920,804.

R. G. WOODWARD.

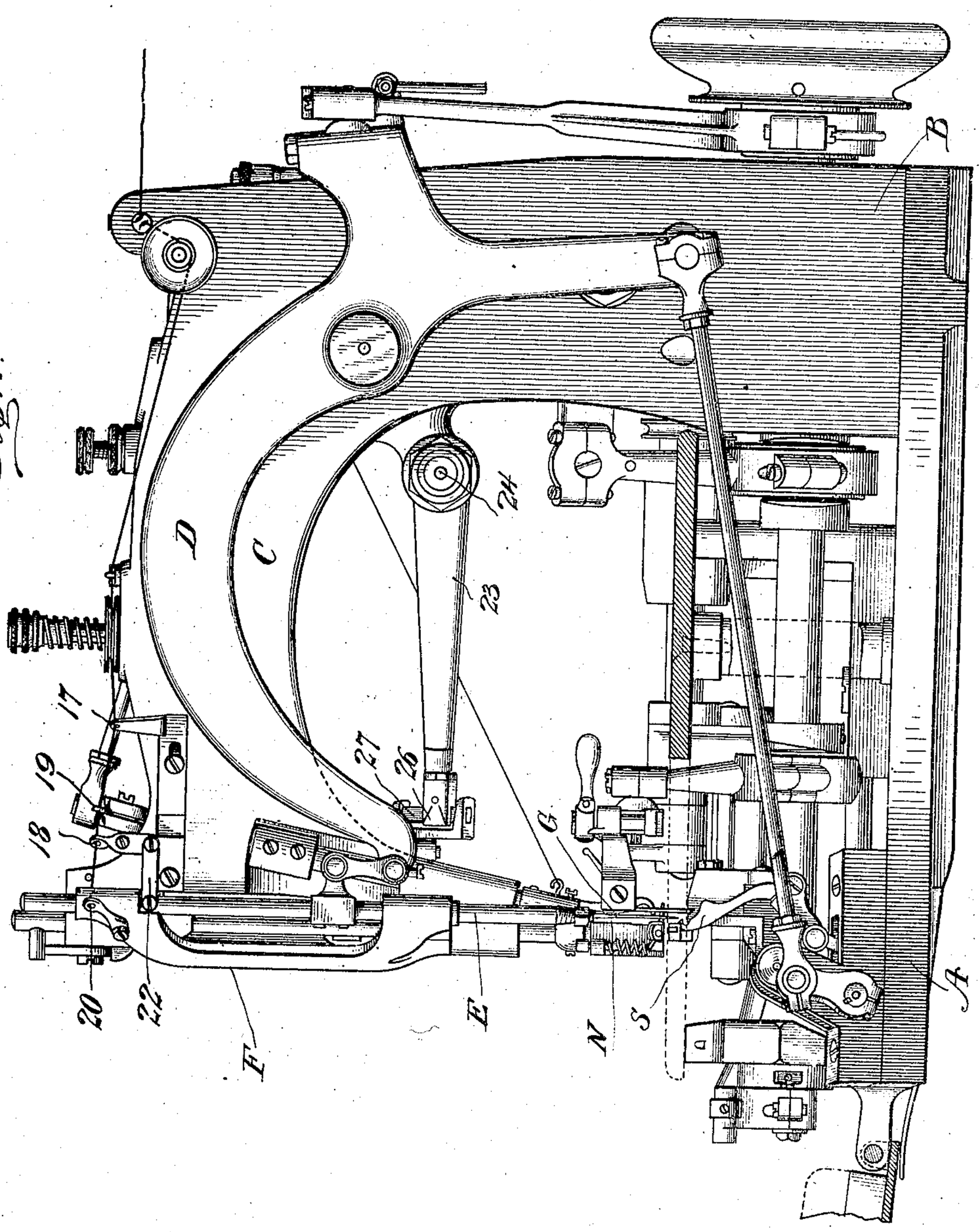
OVERSEAMING SEWING MACHINE.

APPLICATION FILED NOV. 9, 1901.

Patented May 4, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

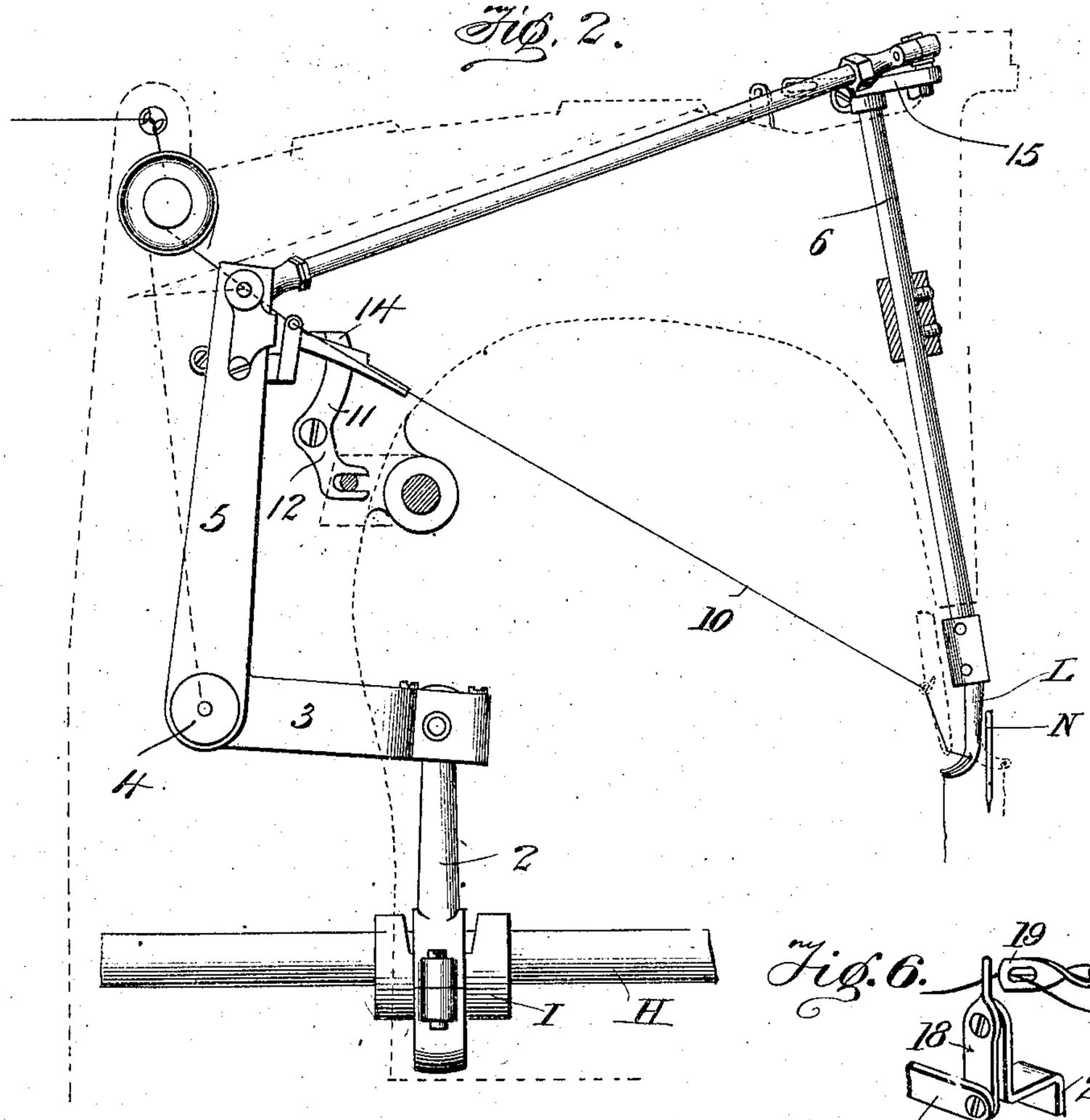
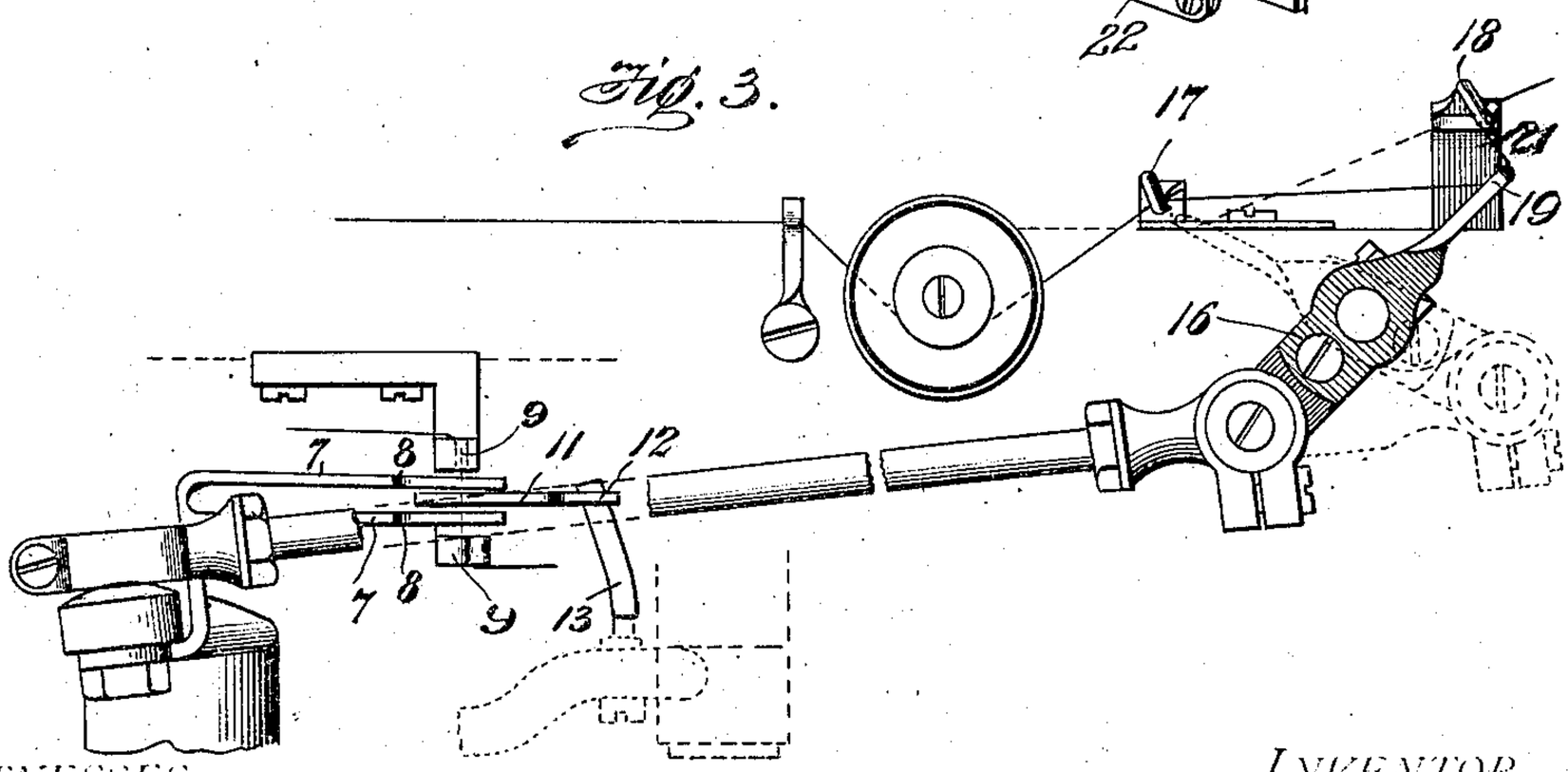



Fig. 6.




Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 4.

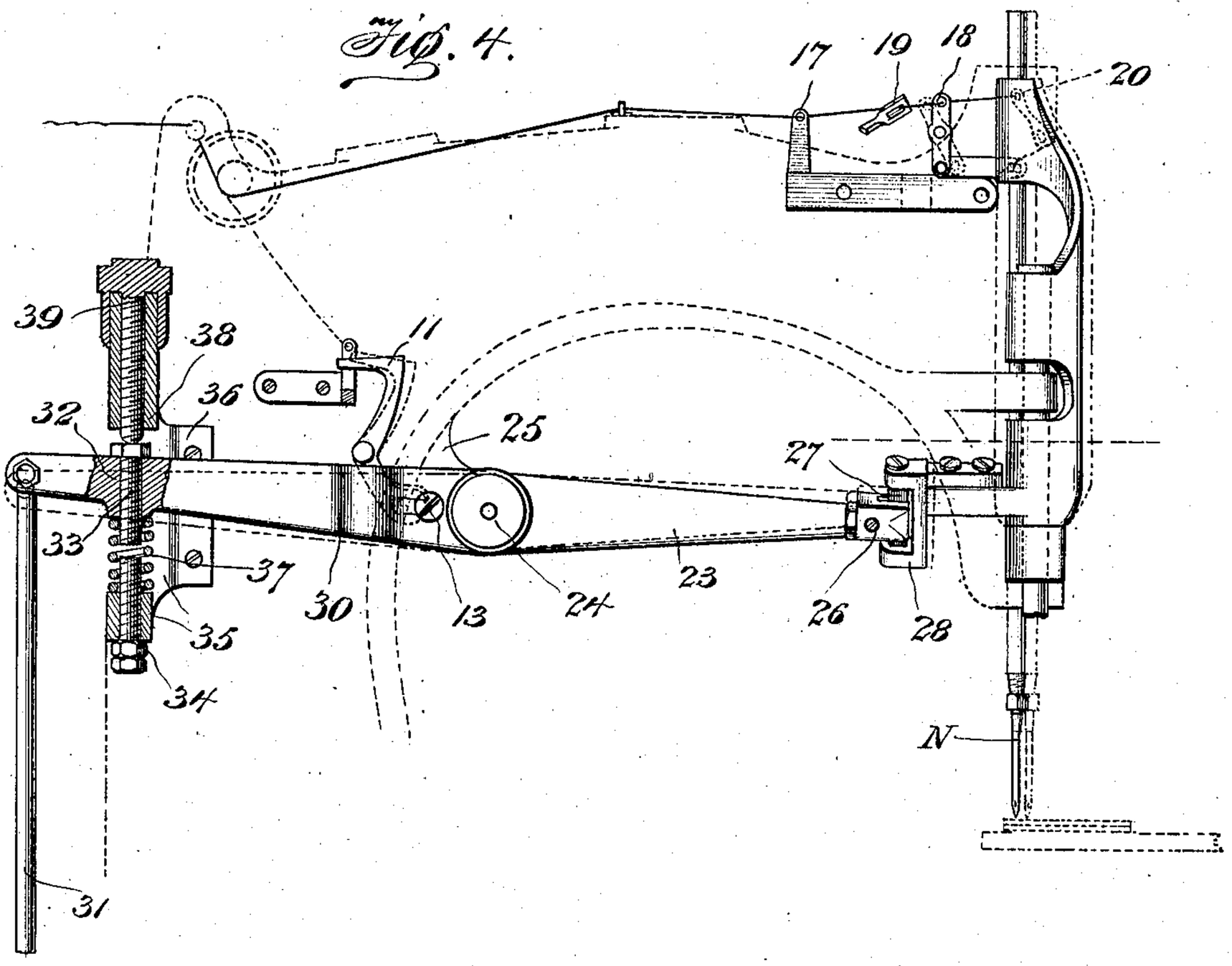
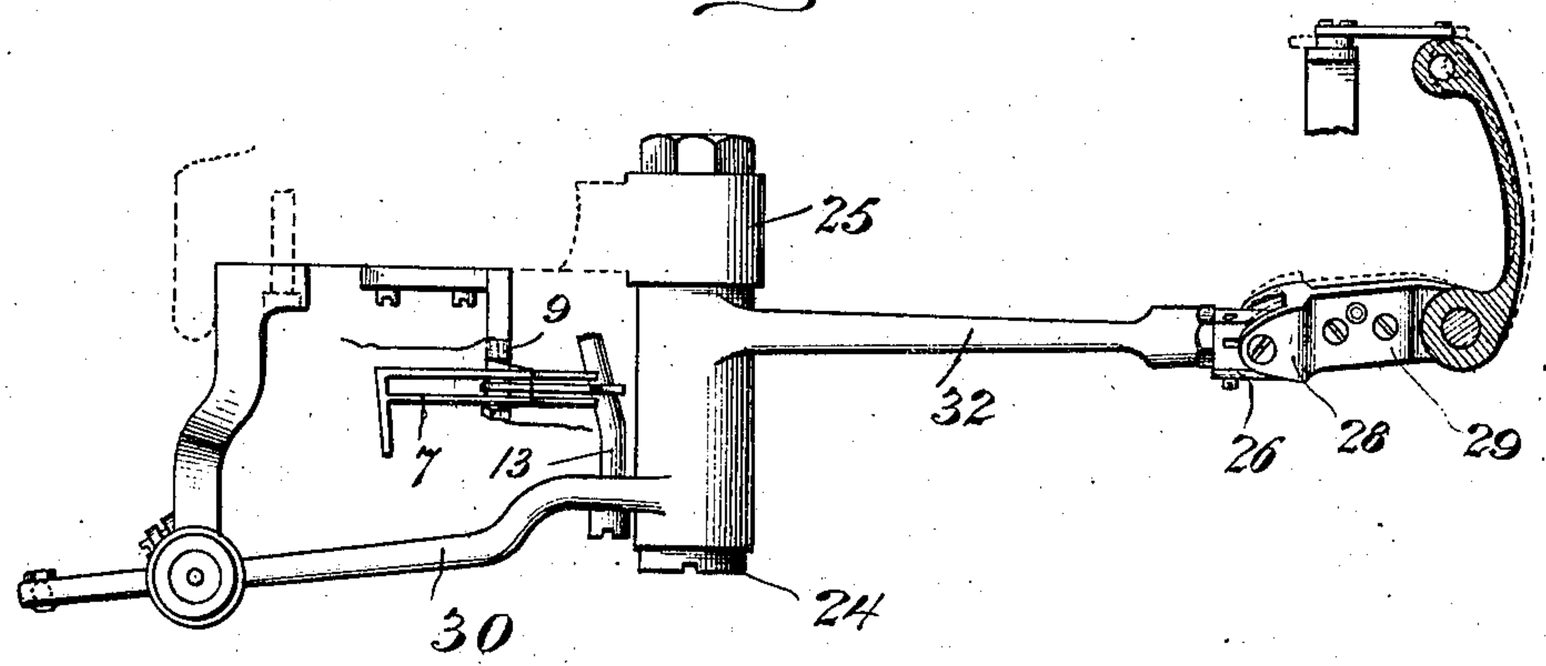



Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## OVERSEAMING SEWING-MACHINE.

No. 920,804. Specification of Letters Patent. Patented May 4, 1909.

Application filed November 9, 1901. Serial No. 81,769.

*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 Overseaming Sewing-Machines, of which the following is a description, reference being had to the accompanying drawing and to the letters and figures of reference marked thereon.

My invention relates to an improvement in sewing machines, and particularly to overseaming machines of the type used for making an overedge seam on knit goods, although it will be understood that so far as certain features of the invention are concerned, they are applicable to other machines than those of the particular type herein shown, such as shown in the patent granted to Lansing Onderdonk and myself, November 27th, 1906, No. 837,106.

The invention includes in general, means for varying the width of the seam, with automatically adjustable pull-offs for the needle and looper threads.

The invention 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 front elevation of a sewing machine, embodying my invention; Fig. 2 is a skeletonized rear view, showing the mechanism for operating the looper, and the needle and looper thread pull-offs; Fig. 3 is a plan view of Fig. 2; Fig. 4 is an elevation partly in section of the mechanism for shifting the needle bar gate or frame, and thereby shifting the pull-offs; and Fig. 5 is a plan view of Fig. 4. Fig. 6 is a detail in perspective, showing the bracket for supporting the eyelet 18.

In these drawings, A, represents the bed plate of the machine; B the standard; C the gooseneck; D the needle lever; E the needle bar; F the needle bar gate or frame, the parts being practically of usual construction.

G represents the trimmer which is arranged in advance of the stitch-forming mechanism, and comprises upper and lower coöperating blades, with means operated from the main shaft for vibrating the upper blade. The needle bar E, reciprocates vertically in bearings on a pivoted gate or frame F, which may be swung out or in a limited amount to enable the needle to stitch nearer to or farther from the edge of the fabric. The stitch-forming mechanism includes the needle N, the looper L and spreader S, the latter operating to seize a loop of needle thread below the work plate, and carry it above the edge of the throat plate, in position to be entered by the looper, which passes through said loop, and carries a loop of its own thread into position to be engaged by the needle in its next descent.

The looper movement, and needle thread take-up shown in the drawings are not of my invention, but the looper thread pull-off and take-up is of my invention, as is also the arrangement of making the pull-offs and take-ups automatically adjustable, so that when the width of the seam is varied, the supply of thread will be automatically regulated.

Taking up now the looper thread take-up, on the driving shaft H adjacent the standard B, is a ball eccentric 1 embraced by a vertical connecting rod 2 at its upper end pivotally connected to one arm 3 of a bell crank lever supported on a stud 4 on the rear of the machine standard. The other arm 5 of the bell crank lever extends vertically and at its upper end is connected with the mechanism which drives the looper shaft 6. Secured to the upper end of this upper arm 5, of the bell crank lever are two forwardly projecting fingers or arms 7, having shoulders 8 which extend between two stationary eyelets 9 upon the machine frame, through which stationary eyelets the looper thread 10 is guided. In a plane between these fingers or arms is a cast off plate or cam 11 pivoted, as shown, to the machine frame, and having a forked lower end 12 engaging a projection 13 on the lever which shifts the needle head. As the two fingers or arms 7 move forward, they engage the looper thread which extends between the stationary eyelets and pull off thread from the spool until such time as the upper edge 14 of the cast off plate or arm 11 forces the thread out of engagement with the shoulders 8 on the fingers or arms, thus releasing the thread. This forward movement of the fingers or arms to pull off the thread from the spools, 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 arm is swung downwardly, 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 the greater width of seam.

Referring now to the needle thread take-up, attached to the block 15, in which the upper end of the looper shaft 6 is secured, is a plate 16 projecting forward toward the front of the machine into a path between a stationary eyelet 17 on the gooseneck of the machine and another pivoted eyelet 18 which is attached to and moves with, the needle bar head or gate. The forward end of this arm which is on the looper head is provided with an eye or opening 19, through which the thread is guided between said two eyelets. From the pivoted eyelet above referred to, the thread is guided to another stationary eyelet 20, on the upper needle bar lug, and from there the thread extends to the eye of the needle in the usual way. The action of this needle thread take-up is as follows: Assuming the needle to be in its raised position, and just about to start downward, the looper at that time has passed into the needle loop. As the looper moves forward to carry its thread into position to be engaged by the needle in its descent, the forward end of the eyeleted arm which moves with the looper shaft, passes beyond the pivoted eyelet above referred to, which pivoted eyelet is, of course, in operative position to the machine and pulls off thread sufficient for the needle to use up in its downward movement. When this amount has been pulled off, the looper meanwhile receding, the pull-off arm moves back toward its normal position, and when the needle ascends the eyeleted pull-off moves beyond the stationary eyelet on the goose-neck, and, therefore, takes up the slack in the needle thread caused by the ascent of said needle, thus enabling all the superfluous thread to be taken out and the stitch to be properly drawn up. The eyeleted pull off will operate to draw thread from the point of least resistance, and therefore, when the needle is going down, the thread is held taut and the movements of the eyeleted pull off beyond the adjustable eyelet, will operate to pull thread from the supply, while when the needle is ascending the thread is slack and therefore, the movements of the eyeleted pull off beyond the stationary pull off, will operate to take up the slack in the needle thread. To allow for an increase of the thread pulled off, when it is desired to make a wider seam, that is, to stitch farther from the trimmed off edge than in normal position, the pivoted eyelet 18 above referred to, is provided, which is pivoted to an arm 21 projecting from the gooseneck, and at its lower end is connected by a link 22 with the upper needle bar lug. When the needle bar gate or frame with the needle is shifted by means of the mechanism described, 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, more thread will be pulled off than when the needle bar gate is in the normal position shown in the drawings.

As a convenient means for shifting the needle head to vary the width of seam, and with it automatically adjusting the pull-offs, I have provided the mechanism shown in Figs. 4 and 5, which mechanism forms the subject matter of another application, filed of even date herewith, Serial No. 81,766. This mechanism consists of a lever 23 pivoted upon a stud 24, projecting rearwardly from a lug 25, beneath the gooseneck of the machine. One arm of this lever extends toward the head of the machine, and is provided with a fork 26 at its forward end, which engages an inclined flat pin 27, secured in a head 28 fastened to a lug 29 on the needle bar gate or frame. The opposite arm 30 extends toward the right hand end of the machine, and is connected at its outer end through rod 31, with a treadle, within reach of the foot of the operator. Near its outer end this lever arm has a head 32, through which projects a bolt 33, and an oppositely extending bolt 34 is threaded through the lower lug 35 on a yoke 36 secured to the machine frame. Between the head of the lever arm and the lug on the yoke is a spring 37, which keeps the needle bar gate or frame in normal position, herein shown as making the narrower seam. Passing through the upper lug 38 on the yoke is an adjusting stop screw 39, 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. This lever has the member 13 which engages the forked end 12 of the pivoted cast off plate or arm 11, to vary the point at which the cast off of the looper thread from the shoulders on the swinging fingers takes place.

Various minor modifications and changes may be made without departing from the spirit of my invention.

I have designated this machine as an overseaming sewing machine and have referred to the stitch forming mechanism in the claims as an overseaming stitch forming mechanism. I desire it to be understood, however, that I do not intend to restrict myself entirely to the use of the machine for making an overseam stitch on the edge of a fabric, as the invention is applicable

to machines which might be used for embroidering or ornamenting the face of a cloth. I therefore wish the term "overseaming" to mean a seam in which there is combined with the needle as an element of the stitch forming mechanism, an additional member which lays threads upon the face of the fabric or over the edge thereof, as distinguished from a machine in which the needle itself marks the entire width of the seam by laying the needle threads in a zig zag line on the face of the fabric. So far, however, as certain features of the invention are concerned, they might also be applicable to machines making a zig zag stitch. Therefore, I have used a term still broader than overseaming in certain of the claims, namely, the term "irregular" by which is meant a stitch forming mechanism making a seam having lateral extent as distinguished from mere straightaway stitching.

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

1. An overseaming sewing machine comprising a needle carrying a thread and adapted to pass loops thereof through the fabric, complemental stitch-forming mechanism coöperating therewith to form a seam and including a member additional to the needle for depositing threads upon the upper face of the fabric being sewed, means for shifting bodily, the working position of the needle with respect to the edge of the seam, and means for automatically varying the supply of thread as the width of the seam is varied; substantially as described.

2. An overseaming sewing machine, comprising a vertically reciprocating needle adapted to deposit a straightaway line of stitching upon the fabric, complemental stitch-forming mechanism coöperating therewith to form a seam and including a member additional to the needle for laying threads upon the upper face of the fabric, means for shifting bodily, the working position of the needle with respect to the edge of the seam, and means for automatically regulating the supply of thread necessary to make the seam for various shifted positions of the needle; substantially as described.

3. An overseaming sewing machine, comprising a work support, a needle and complemental stitch-forming mechanism coöperating therewith, including devices cooperating with the needle above and below the work support for depositing binding stitches upon the edge of the fabric, means for shifting bodily the working position of the needle with respect to the edge of the seam, and means for automatically varying the supply of thread as the width of the seam is varied; substantially as described.

4. In a sewing machine for making irregular stitches, stitch-forming mechanism including a needle and complemental stitch-forming mechanism including a thread-carrying looper arranged to coöperate with the needle and deposit threads upon the face of the fabric, means for shifting bodily, the working position of the needle with respect to the edge of the seam, and means for automatically varying the supply of thread to the thread-carrying devices, as the width of the seam is varied; substantially as described.

5. In an overedge sewing machine, the combination with a vertically reciprocating needle, complemental stitch-forming mechanism including a device for carrying the thread over the edge of the fabric into position to be engaged by the needle, means for moving the needle bodily, laterally to shift its vertical working position with respect to the edge of the seam and thus varying the width of the seam, and means for automatically varying the supply of needle thread as the width of the seam is varied; substantially as described.

6. In a sewing machine for making overseaming stitches, means whereby the width of the seam may be varied, including a vertically reciprocating needle with means for shifting it bodily, laterally, with respect to the edge of the seam, and means for automatically varying the amount of supply of thread, as the width of the seam varies; substantially as described.

7. In an overseaming machine, stitch-forming mechanism including a needle, a thread-carrying looper, and a spreader hook, means for shifting the position of the needle with respect to the edge of the seam, means for automatically varying the amount of needle thread supplied to the needle, and means for automatically regulating the amount of looper thread supplied to the looper as the needle is shifted; substantially as described.

8. In an overseaming machine, stitch-forming mechanism including a needle with means for imparting to it a vertical reciprocation, a looper and a spreader, means for shifting bodily the working position of the needle with respect to the edge of the seam, and means for automatically varying the supply of needle thread simultaneously with the shifting of the needle, and means for operating the looper and spreader; substantially as described.

9. In an overseaming machine, stitch-forming mechanism including a needle with means for imparting to it a vertical reciprocation, a thread-carrying looper and a spreader, means for shifting bodily the working position of the needle with respect to the edge of the seam, and means for automatically varying the supply of needle thread and looper thread simultaneously with the shifting of the needle, and means

for operating the looper and spreader; substantially as described.

10. In an overseaming machine, stitch-forming mechanism including a vertically reciprocating needle and means for operating it, a looper coöperating therewith, and arranged to oscillate across the line of the seam, a spreader, with means for operating it to cause it to take a loop of needle thread and carry it to position to be engaged by the looper, means for shifting the working position of the needle, whereby the width of the seam is varied, and means for regulating the supply of thread automatically simultaneously with the shifting of the needle, and means for operating the looper and spreader; substantially as described.

11. In a sewing machine, in combination with the needle, means for shifting the working position thereof bodily to vary the width of the seam, a movable eyelet, a stationary eyelet, and an adjustable eyelet, with means for increasing or decreasing the space between the adjustable eyelet and the movable eyelet to vary the supply of needle thread while the machine is in operation; substantially as described.

12. A sewing machine, including in combination, a needle, complemental stitch-forming mechanism, and means for varying the width of the seam, thread-controlling devices including a movable thread eyelet, two stationary eyelets upon opposite sides thereof, one of which may be adjusted, and means for adjusting said stationary eyelet to increase or decrease the supply of thread while the machine is in operation; substantially as described.

13. In a sewing machine, the combination with suitable stitch-forming mechanism, and means for varying the width of the seam, a combined automatic takeup and pull-off, including a movable member having a single eye acting upon the needle thread to pull off and take up the same, and devices coöperating therewith, whereby the supply of thread is varied in accordance with the width of the seam; substantially as described.

14. In a sewing machine for making overseaming stitches, a needle, means for vertically reciprocating said needle and means for shifting its working position with respect to the edge of the seam, a looper, an automatic pull-off acting on the needle thread, and an automatic pull-off acting on the looper thread to vary the supply of thread for the stitches, as the width of the seam is varied; substantially as described.

15. In an overseaming sewing machine, stitch-forming mechanism including a needle and means for operating it, a thread-carrying looper coöperating therewith, and a spreader with means for operating it to cause it to take a loop of thread from below the work plate and carry it into position to be engaged by one of the loop-taking devices, means for varying the position of the needle with respect to the edge of the fabric, to vary the width of the seam, and an automatically adjustable pull-off for the needle thread, adjustable simultaneously with the adjustment of the needle; substantially as described.

16. In an overseaming sewing machine, stitch-forming mechanism including a needle, and means for operating it, a thread-carrying looper coöperating therewith, and a spreader, with means for operating it to cause it to take a loop of thread from below the work plate and carry it into position to be engaged by one of the loop-taking devices, means for varying the position of the needle with respect to the edge of the fabric, to vary the width of the seam, and an automatically adjustable pull-off for the looper thread, adjustable simultaneously with the adjustment of the needle; substantially as described.

17. In an overseaming machine, stitch-forming mechanism including a needle and means for operating it, a thread-carrying looper coöperating therewith, and a spreader with means for operating it to cause it to take a loop of thread from below the work plate and carry it into position to be engaged by one of the loop-taking devices, means for varying the position of the needle with respect to the edge of the fabric, to vary the width of the seam, and automatically adjustable pull-offs for the needle and looper threads, adjustable siniultaneously with the adjustment of the needle; substantially as described.

18. In an overseaming sewing machine, stitch-forming mechanism, including a needle and means for shifting its working position with respect to the edge of the seam, thereby varying the width of the seam, and including a member in addition to the needle for laying threads upon the face of the fabric, and a pull-off for the needle thread including a movable eyelet, stationary eyelets upon opposite sides thereof, one of said eyelets being automatically adjustable with the seam adjusting mechanism; substantially as described.

19. In an overseaming sewing machine, stitch-forming mechanism, coöperating to form stitches, including a needle and means for shifting its working position with respect to the edge of the seam, thereby varying the width of the seam, and including a member in addition to the needle for laying threads upon the face of the fabric, and a pull-off for the looper thread with means for adjusting it automatically with the seam-adjusting mechanism; substantially as described.

20. In an overseaming sewing machine, stitch-forming mechanism, coöperating to form stitches, including a needle and means for shifting its working position with respect

to the edge of the seam, thereby varying the width of the seam, and including a member in addition to the needle for laying threads upon the face of the fabric, and a pull-off for the looper thread including stationary eyelets, a movable pull-off, and a swinging lever movable with the seam-adjusting mechanism to vary the amount of thread pulled off; substantially as described.

21. In an overseaming machine, stitch-forming mechanism, coöperating to form stitches, and including a needle and means for shifting its working position with respect to the edge of the seam, and including a member in addition to the needle for laying threads upon the face of the fabric, and a pull-off for the looper thread, including stationary eyelets, a movable pull-off, and a swinging cast-off movable with the seam-adjusting mechanism; substantially as described.

22. In a sewing machine, having a stitch-forming mechanism, coöperating to form stitches, and including a needle and means for shifting its working position with respect to the edge of the seam, said stitch-forming mechanism including a needle and a member in addition to the needle to lay threads upon the face of the fabric, and a pull-off for the looper thread including stationary eyelets, a movable member reciprocating in a plane between the same, and a cast-off plate or cam arranged to cast off the thread from the movable member, with connections between the cast-off member, and the seam-varying mechanism for adjusting the position of the cast-off plate or member; substantially as described.

23. In a sewing machine having stitch-forming mechanism including a vertically reciprocating needle, and including also a thread-carrying looper for depositing threads upon the face of the fabric, and including also a thread-carrying looper for depositing threads upon the face of the fabric, means for shifting said needle laterally with respect to the edge of the seam, a pull-off mechanism for the looper thread, with means for automatically adjusting the pull-off, as the amount of looper thread required to make the stitch varies; substantially as described.

24. In a sewing machine having stitch-forming mechanism including a needle with means for vertically reciprocating it, and means for shifting its lateral position with respect to the edge of the seam, a thread-carrying looper, adapted to oscillate across the line of the seam, and lay threads across the face of the fabric, and pull-off mechanisms for the needle and looper threads, with means for automatically adjusting both pull-offs, as the amount of thread required to make the stitch, varies; substantially as described.

25. In a sewing machine for making irregular stitches, means whereby the width of the seam may be varied including a needle with means for shifting it laterally with respect to the edge of the seam, and a coöperating loop-taking device, arranged to lay threads upon the face of the fabric, devices for controlling the thread for the needle and loop-taking devices, means for automatically adjusting the controlling devices as the width of the seam is varied to take up or pull off thread for the requirements of the seam when varied in width; substantially as described.

26. In an overseaming sewing machine, the combination with a stitch-forming mechanism, including a needle and a coöperating, thread-carrying looper, with means for causing said needle when in operation to deposit a continuous row of loops through the material to be sewed, means for shifting the working position of the needle laterally, with respect to the edge of the seam, pull-off and take-up devices for the needle thread and a pull-off device for the looper thread, and means for simultaneously adjusting the pull-off and take-up devices as the needle is shifted: substantially as described.

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

RUSSEL G. WOODWARD.

Witnesses:
CHESTER MCNEIL,
EMMA KERN.