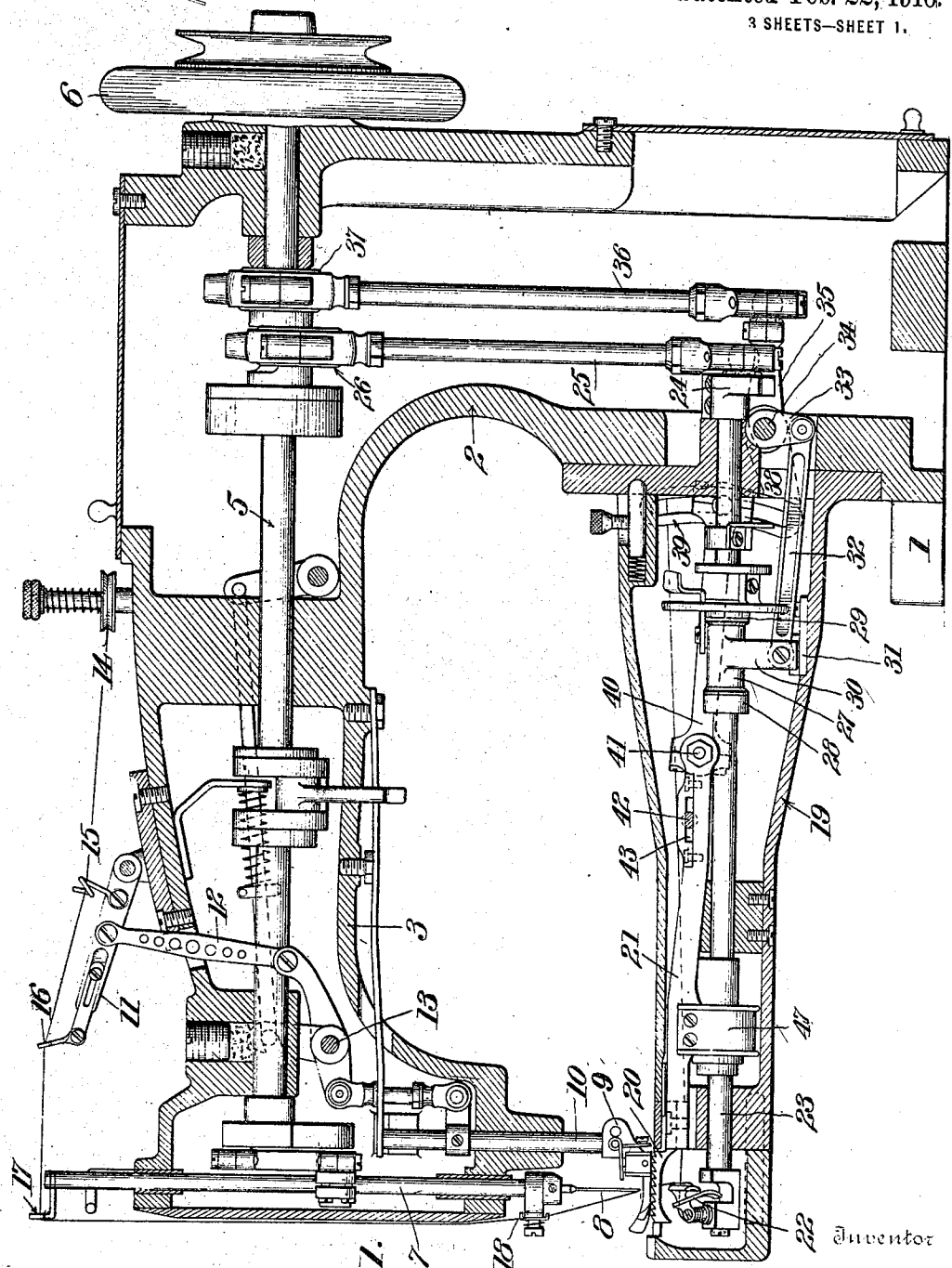


D. S. SEYMOUR,
 SEWING MACHINE.
 APPLICATION FILED NOV. 5, 1910.

1,172,911.

Patented Feb. 22, 1916.
 3 SHEETS—SHEET 1.



Witnesses
W. H. Master
Grace P. Overton

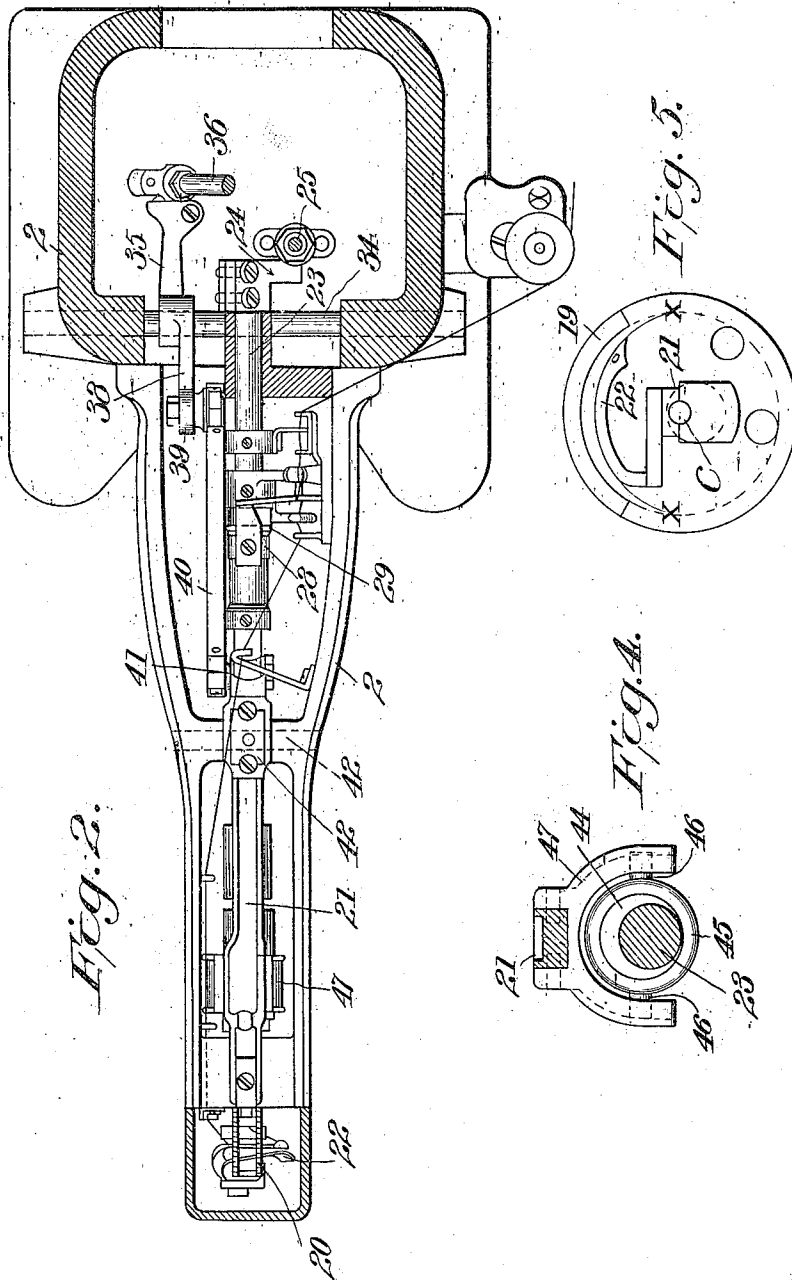
Fig. 1.

By

Inventor
Dudley S. Seymour
 Attorney
Sturtevant Mason
 Attorneys

1,172,911.

Patented Feb. 22, 1916.
 3 SHEETS—SHEET 2.



Witnesses
W. Walker.
Grace P. Breerton

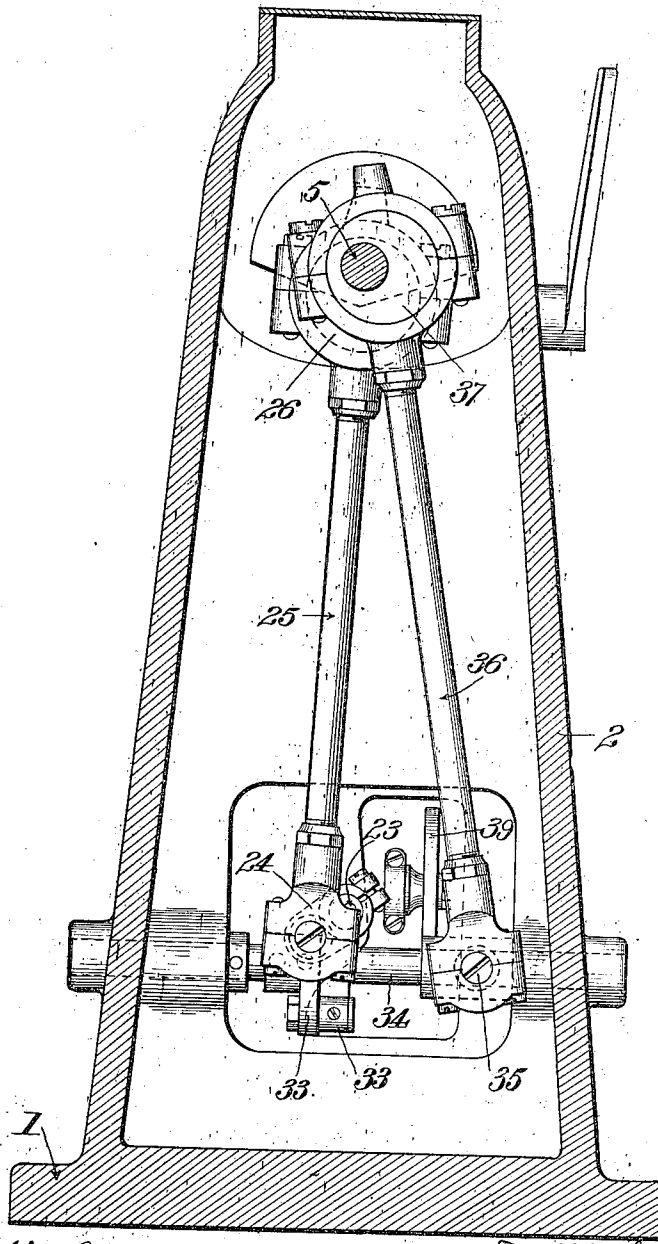
Inventor
Dudley S. Seymour
 By *Stewart Mason*
 Attorneys

1,172,911.

D. S. SEYMOUR.
SEWING MACHINE.
APPLICATION FILED NOV. 5, 1910.

Patented Feb. 22, 1916.
3 SHEETS—SHEET 3.

Fig. 3.



Inventor

Witnesses

C. Walker
Grace P. Breerton

334

Dudley S. Seymour
Sturtevant Mason
Attorneys

UNITED STATES PATENT OFFICE.

DUDLEY S. SEYMOUR, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SEWING-MACHINE.

1,172,911.

Specification of Letters Patent.

Patented Feb. 22, 1916.

Application filed November 5, 1910. Serial No. 590,915.

To all whom it may concern:

Be it known that I, DUDLEY S. SEYMOUR, 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 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.

The invention relates to new and useful improvements in sewing machines, and more especially to sewing machines having a cylindrical bed plate or work-supporting arm longitudinally of which the goods are fed during the stitching operation.

An object of the invention is to provide a machine with an unusually long overhanging arm and work-supporting arm, in order to increase the capacity of the machine.

A further object of the invention is to provide an improved arrangement of looper-operating mechanism and feed-operating mechanism which may be packed in a very small work-supporting arm, and in which the movements of the looper and the feed are positive, and especially adapted for high speed.

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 sectional view taken longitudinally through the machine; Fig. 2 is a view partly in section and partly in plan, showing the looper and feed-operating mechanisms; Fig. 3 is a vertical section through the standard; Fig. 4 is a detail view showing the means for raising and lowering the feed bar; and Fig. 5 is an end view of the cylindrical work support and showing the position of the looper therein.

The machine as herein shown consists of a bed plate 1, in which rises a standard 2 carrying a very long overhanging arm 3 having the usual needle head 4 at the forward end thereof. The main shaft 5 is mounted to rotate in the overhanging arm, and is operated by the combined belt and hand wheel 6. The needle bar 7 reciprocates in a needle head and carries a needle

or needles 8. The needle bar is connected by the usual link with the main shaft 5. The presser foot 9 is carried by a presser bar 10, mounted at the forward end of the overhanging arm. A thread controller 11 is connected by a link 12 to a rock shaft 13, which in turn is connected to the presser bar so as to vary the position of the thread controller for varying thicknesses of fabric. The needle thread is led through the tension device 14; then through the eye 15 to the thread guide 16 on the outer end of the thread controller 11. The needle thread then passes to a thread guide 17 on the upper end of the needle bar, and through a thread clip 18 to the eye of the needle.

The parts above described are not claimed herein, and further details and description thereof are not thought necessary.

The work-supporting arm or bed plate 19 is attached to the standard 2, and projects in a direction parallel to the overhanging arm. The feed dog 20 cooperating with the presser foot 9, is arranged so as to feed the material along the work-supporting arm and in a direction underneath the overhanging arm. Said feed dog 20 is rigidly attached to a feed bar 21. This feed bar at its forward end reciprocates back and forth in the supporting bearing of the work support, which prevents said feed bar from moving laterally. A looper 22 is carried by the forward end of a looper shaft 23, which is mounted to oscillate in bearings in the work-supporting arm. The looper is so mounted as to move in a direction at right angles to the line of feed, and a single looper cooperates with both needles, if two needles are used. The looper-supporting shaft 23 carries a crank arm 24 at its rear end, which extends into the standard 2 of the machine. A ball is carried on the outer end of the crank arm and a link 25 engages said ball. The link 25 at the upper end cooperates with an eccentric 26 mounted on the main shaft 5. As the main shaft rotates, the looper shaft will be oscillated, and the looper moved back and forth into and out of the needle loop.

The looper is moved laterally to give the same a needle-avoiding movement by means of a sleeve 27, which is freely mounted on the looper-supporting shaft 23 between the

collars 28 and 29, which are rigidly secured to the looper-supporting shaft. The sleeve 27 carries a depending arm 30, which rests between guides on a bracket 31 mounted on the work-supporting arm. These guides allow the sleeve to move longitudinally, but prevent the same from rotating or oscillating with the looper-supporting shaft. A link 32 is connected with the outer end of the arm 30 and to an arm 33 carried by a rock shaft 34. The rock shaft 34 carries also an arm 35 having a ball stud which engages a link 36, which in turn cooperates with an eccentric 37 on the main shaft 5. As the main shaft rotates, the rock shaft 34 will be oscillated, and through the link 32 and arm 30 the looper-supporting shaft will be moved endwise. A third arm 38 is carried by the rock shaft 34, and will vibrate with said rock shaft. Said arm 38 is provided with a vertically extending member 39, which is formed with a curved slot. A link 40 is pivoted at 41 to the end of the feed bar 21, and said link at its other end is connected to a ball stud adjustably secured in the curved slot in the member 39.

The feed bar 21 at the opposite end from its feed dog slides on a flat pin 42, which flat pin is mounted to turn freely in bearings in the work support. The feed bar is formed with an elongated slot 43, which engages the flat pin 42, and this slot allows the feed bar to be moved endwise, and the pivotal support for the pin allows the feed dog to be moved up and down. As the rock shaft 34 is oscillated, the member 39 will be vibrated, and through the link 40 the feed bar will be moved back and forth in the work-supporting arm.

The feed bar is raised and lowered by an eccentric 44, which is secured to the looper-supporting shaft 23. Said eccentric engages a sleeve 45, which is carried by trunnions 46, freely mounted in a yoke 47, which is rigidly secured to the feed bar 21. The eccentric 44 is so constructed that said eccentric may slide back and forth in the sleeve 45. This allows for the endwise movement of the looper shaft, which gives the looper its needle-avoiding movement. The oscillations of the looper shaft will, however, through the eccentric 44 raise and lower the yoke 47, and in turn raise and lower the feed dog by swinging the feed bar and the flat pin 42 in its pivotal support. The trunion connection between the sleeve 45 and the yoke 47 allows for the rigid connection between the yoke and the feed bar and the swinging of the feed bar about the pin 42 as a center. It will thus be seen that I have provided a means for raising and lowering the feed bar, which is positive in its action and which is located adjacent the feed dog, so that the weight of the vibrated parts is comparatively small. It will also be noted

that I have provided only two operating eccentrics on the main shaft, one of which gives one movement to the feed dog and one movement to the looper, while the other gives the other movement to the feed dog and the other movement to the looper.

Another feature of my invention is the location of the looper shaft relative to the cylindrical work support. It is desirable to make the cylindrical work support as small as possible and still operate properly the looper. When the work support is reduced in size, the looper must also be reduced, and cause to move in a circular path having a short radius.

I have found that by mounting the axis of the looper shaft below the longitudinal axis of the cylindrical work support, so that the path of the looper is eccentric to the work support, a relatively large circular path of travel may be given to the looper, and the size of the cylindrical work support relatively decreased.

In Fig. 5 I have shown the work support 19 in end elevation. The looper shaft 21 is indicated in dotted lines as having its axis below the longitudinal axis of the work support, which is indicated at *c*. The path of movement of the looper 22 is indicated at *x-x*. It will be seen that the path of movement of the looper if extended would cut the outer surface of the work support. I am able by this new positioning of the looper, to also construct the looper in the arc of a circle, having less curvature, which aids materially in the proper formation of the stitches.

It will be obvious that minor changes in the details of construction may be made without departing from the spirit of my invention.

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

1. The combination of a thread-manipulating device mounted to move back and forth and laterally, a fabric-manipulating device mounted to move back and forth and up and down, a shaft, an eccentric member operated by said shaft, means operated by said eccentric member for giving said thread-manipulating device one of its movements, and said fabric-manipulating device one of its movements; a second eccentric member operated by said shaft, and means operated by said second eccentric member for giving the thread-manipulating device its other movement and the fabric-manipulating device its other movement.

2. The combination of a looper mounted to move back and forth and laterally, a feed dog mounted to move up and down and back and forth, a shaft, an eccentric member operated by said shaft, means operated by said eccentric member for giving each said

looper and said feed dog one of their movements, a second eccentric member operated by said shaft, and means operated by said eccentric member for giving the looper and the feed dog their other movements.

3. The combination of a looper, a looper-supporting shaft, a feed dog, a feed bar carrying said feed dog, an operating shaft, an eccentric member carried thereby, a rock shaft operated from said eccentric member, means connected to said rock shaft for moving the feed bar back and forth, and means connected to said rock shaft for moving the looper shaft endwise.

4. The combination of a looper, a looper-supporting shaft, a feed dog, a feed bar supporting the same, an operating shaft, an eccentric member carried thereby, a rock shaft operated by said eccentric member, a slotted arm carried by said rock shaft, a link adjustably connecting said slotted arm to said feed bar, and means for moving the looper shaft endwise from said rock shaft.

5. The combination of a looper, a looper-supporting shaft, a feed dog, a feed bar supporting the same, an operating shaft, an eccentric member carried thereby, a rock shaft operated by said eccentric member, a slotted arm carried by said rock shaft, a link adjustably connecting said slotted arm to said feed bar, a sleeve carried by said looper-supporting shaft, and a link connecting said sleeve to said rock shaft.

6. The combination of a looper, a looper-supporting shaft, a feed dog, a feed bar supporting said feed dog, a main shaft, an eccentric member operated by said main shaft, means operated from said eccentric for oscillating the looper shaft, an eccentric member carried by the looper-supporting shaft adjacent the forward end thereof, and means operated by said eccentric member for raising and lowering the feed dog, a second eccentric mounted on the main shaft, and means operated by said last named eccentric for moving the looper shaft endwise and for giving a feeding movement to the feed bar.

7. The combination of a looper, a looper-supporting shaft, a feed dog, a feed bar carrying said feed dog, said feed bar extending longitudinally of said looper-supporting shaft, means for moving the looper-supporting shaft endwise and for giving to the feed bar a feeding movement, means for oscillating the looper shaft, an eccentric member carried by said looper-supporting shaft adjacent the forward end thereof, a sleeve cooperating with said eccentric, a yoke attached to the feed bar, and means for pivotally connecting said sleeve to said yoke.

8. The combination of a cylindrical bed plate, of a feed bar extending longitudinally thereof, a feed dog carried thereby, a pivot pin on which said feed bar is slidingly

mounted, means for moving said feed bar back and forth, a looper-supporting shaft, an eccentric member operated by said looper-supporting shaft, a sleeve cooperating with said eccentric member, a yoke connected to the feed bar adjacent the feed dog, and means for pivotally connecting said sleeve to said yoke.

9. The combination of a cylindrical bed plate, of a feed bar extending longitudinally thereof, a feed dog carried thereby, a pivot pin to which one end of said feed bar is slidingly connected, a link connected to the end of the feed bar for reciprocating the same, a looper shaft mounted below said feed bar, an eccentric member carried by the looper shaft, a sleeve engaging said eccentric member and sliding longitudinally thereon, a yoke attached to said feed bar intermediate its ends, trunnions carried by said sleeve and engaging bearings in said yoke.

10. The combination of a cylindrical bed plate, of a looper-supporting shaft mounted therein, spaced collars carried by said looper shaft, a feed bar extending longitudinally of the bed plate, means for operating said feed bar up and down from said looper-supporting shaft, means for oscillating said looper-supporting shaft, means for moving said looper-supporting shaft endwise including a sleeve freely mounted on said looper-supporting shaft and located between the collars fixed on said looper-supporting shaft.

11. The combination of a cylindrical bed plate, a looper-supporting shaft mounted therein, spaced collars carried by said looper shaft, a feed bar extending longitudinally of the bed plate, means for operating said feed bar up and down from said looper-supporting shaft, means for oscillating said looper-supporting shaft, means for moving said looper-supporting shaft endwise, including a sleeve freely mounted on said looper-supporting shaft and located between the collars fixed on said looper-supporting shaft, an arm attached to said sleeve, a guiding bracket for guiding said arm, and a link connected to said arm for moving said looper shaft endwise.

12. The combination of a looper, a looper-supporting shaft, means for oscillating said shaft, means for moving said shaft endwise, including a sleeve, spaced collars on the looper shaft between which said sleeve is freely mounted, means connected to said sleeve for moving the looper shaft longitudinally, and means for preventing the sleeve from turning with the looper shaft.

13. The combination of a looper, a looper-supporting shaft, means for oscillating said shaft, means for moving said shaft endwise including a sleeve, spaced collars on the looper shaft between which said sleeve is

70

75

80

85

90

95

100

105

110

115

120

125

130

freely mounted, means connected to said sleeve for moving the looper shaft longitudinally, said sleeve having a depending portion carried thereby, and a fixed member for engaging said depending portion for preventing the sleeve from turning with the looper-supporting shaft.

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

DUDLEY S. SEYMOUR.

Witnesses:

C. McNEIL,
S. B. CLOTHIER.