

No. 680,664.

Patented Aug. 13, 1901.

D. NOBLE.

FEED MECHANISM FOR SEWING MACHINES.

(Application filed July 14, 1900.)

(No Model.)

2 Sheets—Sheet 1.

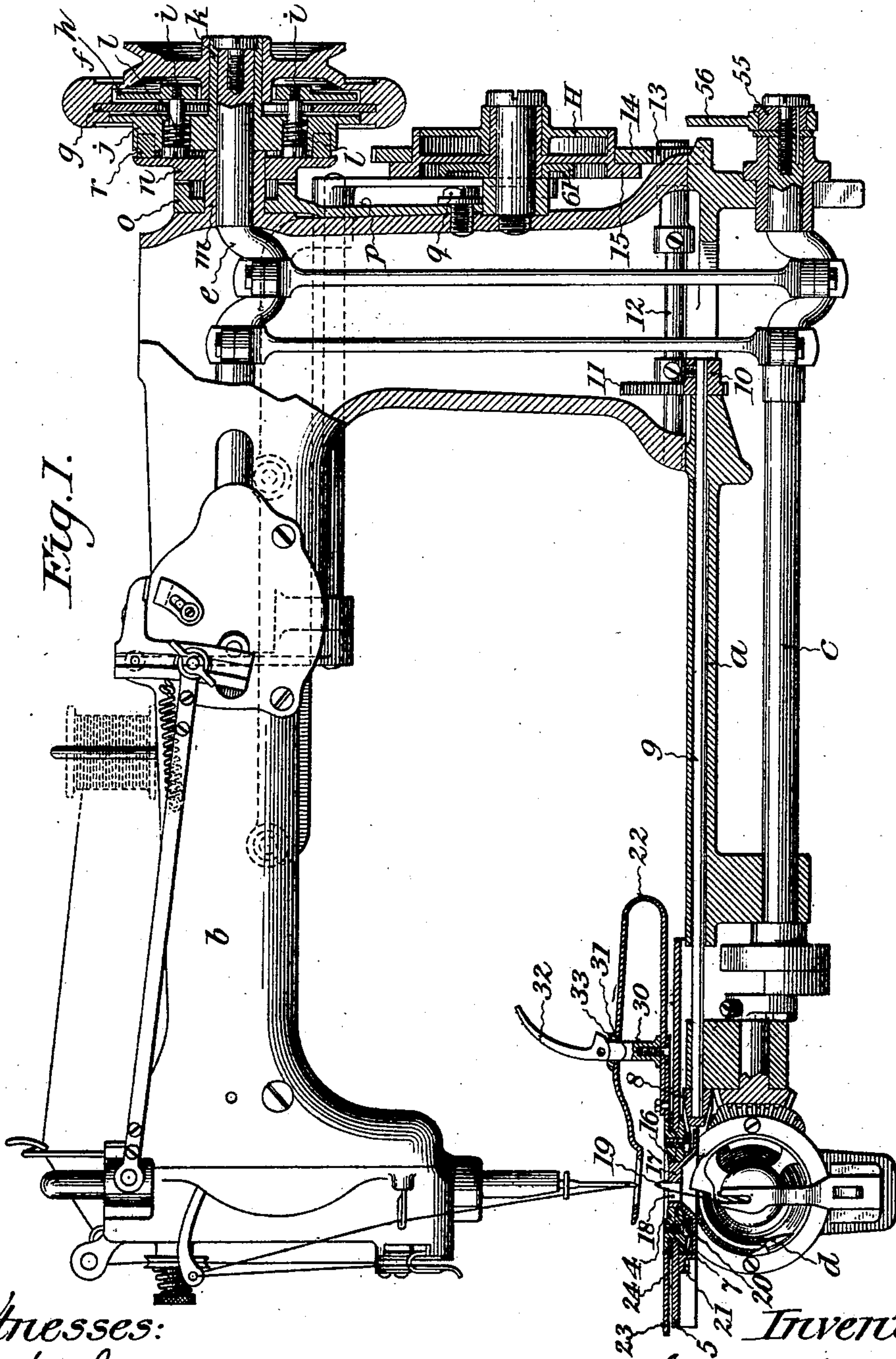


Fig. 1.

Witnesses:

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Inventor:

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*by W. M. Finner*  
*Att'y.*

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2 Sheets—Sheet 2.

Fig. 2.

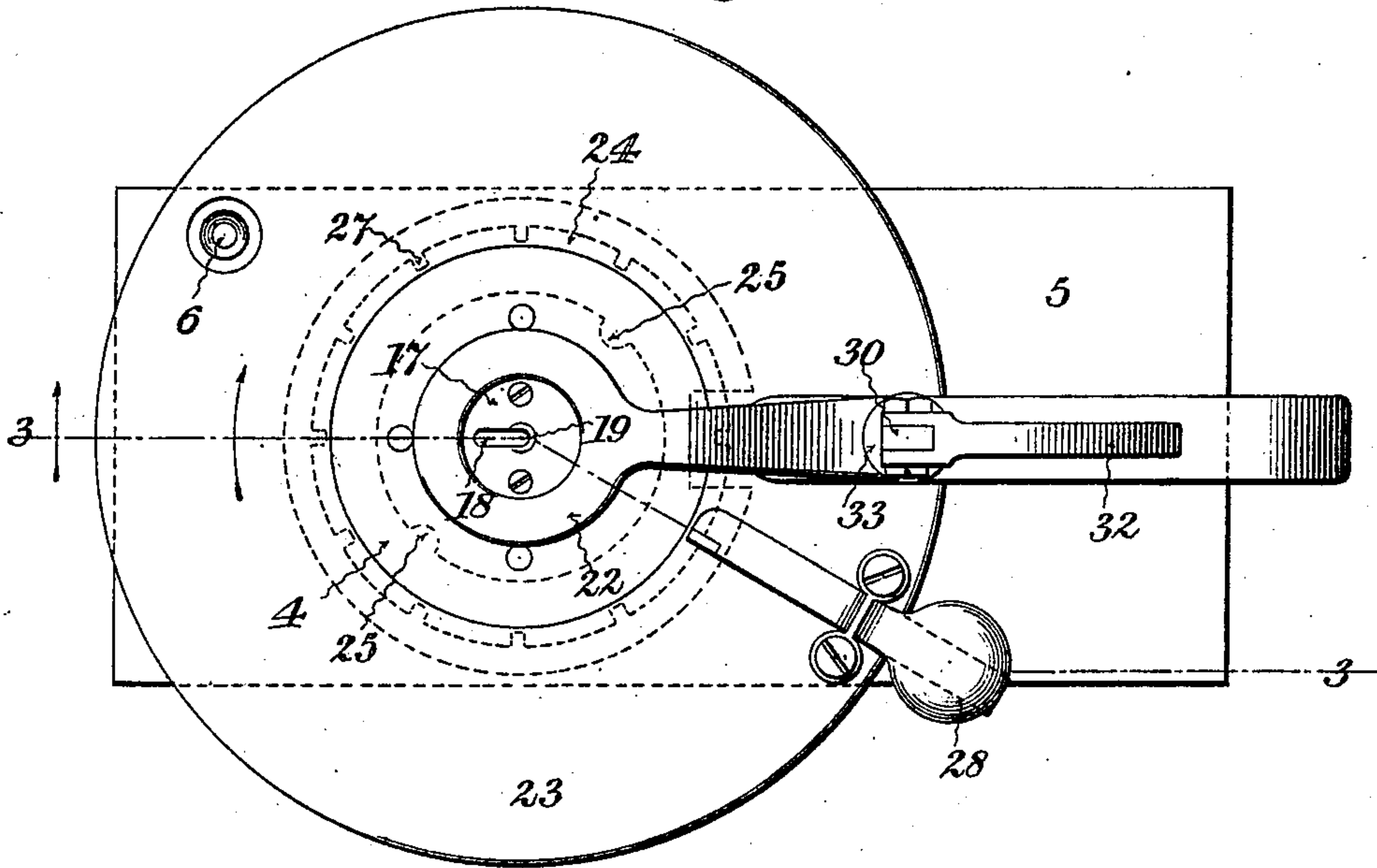


Fig. 3.

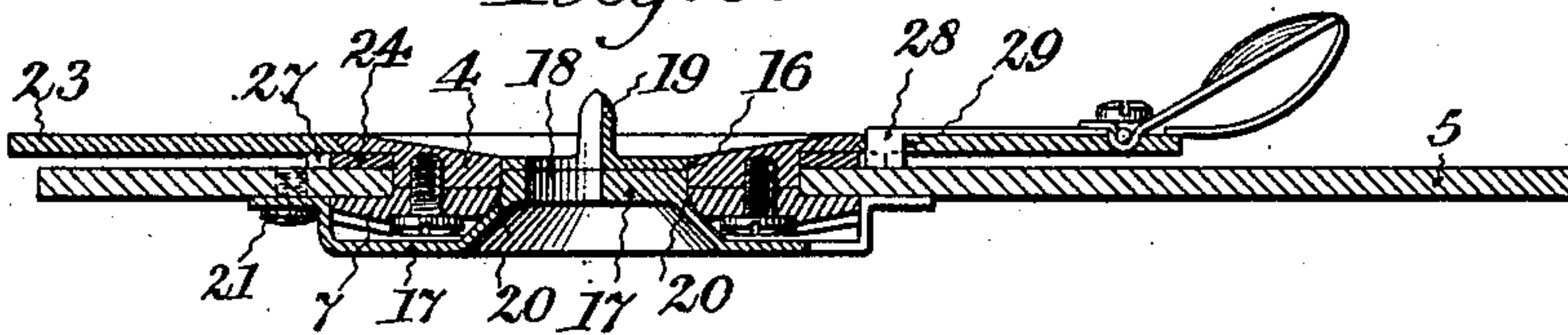


Fig. 4.

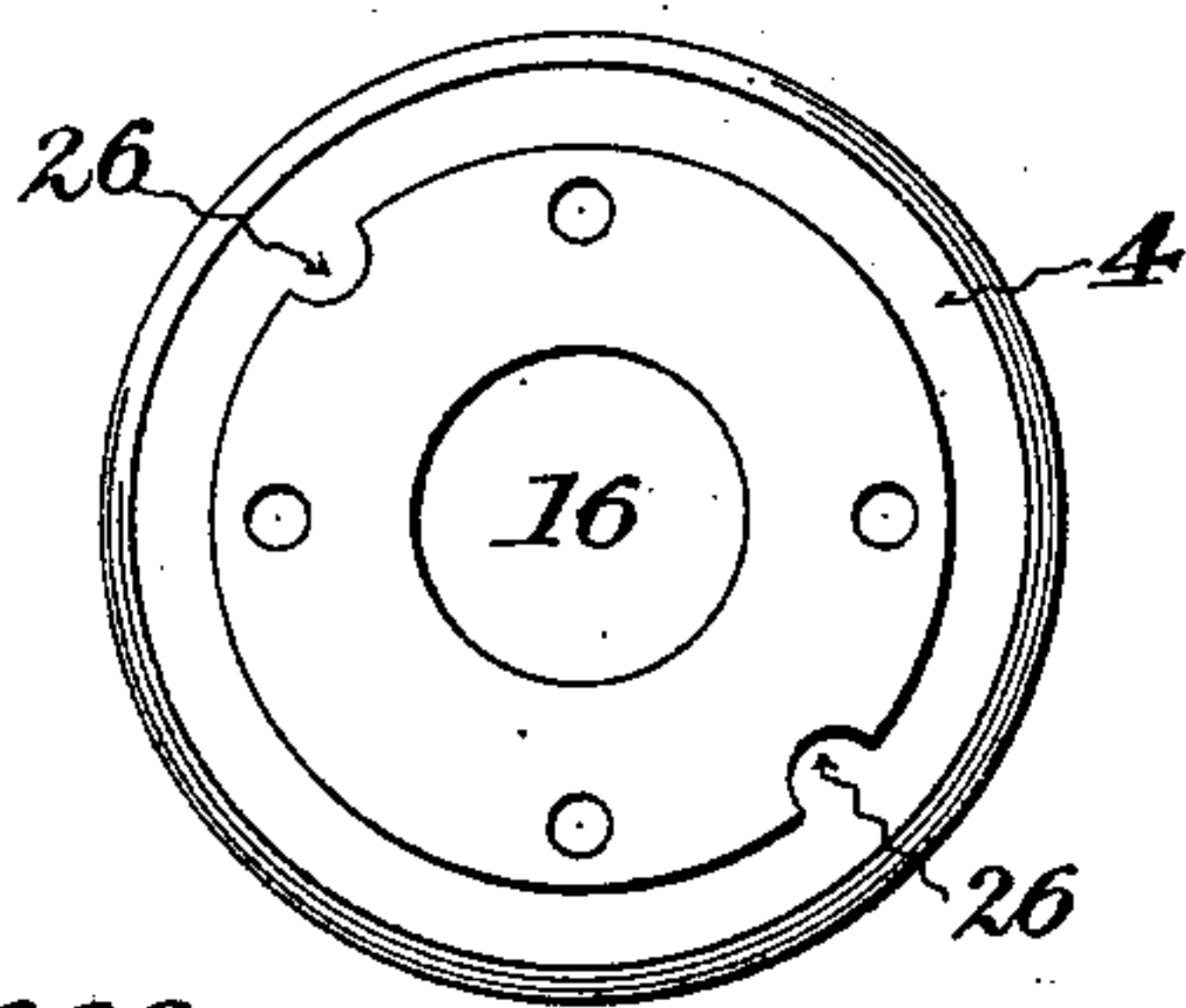
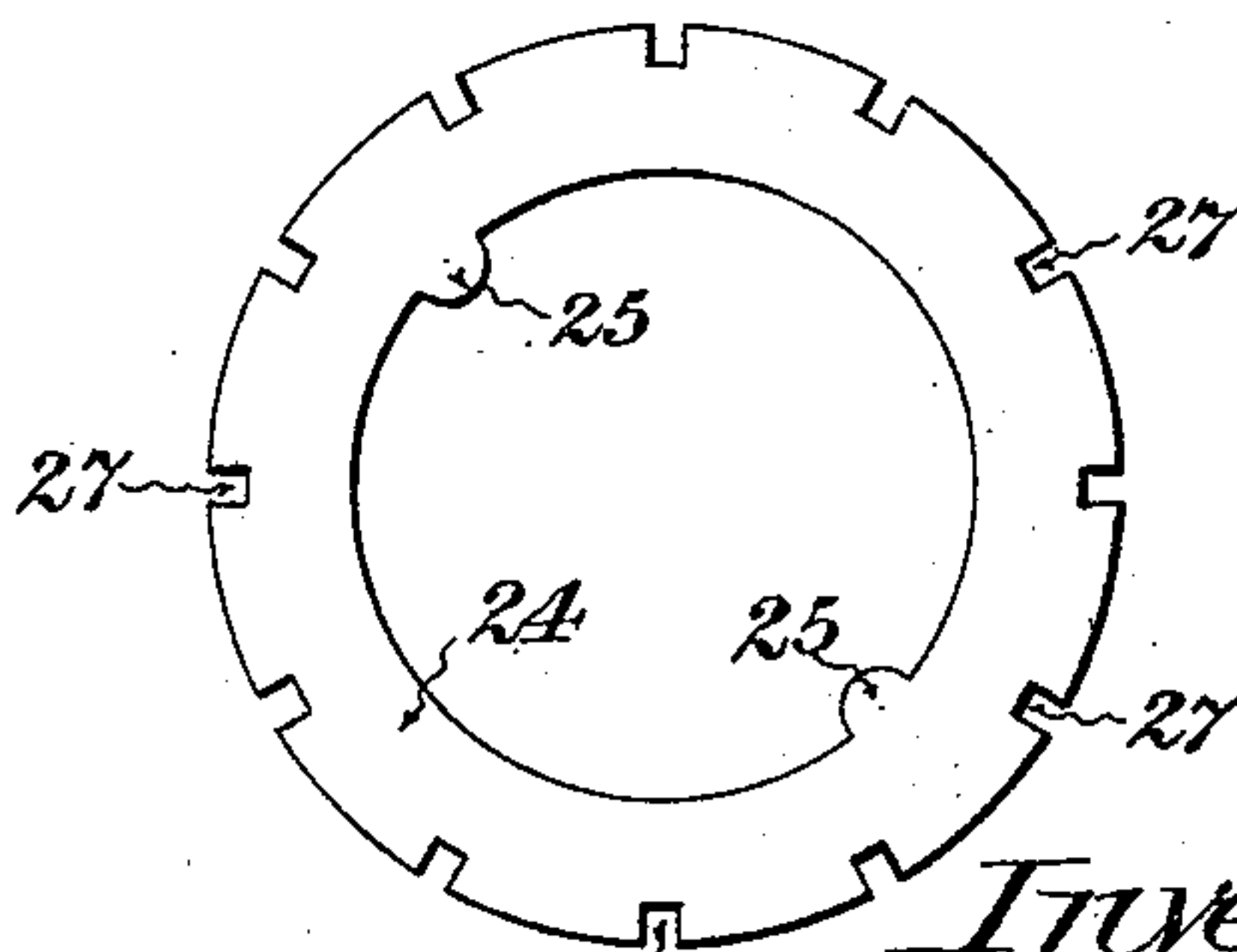


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## FEED MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 680,664, dated August 13, 1901.

Original application filed April 4, 1900, Serial No. 11,495. Divided and this application filed July 14, 1900. Serial No. 23,639. (No model.)

*To all whom it may concern:*

Be it known that I, DONALD NOBLE, a subject of the Queen of Great Britain, residing at Finsbury, London, England, have invented  
5 a certain new and useful Improvement in Feed Mechanisms for Sewing-Machines, of which the following is a full, clear, and exact description.

This invention relates especially to feed  
10 mechanism for sewing-machines in which the work is moved in a circular path, and the subject of this case is divided out of my application for patent for eyelet-sewing machines, filed April 4, 1900, Serial No. 11,495,  
15 in accordance with the requirement of the Patent Office.

The invention comprises a circular or other shaped table or plate, with which is combined a throat-plate and a driving-gear, the  
20 throat-plate remaining stationary, while by means of the driving-gear and motion transmitted thereto from some moving part of the machine the feed table or plate is given rotary motion. With this feed table or plate  
25 is also combined a cloth-clamp, and the table is provided with means by which its position may be controlled independently of the gearing, all as I will proceed now more particularly to set forth and finally to claim.

30 In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation, partly in section, of parts of the well-known Wheeler & Wilson sewing-machine equipped with my improvement.  
35 Fig. 2 is a plan view of the cloth-turning table and parts associated therewith. Fig. 3 is a section taken in the plane of line 3 3 of Fig. 2, the cloth-clamp being omitted. Figs.  
40 4 and 5 are detail bottom views of two of the members of the cloth-turning table.

The bed-plate *a*, overhanging arm *b*, main shaft *c*, loop-taker *d*, needle-operating shaft *e*, and the pitmen connecting the said two  
45 shafts may be of the usual Wheeler & Wilson construction. The needle-bar is arranged in vertical bearings in a vibrating gate and has a vertically-reciprocating motion imparted to it, all in any usual way. The vi-

brating mechanism may be of any approved  
50 construction, but is here shown as of the particular construction set forth in application Serial No. 11,495, hereinbefore referred to.

The needle-operating shaft is shown as provided with a peculiar clutch mechanism,  
55 which forms part of my Letters Patent dated August 28, 1900, No. 656,853, and comprises the combined fly-wheel and band-wheel *f*, having a friction-ring *g*, of leather, metal, or other suitable material, applied thereto. 60

*h* is a movable clutch-disk arranged within a recess within the fly-wheel and having headed bolts or rods *i* applied thereto, and these bolts or rods extend through the friction-ring and through the clutch-disk *j*, also  
65 arranged within the recess in the fly-wheel and having a sleeve *k*, which encircles the shaft *e*, and upon which sleeve the fly-wheel turns freely, said sleeve being rigidly secured to the shaft *e*. Springs *l* are interposed be-  
70 tween the heads of the bolts or rods and the clutch-disk *j* and normally tend to draw the clutch-disk *h* into contact with the friction-ring *g*. Mounted loosely upon a bearing *m*, projecting from the arm of the machine, is a  
75 brake-disk *n*, having a series of inclines on its left-hand face which coöperate with similar inclines on the right-hand face of the disk *o*, which is likewise loosely mounted upon the bearing *m*, and this last-mentioned  
80 disk *o* has an arm *p*, which is adjustably secured by the screw *q* to the arm of the machine. Interposed between the brake-disk *n* and the clutch-disk *j* is a brake-ring  
85 *r*, seated in a recess in the clutch-disk *j*. In Fig. 1 this clutch mechanism is shown in the released position, which position is effected by a movement of the brake-disk *n* against the heads of the bolts or rods *i*,  
90 which moves them toward the right, and thus releases the clutch-disk *h* from engagement with the friction-ring *g*, and subsequently the brake-disk *n* comes into contact with the brake-ring *r*, and thus accomplishes the stopping of the needle-bar shaft. Any other  
95 clutch mechanism having this capacity of motion may be substituted for the clutch mechanism described.



Referring now to the subject of this invention and its cognate parts, I will proceed to describe the construction and operation thereof, and for this purpose will use reference characters similar to those used in the case of which this is a division.

4 is a circular feed-disk journaled within the plate 5 immediately above the loop-taker. This feed-disk may or may not be roughened for coöperation with the cloth-clamp. The plate 5 is secured to the bed of the machine in any desirable manner, as by screws, one of the holes for which is shown at 6 in Fig. 2.

7 is a bevel-gear secured concentrically to the under side of the feed-disk 4 and meshing with a beveled pinion 8, fast on the end of the horizontal shaft 9. The shaft 9 is suitably journaled within the bed-plate, and tight on the other end thereof is a pinion 10, which meshes with a gear-wheel 11, secured upon a horizontal counter-shaft 12, journaled within the base of the arm *b*. Upon the outer extremity of the counter-shaft 12 is secured a pinion 13, which meshes with and is driven by a large gear-wheel 14, carried by the stopping-disk 15 of the counting mechanism.

The stopping-disk 15 receives an intermittent rotation through the clutch H, a segment-lever (not shown) connected therewith, eccentric 55 on the end of shaft *c*, and connection 56 between said eccentric and segment-lever, as shown and described in my Letters Patent dated August 28, 1900, No. 656,852. Thus it will be clear that the circular disk 4 receives its feed movements from the intermittent rotary movement of the stopping-disk 15 through an intermediate train of gearing—to wit, gears 7, 8, 10, 11, 13, and 14—and shafts 9 and 12.

The feed-disk 4 has a central circular opening 16, within which extend the circular throat-plate 17, provided with the usual needle-aperture 18, and a spur 19. The bevel-gear 7, secured to the under side of the feed-disk 4, has a central opening 20 to receive the circular throat-plate.

The throat-plate 17 incloses the bevel-gear 7 and is supported in position by means of screws 21, (only one shown,) tapped in the under side of the plate 5, Figs. 1 and 3.

22 is a cloth-clamp secured to and supported in position by a circular table or ring 23, which is journaled around the feed-disk 4 in such manner as to be capable of turning or swinging freely around said disk. The contiguous bearing-surfaces of the disk 4 and table 23 are beveled (see Fig. 3) to form an inverted conical bearing, which affords a convenient manner of securing said table in position.

24 is a washer interposed between the plate 5 and the under edges of both the table 23 and disk 4, and said washer is provided with integral keys 25, which register with complementary recesses 26, formed in said disk, as clearly as shown in Figs. 4 and 5, so that said washer will be carried around by and partake

of all the movements of said disk 4. The washer 24 is provided with notches 27, adapted to be engaged by a spring-latch 28, which projects through a perforation 29 in the table 23. When the latch 28 is in engagement with one of the notches 27, the turn-table 23 and feed-disk 4 will be locked together, and said turn-table and cloth-clamp mounted thereon will be moved positively with the feed-disk, so that no slipping between the latter and said cloth-clamp can occur; but when said latch is disengaged the clamp and turn-table may be moved to any desired position around the feed-disk, thereby enabling the operator to introduce and manipulate the material to be stitched with greater facility.

30 is a post whose upper end passes through a perforation 31 in the clamp 22, and pivoted to the upper end of said post is a cam-lever 32, by means of which the clamp 22 is closed down against the material.

33 is a washer interposed between said cam-lever and cloth-clamp. The post 30 is rigid with the turn-table and will of course be carried around by the latter.

In operation the material is to be introduced beneath the cloth-clamp and over the spur 19 in such a manner as to abut one edge of the material against the cloth-clamp or post 30 and is clamped down, care being taken that the material rests against the proper side of the post or clamp, (in advance of said clamp with respect to the direction of the feed movement,) so that the clamp will tend to push said material around should there develop a tendency for said material to slip, which condition is of course present to a greater degree when the machine is operated at a very high rate of speed. By placing the material beneath the cloth-clamp in the position indicated an additional safeguard is secured as against the slipping of the material during the operation of the machine, and a proper distribution of the number of stitches employed is insured.

The importance of preventing any slipping of the material during the feed of the latter will be understood when it is borne in mind that a predetermined number of stitches is used and that said stitches must be properly distributed around the eyelet or the result would be imperfect work by reason of a failure to complete the figure being stitched. I do not, however, wish to be confined to this particular construction of clamp, since any clamp or presser-foot so constructed as to prevent the material from slipping during the feeding thereof would answer the requirements equally well.

The proportions of the respective gears which constitute the train of gearing between the stopping-disk 15 and feed-disk 4 are such that the latter will be rotated about two and one-tenth revolutions approximately during one complete revolution of said stopping-disk 15, such fraction in excess of the two complete revolutions of said feed-disk representing the



amount of overlapped stitches or, in other words, stitches in excess of the number required to exactly complete the stitched figure. It has been found expedient to overlap  
 5 at least one of the radial overseam-stitches and one or more of the plain stitches which anchor said radial stitches, and for this reason I have provided for a sufficient movement of the feed-disk to obtain such overlapping of the stitches.  
 10

When my present invention is used in connection with a combined reciprocating and vibrating needle, such as shown in the parent case herein referred to and as illustrated in  
 15 part in Fig. 1 of this case, the needle-shifting mechanism may be such as described in said parent case.

What I claim is—

1. In an eyelet-sewing machine, the combination of stitch-forming mechanism, means for horizontally vibrating the needle-bar, a suitably-journaled feed-disk, a counting mechanism and stop-motion arranged at the end of the machine opposite the feed-disk, a  
 20 gear-wheel secured to the under side of said feed-disk, a gear-wheel carried by said counting mechanism, and a shaft geared with said feed-disk gear and the gear carried by said counting mechanism, whereby movement is  
 25 communicated from said counting mechanism to said feed-disk and whereby the number of stitches to be made may be varied in accordance with the size of the eyelet or thickness of thread employed, substantially  
 30 as described.

2. In an eyelet-sewing machine, the combination of stitch-forming mechanism, means for vibrating the needle-bar in a horizontal plane, a feed-disk, means for rotating said  
 40 disk, a turn-table secured to said disk cooperating with it to support the cloth and adapted to turn freely around it, and a latch by means of which said turn-table and feed-disk are locked together as against independent  
 45 movement, substantially as set forth.

3. In an eyelet-sewing machine, the combination of stitch-forming mechanism, means

for vibrating the needle-bar in a horizontal plane, a feed-disk, a plate within which said disk is journaled, means for rotating said  
 50 disk, a turn-table journaled upon said disk and cooperating with it to support the cloth, a cloth-clamp carried by said turn-table, a notched washer interposed between the under side of said feed-disk and the plate within  
 55 which said disk is journaled, said washer being fast with said disk as to rotary movement, and a latch carried by said turn-table and adapted to engage said notched washer, whereby said turn-table and feed-disk are  
 60 locked together, substantially as set forth.

4. In a sewing-machine, the combination of stitch-forming mechanism, a feed-disk, means for rotating said feed-disk, a turn-table secured to said disk cooperating with it to support the cloth and adapted to turn freely  
 65 around it, and a latch by means of which said turn-table and feed-disk are locked together as against independent movement.

5. In a sewing-machine, the combination of  
 70 stitch-forming mechanism, a feed-disk, means for rotating said feed-disk, a turn-table journaled upon said disk and with it serving to support the cloth, a cloth-clamp carried by said turn-table, and means to lock the turn-  
 75 table and feed-disk against independent movement.

6. In a sewing-machine, the combination of stitch-forming mechanism, a feed-disk, a plate within which said disk is journaled, means for rotating said disk, a turn-table  
 80 journaled upon said disk and with it serving to support the cloth, a cloth-clamp carried by said turn-table, a notched washer interposed between the under side of said feed-disk and  
 85 the plate within which said disk is journaled, and a latch carried by said turn-table and adapted to engage said notched washer.

In testimony whereof I have hereunto set my hand this 11th day of July, A. D. 1900. 90

DONALD NOBLE.

Witnesses:

E. I. VAN HORN,  
 C. N. WORTHEN.