

No. 860,064.

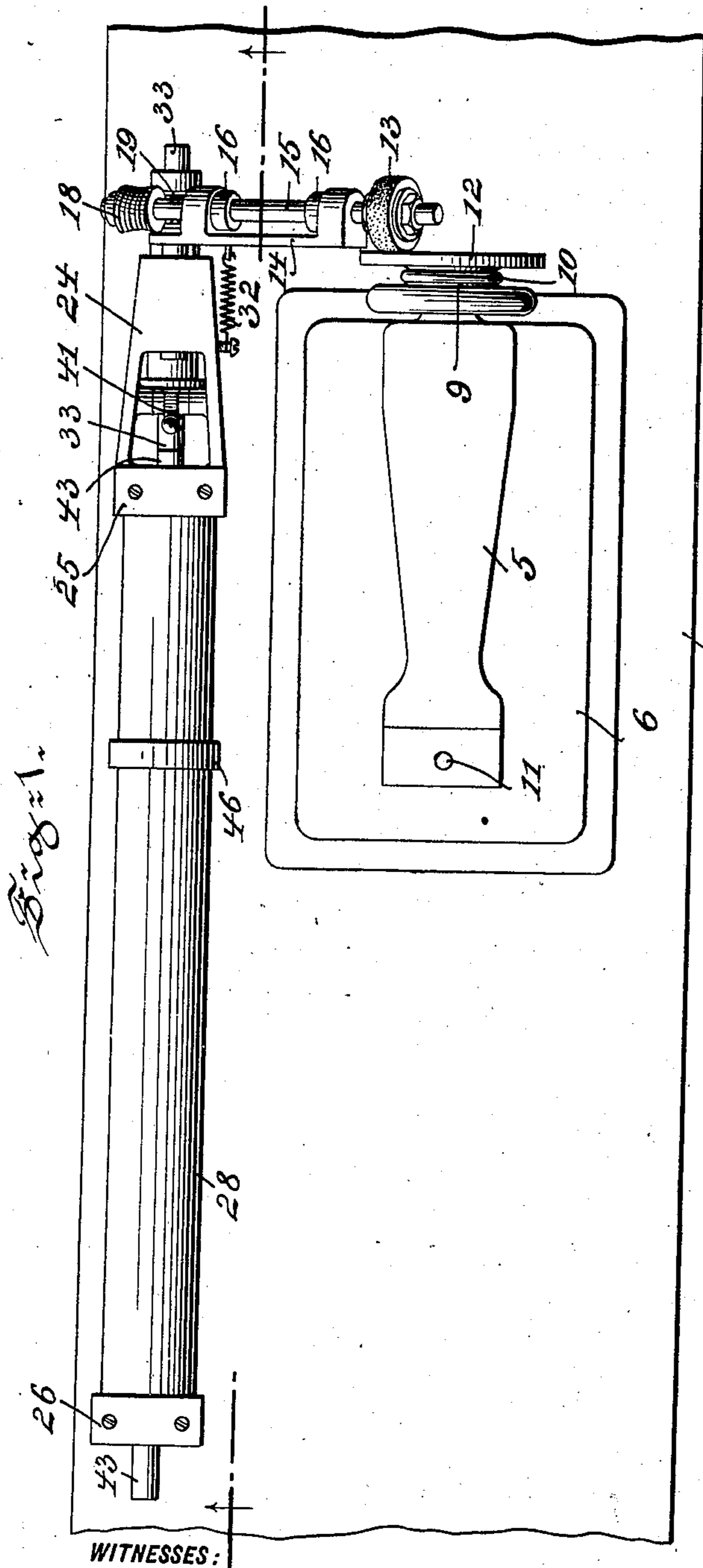
PATENTED JULY 16, 1907.

H. E. SCHULTZ.

ATTACHMENT FOR SEWING MACHINES.

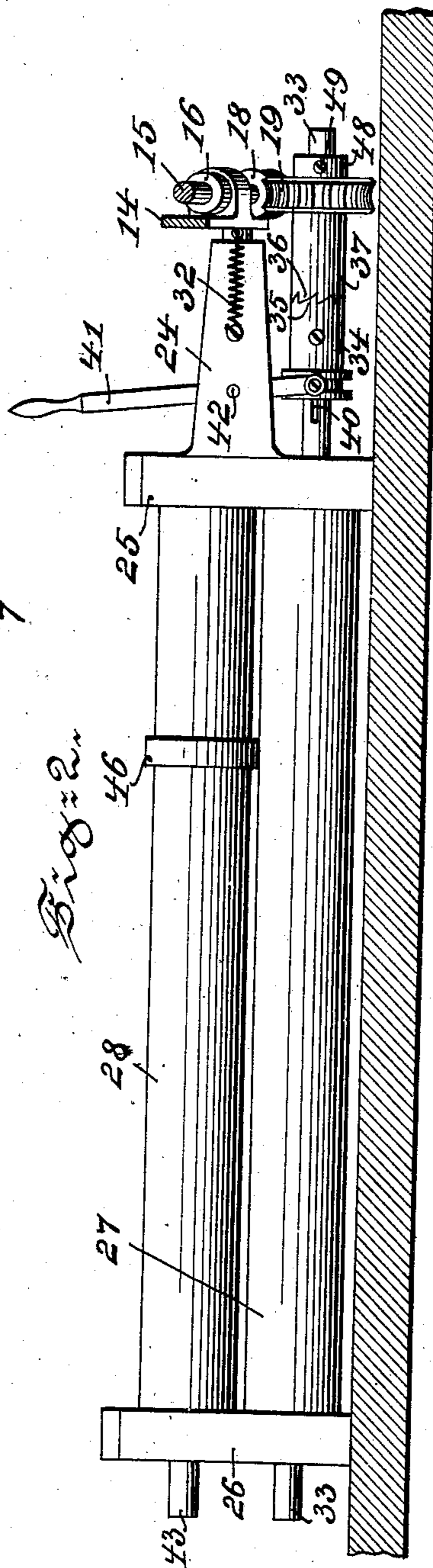
APPLICATION FILED MAR. 19, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

Wilhelm Vogt
Thomas M. Smith



INVENTOR

BY *Henry E. Schultz*

B.

J. Walter Douglas

ATTORNEY.

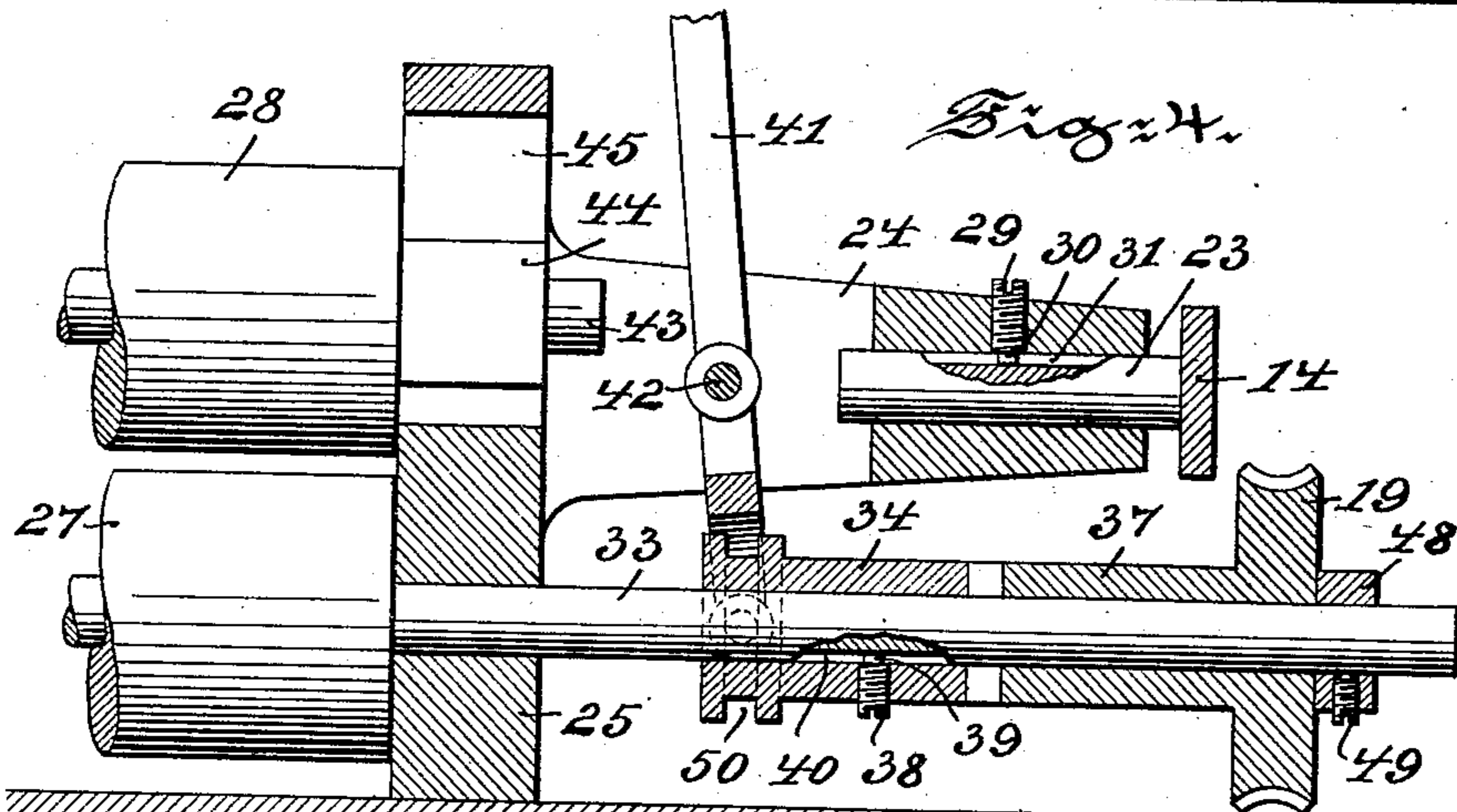
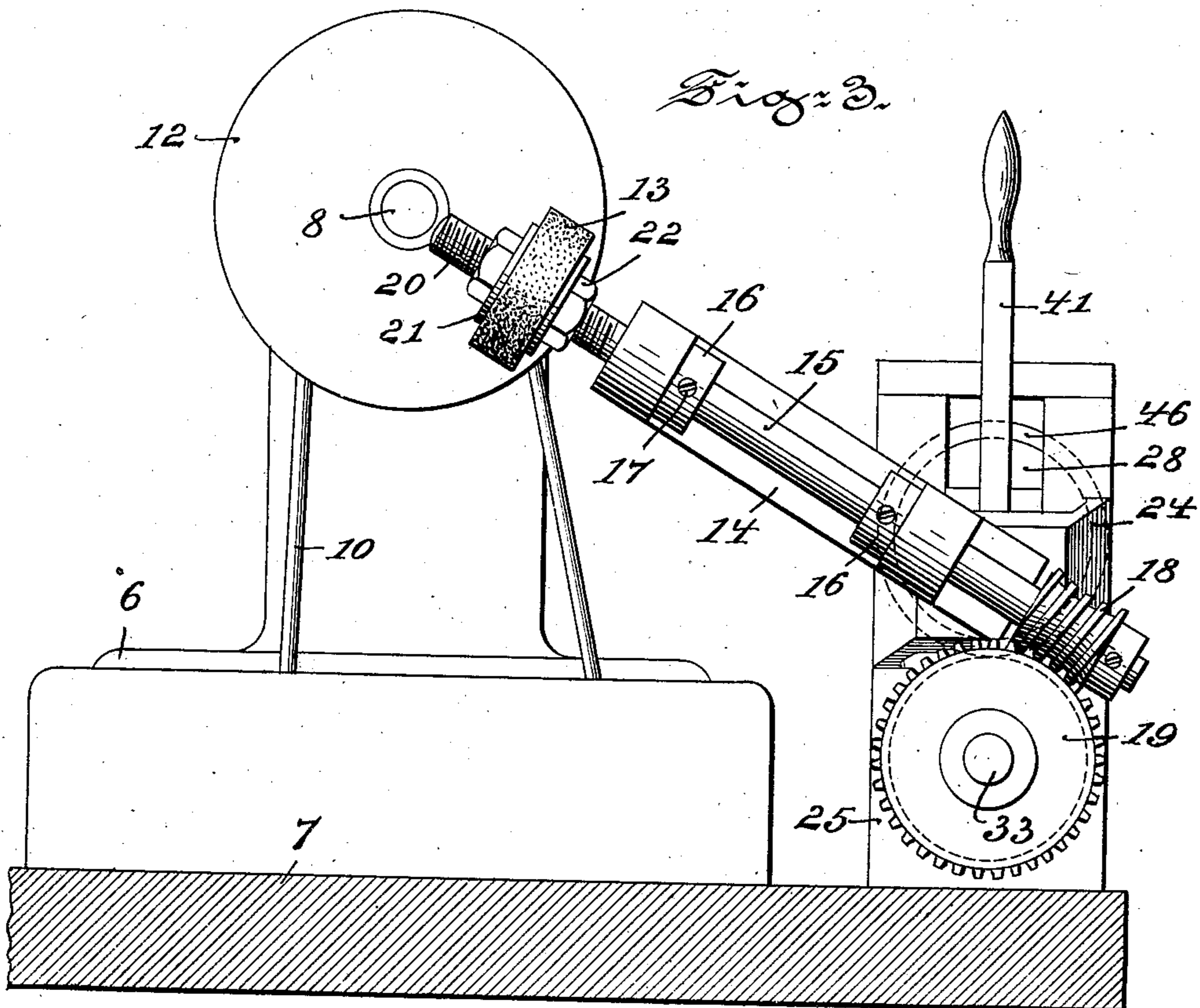
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H. E. Schultz,
BY
J. Walton Douglas,
ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY E. SCHULTZ, OF ELKINS PARK, PENNSYLVANIA.

ATTACHMENT FOR SEWING-MACHINES.

No. 860,064.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed March 19, 1907. Serial No. 363,244.

To all whom it may concern:

Be it known that I, HENRY E. SCHULTZ, a citizen of the United States, residing at Elkins Park, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Attachments for Sewing-Machines, of which the following is a specification.

My invention has relation to a feeding attachment for power driven sewing machines for drawing the stitched goods from the machine; and in such connection it relates particularly to the construction and arrangement of the driving mechanism for such an attachment.

The principal objects of my invention are first, to drive the feed rollers employed in the drawing of the stitched goods from the machine by friction disks, which by their adjustment with respect to each other, will permit of ready regulation of the speed of rotation of such feed rollers and hence of the length of the stitch effected by the machine; second, to adjustably connect the frictionally driven friction disk of the driving mechanism so as to permit of ready replacing by another; third, to provide the shaft of the positively driven feed roller with a clutch-mechanism, whereby rotation in a direction opposite to that in which this roller is normally driven is permitted; and fourth, to provide one of the feed rollers with a yielding ring engaging the stitched goods at one point and by slightly separating the rollers drawing the same freely through the feed rollers.

The nature and scope of my invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, in which

Figure 1 is a top or plan view of a portion of a sewing machine, feed rollers arranged adjacent thereto, a friction ring carried by one of the feed rollers, a driving mechanism for transmitting the movement of the pulley actuating the machine directly to one of the feed rollers and a clutch-mechanism for the positively driven feed roller, all embodying main features of my said invention. Fig: 2 is a view illustrating partly in section and partly in elevation, the feed rollers, the driving and clutch mechanisms for the lower feed roller, and the yielding friction ring for separating the rollers and transmitting the rotary movement of the lower roller to the upper roller. Fig: 3 is a view enlarged, illustrating partly in elevation and partly in section, a portion of the sewing machine and driving mechanism for the lower feed roller; and Fig: 4 is a detail view enlarged, illustrating partly in section and partly in elevation, the adjustable support of the holder of the driving mechanism and the adjustable arrangement of a worm-gear of said mechanism for positively rotating the lower feed roller.

Referring to the drawings, 5 represents the over-

hanging arm of the head of a sewing machine, of ordinary construction, which is supported by a bed-plate 6, carried by a table 7. The sewing machine operating shaft 8, is driven by a pulley 9, which in turn is positively driven by a belt 10, actuated by means, not shown. The actuating shaft 8, actuates, in the usual well known manner, the needle bar 11, the needle carried by the same and the presser-bar of the sewing machine, which mechanisms have not been shown in the drawings.

To the positively driven pulley 9, is suitably secured a disk 12, which is likewise positively driven by the belt 10, rotating the pulley 9, and the rotation of which is transmitted to a second disk 13, which by means of a holder 14, is held in engagement with the disk 12. These friction disks 12 and 13 form a friction drive for the feed rollers to be presently more fully described. The friction disk 13, is supported by a shaft 15, carried by the holder 14, which is removably held in position therein by collars 16, and set-screws 17, and is provided at the lower end with a worm 18, meshing with a worm-gear 19. The upper or free end of the shaft 15, is provided with a threaded portion 20, to permit of adjustment of the friction disk 13, with respect to the disk 12, to hold the same in any position between the driving shaft 8, of the sewing machine, and the perimeter of the disk 12, and to thus permit of the regulation of the speed with which the disk 13, is to be driven by the disk 12. Washers 21, and jam-nuts 22, engaging the disk 13, from opposite sides, serve to removably hold the same in any given position on the threaded portion 20, of the shaft 15.

As shown in Fig: 4, the holder 14, of the shaft 15, is provided with an extension or shaft 23, which is slidably supported by a bracket 24, preferably formed integral with a bearing 25, which in conjunction with a bearing 26, serves to support feed rollers 27 and 28, arranged adjacent and parallel to the arm 5, of the sewing machine. A set-screw 29, engaging with the rounded end 30, a slot 31, in the shaft 23, of the holder 14, serves to maintain the same, the shaft 15, and friction disk 13, in their proper operative positions with respect to the friction disk 12, and when withdrawn from the slot 31, permit of a turning of the shaft 23, in the bracket 24, and thus of a ready disengagement of the worm 18, of the shaft 15, from the worm-gear 19. The preferred means for holding the friction disk 13, in frictional engagement with the friction disk 12, and which at the same time permits of the free sliding of the shaft 23, of the holder 14, in the bracket 24, consists of a spring 32, removably secured at one end to the bracket 24, and at its other end to the holder 14, as shown in Figs: 1 and 2. The spring 32, also permits of the ready replacing of the friction disk 13, by a disk of larger or smaller diameter, and thus of a regulation of the speed with which the disk 13, and by the same

the shaft 15, worm 18, and worm-gear 19, is driven by the disk 12, in case an adjustment of the position of the disk 13, with respect to the disk 12, is not desired.

The worm-gear 19, is loosely mounted on the shaft 33, of the lower feed roller 27, and rotates the same and feed roller when engaged by a sleeve 34, slidably arranged on the shaft 33.

As shown in Figs: 2 and 4, the sleeve 34, is provided with inclined teeth 35, normally engaging similarly inclined teeth 36, of the tubular extension or sleeve 37, of the worm-gear 19, and thus form in conjunction therewith a coupling, which permits of the manual turning of the shaft 33, and the feed roller 27, in a direction opposite to that in which the same are driven by the worm-gear 19. The preferred means of slidably connecting the coupling-sleeve 34, with the shaft 33, consists of a set-screw 38, the rounded head 39, of which engages a groove 40, arranged in the shaft 33, as shown in Fig: 4. The coupling-sleeve 34, can be brought out of engagement with the extension 37, of the worm-gear 19, by a hand-lever 41, pivotally supported by a bolt 42, in the bracket 24, and engaging with its lower end a groove 50, arranged in the coupling-sleeve 34. As soon as the sleeve 34, has been disengaged from the worm-gear 19, the feed roller 27, will be brought to a standstill, independent of the rotation of the worm-gear 19. The shaft 33, of the positively driven feed roller 27, is rotatably mounted in the bearings 25 and 26, and rotates by friction the upper feed roller 28, the shaft 43 of which rotates in bearing-blocks 44, slidably arranged in a slot 45, in the bearings 25 and 26. The upper feed roller 28, may thus be readily lifted from the lower feed roller 27, when it becomes necessary to introduce between the same the goods which have been stitched by the machine for a length sufficient to permit of entrance into the rollers 27 and 28. These feed rollers 27 and 28, will now draw the stitched goods from the machine, and in doing so will leave both hands of the operator free to properly feed the goods to the machine. Thus the operator being relieved from the guiding away of the goods by hand from the machine, will be enabled to turn out in a given time a far greater quantity of work, and at the same time far less skilled labor to handle the work will be required.

In order to prevent the crushing or creasing of the stitched goods by the feed rollers 27 and 28, and at the same time to hold the goods taut, at the seam or stitched portion only, the upper feed roller 28, is provided with a friction feed ring 46, preferably consisting of rubber. The feed ring 46, being yielding, and thus slightly compressed at the point of contact with the goods under the weight of the roller 28, will permit of the free passage of the stitched goods through the rollers, without crushing and creasing the same. At the same time the ring 46, by being arranged upon the feed roller 28, and in a position in a straight line to the needle-bar 11, of the machine, will engage the stitched goods directly at the seam, and will thus hold the same taut, at the seam portion, between the machine and feed roller. The goods being thus held at two points will be prevented from moving sidewise, thus preventing the formation of irregular seams. If the stitched goods should wind upon the upper feed roller 28, this roller as well as the feed roller 27, by the disengaging of the coupling sleeve 34,

from the worm-gear 19, can be manually turned in an opposite direction to that in which the rollers are mechanically rotated, whereby the goods will be unwound or disengaged from the feed roller 28, and after it has been again properly adjusted, the machine can be set in operation.

The position of the friction disk 13, with respect to the friction disk 12, determines the speed with which the lower feed roller 27, and thus the upper feed roller 28, is driven. The speed naturally determines the length of the stitches in drawing the goods with more or less speed away from the machine. If, therefore, the friction disk 13, is brought nearer to the operating shaft 8, of the machine, the speed of rotation of the disk 13, and feed rollers 27 and 28, will be decreased and the length of the stitches will be correspondingly decreased. On the other hand, by shifting the friction disk 13, towards the perimeter of the friction disk 12, the speed of feed of the goods and length of stitches will proportionally be increased. As hereinbefore described, this regulation of the feed of the goods and the length of the stitches may also be accomplished by removing the friction disk 13, from the shaft 15, and replacing by a disk of larger or smaller diameter. This change is rendered readily possible by the spring 32, which by the intervention of the holder 14, and shaft 15, holds the friction disk 13, movably in engagement with the friction disk 12. The shifting of the holder 14, necessitates a corresponding shifting of the worm-gear 19, on the shaft 33, of the lower feed roller 27, to permit the worm 18, to remain in mesh with the same. This shifting of the worm-gear 19, and the holding of the same, is accomplished by a collar 48, and a set-screw 49, of the same which engages the shaft 33, as shown in Fig: 4 of the drawings.

Having thus described the nature and objects of my invention what I claim as new and desire to secure by Letters Patent is:—

1. In combination with a sewing machine, of feed rollers, means for rotating the feed rollers, said means including a friction disk connected with and driven by the machine, a second friction disk rotated by the first disk, a shaft supporting the second disk and having a worm, a worm-gear meshing with said worm, said shaft, worm and worm-gear adapted to transmit the rotary movement of the second disk to one of the feed rollers, and yielding means adapted to hold the second disk in frictional engagement with the first disk.
2. In combination with a sewing machine, of feed rollers, means for rotating said feed rollers, said means including a friction disk connected with and driven by the machine, a second friction disk rotated by the first disk, a shaft adjustably supporting the second disk to permit of an adjustment of the point of contact of the second disk with the first disk, and means carried by the shaft and meshing with the rotating means of the feed rollers.
3. In combination with a sewing machine, of superposed feed rollers, a shaft for rotating one of the feed rollers, a sleeve slidably mounted on the shaft, a worm-gear loosely mounted on the shaft and adapted to be coupled to the same by the sleeve, a friction disk connected with and rotated by the machine, a second friction disk rotated by the first disk, a second shaft carrying the second disk and having a worm, a worm-gear meshing with said worm, said second shaft, worm and worm-gear adapted to transmit the rotary movement of the second disk to one of the feed rollers to rotate the same in a certain direction, and said sleeve when disengaged from the worm-gear adapted to permit of rotation of the feed rollers in an opposite direction thereto.
4. In combination with a sewing machine, of feed roll-

ers, a friction disk connected with and rotated by the machine, a second friction disk rotated by the first disk, a shaft adjustably carrying the second disk having a worm, feed rollers, a shaft for rotating one of the feed rollers, 5 a worm-gear mounted on the roller shaft and meshing with the worm of the disk shaft, bearings for supporting the roller shaft having a bracket, a holder for supporting the disk shaft having an extension slidably arranged in said bracket, and means for yieldingly engaging said holder.

10 5. In combination with a sewing machine, of superposed feed rollers, a shaft for rotating the lower one of the feed rollers, bearings for supporting the shaft and the upper one of the feed rollers, a yielding ring carried by 15 the upper one of the feed rollers, said ring adapted to hold the rollers apart and to transmit the rotary movement of the lower feed roller to the upper roller, a sleeve slidably mounted on the shaft, a worm-gear loosely and slidably mounted on the shaft and adapted to be coupled to the same by said sleeve, a friction disk connected with and 20 rotated by the machine, a second friction disk rotated by the first disk, a second shaft carrying the second disk and having a worm meshing with the worm-gear of the roller shaft, said second shaft, worm and worm-gear adapted to transmit the rotary movement of the second disk to the lower feed roller, and said roller and yielding ring the 25 rotary movement to the upper feed roller to rotate the same in one direction, and said sleeve, when disengaged from the worm-gear, adapted to permit of the manual rotation of said rollers.

30 6. In combination with a sewing machine, of superposed feed rollers, a shaft for rotating the lower one of the feed rollers, bearings for supporting the shaft and the upper

one of the feed rollers, a yielding ring carried by the upper one of the feed rollers, said ring adapted to hold the rollers apart and to transmit the rotary movement of the 35 lower feed roller to the upper roller, a sleeve slidably mounted on the shaft, a worm-gear loosely and slidably mounted on the shaft and adapted to be coupled to the same by the sleeve, a friction disk connected with and rotated by the machine, a second friction disk rotated by 40 the first disk, a second shaft carrying the second disk and having a worm meshing with the worm-gear of the roller shaft, said second shaft, worm and worm-gear adapted to transmit the rotary movement of the second disk to the lower feed roller and the roller and yielding ring the 45 rotary movement to the upper feed roller to rotate the same in one direction, said sleeve, when disengaged from said worm-gear, adapted to permit of the manual rotation of said rollers, a holder for supporting the disk shaft having an extension slidably engaging one of the bearings of 50 said rollers, means carried by the supporting bearing, engaging the extension of the holder and adapted, when removed therefrom, to permit of the disengagement of the worm from the worm-gear, and a spring adapted to move the holder in said supporting bearing in one direction to 55 hold by the same the second disk yieldingly, in frictional engagement with said first disk.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

HENRY E. SCHULTZ.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.