May 13, 1924. 1,494,319

J. E. CHALMAN

MULTIPLE NEEDLE SEWING MACHINE

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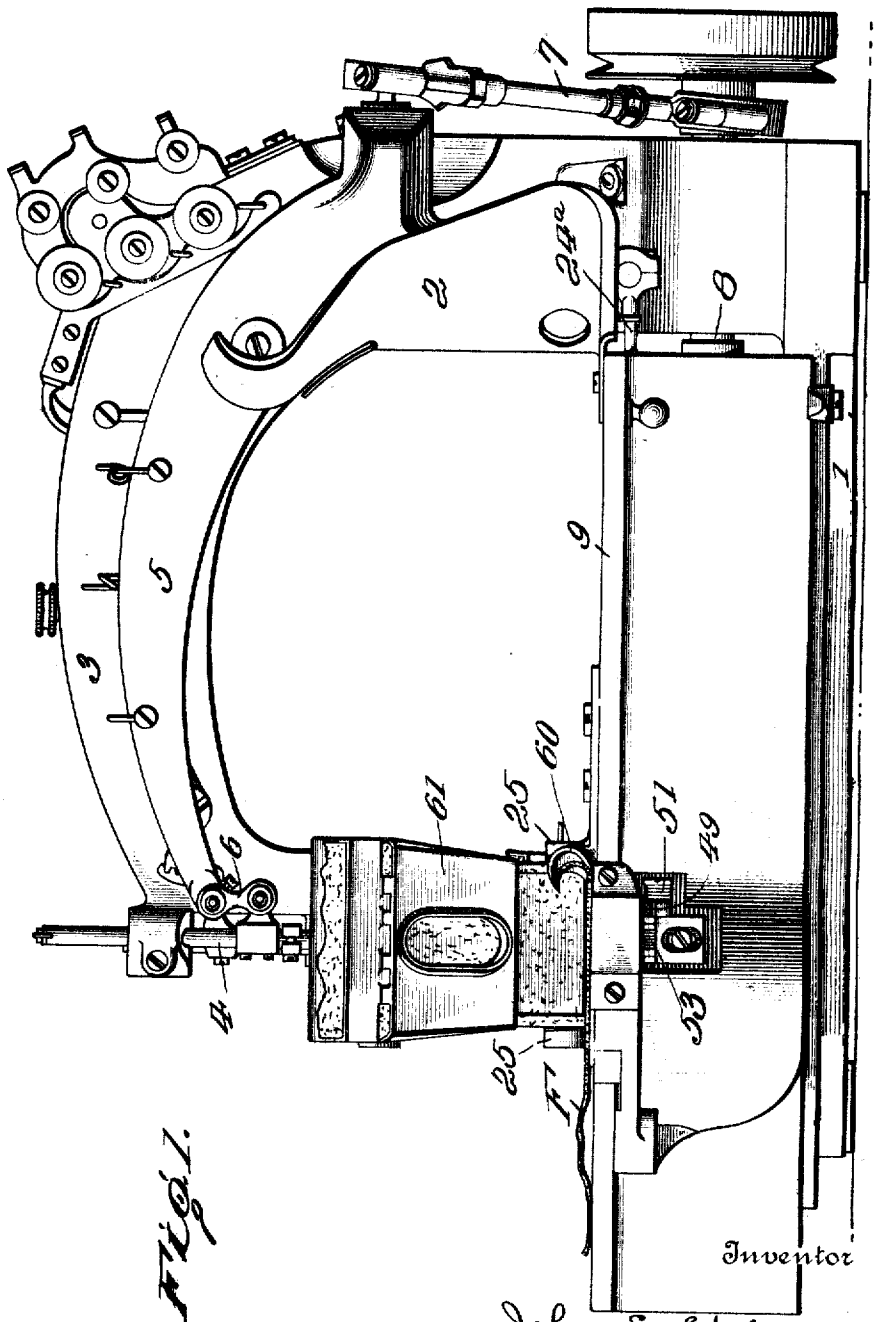


Fig 1.

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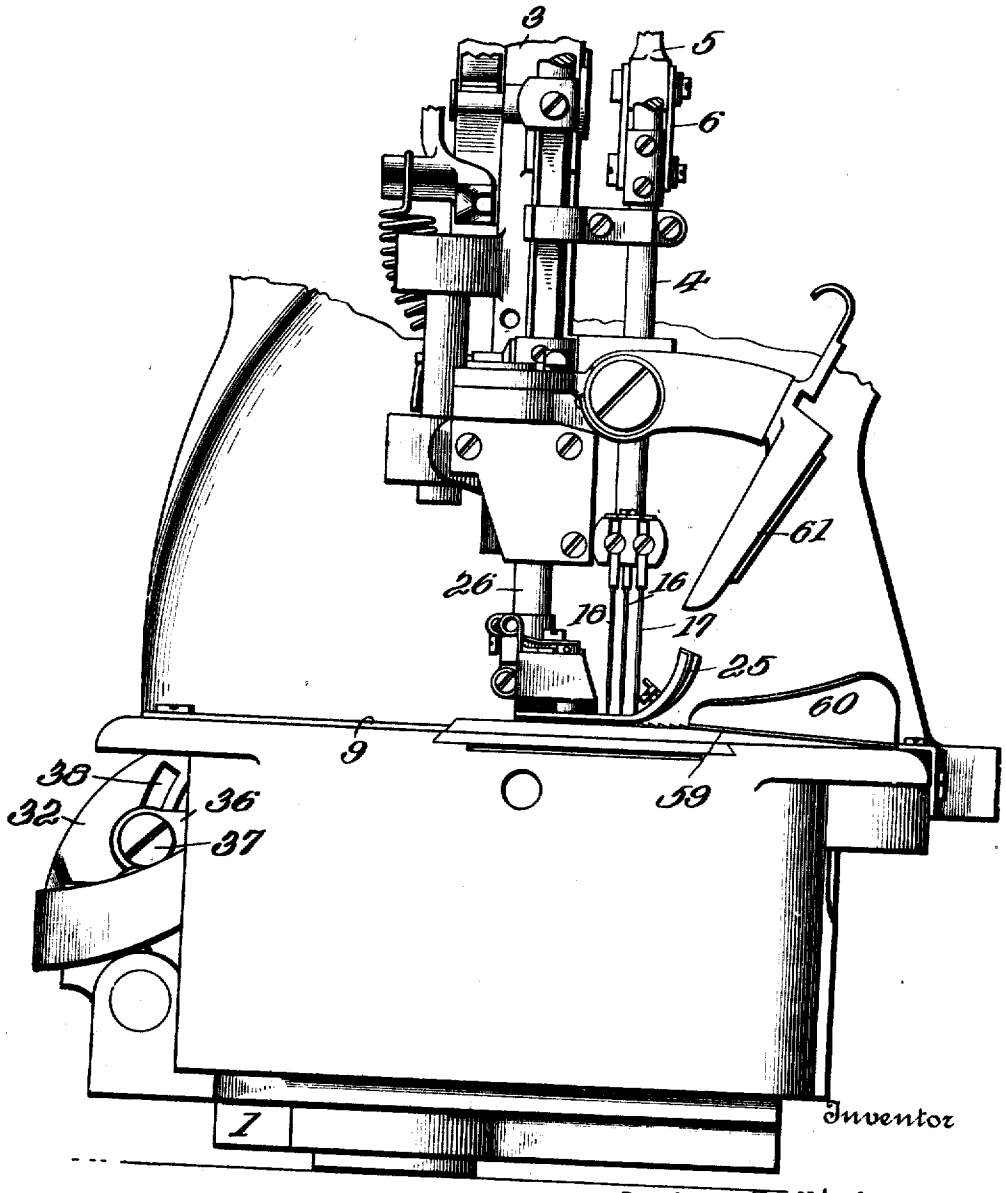
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MULTIPLE NEEDLE SEWING MACHINE

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Fig. 2.



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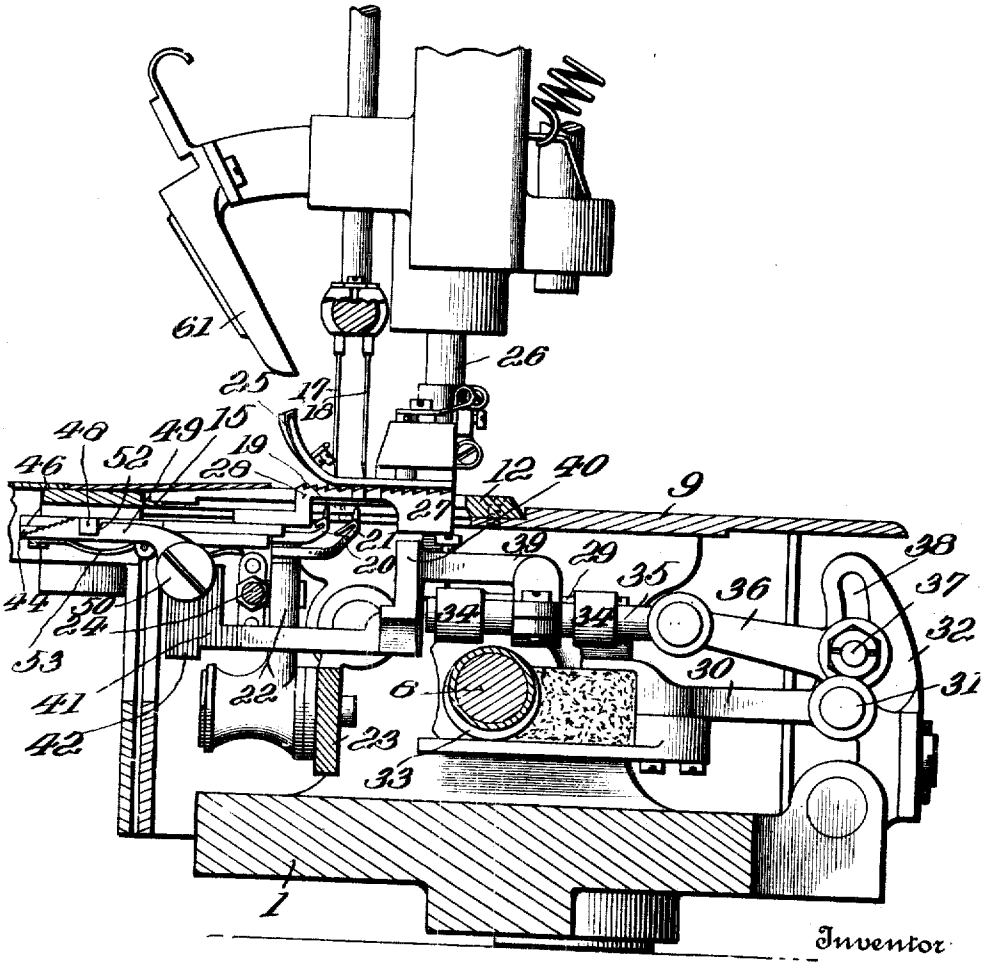
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MULTIPLE NEEDLE SEWING MACHINE

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Fig. 3.



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MULTIPLE NEEDLE SEWING MACHINE

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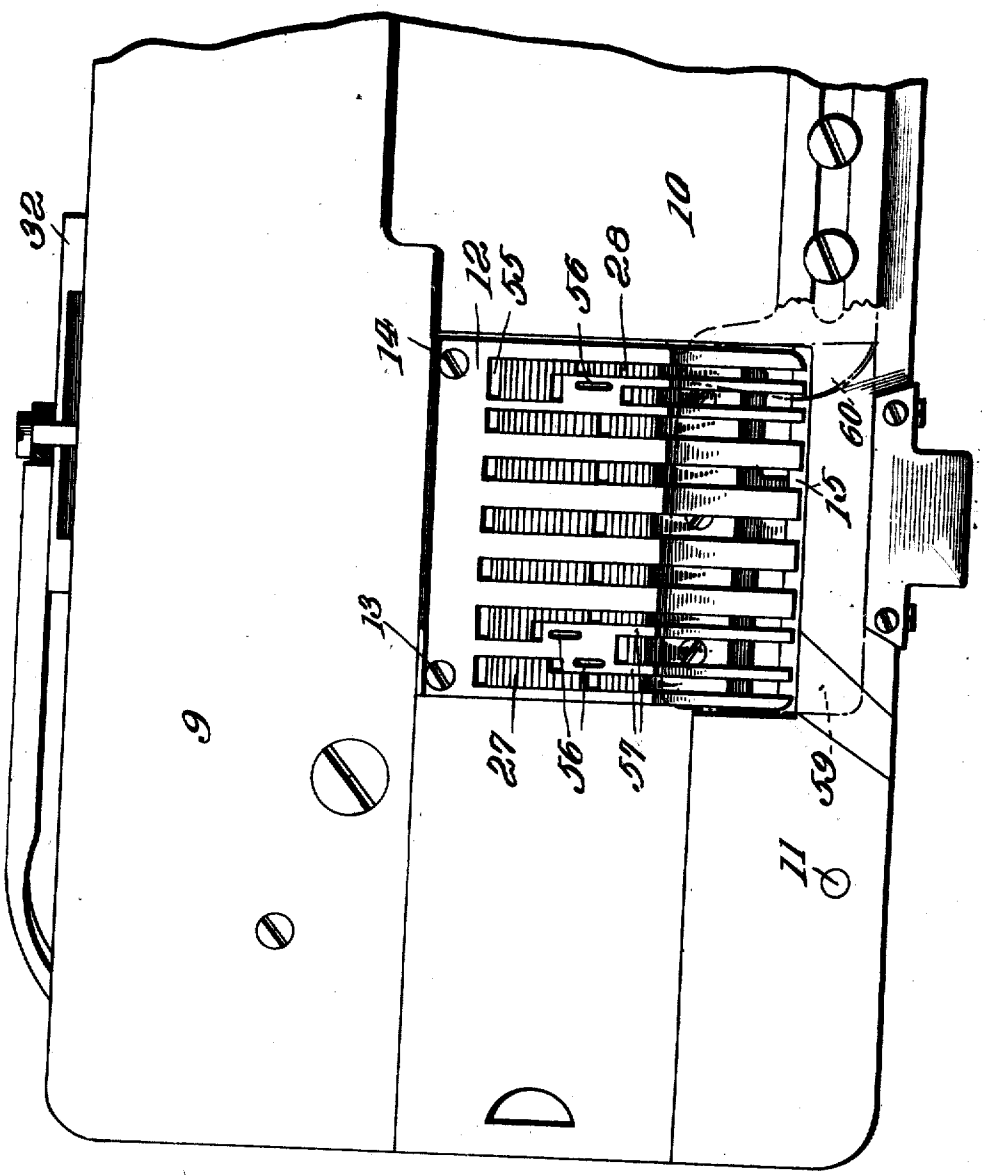


Fig. 4.

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MULTIPLE NEEDLE SEWING MACHINE

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FIG. 5.

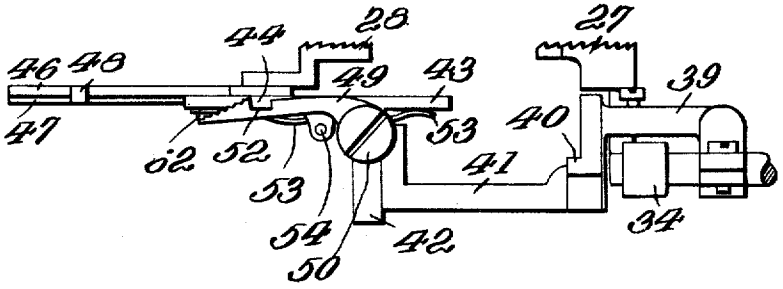


FIG. 6.

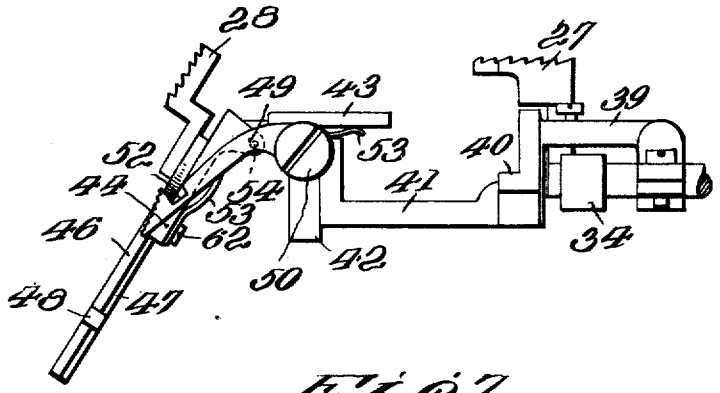


FIG. 7.

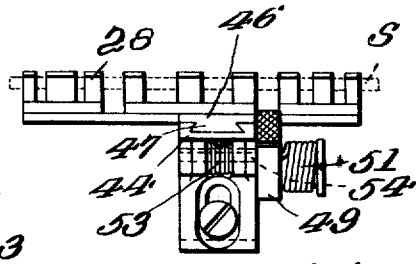
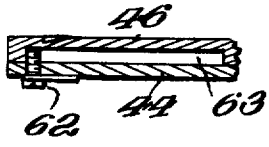


FIG. 9.



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MULTIPLE NEEDLE SEWING MACHINE

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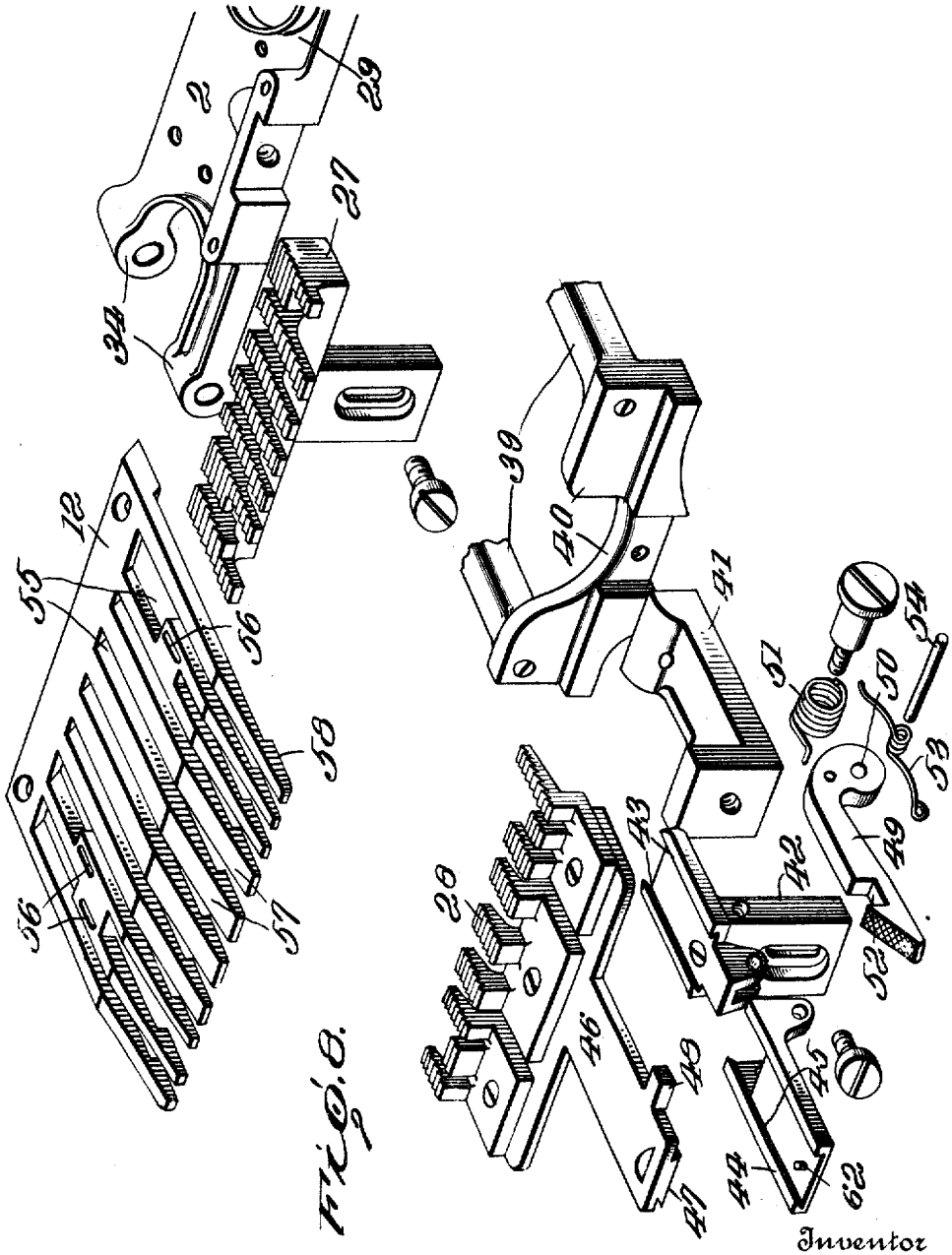


FIG. 6.

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MULTIPLE NEEDLE SEWING MACHINE

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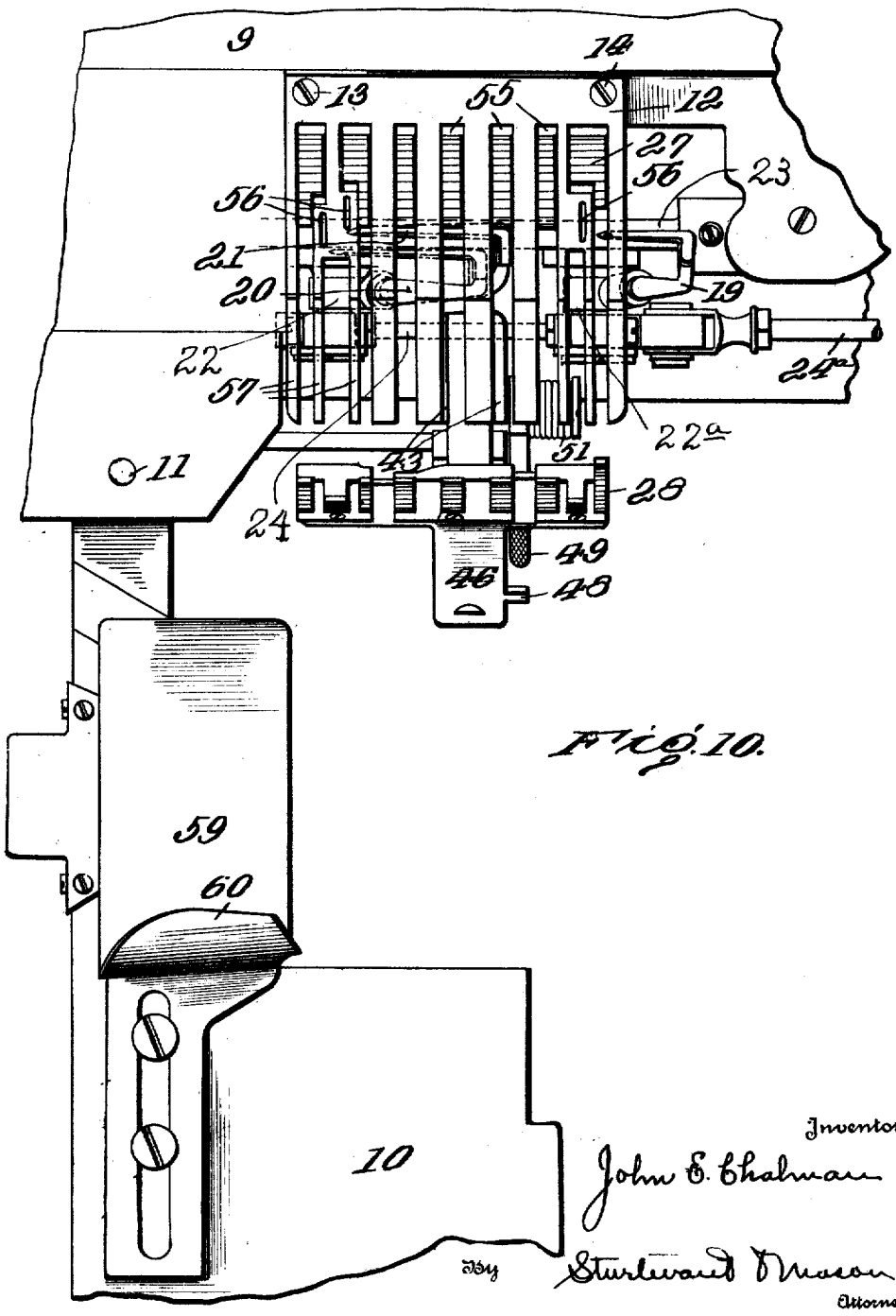


FIG. 10.

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Patented May 13, 1924. 1,494,319

UNITED STATES PATENT OFFICE.

JOHN E. CHALMAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MULTIPLE-NEEDLE SEWING MACHINE.

Application filed June 18, 1919. Serial No. 305,019.

To all whom it may concern:

Be it known that I, JOHN E. CHALMAN, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Multiple-Needle Sewing Machines, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

The invention relates to new and useful improvements in sewing machines, and more particularly to a sewing machine having a differential feeding mechanism and a plurality of needles and cooperating threaded loopers.

An object of the present invention is to arrange the auxiliary feed dogs in a machine of the above type so that said auxiliary feed dogs may be moved away from their normal point of operation to facilitate the threading of the loopers.

A further object of the invention is to provide a sewing machine of the above character with a throat plate which is secured at its rear end only and is provided with slotted extensions which permit the auxiliary feed dogs to be moved forwardly away from the loopers to facilitate the threading of the loopers.

A still further object of the invention is to provide a machine of the above character with a work support having a hinged section with a supporting ledge for the forward free end of the throat plate, and a cover plate which is adapted to cover the slots at the forward end of the throat plate, which movable section of the cloth plate may be withdrawn from the front of the throat plate so as to permit the auxiliary feed dogs to be moved away from the loopers and thus facilitate the threading of the same.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings, which show by way of illustration one embodiment of the invention:—

Figure 1 is a front view of a sewing machine embodying my improvements;

Fig. 2 is an end view showing a part of the machine;

Fig. 3 is a sectional view at one side of the feeding mechanism transversely of the machine;

Fig. 4 is a plan view of the work support with the cover plate for the forward end of the throat plate broken away;

Fig. 5 is a detail view showing a portion of the feeding mechanism in side elevation and with the auxiliary feed dogs moved toward the front of the machine to their extreme forward position;

Fig. 6 is a similar view but showing the bracket for the auxiliary feed dogs as swung about its pivot to further remove the auxiliary feed dogs from the loopers to aid in the threading of the same;

Fig. 7 is a front view of the auxiliary feed dogs and the supporting bracket therefor;

Fig. 8 is a perspective view showing a portion of the feed bars, the main feed dog, the auxiliary feed dogs, and the throat plate, the parts being separated to show more clearly the construction thereof;

Fig. 9 is a longitudinal sectional view through the supporting bracket for the auxiliary feed dogs;

Fig. 10 is a detail showing a portion of the cloth plate, the throat plate, and the cover plate which overlies the throat plate.

The invention is directed broadly to a multiple needle sewing machine having a feeding mechanism which includes main feed dogs and auxiliary feed dogs, the auxiliary feed dogs being located in front of the needles and operating to feed the material thereto. The stitching mechanism from certain aspects of the invention includes needles and threaded loopers cooperating therewith, which needles are set in a line substantially at right angles to the feed regardless of whether the loopers move transversely of the line of feed or parallel with the line of feed. It is difficult to get at the loopers to thread them, and the invention is directed to a construction for supporting the auxiliary feed dogs which permits the same to be moved forward away from the loopers in order that said loopers may be rendered accessible through the feed slots to assist in the threading of the loopers. From certain other aspects, the invention is directed more particularly to threaded loopers arranged transversely of the line of feed

and in tandem and is directed to a construction of feeding mechanism wherein auxiliary feed dogs may be used with such an arrangement of loopers.

To permit the movement of the auxiliary feed dogs above referred to, the throat plate is provided with a plurality of slots extended to the front end thereof, and said throat plate is secured by screws disposed at the rear end of the throat plate. The cloth plate is provided with a swinging section which has a supporting ledge adapted to move underneath the forward edge of the throat plate so as to provide a support therefor during the normal stitching operation. The slots which permit the auxiliary feed dogs to move forward are in part covered by a cover plate carried by this movable section of the work support.

Referring more in detail to the drawings, I have shown my invention as applied to a sewing machine which includes a bed plate 1 having a standard 2 carrying an overhanging arm 3, in which a needle bar 4 reciprocates. Said needle bar is given its movements by a needle lever 5 connected to the needle bar by a link 6, and the lever 5 is operated by an eccentric strap 7 cooperating with an eccentric on the main shaft 8. Carried by the bed plate 1 is a cloth plate 9. The cloth plate 9 is formed with a movable section 10 which is pivoted at 11 to the main section of the cloth plate, and said pivoted section is adapted to be swung outwardly on the pivot 11. The throat plate 12 is secured to the main section of the cloth plate by screws 13 and 14. The forward end of this throat plate is free from connection with the cloth plate but is supported by a ledge 15 carried by the movable section 10 of the cloth plate.

Mounted on the needle bar 4 are a plurality of needles 16, 17 and 18. Cooperating with the needle 16 beneath the work support is a looper 19, cooperating with the needle 17 is a looper 20, and cooperating with the needle 18 is a looper 21. These loopers are all of the same general construction and are of the threaded type. The loopers 20 and 21 are mounted on a looper carrier 22, which is pivotally mounted upon a looper support 23. The looper 19 is mounted upon a looper carrier 22^a. This looper carrier is also mounted upon the looper support 23. The two looper carriers are connected by a link 24 and are oscillated by a link 24^a which is connected to the needle lever extension. These loopers are set so as to move back and forth in planes transverse of the line of feed, and each looper is given a needle avoiding movement in the well-known way. The material is held on the work support by a presser foot 25 carried by a presser bar 26.

The material is fed across the work support by a series of main feed dogs 27 and a series of auxiliary feed dogs 28. The main feed dogs 27 are carried by a bracket 29 secured to the main feed bar 30. This main feed bar 30 is pivoted at 31 to a feed rocker 32 which is of the usual construction. The main feed bar is raised and lowered by an eccentric 33 on the main shaft 8. The bracket 29 has spaced projecting bearings 34. Mounted to slide freely in these supporting bearings is a pair of rods 35 which are connected to a link 36, and the link 36 is in turn connected to a bolt 37 adjustable in the slot 38 of a bracket arm carried by the feed rocker 32. These parts are in general similar to those shown in the patent to Moffatt, No. 1,217,328, dated February 27, 1917.

Mounted on the rods 35 are two bracket arms 39, see Figs. 3 and 8. These bracket arms carry a cross head 40, and secured to said cross head 40 is a U-shaped bracket piece 41. Mounted on the forward end of said U-shaped bracket piece 41 is an adjustable supporting shank 42 for the auxiliary feed dogs. The U-shaped bracket piece 41 extends beneath the path of travel of the loopers and forms a clearance space therefor. In the present arrangement of the needles and loopers the bracket piece is shown as disposed between the looper carriers. At the upper end of the supporting shank 42 of the auxiliary feed dogs is a dove-tailed recessed support 43. Pivotally carried by this supporting shank is an arm 44. This arm 44 also has a dove-tailed recess 45, corresponding in cross section to the dove-tailed recess in the support 43. The auxiliary feed dogs 28 are carried by a supporting plate 46 which has a dove-tailed rib 47 on its under face adapted to slide in the dove-tailed recesses. Said plate 46 is provided with a laterally projecting lug 48. A latch 49 is pivoted at 50 to the shank 42 and a spring 51 normally tends to throw said latch in an upward direction. Said latch is provided with a notch 52 which is adapted to engage the lug 48 when the slide is moved inwardly to its extreme inward position, and in this position the auxiliary feed dogs are set for their normal feeding operation. By releasing this latch from the lug 48, the slide may be moved forwardly or toward the front of the machine, or to the position shown in Fig. 5. A spring 53 carried by the pivot pin 54, which secures the arm 44 to the shank 42, bears against the under face of the arm 44 and normally holds the same in horizontal position so that the dove-tailed recesses are in alinement. When the supporting plate 46 is moved to the extreme forward position of its movement and away from the needles, then said plate is supported wholly by the arm 44 and said arm 44 may be

swung downwardly to the position shown in Fig. 6. In this position, the notch 52 in the latch 49 engages the edge of the plate 46 and holds the arm in its inclined position against the tension of the spring 53.

The throat plate 12 is provided with feed slots 55. These feed slots are cut clear through to the forward edge of the throat plate. Said throat plate is also provided with needle openings 56. The forward portion of the throat plate is inclined downwardly, as indicated at 57. Said throat plate has a thickened portion 58 at its forward edge, and this thickened portion is adapted to rest on the ledge 15, as shown in Fig. 4 of the drawings. The work support is provided with an adjustable cover plate 59 which is mounted on the movable section 10, and said cover plate overlies the tapered edge of the throat plate and covers in part the slots in which the feed dog sections operate. Said cover plate may be formed with an edge guide 60 for directing the main fabric, indicated at F in the drawings. I have also shown in the drawings a guide and folder 61 for directing a facing strip which is to be stitched to the body fabric F.

In the normal operation of the machine, the auxiliary feed dogs are positioned as shown in Fig. 4, and said feed dogs operate in the usual way to feed the fabric. When it is desired to thread the machine, the section 10 is swung on its pivotal support 11, which carries the cover plate 59 and the ledge 15 away from the throat plate, leaving exposed the open ended slots in the throat plate in which the feed dogs operate. The operator then depresses the latch 49 and moves the slide to its extreme forward position, as in Fig. 5, and then pushes down on the slide which tilts the arm 44, and thus moves the auxiliary feed dogs and the supporting plate 46 to the position shown in Fig. 6. This gives access to the loopers through the slots in the throat plate, so that the loopers may be readily threaded. The forward movement of the slide for the auxiliary feed dogs is limited by a stop screw 62 which is threaded into the arm 44 and extends into a groove 63 in the under face of the slide 46. After the loopers have been threaded, the latch is depressed and the slide plate released, then the arm is turned to normal horizontal position and the slide moved in to bring the auxiliary feed dogs back to their normal position.

It is obvious that minor changes in the details of construction may be made without departing from the spirit of the invention as set forth in the appended claims.

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

1. The combination of a plurality of needles, threaded loopers cooperating with said needles, and a feeding mechanism including feed dog sections disposed in front of said needles, means for actuating the feed dog sections, and means for supporting said feed dog sections whereby the same may be moved independently of the actuating means therefor away from the needles to give access to the loopers beneath the same for threading the loopers.

2. The combination with a plurality of needles, threaded loopers cooperating with said needles, and a feeding mechanism including feed dog sections located in front of said needles, means for supporting said feed dog sections whereby they may be moved forward and tilted downwardly in order to give access to the loopers for threading the same.

3. The combination with a plurality of needles, threaded loopers cooperating with said needles, a throat plate having feed slots formed therein, and a feeding mechanism including feed dog sections arranged in front of the needles and disposed in said feed slots, said throat plate having the feed slots extended to the forward edge thereof, and means whereby said feed dog sections may be drawn forwardly in said slots to give access to the loopers for threading the same.

4. The combination with a plurality of needles, a threaded looper for each needle arranged in a line substantially at right angles to the line of feed, and a feeding mechanism including feed dog sections arranged in front of said needles, and means for supporting said feed dog sections whereby they may be moved forwardly away from the needles to give access to the loopers for threading.

5. The combination with a plurality of needles, a throat plate having feed slots therein, a looper cooperating with each needle and arranged in a line substantially at right angles to the line of feed, and a feeding mechanism including feed dog sections arranged in the feed slots in the throat plate in front of said needles, and means whereby said feed dog sections may be moved forwardly away from the needles to give access to the loopers through the feed slots in the throat plate for the threading of the loopers.

6. The combination with a plurality of needles, a threaded looper for each needle arranged in a line substantially at right angles to the line of feed, a throat plate having a plurality of feed slots formed therein extending to the front end of said throat plate, a work support having a hinged section for covering the front ends of said slots, and a feeding mechanism including feed dog sections arranged in the feed slots in front of the needles, and means

for supporting said feed dog sections whereby the same may be moved forwardly away from the needles to give access to the loopers beneath the throat plate for threading the same.

7. The combination with a plurality of needles, a threaded looper cooperating with each needle, a work support, a throat plate fixed at its rear end to the work support, said work support having a pivoted section provided with a supporting ledge for the front end of said throat plate, said throat plate having feed slots formed therein extending to the front edge of the throat plate, and a feeding mechanism including feed dog sections arranged in the feed slots in the throat plate, and means for supporting said feed dog sections whereby they may be moved forwardly to give access to the loopers through the feed slots in the front plate for the threading of the loopers.

8. The combination with a plurality of needles, a threaded looper cooperating with each needle, a work support, a throat plate fixed at its rear end to the work support, said work support having a pivoted section provided with a supporting ledge for the front end of said throat plate, said throat plate having feed slots formed therein extending to the front edge of the throat plate, and a feeding mechanism including feed dog sections arranged in the feed slots of the throat plate in front of the needles, a sliding plate carrying said feed dog sections, a pivoted arm supporting said sliding plate, and means whereby said arm may be raised and lowered to move the feed dog sections away from the throat plate.

9. The combination with a plurality of needles, a threaded looper cooperating with each needle, a work support, a throat plate fixed at its rear end to the work support, said work support having a pivoted section provided with a supporting ledge for the front end of said throat plate, said throat plate having feed slots formed therein extending to the front edge of the throat plate, and a feeding mechanism including feed dog sections arranged in the feed slots of the throat plate in front of the needles, a sliding plate carrying said feed dog sections, a pivoted arm supporting said sliding plate, a spring for normally holding the arm raised, and a pivoted latch for holding the arm in depressed position with the feed dogs moved away from the throat plate.

10. The combination with a plurality of needles, a threaded looper cooperating with each needle, a work support, a throat plate fixed at its rear end to the work support, said work support having a pivoted section provided with a supporting ledge for the front end of said throat plate, said throat plate having feed slots formed therein extending to the front edge of the throat plate, and a feeding mechanism including feed dog sections arranged in the feed slots in front of the needles, a sliding plate carrying said feed dog sections, a support having a recess adapted to receive said sliding plate, a supporting arm having a recess in alinement with the recess in the support whereby said sliding plate may be moved into the recess in the supporting arm to withdraw the feed dog sections from in front of the needles, and a latch adapted to engage said sliding plate and hold the feed dog sections in normal feeding position.

11. The combination with a plurality of needles, a threaded looper cooperating with each needle, a work support, a throat plate fixed at its rear end to the work support, said work support having a pivoted section provided with a supporting ledge for the front end of said throat plate, said throat plate having feed slots formed therein extending to the front edge of the throat plate, and a feeding mechanism including feed dog sections arranged in the feed slots in front of the needles, a sliding plate carrying said feed dog sections, a support having a recess adapted to receive said sliding plate, a supporting arm having a recess in alinement with the recess in the support whereby said sliding plate may be moved into the recess in the supporting arm to withdraw the feed dog sections from in front of the needles, a latch adapted to engage said sliding plate and hold the feed dog sections in normal feeding position, said supporting arm being pivotally mounted on the first-named support for the feed dog sections whereby said supporting arm may be lowered, a spring for raising said arm, and means whereby said latch is adapted to hold the arm depressed with the feed dog sections moved away from the throat plate.

12. The combination with a plurality of needles, a work support, a throat plate fixed at its rear end to the work support, said throat plate having feed slots formed therein extending to the front edge of the throat plate, threaded loopers cooperating with the needles and disposed beneath the throat plate, feed dog sections located in said feed slots in front of the needles, means whereby the feed dog sections may be moved forwardly in said slots away from said needles, and a cover plate carried by the work support and covering the extreme front end of the slots when said feed dog sections are in normal feeding position.

13. The combination with a plurality of widely spaced needles arranged in a line at an angle to the line of feed, a threaded looper cooperating with each needle, and a feeding mechanism including main feed dogs located substantially in rear of the needles, auxiliary feed dogs located in front of the needles, means for actuating said feed

dogs, a U-shaped bracket disposed between said needles and supporting said auxiliary feed dogs, and means whereby said auxiliary feed dogs may be moved independently of the actuating means therefor forwardly relative to the supporting bracket therefor to render the loopers accessible for threading.

14. The combination with a plurality of spaced needles arranged in a line at an angle to the line of feed, a threaded looper cooperating with each needle and arranged to move in a line at an angle to the line of feed, and a feeding mechanism including main feed dogs substantially in rear of the needles, auxiliary feed dogs in front of said needles, and a U-shaped bracket for supporting said auxiliary feed dogs, said U-shaped bracket being disposed so as to form a clearance space for one of the loopers and the actuating mechanism therefor, said support for the auxiliary feed dogs being constructed so as to permit said feed dogs to be moved forwardly away from the needles to give access to the loopers for the threading of the same.

15. The combination with a plurality of needles and a threaded looper cooperating with each needle, said needles and loopers being disposed in a plane substantially at right angles to the line of feed, means for oscillating said loopers, a looper support on which both loopers are mounted, means for oscillating said support for giving the loopers a needle avoiding movement, and a feeding mechanism including main feed dogs disposed substantially in rear of the needles, auxiliary feed dogs disposed substantially in front of said needles, a U-shaped bracket for supporting said auxiliary feed dogs and forming a clearance space for one of said loopers and the actuating mechanism therefor, and means whereby said auxiliary feed dogs may be moved relative to the supporting bracket therefor for giving access to the loopers for threading.

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

JOHN E. CHALMAN.

Witnesses:

S. GEORGE TATE,

ARTHUR F. LARRABEE.