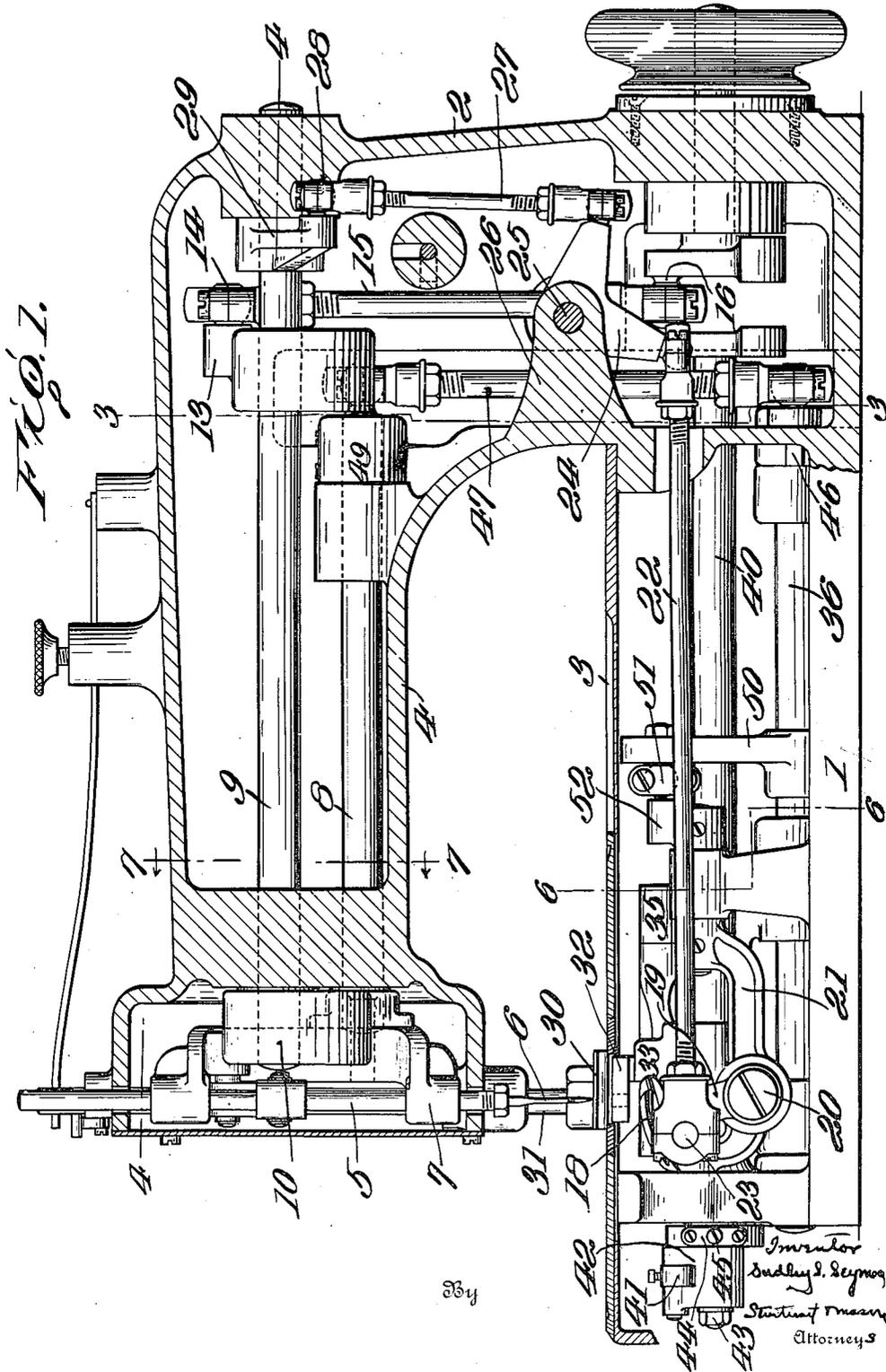


Apr. 3, 1923.

1,450,456.

D. S. SEYMOUR.  
FEEDING MECHANISM FOR SEWING MACHINES.  
FILED SEPT. 13, 1920.

6 SHEETS—SHEET 1.

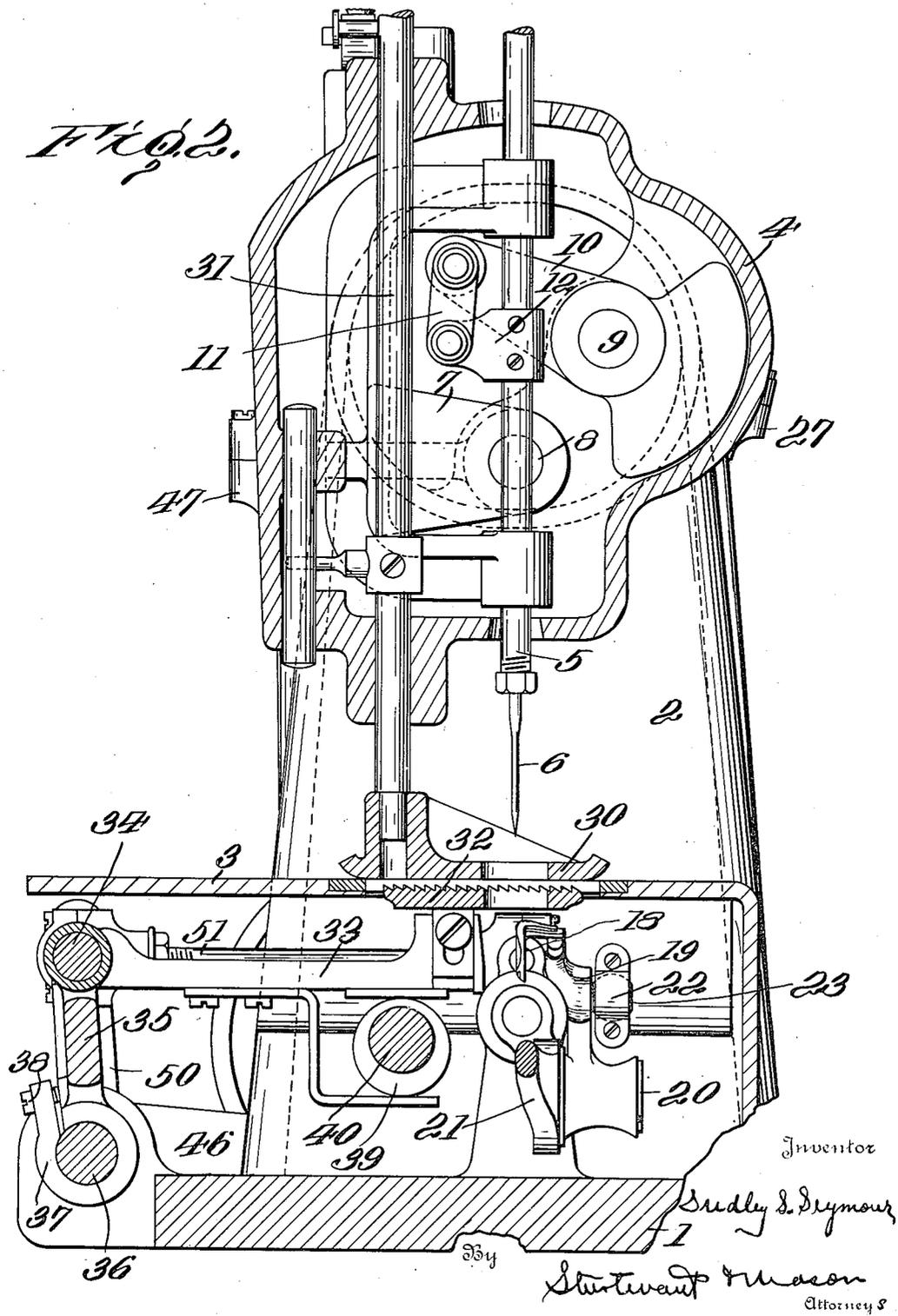


Apr. 3, 1923.

1,450,456.

D. S. SEYMOUR,  
FEEDING MECHANISM FOR SEWING MACHINES.  
FILED SEPT. 13, 1920.

6 SHEETS—SHEET 2.

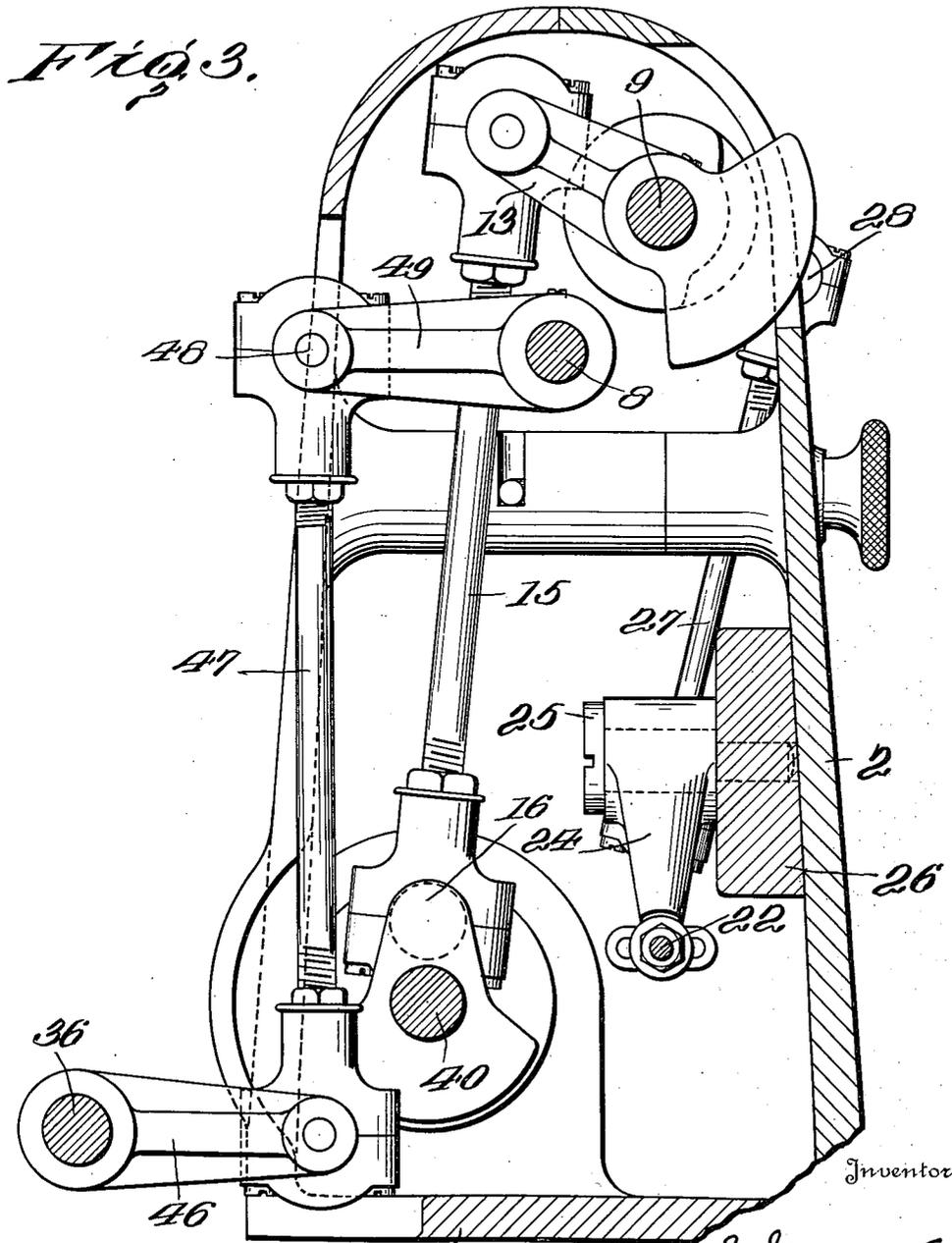


Apr. 3, 1923.

1,450,456.

D. S. SEYMOUR.  
FEEDING MECHANISM FOR SEWING MACHINES.  
FILED SEPT. 13, 1920.

6 SHEETS—SHEET 3.



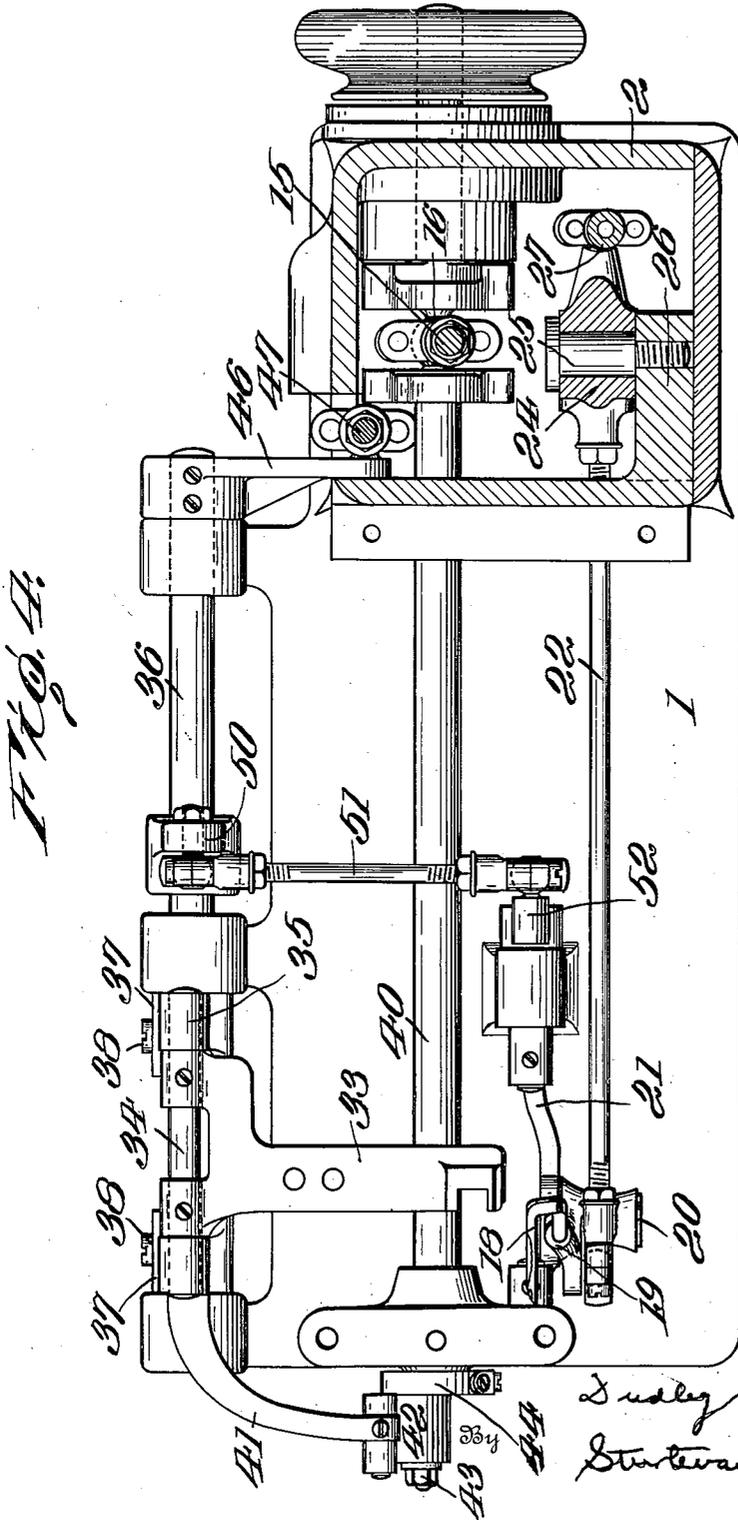
Inventor  
Dudley S. Seymour  
Sturtevant & Mason  
Attorneys

Apr. 3, 1923.

1,450,456.

D. S. SEYMOUR,  
FEEDING MECHANISM FOR SEWING MACHINES.  
FILED SEPT. 13, 1920.

6 SHEETS—SHEET 4.



Inventor

Dudley S. Seymour  
Sturtevant & Mason  
Attorneys

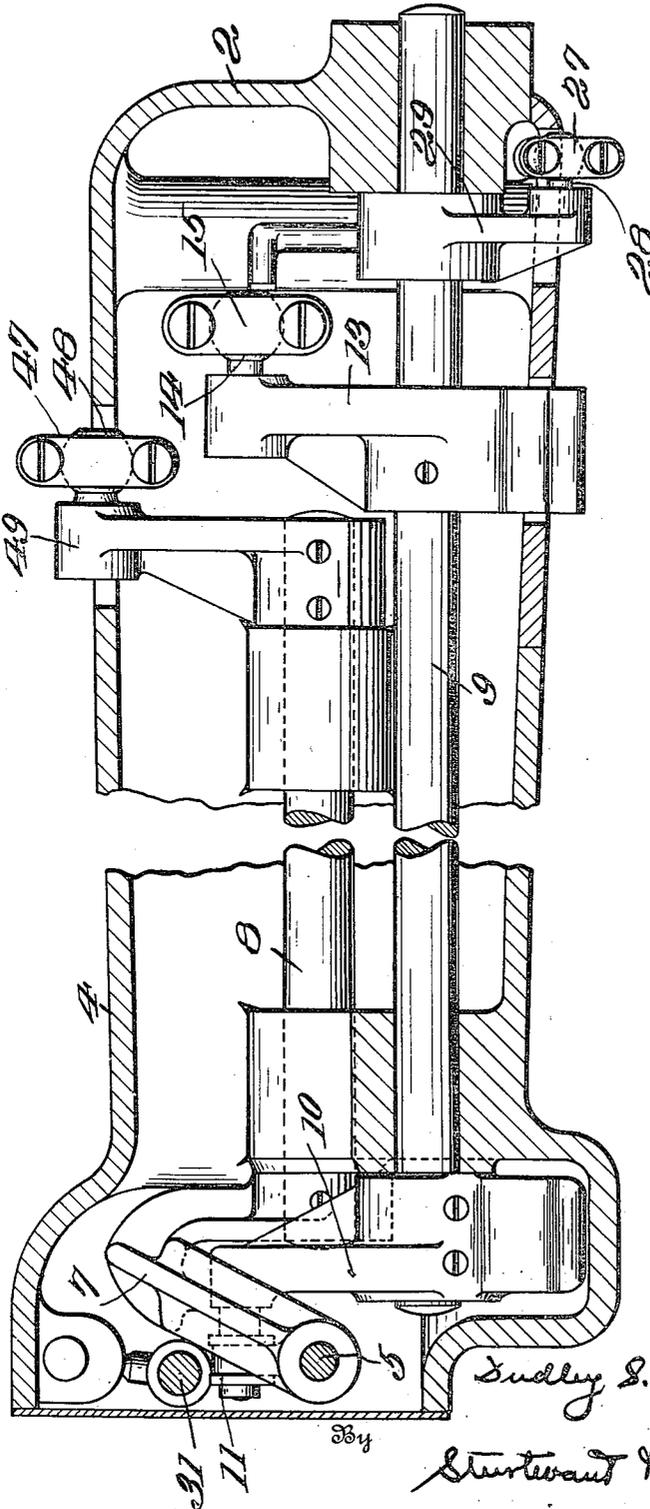
Apr. 3, 1923.

1,450,456.

D. S. SEYMOUR,  
FEEDING MECHANISM FOR SEWING MACHINES.  
FILED SEPT. 13, 1920.

6 SHEETS—SHEET 5.

*Fig. 5.*



Inventor

*Dudley S. Seymour*

*Stewart & Mason*  
Attorneys

Apr. 3, 1923.

1,450,456.

D. S. SEYMOUR,  
FEEDING MECHANISM FOR SEWING MACHINES,  
FILED SEPT. 13, 1920.

6 SHEETS—SHEET 6.

FIG. 6.

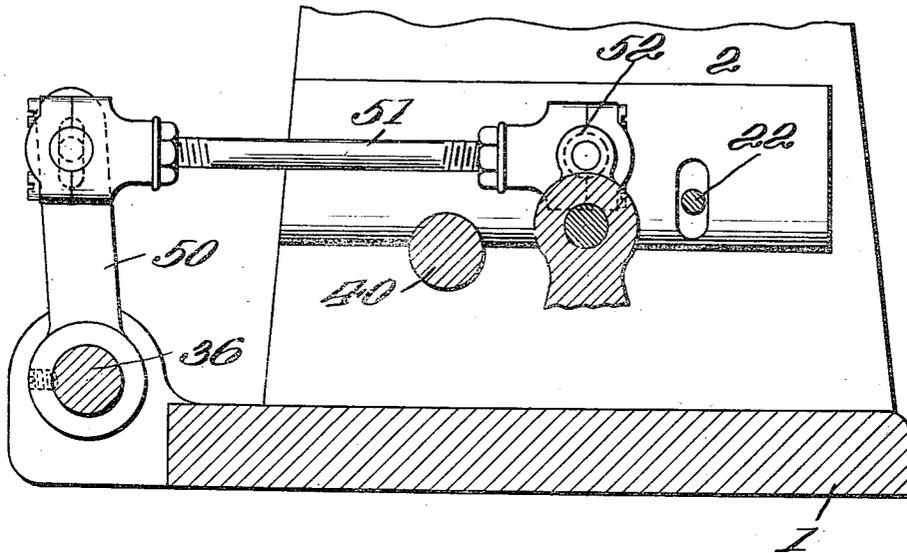


FIG. 7.

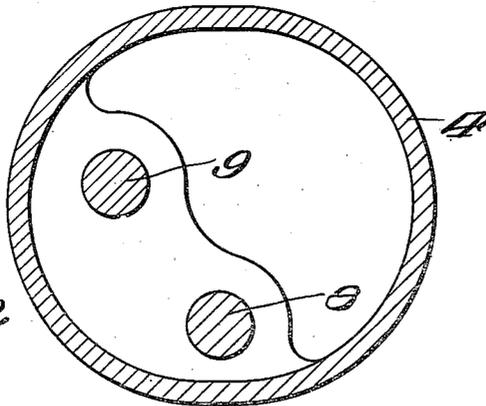
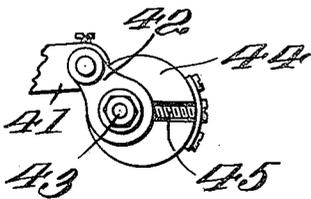


FIG. 8.



Inventor  
Dudley S. Seymour

By  
Stewart Mason  
Attorney

# UNITED STATES PATENT OFFICE.

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

## FEEDING MECHANISM FOR SEWING MACHINES.

Application filed September 13, 1920. Serial No. 409,842.

*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 Feeding Mechanisms for 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 feeding mechanisms for sewing machines, and more particularly to a feeding mechanism which is adapted for forming relatively long stitches.

An object of the invention is to provide a machine of the above character, wherein the feed of the fabric is accomplished both by a reciprocating feed dog and a lateral movement of the needle while in the material, the feed dog being timed to engage the material to move the same while the needle is in the material and operating through a lateral movement thereof to assist and aid in feeding the material.

A further object of the invention is to provide a feeding mechanism of the above character, wherein the looper co-operating with the needle is moved bodily with the needle in its lateral movements, so as to be properly positioned to co-operate with the needle and permit of a relatively wide range of lateral movement of the needle for producing long stitches.

A further object of the invention is to provide a feeding mechanism of the above character, wherein the feed dog is reciprocated back and forth, the needle moved laterally and the looper shifted to co-operate with the needle through a single driving connection with the main shaft, whereby a proper timing of these moving parts is secured.

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

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

Figure 1 is a vertical longitudinal sectional view through the machine at a point in front of the needle;

Figure 2 is a vertical sectional view substantially on the line of feed;

Figure 3 is a vertical sectional view on the line 3—3 of Figure 1;

Figure 4 is a sectional view on the line 4—4 of Figure 1; the work support being removed to show the mechanism beneath the same;

Figure 5 is a sectional view on the line 5—5 of Figure 1;

Figure 6 is a sectional view on the line 6—6 of Figure 1;

Figure 7 is a sectional view on the line 7—7 of Figure 1; and

Figure 8 is a detail showing the connection to the main shaft for reciprocating the feed, moving the needle laterally and shifting the looper bodily.

The invention is directed to a sewing machine which is adapted to operate upon coarse material, such as used for forming bags, and more particularly to the feeding mechanism for feeding the material a stitch length. In certain classes of work, it is desired to feed the material from one-half to three-quarters of an inch between needle punctures, and considerable difficulty has been experienced in properly controlling the material to bring about an even feed thereof for such long stitch lengths.

In my co-pending application, filed of even date herewith, I have shown and described a feeding mechanism wherein the material is fed solely by lateral movements of the needle, and in order that the needle may be given a relatively long lateral throw, a looper is mounted so as to shift bodily with the needle in its lateral movements.

The present invention is along the line of my co-pending application, wherein the bodily movements of the looper with the needle are claimed broadly. The feed of the material in the present invention is accomplished by a four-motion feed dog and a laterally shifting needle, which feed dog is timed so as to engage the material for moving the same a stitch length while the needle is in the material. In the present machine, the looper is also shifted laterally so as to permit of a wide range of lateral movement of the needle.

Referring more in detail to the drawings, my improved sewing machine consists of a bed plate 1, having a standard 2, a work support 3 and an overhanging arm 4. Mounted in the overhanging arm 4 is a needle bar 5,

carrying a needle 6. This needle bar 5 is mounted to reciprocate in a yoke 7, which is fixed to the end of a shaft 8 mounted in suitable bearings in the overhanging arm. The needle is reciprocated by means of a shaft 9, also mounted in suitable bearings in the overhanging arm 4 and this shaft 9 carries an arm 10, which is connected by a link 11 to a lug 12 secured to the needle bar. Near the other end of the shaft 9, there is an arm 13 having a ball stud 14 and a link 15 engages said ball stud. The other end of said link engages a crank pin 16 formed integral with the main shaft 40 which is mounted in suitable bearings carried by the bed plate 1 and the standard 2. As the main shaft rotates, the shaft 9 will be oscillated and the needle bar will be reciprocated.

Co-operating with the needle, beneath the work support, is a threaded looper 18. This threaded looper is mounted on a carrier 19, which is pivoted at 20 to a looper support 21. The looper is moved back and forth in a direction at right angles to the line of feed by means of a link 22 which engages a ball stud 23 on the looper carrier 19 and a ball stud on a rock lever 24, pivoted at 25 to a lug 26 projecting from the inner wall of the standard, and this rock lever is in turn connected to a link 27 which at its upper end engages a ball stud 28 on an arm 29 fixed to the shaft 9, so that, as the shaft 9 is oscillated through the link 27, the rock lever 24 and the link 22, the looper will be moved back and forth into and out of the needle thread loop.

The material is held on the work support by means of a presser foot 30, carried by a presser bar 31, mounted in suitable bearings in the overhanging arm. Directly beneath the presser foot is a feed dog 32, carried by a feed bar 33, pivoted at 34 to a feed rocker 35. This feed rocker is rigidly clamped to a shaft 36 by means of split collars 37 and set screws 38. The feed bar is raised and lowered by means of an eccentric 39 on the main shaft 40. The feed rocker 35 is oscillated by means of an arm 41 which is connected at its outer end to a link 42, which in turn is connected to a crank pin 43 carried by a disk 44 secured to the outer end of the main shaft 40. The crank pin may be shifted toward and from the center of the disk by means of a screw 45.

As the main shaft rotates, this arm 41 will be oscillated and this will cause the feed rocker to move back and forth and impart reciprocating movements to the feed dog 32. The feed rocker 35, as above noted, is rigidly secured to the shaft 36 and therefore the oscillating movements imparted by the arm 41 to the feed rocker 35 will likewise be imparted to the shaft 36. This shaft 36 is extended to a point adjacent the standard

and at its extreme inner end carries an arm 46. A link 47 is connected to the outer end of the arm 46 and extends upwardly in the standard. Said link is connected to a ball stud 48, carried by an arm 49 which is rigidly secured to the shaft 8. The oscillations of the shaft 36, therefore, will positively impart oscillations to the shaft 8 and the shaft 8 carries the yoke 7, and will oscillate said yoke. This will cause the needle bar to oscillate and impart a lateral movement to the needle.

Also carried by the shaft 36 is an upwardly extending arm 50, to which a link 51 is connected and this link 51 in turn is connected to an arm 52 carried by the looper support 21, so that as the shaft 36 oscillates, it will impart an oscillation to this looper support and this will bodily shift the looper in a direction parallel with the line of feed. This shifting of the looper causes the looper to maintain its co-operative relation to the needle although the needle moves laterally. It also imparts a needle avoiding movement to said looper. In other words, when the needle is down and ready for the looper to move forward to take the needle loop, said needle is also back at or near the end of its feed stroke. The looper then moves into the needle thread loop and, while entering the needle loop, it moves laterally with the needle so as to maintain its relation thereto. As the needle leaves the fabric, it moves forward for its next feed stroke; the looper is also moved forward, that is sidewise toward the front of the machine, and the movement imparted to the looper is greater than that imparted to the needle, so that the looper is moved to the other side of the needle and thus given its needle avoiding movement.

From the above, it will be apparent that the feed is moved back and forth for feeding the material, the needle is moved laterally to assist in feeding the material and the looper is moved laterally to maintain its co-operative relation to the needle by the oscillating movements imparted from the crank pin 43 to the arm 41. The timing of these parts will thus be maintained.

It is noted that the crank pin 43 is on the opposite side of the disk 44 from which it is usually set in operating a feed dog and this is because the feed dog engages the material and moves the same while the needle is in the material and not while the needle is out of the material, as in the ordinary four-motion feed dog construction.

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

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

70

75

80

85

90

95

100

105

110

115

120

125

130

1. A sewing machine including in combination, a feed dog, a needle, means for reciprocating said needle, means for giving said feed dog feeding movements while the  
5 needle is in the material, means for moving the needle laterally while in the material to assist in feeding the same, a looper cooperating with the needle, and means for moving said looper laterally with the needle and  
10 for giving said looper a needle avoiding movement.
2. A sewing machine including in combination, a feed dog, a needle, means for reciprocating said needle, means for giving  
15 said feed dog feeding movements while the needle is in the material, means for moving the needle laterally while in the material to assist in feeding the same, a looper cooperating with the needle, said looper being  
20 mounted so as to move in a direction transversely of the line of feed, and means for moving said looper laterally with the needle and for giving thereto a needle avoiding movement.
- 25 3. A sewing machine including in combination, a feed dog, a needle, means for reciprocating said needle, means for giving said feed dog feeding movements while the  
needle is in the material, means for moving  
the needle laterally while in the material to  
30 assist in feeding the same, a looper cooperating with the needle, and means actuated in timing with the feeding mechanism for moving said looper laterally with the needle  
and giving said looper a needle avoiding  
35 movement.
4. A sewing machine including, in combination, a feed dog, a feed bar carrying said  
40 feed dog, a feed rocker to which said feed bar is pivoted, means for raising and lowering said feed dog, means for oscillating said feed rocker, a needle, a needle bar carrying  
said needle, a yoke in which said needle bar  
reciprocates, a looper, means for moving  
45 said looper into and out of the needle thread loop, a looper support on which said looper is pivoted, means for oscillating said looper support from said feed rocker and for oscillating  
said yoke from said feed rocker, whereby said needle is caused to move later-  
50 ally while in the material to assist in feeding the material and whereby said looper is maintained in proper co-operative relation to the needle.

In testimony whereof, I affix my signature. 55  
DUDLEY S. SEYMOUR.