

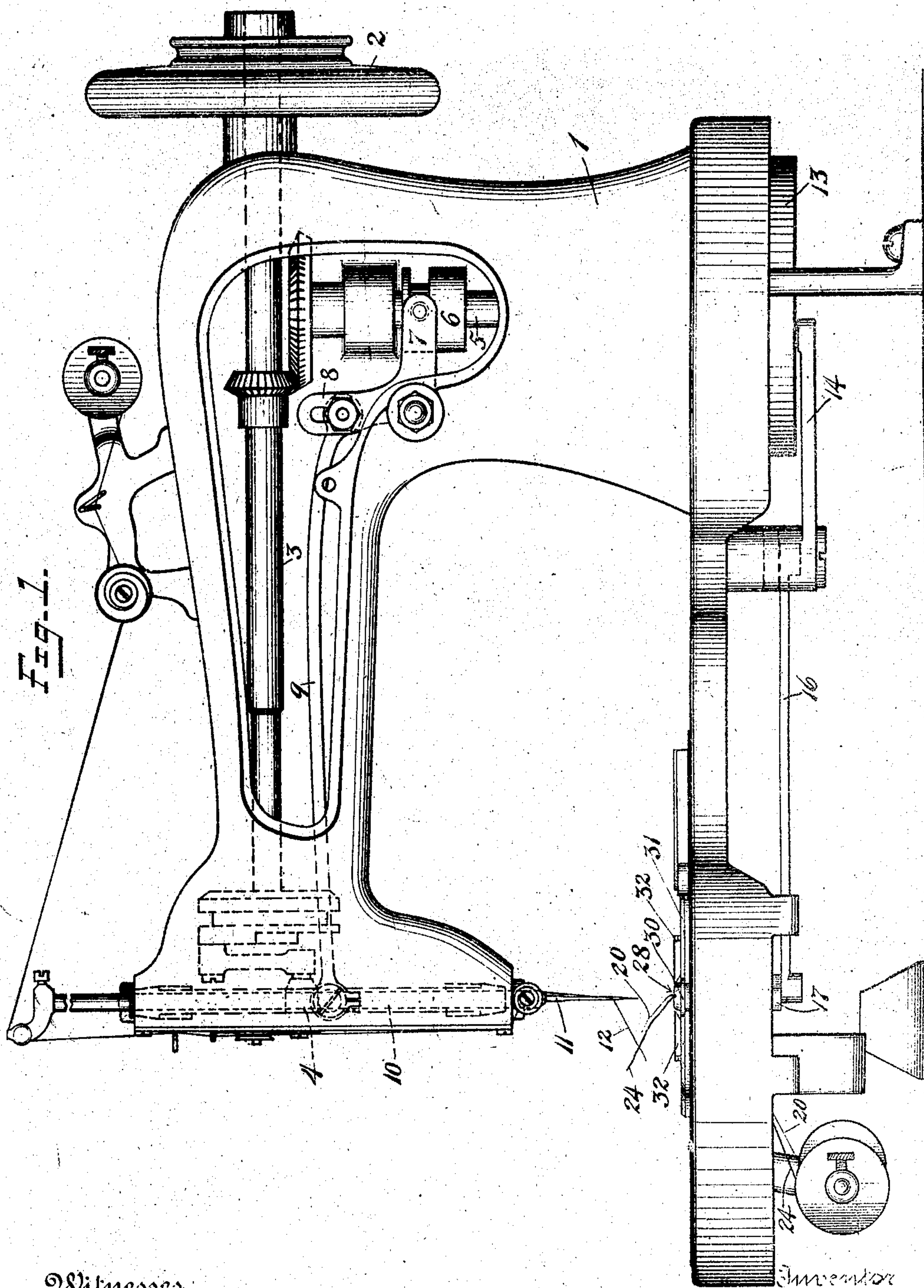
No. 815,739.

PATENTED MAR. 20, 1906.

A. PRUVER.  
CORD STITCH BUTTONHOLE MACHINE.

APPLICATION FILED JUNE 1, 1905.

3 SHEETS—SHEET 1



Witnesses  
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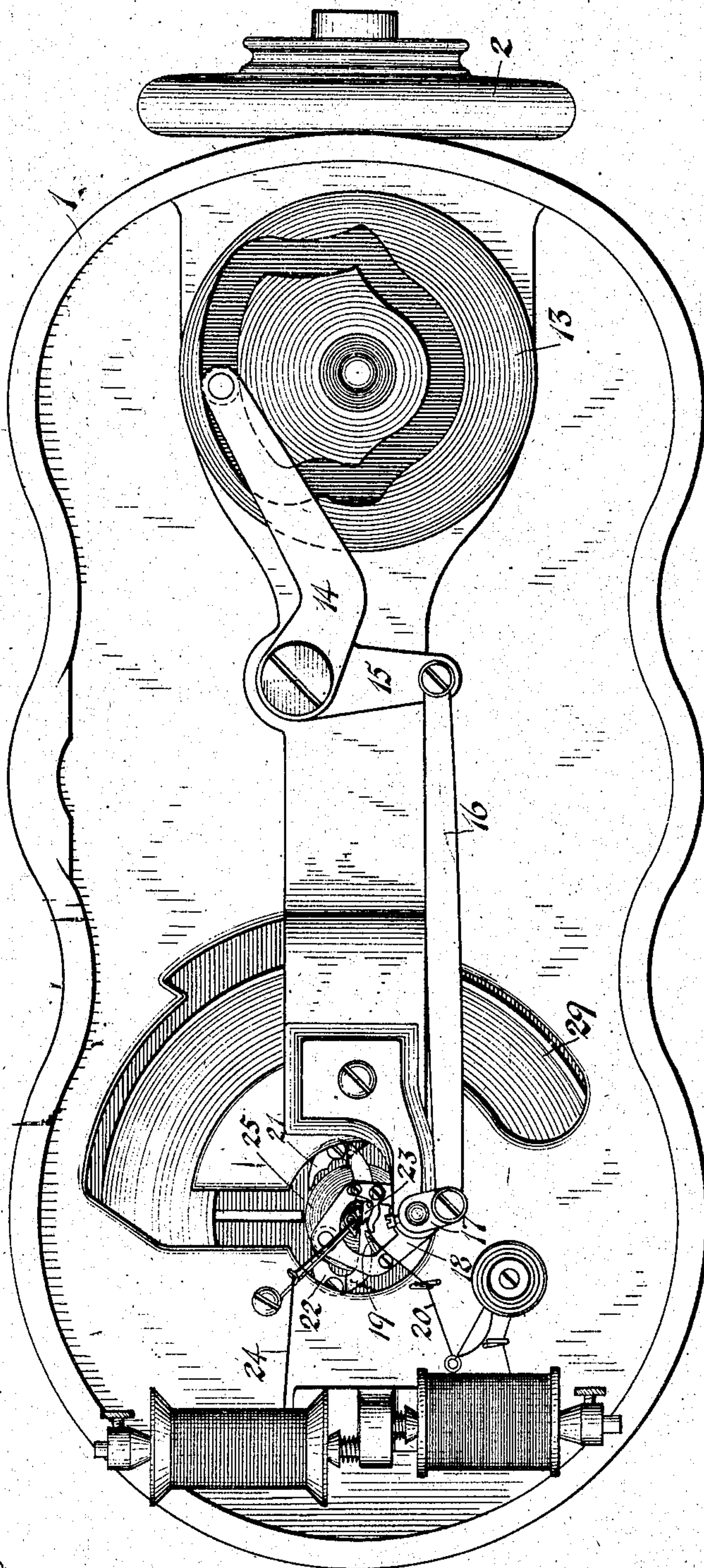
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

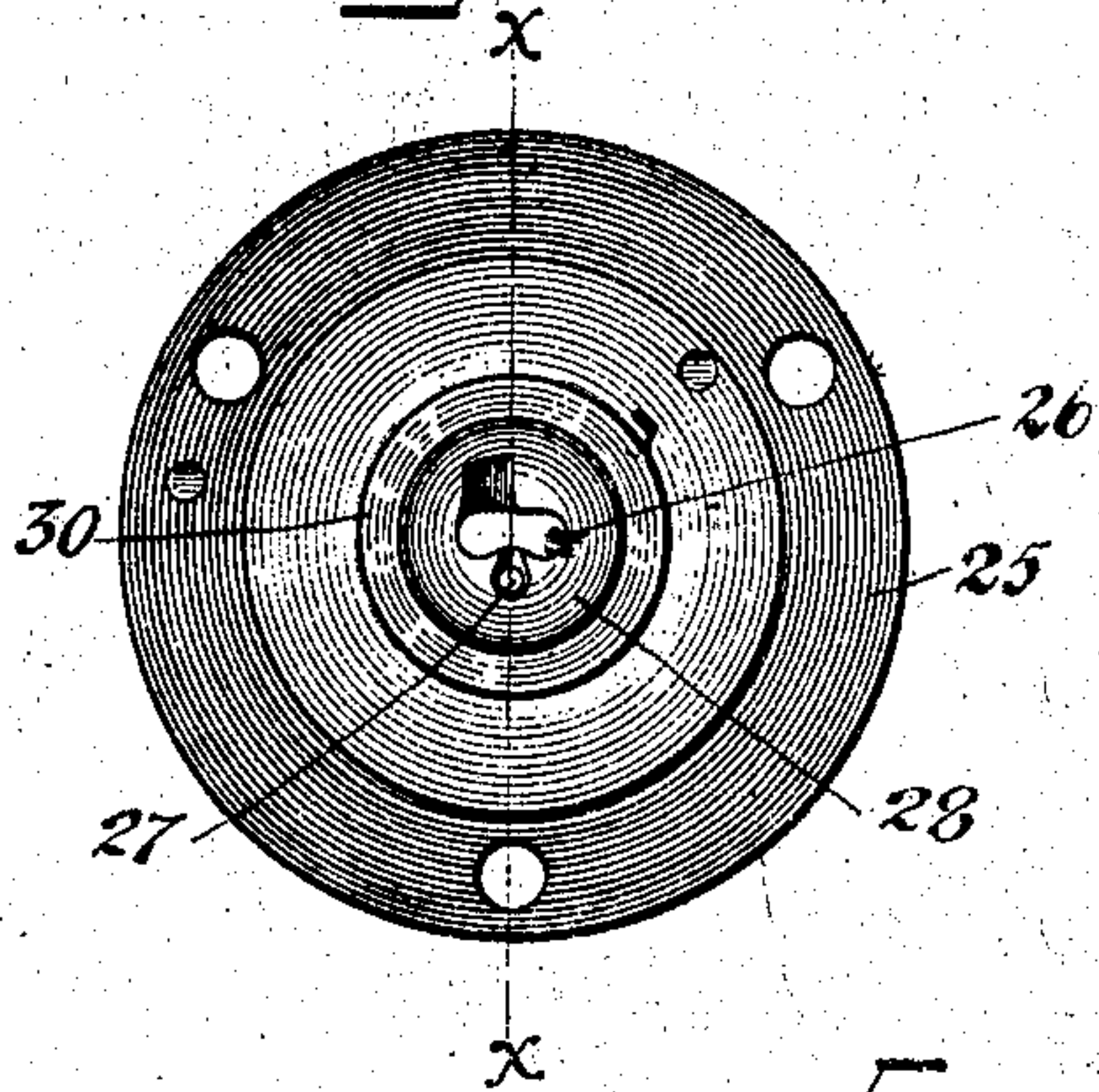


Fig. 4.

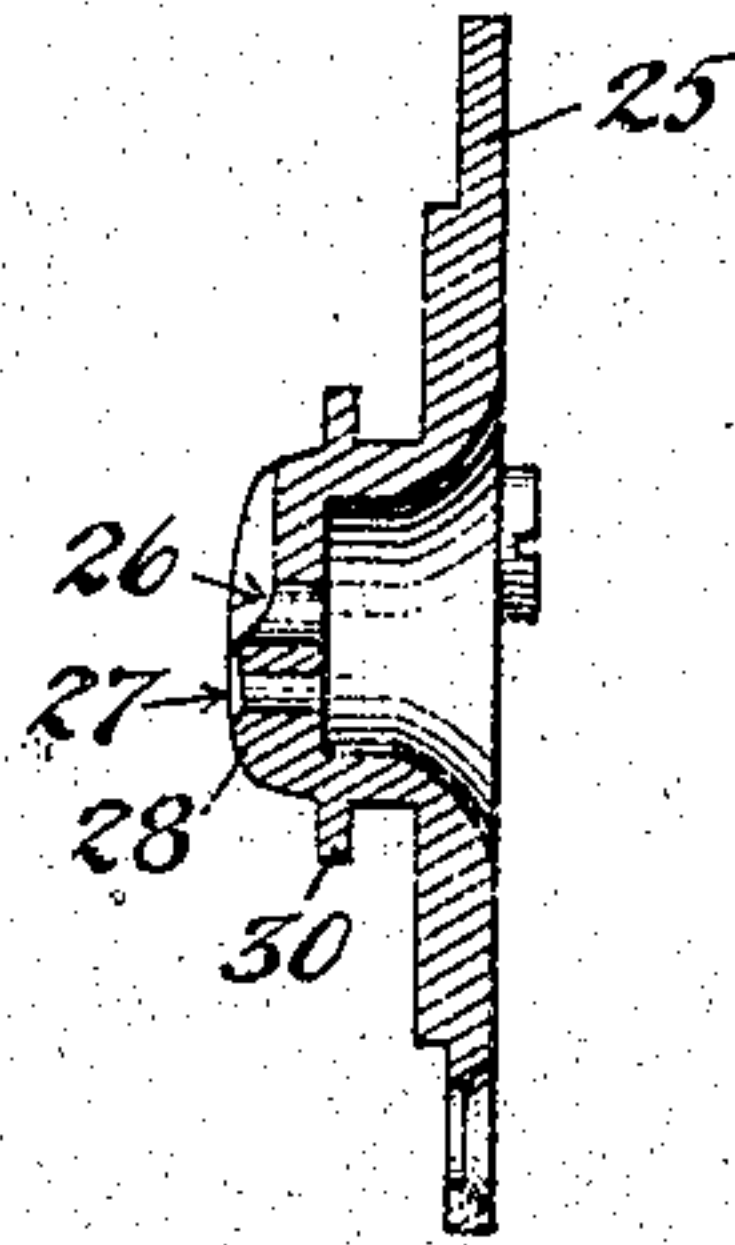


Fig. 5.

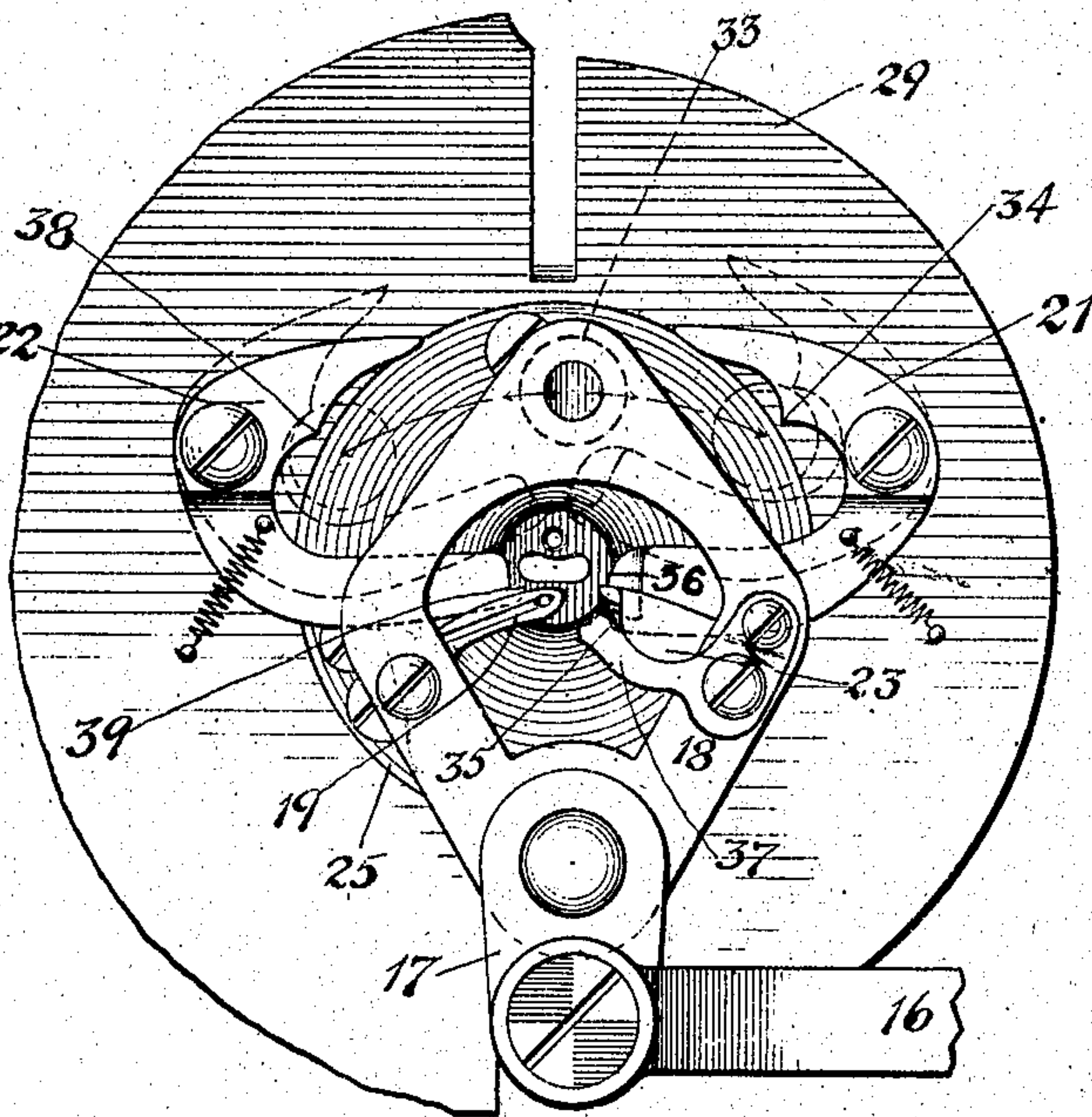


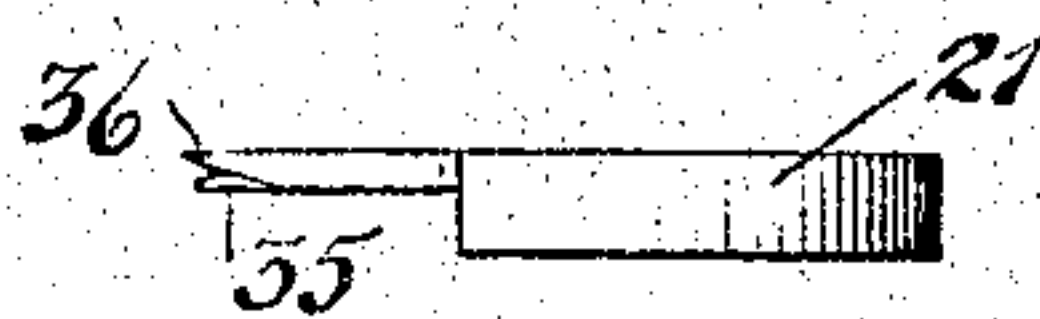
Fig. 7.



Fig. 8.



Fig. 6.



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# UNITED STATES PATENT OFFICE.

ALBERT PRUVER, OF NEW YORK, N. Y.

## CORD-STITCH-BUTTONHOLE MACHINE.

No. 815,739.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed June 1, 1905. Serial No. 263,288.

*To all whom it may concern:*

Be it known that I, ALBERT PRUVER, a citizen of the United States, residing at New York, State of New York, have invented certain new and useful Improvements in Cord-Stitch-Buttonhole Machines, of which the following is a full, clear, and exact description.

My invention relates to improvements in machines for making buttonholes, and particularly to a construction for producing a cord-stitch effect more closely resembling a hand-made buttonhole.

The object of the invention is to construct a machine on which buttonholes may be made to closely resemble handwork with uniformity. Machines of this character in the past have generally produced flat purl-stitch effects which are readily distinguished by the eye from the hand-made product. My construction enables the operator to produce a higher cord-like stitch, as will be understood by those skilled in the art.

The principles of the invention are illustrated in the accompanying three sheets of drawings.

Figure 1 is a front view of a machine for carrying out the improvements of my invention, only such parts being shown as are necessary for an understanding of the same. Fig. 2 is a view of the mechanism of the machine on the under side of the bed. Fig. 3 is a detail plan, on an enlarged scale, of what is termed the "button-plate," through which the needle passes and through which the gimp or cord is fed. Fig. 4 is a sectional view of the same. Fig. 5 is a view of the under side of the mechanism adjacent the needle position. Fig. 6 is a detail of the right-hand spreader. Figs. 7 and 8 are enlarged detail views illustrating the stitch made according to my invention.

1 represents the arm of the machine of usual construction.

2 is the balance and driving wheel.

3 is the horizontal shaft for producing the up-and-down movement of the needle.

4 is the take-up connection, through which the vertical movement of the needle is transmitted.

5 is the vertical shaft, geared to the horizontal shaft 3.

6 is a gage-cam carried by shaft 5.

7 is one arm of a bell-crank lever, having a roller cooperating with the cam 6.

8 is a vertical arm of the bell-crank, coupled by the reach-rod 9 to the needle-bar frame 10

and through which the needle is thrown or moved first to the right and then to the left to produce, in conjunction with the vertical movement, the zigzag stitch, the distance of travel from right to left being termed the "bight."

11 is the needle.

12 is the top silk or thread, provided with suitable tension devices, as is customary in machines of this character.

Underneath the bed of the machine is located the mechanism for controlling the thread or silk in cooperation with the needle for producing the stitch.

13 is a cam carried by the lower end of the vertical shaft 5.

14 and 15 are the two arms of a bell-crank lever operated by the cam 13.

16 is a pitman-rod connected to the arm 15.

17 is a crank extending from the shaft of the looper-carrier frame 18.

19 is a long looper carried by the left-hand branch of the frame 18 and providing a passage for the bottom silk or thread 20.

21 and 22 are the right and left hand spreaders, respectively, for cooperating with the silk or thread in the formation of the stitch.

23 is a small looper carried by the right-hand branch of the carrier-frame 18.

24 is the cord, for which suitable guides are provided for leading it to the stitch position.

25 is the button-plate, suitably attached to the bed of the machine beneath the clamp feed-plate.

26 is the passage through the button for the needle and top silk and also the bottom silk as it is drawn up to produce the stitch.

27 is a passage for the cord, which is preferably located at the center line of the button relative to the direction of throw of the needle or close thereto, so as to deliver the gimp touching the inner side of the needle on its outer stroke—that is, the stroke furthest from the center line of the buttonhole about to be formed.

28 is the top of the button, which provides a delivery-surface for the cord, against the surface of the goods in which the stitch is to be made.

29 is the bed-plate, to the under side of which the button 25 is attached.

30 is a collar or shoulder formed with the button, which guides the clamp-plate 31 as



the clamp is fed back and forth during the formation of the stitch.

32 32 represent the bottom arms or jaws of the clamp for holding the cloth or goods adjacent to the stitching-point. The upper arms of the clamp are not shown; but it will be understood that a clamp of suitable construction would be employed with proper operating mechanism. Other suitable mechanism is provided for carrying the clamp and goods around the button, as is customary in machines of this general character. The top 28 of the button is on a level with or slightly above the upper surface of the lower jaws 32, so that the cord 24 is pressed against the surface of the goods.

33 is a projecting roller carried by the frame 18 and adapted to cooperate with the shoulder 34 of the right-hand spreader as the frame is moved to the right for moving the point of the spreader and pulling the bottom silk from the looper 19 at the proper moment.

35 is a hook-like finger on the extremity of the spreader 21, which catches the bottom silk or thread.

36 is a guard projection carried by the spreader, which is provided for pushing the top silk back onto the long looper 19 and preventing it from being caught on the hook 35 in case the loop of the top silk has not been moved far enough to the left on the looper 19. This guard projects beyond the point of the hook 35; but the bottom silk is easily caught by the hook, since at the moment when it is desired that it shall be caught the bottom silk is drawn over at an angle inclining to the right, so as to bring it into contact with the hook.

37 represents a fragment only of the usual needle-guard to prevent the needle from being caught under the looper. The end of the guard is broken off in order to show the mechanism more particularly involved in this invention.

38 is a shoulder formed on the left-hand spreader 22, with which the projecting roller 33 of the frame 18 coacts on the left-hand stroke of the frame.

39 is a hook-like finger carried by the spreader 22 for coacting with the top silk or thread at the proper moment when it has been brought over by the small looper 23. The two spreaders are so constructed and proportioned that the hook of the right-hand spreader is moved farther, as viewed in Fig. 5, than the left-hand-spreader hook. The comparison between the stroke of the two spreaders will be seen from the dotted lines in Fig. 5. The right-hand spreader pulls out more of the bottom silk from the looper 19 than the left-hand spreader pulls out of the top silk, and thus allows more slack, so that the knot is not pulled over to the left on the inside edge of the buttonhole (or buttonhole-line) on the left upstroke of the needle, but is

left underneath the center of the gimp. The cord-hole 27 is so arranged that as the material is being fed the right-hand side of the needle on its left or outside stroke just grazes the left-hand side of the cord, thus drawing the cord close up to the center of the buttonhole and making the stitch stand up high above the cloth.

The result of operation of my improved mechanism is illustrated in Figs. 7 and 8.

By my invention I am enabled to use a coarser silk or thread, an "O" or even "A" on the top and a "C" or "D" on the bottom, making a stronger buttonhole and one which looks exactly like a hand-made stitch.

The left-hand downward stroke of the needle is arranged to take place just to the left of the axis of the buttonhole and touching the left-hand edge of the gimp, and the tension draws the silk after the needle is retracted over to the right, so as to leave a space between the two lines of stitches, through which the cutting-knife may be extended. The stitches are made in the cloth or material before cutting. The bight of the stitch is quite narrow and makes it desirable to cut after the stitching is completed. The very narrow bight also tends to bring the cord-like edge of the stitch up on top rather than allowing it to fall along the inside edge of the cord. This bringing of the cord-like effect upon the top of the gimp is produced by the extreme throw of the right-hand spreader and the height of the button.

The advantages of this construction will be apparent to those who are skilled in this art.

What I claim is—

1. In a buttonhole-stitching machine, a needle for carrying the top silk, means for operating the needle, a button having an opening for the passage of the needle and a passage for the gimp adjacent thereto, means for guiding a bottom silk beneath the button, means for guiding gimp to the passage in the button, and mechanism cooperating with the top and bottom silks for forming a knot directly beneath the center line of the gimp.

2. In a buttonhole-stitching machine, means for carrying the top and bottom silks, a pair of spreaders for normally cooperating with the top and bottom silks respectively, mechanism for operating said spreaders and throwing the spreader which cooperates with the bottom silk a greater distance than the spreader which cooperates with the top silk.

3. In a buttonhole-stitching machine, means for carrying the top and bottom silks, a button having a passage for the gimp and a point of delivery for the gimp arranged to press the gimp against the material being operated upon, a pair of spreaders for normally cooperating with the top and bottom silks respectively, mechanism for operating said spreaders and throwing the spreader which



coöperates with the bottom silk a greater distance than the spreader which coöperates with the top silk.

4. In a buttonhole-stitching machine, means for carrying the top and bottom silks, a pair of spreaders for normally coöperating with the top and bottom silks respectively, mechanism for operating said spreaders and throwing the spreader which coöperates with the bottom silk a greater distance than the spreader which coöperates with the top silk, and a button having a passage for the needle and silks and a passage for the gimp located to deliver the gimp touching the inner side of the needle on its outer stroke.

5. In a buttonhole-stitching machine, a needle for carrying the top silk, means for operating the needle, a button having an opening for the passage of the needle and an opening for the passage of the gimp adjacent thereto, an oscillatory frame, a long looper mounted thereon for carrying the bottom silk and the loop of the top silk, a short looper mounted on said frame for coöperating with the top silk, a pair of spreaders operated by said frame, one of said spreaders having a hook coöperating with the bottom silk and having a guard portion extending beyond the hook for pushing back the loop of the top silk onto

the long looper, the other spreader having a hook for coöperating with the top silk.

6. In a buttonhole-stitching machine, a needle for carrying the top silk, means for operating the needle, a button having an opening for the passage of the needle, and an opening for the passage of the gimp adjacent thereto, an oscillatory frame, a long looper mounted thereon for carrying the bottom silk and the loop of the top silk, a short looper mounted on said frame for coöperating with the top silk, a pair of spreaders operated by said frame, one of said spreaders having a hook coöperating with the bottom silk and having a guard portion extending beyond the hook for pushing back the loop of the top silk onto the long looper, the other spreader having a hook for coöperating with the top silk, the two spreaders being so proportioned that the hook of the spreader which coöperates with the bottom silk has a substantially greater throw than the hook of the spreader which coöperates with the top silk for the purpose described.

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