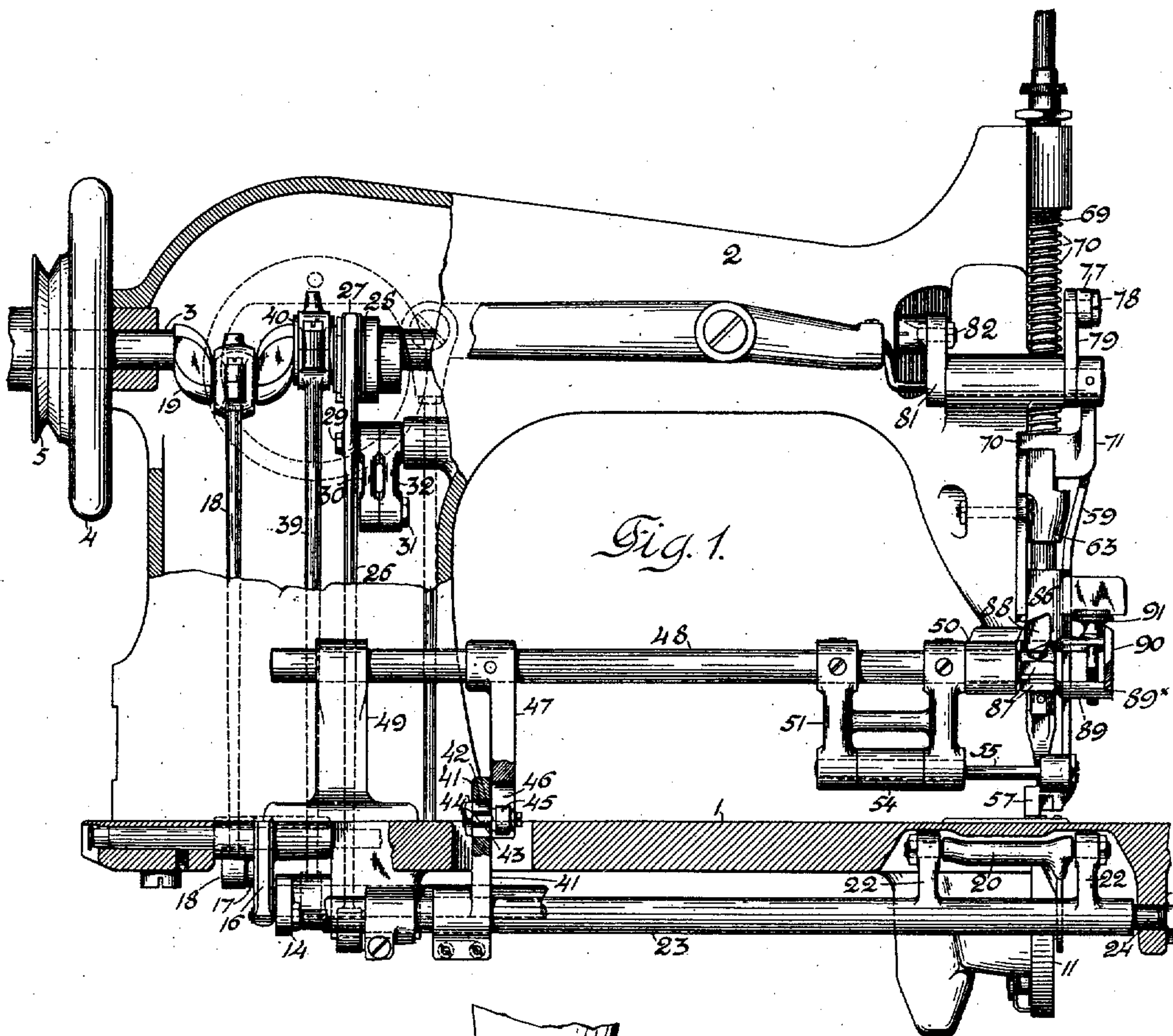
SEWING MACHINE.

APPLICATION FILED JUNE 17, 1908.

986,652.

Patented Mar. 14, 1911.

2 SHEETS—SHEET 1.



WITNESSES:

H. K. Krumm
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Fig. 4.

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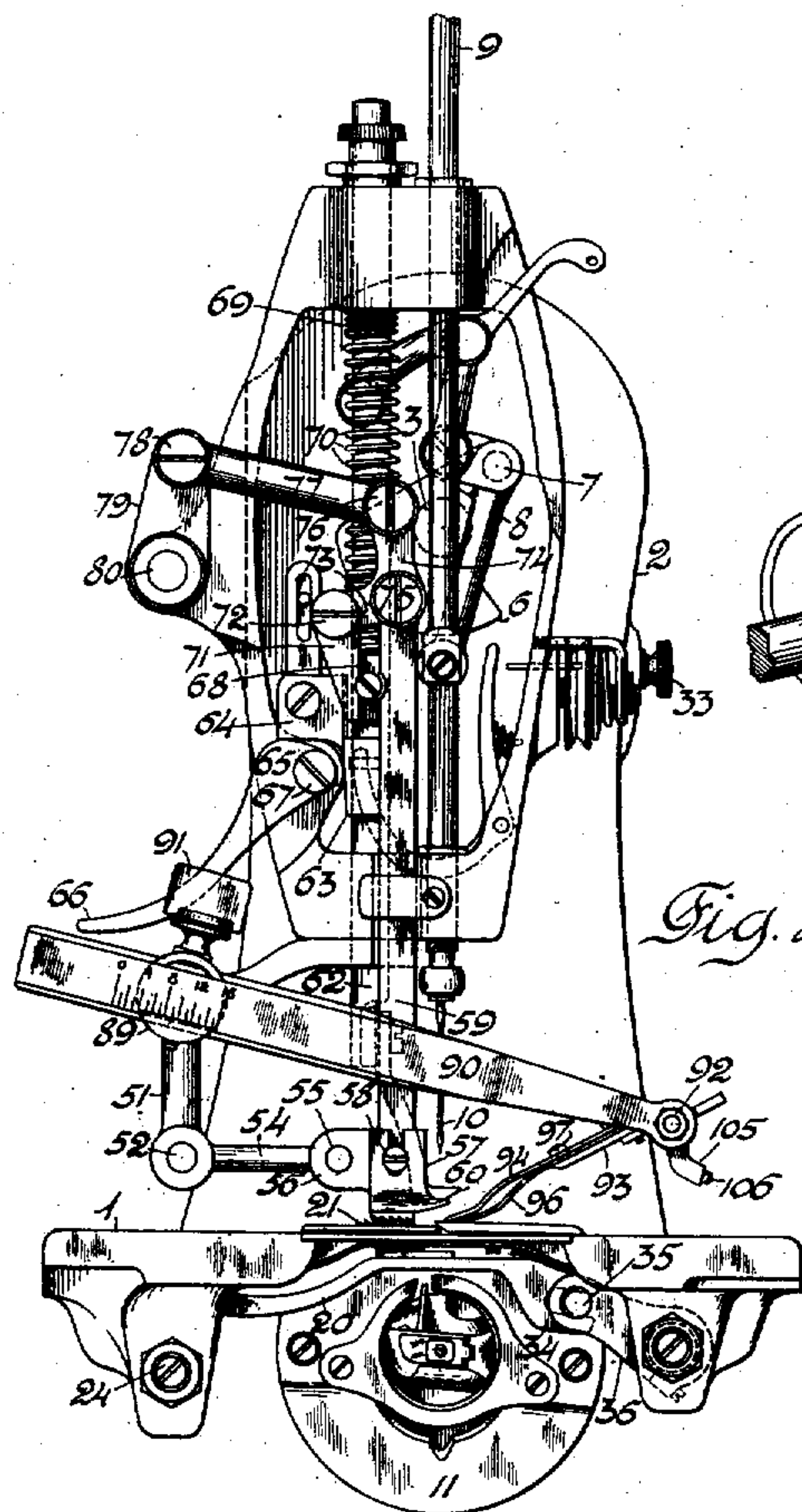


Fig. 2.

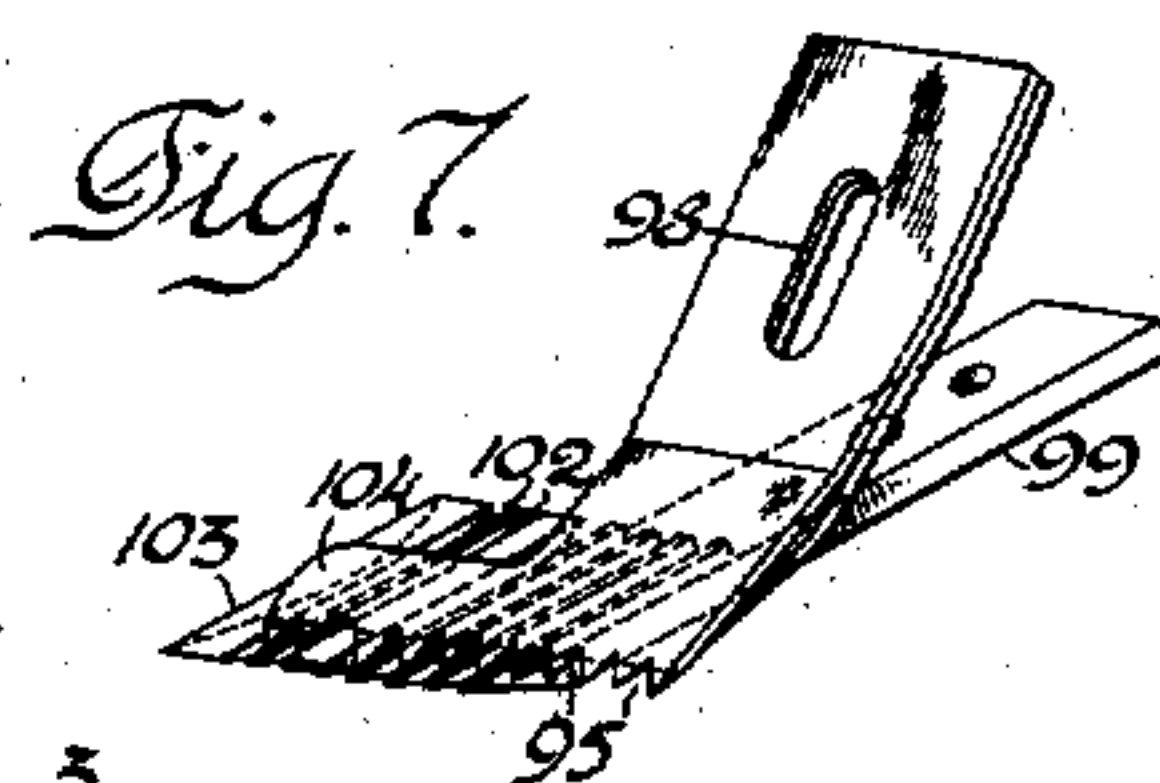


Fig. 7.

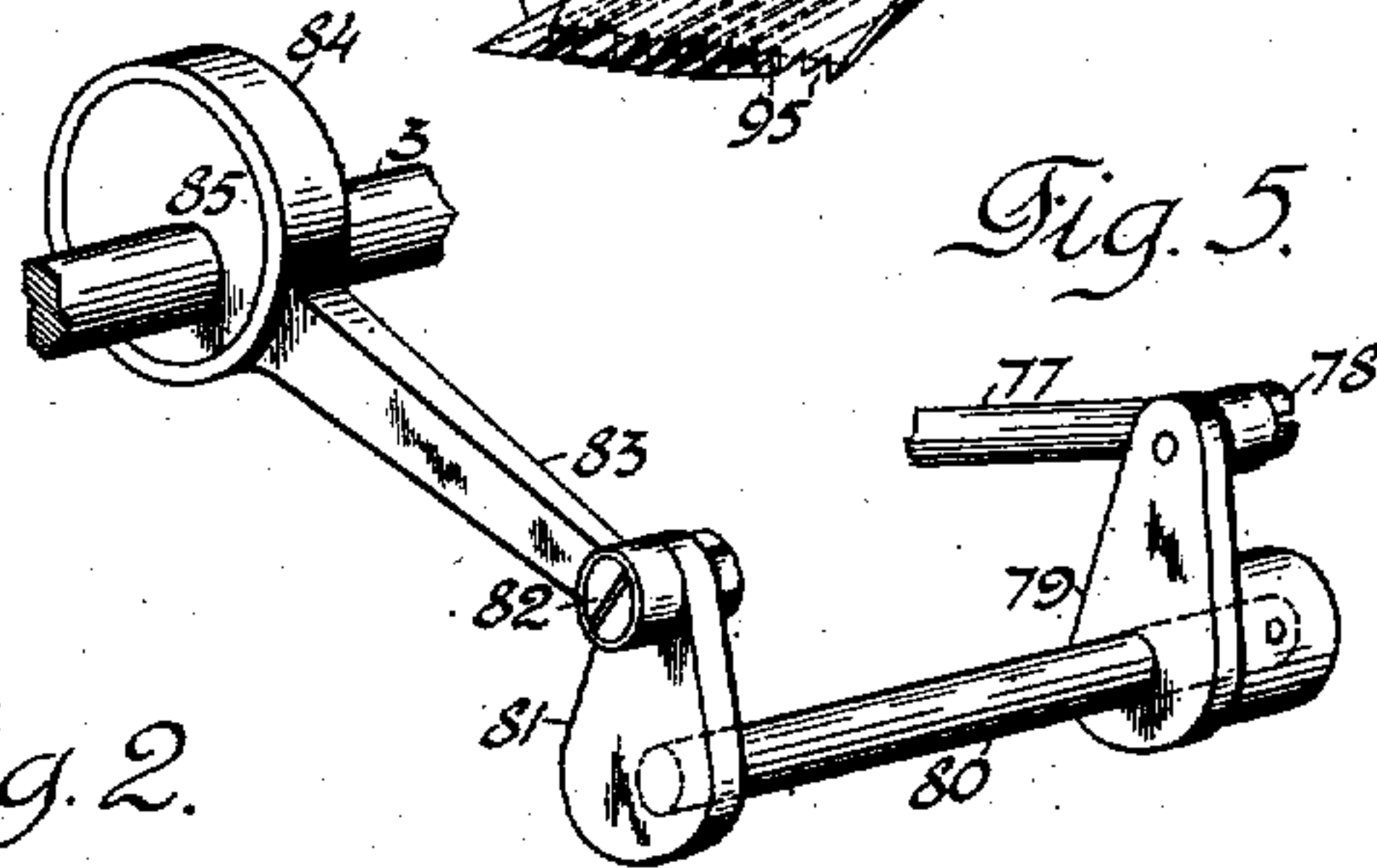


Fig. 5.

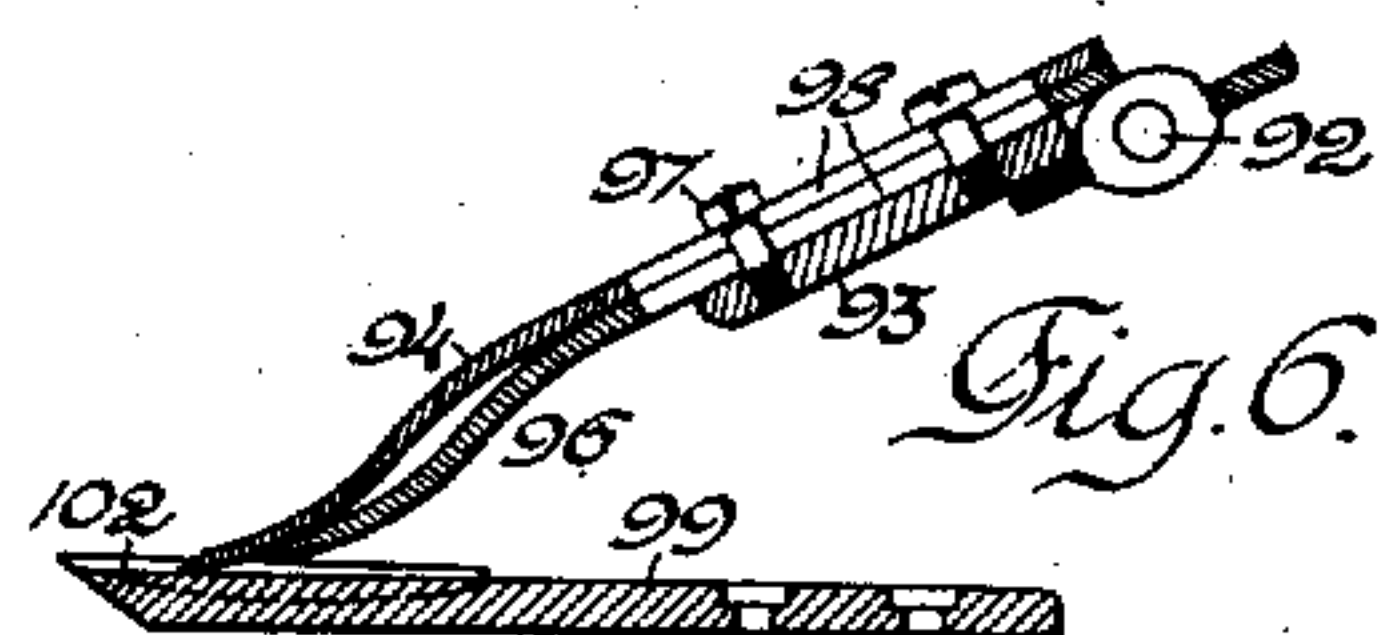


Fig. 6.

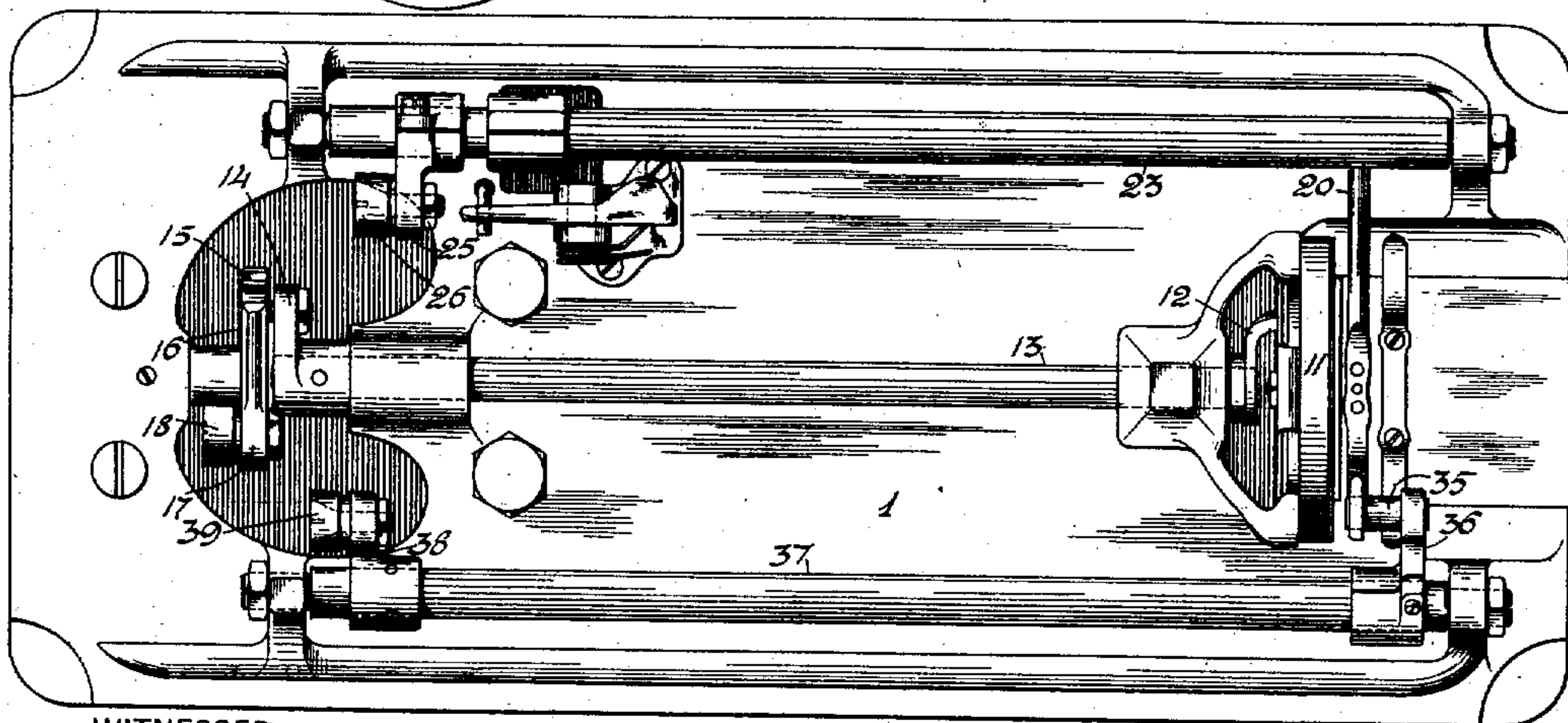


Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANS TITUS STRÖBECK, OF BEACHMONT, MASSACHUSETTS, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

SEWING-MACHINE.

986,652.

Specification of Letters Patent.

Patented Mar. 14, 1911.

Application filed June 17, 1908. Serial No. 438,892.

To all whom it may concern:

Be it known that I, FRANS TITUS STRÖBECK, a citizen of the United States, residing at Beachmont, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in stitching and ruffling machines for general use, but is designed especially for operation in applying facings to knit undershirts, bands on knit under-drawers and similar work on knit goods.

The present invention has for its object the provision of a simple and effective mechanism whereby both upper and lower plies may be independently engaged and fed across the path of the stitch-forming mechanism unruffled and an intermediate ply can be presented to the stitch-forming mechanism in ruffled or full condition; and the invention consists in the features of construction shown and described herein and pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a rear side elevation, partly in section, representing a sewing machine of the well-known Singer type embodying the present improvements, Fig. 2 a front end elevation of the same with the face-plate of the overhanging bracket-arm removed, and Fig. 3 a bottom plan view of the machine. Fig. 4 is a perspective view showing the forward portion of the machine with the presser-foot and upper feeding foot raised to expose the operative parts beneath the same. Fig. 5 is a perspective view of the actuating means whereby the feeding-foot and presser-foot are alternately lifted from engagement with the work. Fig. 6 is a sectional elevation representing in operative relation, upon an enlarged scale, the ruffling member and the separator-plate, and Fig. 7 a perspective view of the same parts.

The machine is represented with the usual bed-plate 1 and overhanging bracket-arm 2 in which is journaled the longitudinally arranged main-shaft 3 carrying the balance-wheel 4 and belt-pulley 5. The main-shaft carries at its forward end the crank-plate 6 carrying the crank-pin 7 connected by means of the pitman 8 with the

vertically reciprocating needle-bar 9 carrying the needle 10 cooperating with an oscillating shuttle mounted in the shuttle-race 11 receiving its oscillating movements from the shuttle-driver 12 fixed upon the forward end of the shuttle actuating rock-shaft 13 mounted in suitable bearings beneath the bed-plate and having at its rearward end a crank 14 carrying a stud embraced by a slot 15 in one of the arms 16 of a rocker whose other arm 17 is connected to the lower end of a pitman rod 18 whose upper end embraces the actuating crank 19 in the main-shaft 3.

As represented in the United States patent to L. B. Miller and P. Diehl, No. 229,629, of July 6, 1880, the primary feeding mechanism comprises a transverse feed-bar 20 carrying the usual feed-dog with serrated feeding surface 21 and pivotally connected at its rearward end with the spaced upright arms 22 of the primary feed rock-shaft 23 journaled upon the center screws 24 mounted in depending lugs upon the bed-plate and having at its rearward end a lateral crank-arm 25 connected with one end of a link-bar 26 whose opposite end is forked at 27 to embrace the feed-actuating eccentric 28 upon the main-shaft; the link-bar being suspended beneath its fork 27 upon the fulcrum-stud 29 carried by the swinging link 30 which is herein shown fulcrumed upon the screw-pin 31 carried by one arm 32 of the feed-regulating lever whose other arm extends through the standard of the bracket-arm and is provided with the thumb-screw 33 by means of which the position of the angle-lever, and hence of the screw-pin 31 affording a fulcrum for the swinging link 30, is adjusted to determine the resultant vertical movement of the link-bar in oscillating the feed rock-shaft 23.

The feed-bar is formed in the end opposite the feed rock-shaft 23 with a lateral slot 34 entered by a stud 35 carried by the lateral arm 36 of the feed-lifting rock-shaft 37 which is provided upon its rearward end with a lateral crank-arm 38 carrying a screw-pin embraced by the lower end of a pitman-rod 39 of which the upper end embraces an eccentric 40 upon the main-shaft from which the feed-bar derives its rising and falling movements.

The feed rock-shaft 23 is provided near its rearward end with an upright crank-arm

41 having a slot 42 embracing the flattened shank 43 of a shouldered stud adjustably secured in position by means of the clamp nut 44 and carrying at its opposite end the roller 5 45 entering a slot 46 in the lower end of a depending arm 47 fixed upon the secondary feed-actuating rock-shaft 48 mounted in suitable bearing brackets 49 and 50 upon the bed-plate and head of the bracket-arm, respectively, and having fixed upon its forward end the depending rocking frame 51 between the spaced and rigidly connected arms of which is journaled the short shaft 52 connected by means of the link 54 and 10 pivotal pin 55 with a rearwardly projecting ear 56 of the feeding foot 57 of angular form, as represented particularly in Fig. 4, whose slotted shank is secured by means of the fastening screw 58 to the lower end of 20 the upper feed-bar 59.

The presser-foot 60 works in the angle of the upper feeding foot 57, in advance of the latter's lateral serrated feeding portion, and has a shank 61 secured to the lower end of 25 the presser-bar 62 journaled in the head of the bracket-arm and provided with a fixed collar 63 with a lateral lug 64 adapted for engagement by the cam portion 65 of the lifting lever 66 which is mounted upon the 30 head of the bracket-arm by means of the fulcrum-screw 67. The presser-bar 62 is shown provided with a second fixed collar 68 between which and the adjustable bushing 69 is interposed the spring 70, the collar 68 35 having a lateral lug 71 carrying a fulcrum-screw 72 connected with one arm 73 of a rock-lever fulcrumed at 75 upon the upper end of the feed-bar 59 and having an upright arm 74 carrying a stud-screw 76 connected by means of a link 77 with a stud-screw 78 upon the upright arm 79 of a rock-shaft 80 journaled in a suitable bearing upon the bracket-arm and provided with a 40 second crank-arm 81 carrying a pivotal pin 82 embraced by one end of a connecting rod 83 provided at its other end with a strap 84 which embraces an actuating eccentric 85 upon the main-shaft 3. As will be observed, when the shaft 80 is rocked in one direction 45 by means of the actuating eccentric 85, its connections with the rock-lever 73 74 causes the latter to rock upon the fulcrum-screw 72 while the presser-foot 60 rests upon the work, thereby acting upon the upper feed-bar 59 to 50 lift the feeding foot 57 clear of the work while it is moved forwardly by its connections with the secondary feed rock-shaft 48 preparatory to a succeeding work-advancing movement; while the rocking of the shaft 80 60 in the opposite direction serves to lower the feeding foot 57 upon the work and to constitute the pin 75 upon the upper feed-lever 59 a fulcrum upon which the rock-lever 73 74 turns to lift the presser-bar 62 and its 65 presser-foot 60 clear of the work during a

feeding movement imparted to the feeding foot by its operative connections with the secondary feed rock-shaft 48.

The rock-shaft 48 carries at its forward end a split collar 86 having the spaced lugs 87 and clamp-screw 88 by which the collar is secured upon the shaft for both endwise and circular adjustment. The collar 86 is provided with the forwardly projecting clamping jaws 89 with undercut grooves 89* in 75 their adjacent faces, as represented in Figs. 1 and 2, entered by the similarly shaped edges of the ruffler-carrying bar 90 which is secured adjustable endwise therein by means of the clamp-screw 91 passing through said 80 jaws and having its threaded shank portion tapped into one of the latter.

The bar 90, which extends forwardly and downwardly from the clamp 89 upon the rock-shaft 48, carries at its forward end a 85 lateral pin 92 upon which is mounted the ruffling blade carrier 93. The carrier 93 is provided with a flat seat upon which is clamped the ruffling blade 94 having the usual serrations 95 in its lower operative 90 end and the interposed guard-plate 96, these plates being adjustably secured to the carrier by means of fastening screws 97 passing through slots 98 in the plates and tapped into the carrier 93. Coöperating with the 95 ruffling blade 94 is a separator 99 having a shank secured by means of fastening screws 100 upon the throat-plate 101 of the machine and provided with an operative portion having a series of parallel V-shaped 100 longitudinal grooves 102 spaced correspondingly with the teeth 95 of the ruffling blade 94 and serrated at its forward edge and provided with a lateral extension 103 which 105 with the overlying offset portion 104 of the blade 94 extends beneath the presser-foot 60 and across the range of action of the upper and lower feeding members. As indicated in the drawings, and particularly in Fig. 6 thereof, the V-shaped grooves 102 extend only partially through the thickness 110 of the separator-plate 99 and its lateral extension 103 so as to avoid unnecessarily weakening the latter and requiring an increased thickness to insure the requisite 115 strength and stiffness, while they serve to house the points of the teeth or serrations 95 of the ruffling blade which are not allowed to pass entirely through the plate and rub upon the throat-plate beneath the separator. 120 The body portion of the ruffling blade 94 is disposed substantially in front of the line of feed, while the lateral extension 104 thereof extends across the line of feed and in advance of the feeding members 21 and 125 57 whereby it is adapted to enter a fold in the unruffled material whose upper and lower plies are engaged respectively by the feeding foot 57 and the feed-dog 21.

A rigid arm 105 depends from the lever 130

90 adjacent the pivotal-pin 92 which engages one arm of a coil-spring 106 surrounding the pin 92 and having another arm engaging the carrier for forcing the ruffling blade yieldingly downward upon the work interposed between the same and the separator-plate 99.

As the upper feeding and ruffling members both derive an operative movement through their common actuating rock-shaft 48 from the main-shaft which imparts a reciprocation of the needle for each of its rotations, and as these members are normally pressed upon the work by their respective springs, both are brought into operative or propelling engagement with the work in the performance of each stitch-forming cycle of the machine as herein represented.

As will be observed, the rocking of the shaft 48 in actuating the upper feeding member 57 produces a vibratory movement of the ruffling blade carrying lever 90, the motion of whose forward end in the arc of a circle toward and from the machine bed-plate causes the operative edge of the ruffling blade 94 to move to and fro in the direction of feed in relation to the stitch-forming mechanism. As will be readily observed, the loosening of the clamp-screw 91 permits the lever 90 to be shifted endwise to adjust the forward position of the operative edge of the ruffling blade 94 in relation to the feeding-foot 57 and presser-foot 60, this adjustment being especially desirable after the circular adjustment of the collar 86 upon the rock-shaft 40 to change the inclination of the lever 90 in varying the throw of the ruffling blade. By the provision of the grooves 102 in the separator-plate parallel with the direction of operative movement of the ruffling blade, the points of the latter are caused to penetrate more readily the interposed fabric to insure the effective propulsion of the same beneath the presser-foot to the stitch-forming mechanism, while the employment of the guard-plate 96 with its operative edge underlying the forward portion of the ruffling blade, serves to support the serrated edge of the blade 94, especially when operating upon thin material, to prevent the dulling of the serrated edge of the ruffling blade upon the separator-plate by maintaining its teeth slightly above the bottoms of the grooves 102.

By the employment of both upper and lower feeding members and a ruffling device offset as above described, it is practicable to effectively and evenly ruffle the margin of a body fabric and to uniformly apply the upper and lower plies of a binding thereto, this being practicable particularly in the present machine by the employment of a ruffling blade carrier mounted and actuated by mechanism located wholly above the bed-

plate. By supporting the ruffer-blade carrying bar at the rear of the machine and behind the stitch-forming mechanism, the part of the machine in advance of the stitch-forming and feeding devices is left unencumbered to a large extent with operative portions of the mechanism for convenient manipulation and inspection of the work in the process of stitching and ruffling, while provision is made for the application of the various folding and other guides commonly employed in this class of machine.

As will be observed from the foregoing description, the primary feed-regulator including the vibratory fulcrum carrying link 32 for the link-bar 26 affords a means of simultaneous adjustment for each of the three work-advancing or feeding members embodied in the present machine, while the adjustment of the stud 43 within the slot 42 of the arm 41 produces a simultaneous adjustment of the work-advancing members 57 and 94 independently of the primary feeding member 21; and the adjustment of the angular relation of the lever 90 with the shaft 48 by suitably shifting the collar 86 produces an adjustment of the length of throw of the ruffling blade 94 independently of the other work-advancing or feeding members. Provision is thus made for regulating the length of the stitching, for changing the rate of advance of the upper unruffled ply of material in relation to the lower ply, which is necessary in connection with certain classes of work, and for adjusting independently of either of the former the fullness of the ruffled or crimped intermediate ply of material.

While the foregoing description, in connection with the accompanying drawings, sets forth a preferred construction and arrangement of parts, it is evident that the present improvement is susceptible of considerable modification of its constructive features without departure from the scope of the invention.

Having thus set forth the nature of the invention, what I claim herein is:—

1. In a sewing machine, the combination with a throat-plate and stitch-forming mechanism comprising a reciprocating needle passing through the same, of three independent work-advancing or feeding members, feed rock-shafts disposed above and below said throat-plate, an operative connection between the same, a connection between one of said rock-shafts and one of the feeding members, connections independent thereof between the other of said rock-shafts and the other feeding members, actuating means for one of said rock-shafts, and means connected with said actuating means whereby the range of action of all of said feeding members may be simultaneously adjusted.

2. In a sewing machine, the combination

teeth or serrations of the ruffling blade with the bottoms of the grooves in the separator-plate.

16. In a sewing machine, the combination with the frame including a bed-plate and an overhanging bracket-arm, a throat-plate, and stitch-forming mechanism comprising a reciprocating needle passing through the same, of feeding mechanism including a work-engaging member, a supporting feed-bar therefor disposed above the throat-plate, a fulcrum for said feed-bar sustained upon said bracket-arm, actuating means connected with said feed-bar and including a rock-shaft arranged above the throat-plate, a ruffling member also disposed above the throat-plate, and actuating means for said ruffling member operatively connected with said rock-shaft.

17. In a sewing machine, the combination with the frame including a bed-plate and an overhanging bracket-arm, a main-shaft, a throat-plate, and stitch-forming mechanism

comprising a reciprocating needle, of feeding mechanism including a work-engaging member disposed above said throat-plate and sustained by the bracket-arm, actuating means therefor connected with and driven by the main-shaft, a ruffling member also disposed above said throat-plate and mounted for operative movement independently of said feeding member, actuating means for said ruffling member operatively connected with the actuating means for said feeding member, and means for insuring the propelling engagement of the feeding and ruffling members with the work in the same stitch-forming cycles.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FRANS TITUS STRÖBECK.

Witnesses:

JOHN F. MORRIS,
ISABEL G. SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

S. G. SUPPLEE.
 REINFORCED TOOTH CROWN.
 APPLICATION FILED DEC. 31, 1910.

986,653.

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Fig. 2.

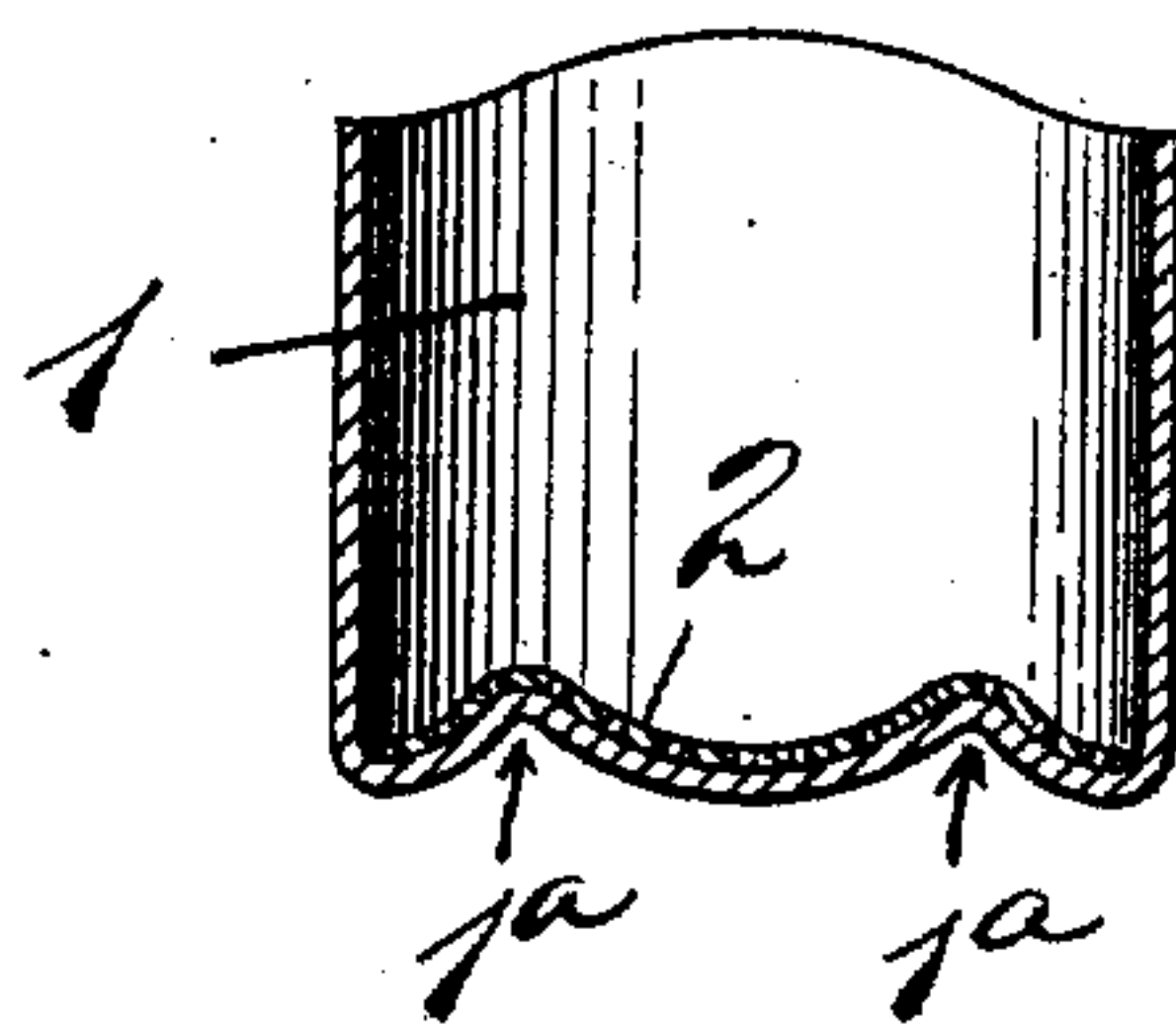


Fig. 4.

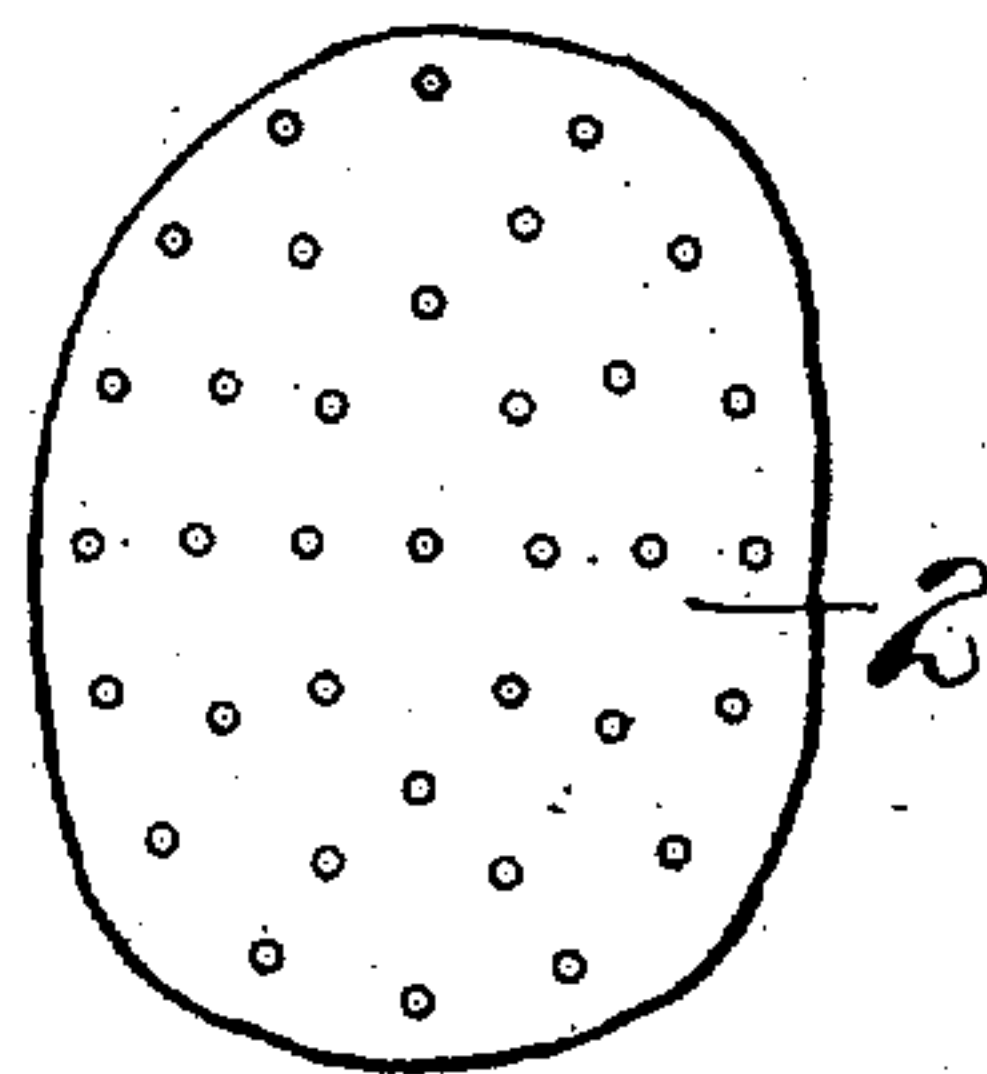


Fig. 1.

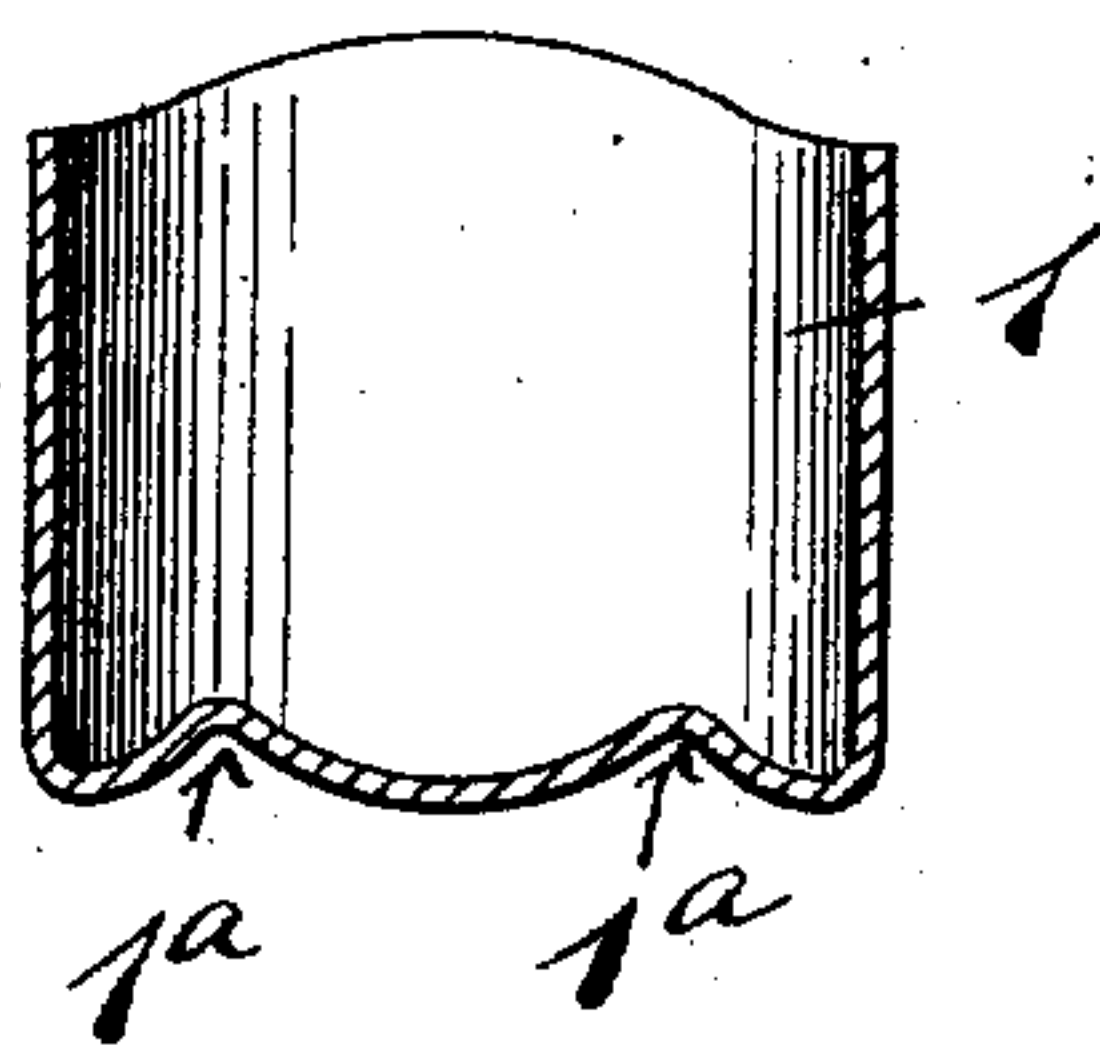


Fig. 3.

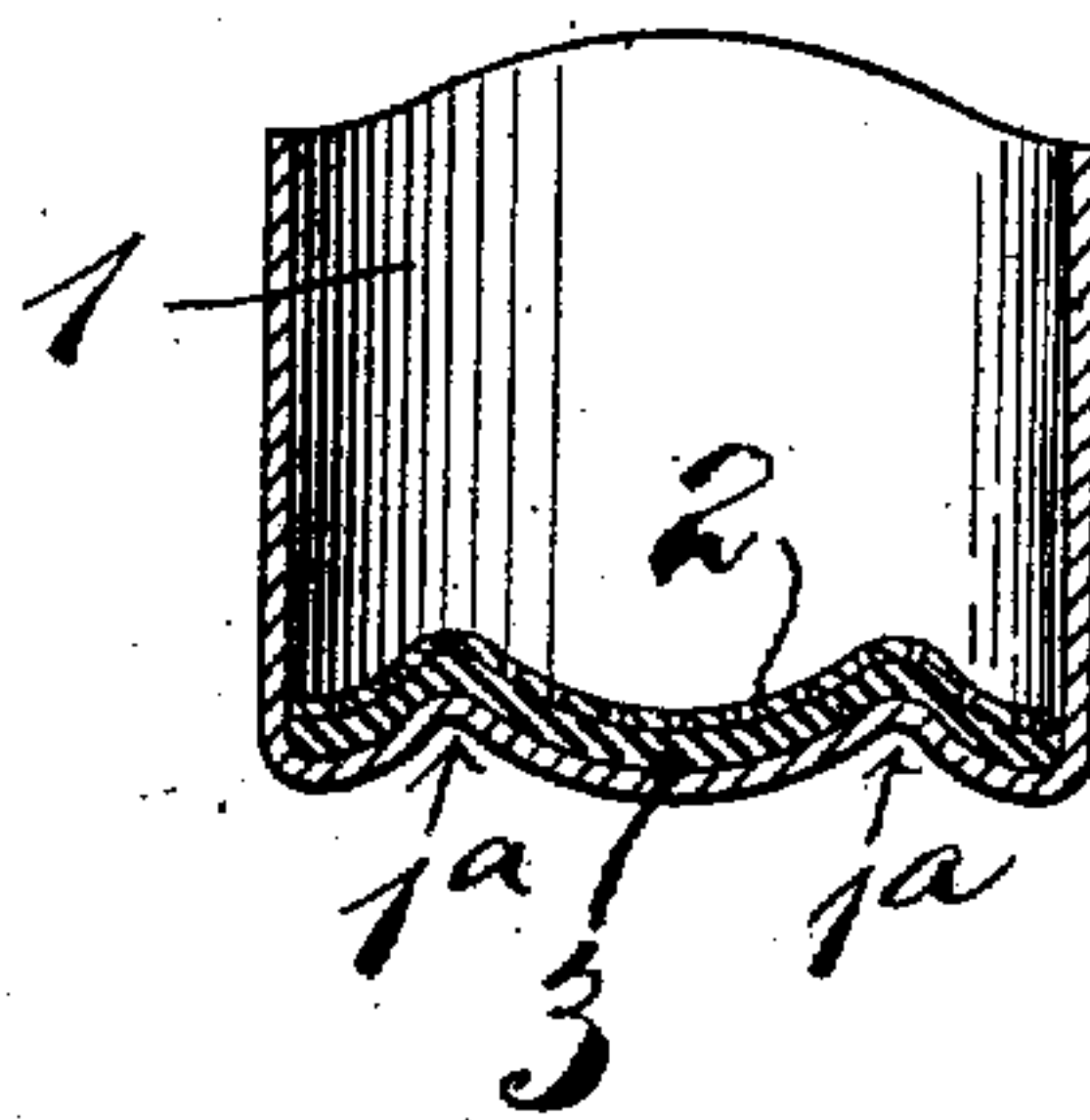
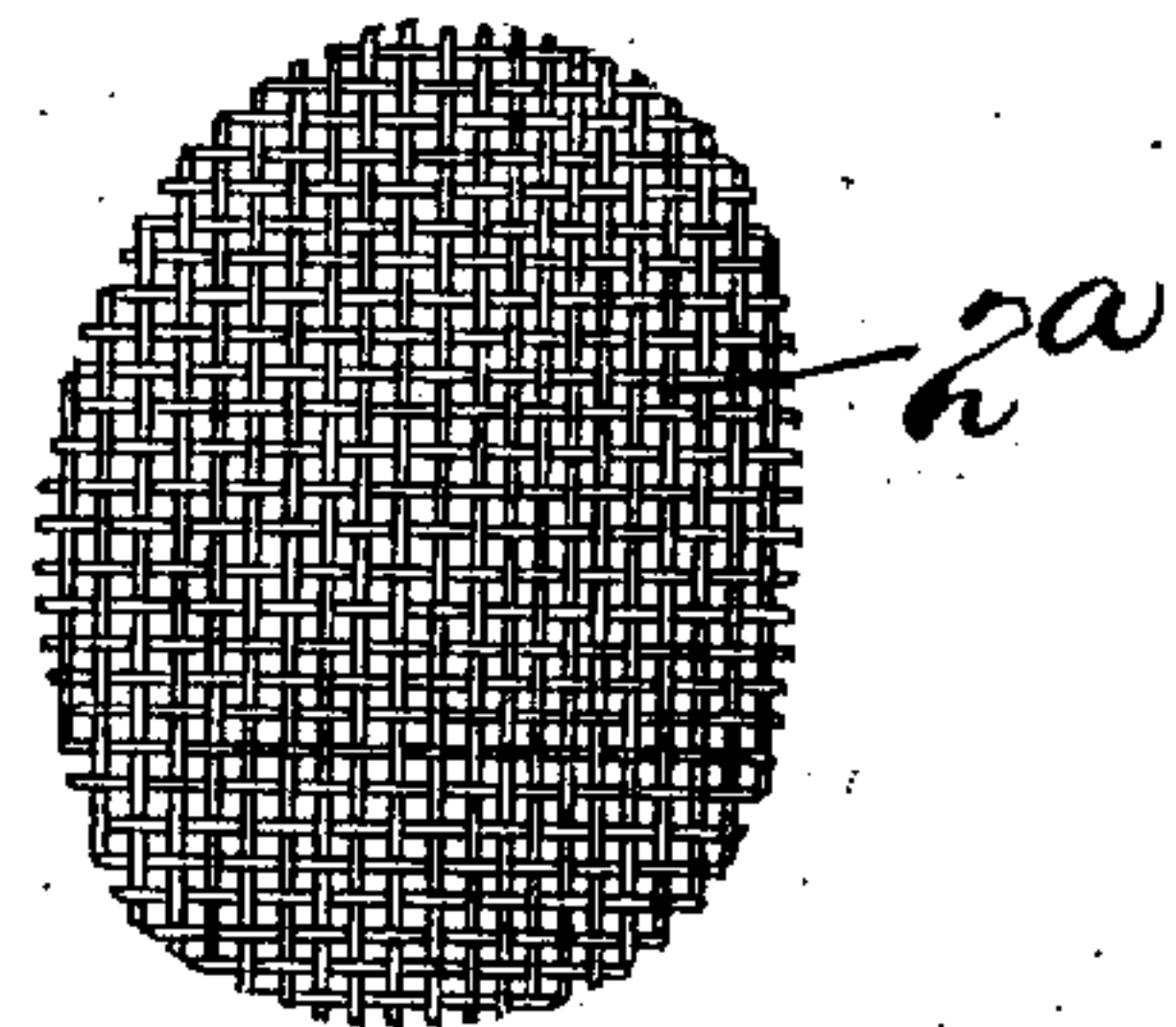


Fig. 5.



Witnesses:
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