

No. 837,255.

PATENTED NOV. 27, 1906.

R. G. WOODWARD.

NEEDLE AND PULL-OFF SHIFTING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED NOV. 9, 1901.

2 SHEETS—SHEET 1.

Fig. 1.

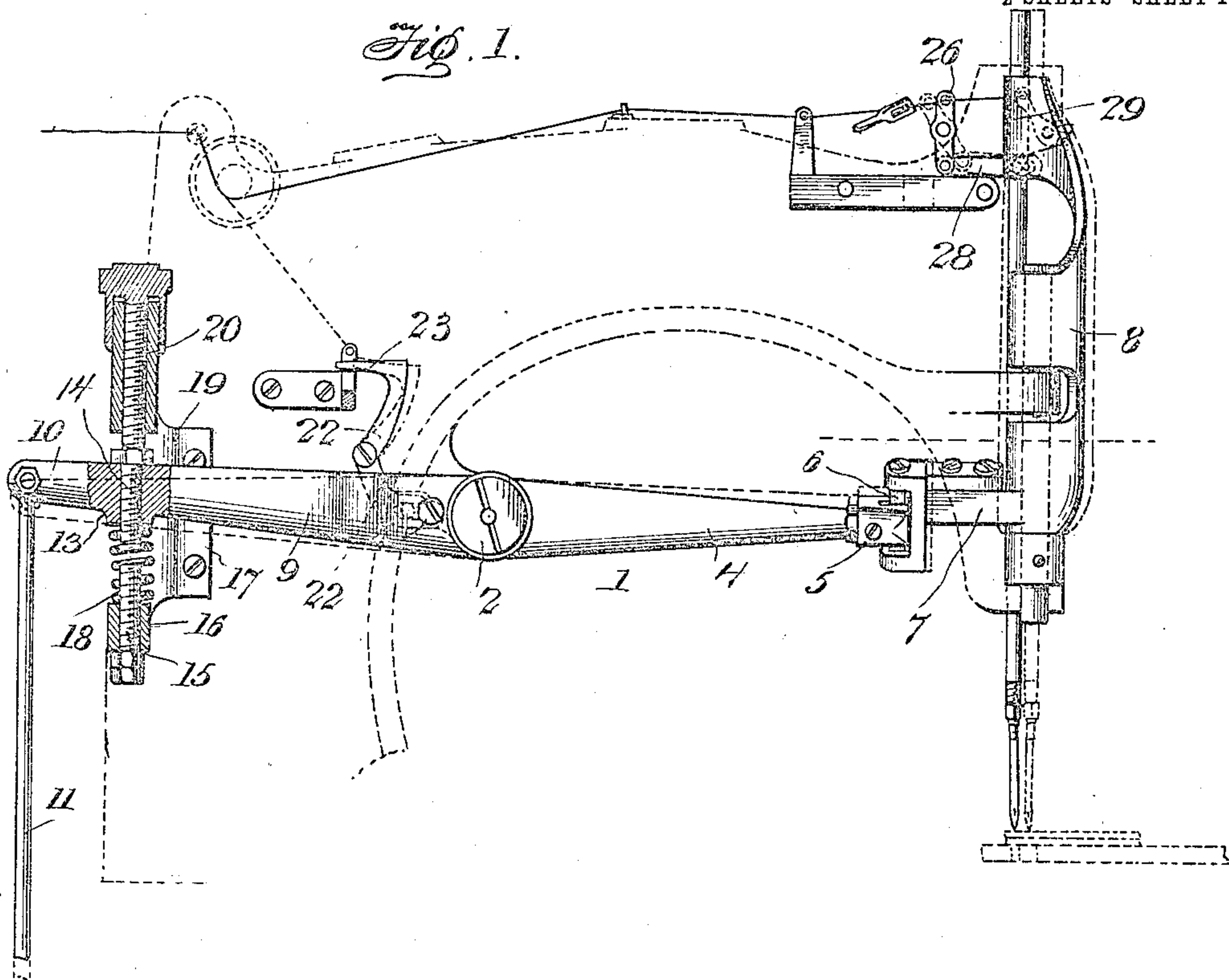
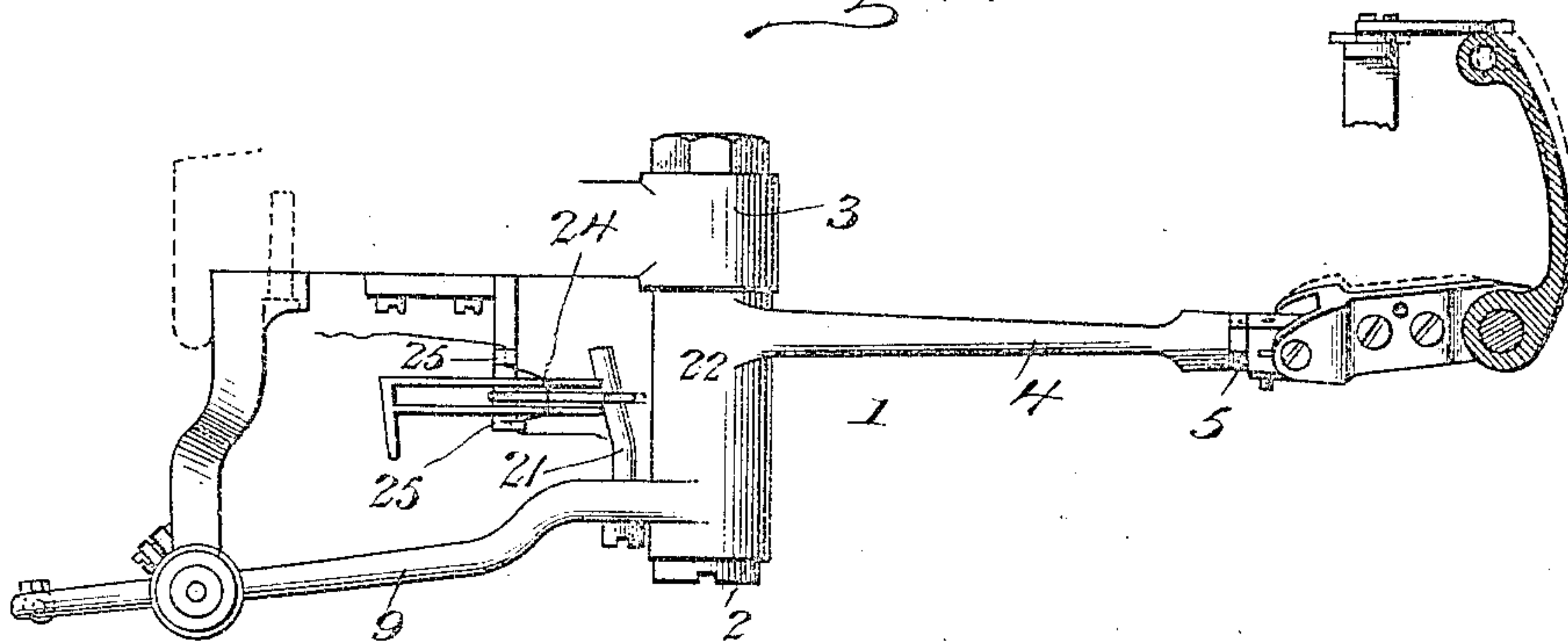


Fig. 2.



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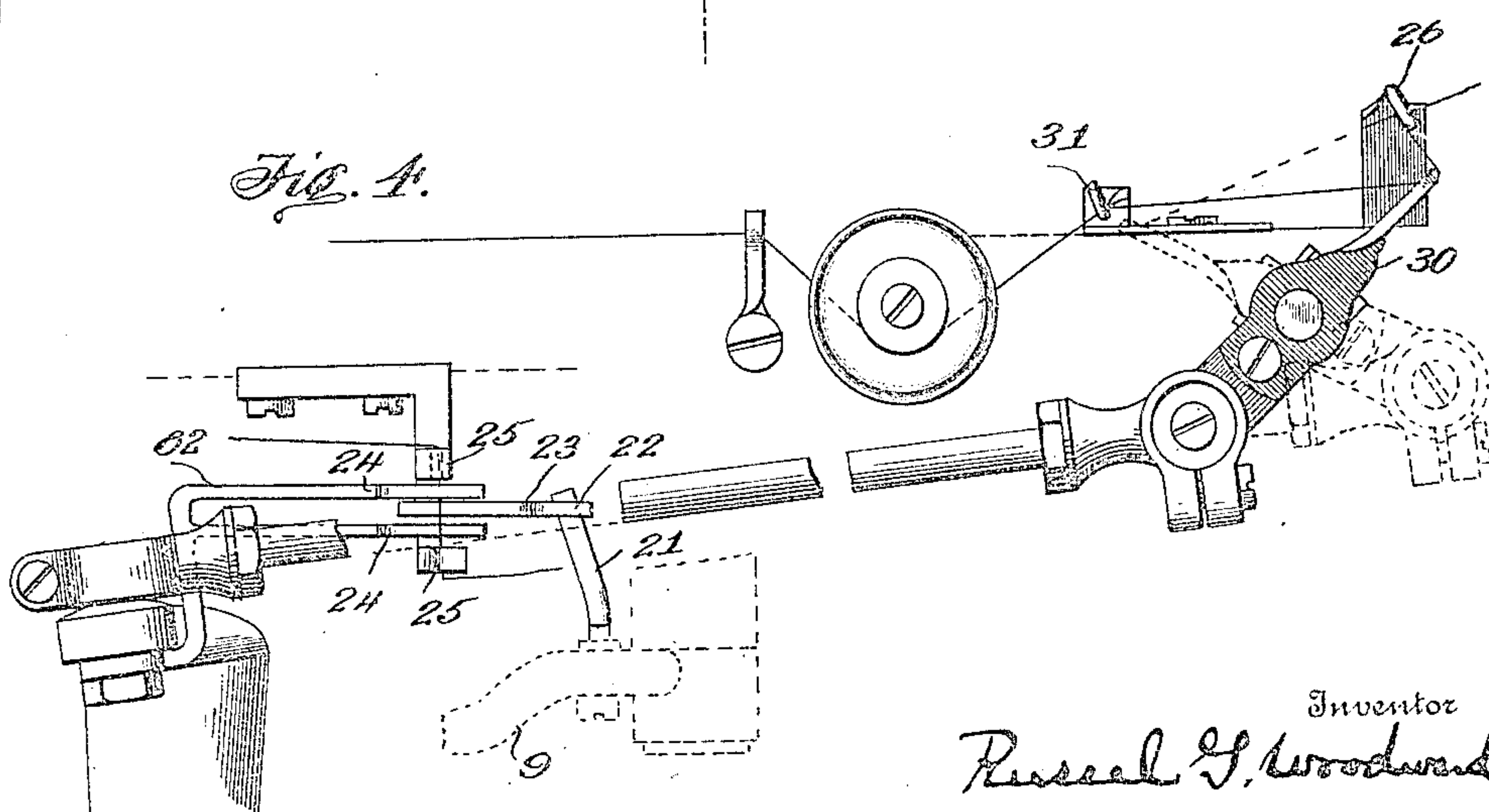
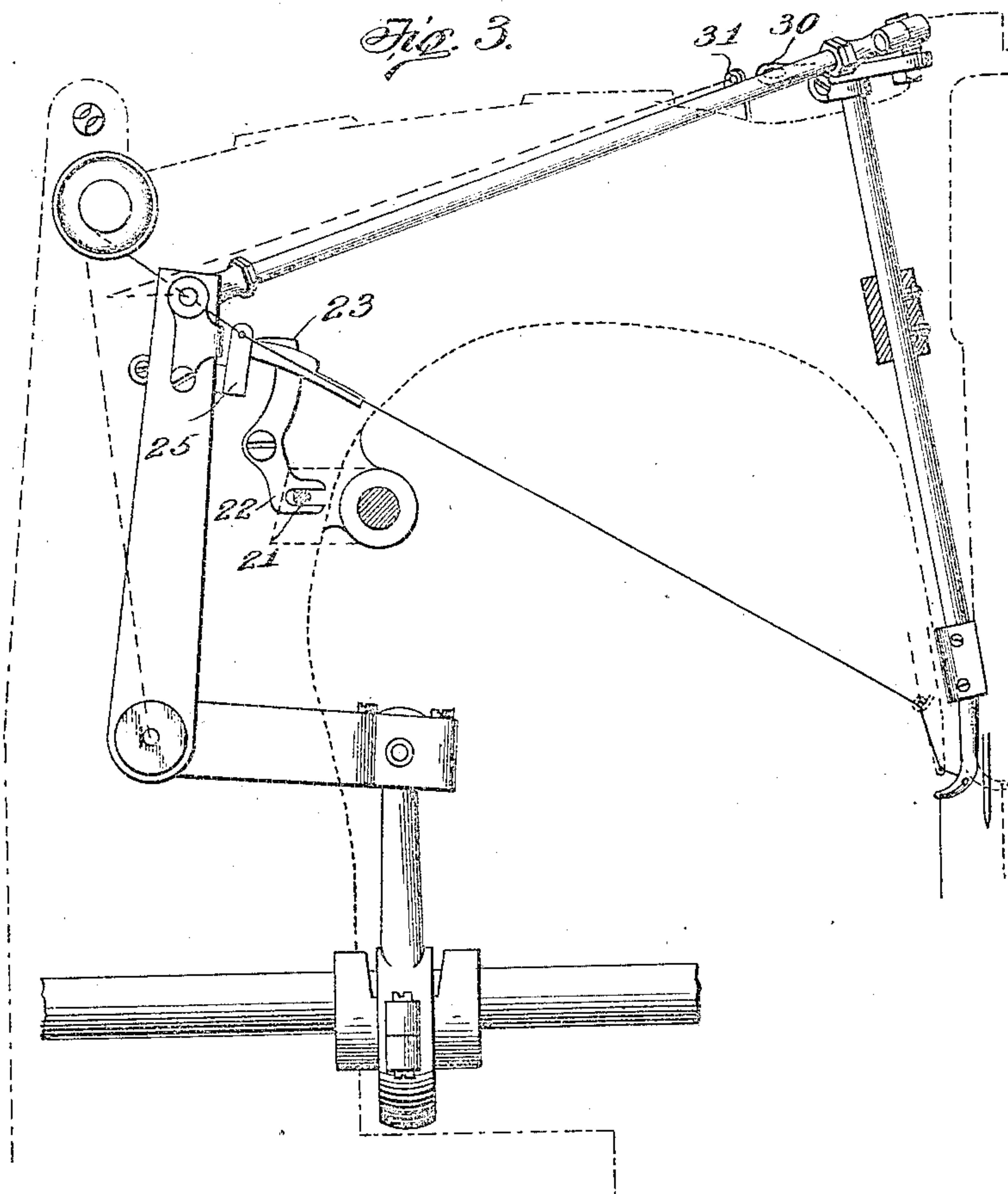
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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NEEDLE AND PULL-OFF SHIFTING MECHANISM FOR SEWING-MACHINES.

No. 837,255.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed November 9, 1901. Serial No. 81,771.

To all whom it may concern:

Be it known that I, RUSSEL G. WOODWARD, a citizen of the United States, residing at Waukegan, in the county of Lake, State of Illinois, have invented certain new and useful Improvements in Needle and Pull-Off Shifting Mechanism for Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings and to the figures of reference marked thereon.

My invention relates to an improvement in sewing-machines, and particularly to means for shifting the stitch-forming mechanism thereof, said shifting being accomplished with respect to the trimmer, if the trimmer be used, to vary the width of the seam and for automatically regulating the supply of thread to accommodate varying widths of seams. While I have shown the invention as applied to a machine for making overedge-stitches, as illustrated in the application filed by Lansing Onderdonk and myself on the 9th day of November, 1901, Serial No. 81,772, it will be understood that I do not wish to be limited to such.

The object of the invention is to provide a simple and effective means for shifting the needle-bar to vary its distance from the edge of the fabric, to automatically return it to adjusted position, and to provide an adjustment so that the starting-point of the needle may be regulated, this being useful for ordinary zigzag-stitch machines.

Broadly, the idea of this invention is claimed in the above joint application; but the specific mechanism which is of my individual design is herein shown and described; and the invention therefore consists in the matters hereinafter described, and referred to in the appended claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a rear view illustrating the shifting mechanism. Fig. 2 is a plan view. Fig. 3 is a skeletonized view of the rear part of the machine, showing the mechanism for operating the looper and the pull-offs and take-ups for the needle and looper threads, respectively; and Fig. 4 is a top plan view of Fig. 3.

The needle-bar reciprocates vertically in a suitable gate or frame which is pivoted to the machine-head in the manner customary in

overseaming-machines of the Union Special type and need not be herein more specifically referred to.

The shifting mechanism consists of a lever 1, pivoted upon a stud 2, projecting rearwardly from a lug 3 beneath the gooseneck of the machine, the outline of the machine being shown in dotted lines. One arm of this lever 4 extends toward the head of the machine and is provided with a fork 5 at its forward end, which engages an inclined flat pin 6, secured in a head fastened to a lug 7 on the needle-bar gate or frame 8. The opposite arm 9 extends toward the right-hand end of the machine and is connected at its outer end 10 with a rod 11, the lower end of which is attached to a treadle (not shown) within reach of the foot of the operator. Near its outer end this lever-arm has a head 13, through which projects a bolt 14, and an oppositely-extending bolt 15 is threaded through the lower lug 16 on a yoke 17, secured to the machine-frame. Between the head on the lever-arm and the lug on the yoke is a spring 18, which keeps the needle-bar gate or frame in a normal position, herein shown in full lines as making a narrower seam, but in dotted lines as adapted to make a wide seam. Passing through the upper lug 19 on the yoke is an adjusting stop-screw 20, by varying which the normal position of the needle-bar gate or frame may be varied and by which also the width of the seam is varied, the spring above referred to always returning the lever to the position to which it has been adjusted by adjusting stop-screw.

Secured to the upper end of the upper arm of a bell-crank lever operated from an eccentric on the driving-shaft are two forwardly-projecting fingers or arms 24, which arms extend between two stationary eyelets 25 upon the machine-frame, through which stationary eyelets the looper-thread is guided. In a plane between these fingers or arms is a cast-off plate or cam 23, pivoted, as shown, on the machine-frame and having its lower end engaging, through the forked end 22, the projection 21, carried by the arm 9 of the lever 4. As the two fingers or arms move forward they engage the looper-thread, which extends between the stationary eyelets, and pull off from the spool thread until such time as the upper edge

of the cast-off plate or cam forces the thread out of engagement with the shoulders on the fingers or arms, thus releasing the thread. This forward movement of the fingers or arms to pull off the thread from the spool takes place while the looper is moving out of the needle-loop, so that when the looper begins to return to move into the needle-loop it has sufficient slack thread supplied it to form the stitch. When the needle-head is shifted to make a wider seam, the upper edge of the cast-off plate or cam is swung downward, so that in the forward movement of the fingers or arms the thread will not be cast off from the shoulders as quickly as when the cast-off plate or arm is in normal position, and therefore more thread is supplied to the looper, thus allowing for greater width of seam. In brief, the movement of the lever through the projection which engages the forked end of the pivoted cast-off plate tilts said cast-off plate and automatically varies the point at which the cast-off of the looper-thread from the shoulders on the swinging fingers takes place.

The needle-thread pull-off is operated in the movement of the looper-supporting shaft, as clearly shown in Figs. 3 and 4; but, briefly, the automatic regulation of the needle-thread may be mentioned as comprising an eyelet 26, pivoted to the gooseneck and its lower end connected by a link 28 with the upper needle-bar lug 29. When the needle-bar gate or frame, with the needle-bar, is shifted through the action of the lever 1 to take a wider bite into the goods by means of this link connection, the upper end of the pivoted arm carrying the eyelet is swung toward the standard of the machine, and thus as the forward movement of the looper takes place a swinging arm 30, carried thereby and which coöperates with said pivoted eyelet and another stationary eyelet 31 on the machine-frame, pulls off a greater quantity of thread than when the needle-bar gate or frame is in its retracted position. Upon the release of the treadle by the operator the parts return automatically to the position to which they have been set by the adjusting mechanism.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a sewing-machine, having a suitable needle-bar, a support for said needle-bar adapted to swing laterally, means for laterally swinging the said support, comprising a pivoted lever engaging said needle-bar support, and at its opposite end under the control of the operator, whereby while the machine is in operation a row of stitches may be deposited in the fabric nearer to or farther from the edge thereof, and means operated by said lever for automatically regulating the supply of thread to the stitch-forming mechanism; substantially as described.

2. In a sewing-machine, having a suitable needle-bar adapted to swing laterally, means for laterally swinging the same, comprising a pivoted lever operatively engaging said needle-bar, and at its opposite end under the control of the operator, whereby while the machine is in operation a row of stitches may be deposited in the fabric nearer to or farther from the edge thereof, a pull-off mechanism, and a pivoted cast-off plate with connections between said pivoted cast-off plate and the lever, whereby in the movement of the latter the said cast-off plate is adjusted; substantially as described.

3. The herein-described means for adjusting laterally the needle-bar-supporting gate or frame, comprising a swinging lever, a pin or rod attached to said swinging gate or frame and inclined with respect to the axis thereof, and a forked member on said swinging lever engaging the inclined pin, with means for swinging said lever; substantially as described.

4. In a sewing-machine having a laterally-adjustable needle-bar carrier, means for adjusting the same, comprising a swinging lever pivoted on the machine-frame, with means for operating said lever and connections between one end of said lever and the needle-bar carrier, including a pin or rod inclined to the axis of the needle-bar carrier and a part operated by the lever embracing the same; substantially as described.

5. In a sewing-machine, having a movable needle-bar gate or frame, means for moving the same, comprising a lever-arm connected at one end thereto and at its other end having means for operating it, a bolt passing through said lever, an oppositely-extending bolt passing through a lug on the machine-frame, and a spring surrounding said latter bolt and interposed between the lug and the lever; substantially as described.

6. Means for shifting the needle-bar gate or frame on sewing-machines, comprising a lever-arm connected at one end thereto, and at its other end having means for operating it, a bolt passing through said lever, an oppositely-extending bolt passing through a lug on the machine-frame, and a spring interposed between said two bolts, and an adjusting stop-bolt above said lever, and adapted to engage with the first bolt to vary the normal position of said lever; substantially as described.

7. In an overedge sewing-machine having suitable stitch-forming mechanism including a needle, a vertically-reciprocating needle-bar to which the needle is attached, said needle depositing a row of consecutive loops of thread in a continuous line within the edge of the fabric, a needle-bar gate or frame pivoted to swing on a vertical axis, means for shifting laterally the working position of the needle with respect to the edge of the fabric,

said means comprising a lever pivoted intermediate its ends to the machine-frame, at one end engaging the needle-bar gate or frame, and at its opposite end under the control of the operator, and independent of any moving part of the machine, whereby while the machine is in operation the width of the overedge seam may be varied; substantially as described.

10 8. In an overedge sewing-machine having suitable stitch-forming mechanism including a vertically-reciprocating needle depositing a row of consecutive loops of thread in a continuous line within the edge of the fabric,

15 and means for shifting laterally the working position of the needle with respect to the edge of the fabric, said means comprising a

lever pivoted intermediate its ends to the machine-frame, at one end operatively connected to the needle-operating mechanism, and at its opposite end under the control of the operator and independent of any moving part of the machine, whereby while the machine is in operation the width of the overedge seam may be varied, means for adjusting said lever to any desired position and a spring for returning it automatically to said adjusted position; substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

RUSSEL G. WOODWARD.

Witnesses:

CHESTER McNEIL,
EMMA KERN.