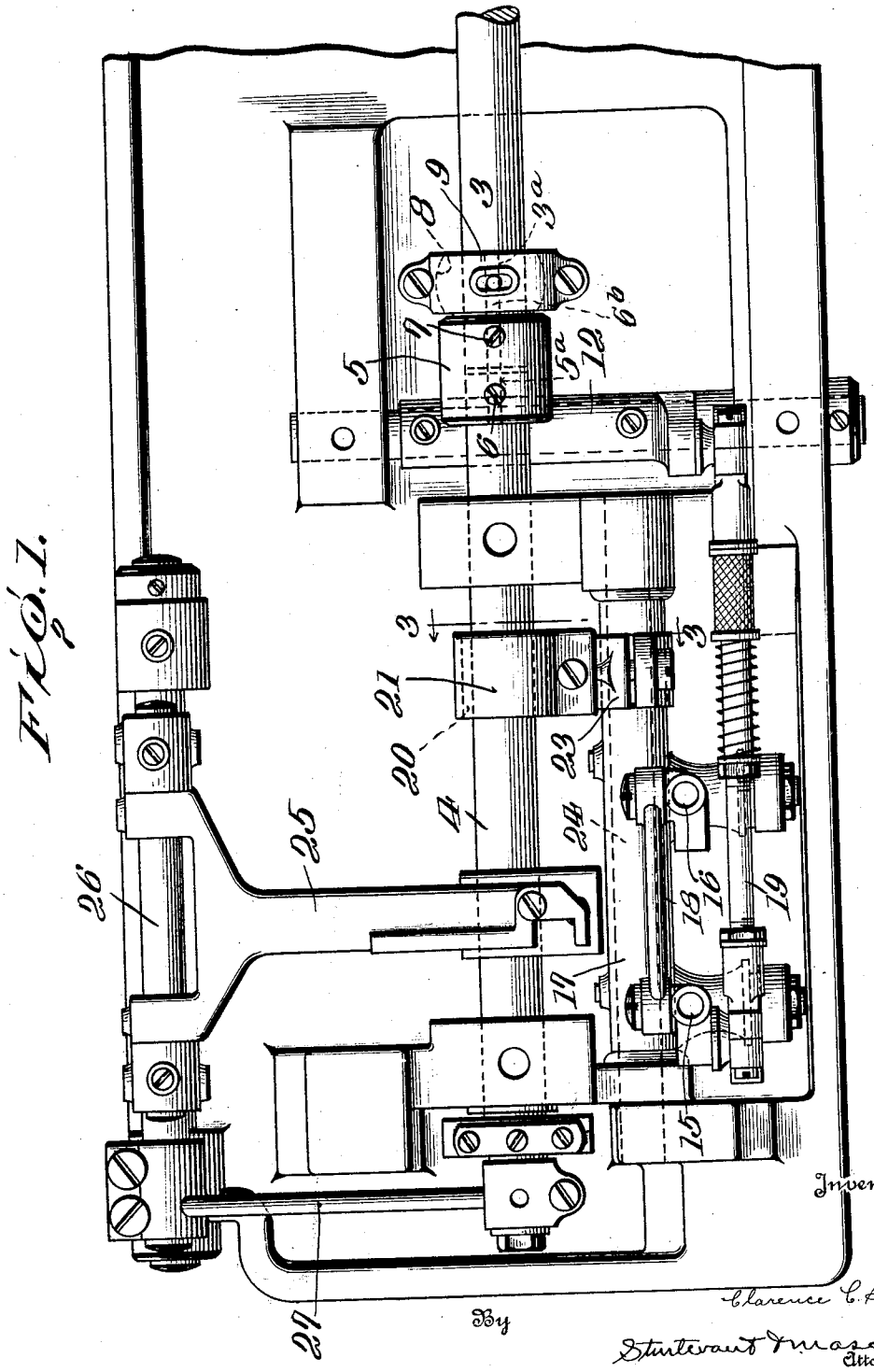
April 19, 1932. C. C. SMITH 1,854,564

LOOPER MECHANISM FOR SEWING MACHINES

Filed Dec. 28, 1929 2 Sheets-Sheet 1



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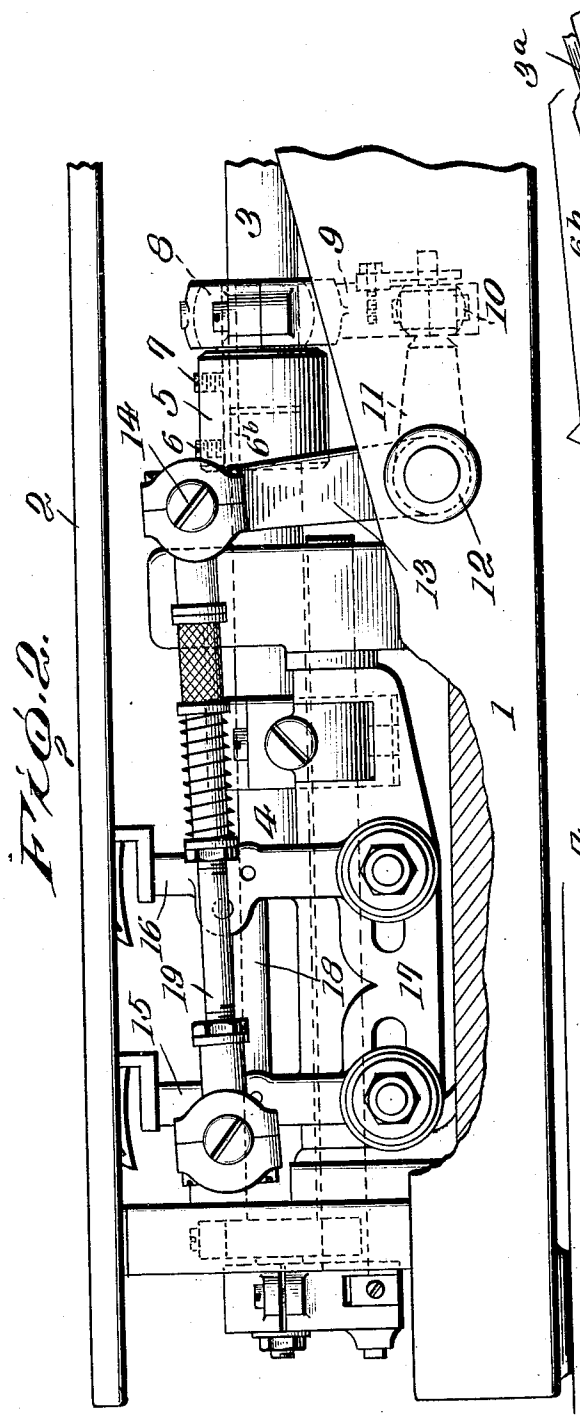

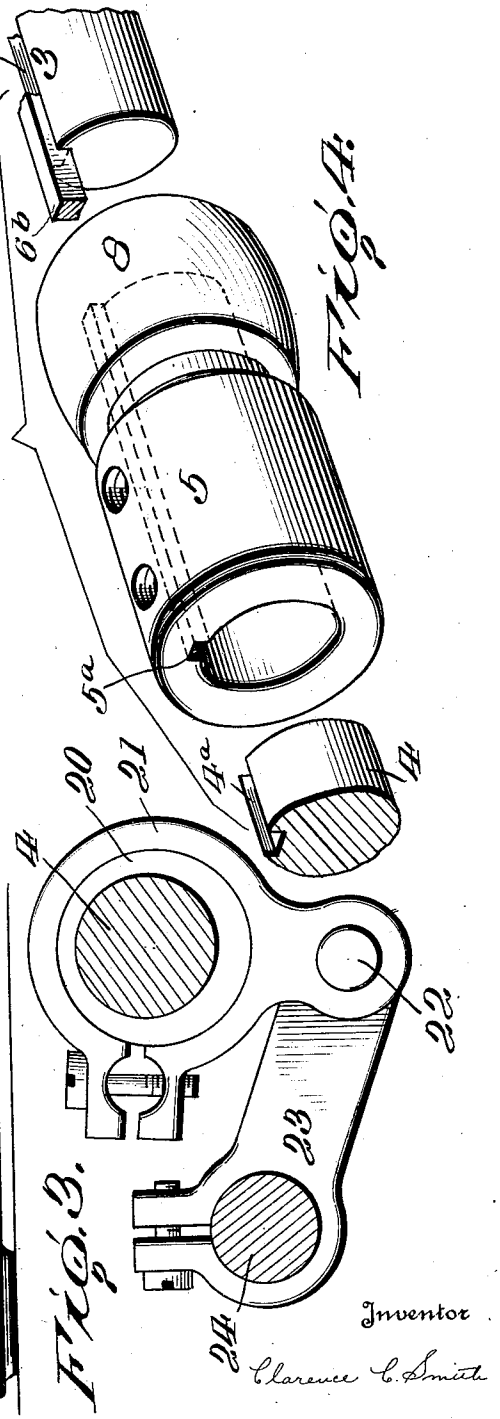

Fig. 3.

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UNITED STATES PATENT OFFICE

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LOOPER MECHANISM FOR SEWING MACHINES

Application filed December 28, 1929. Serial No. 417,170.

The invention relates to new and useful improvements in a looper mechanism for sewing machines, and more particularly to the mechanism for imparting oscillations to the looper.

An object of the invention is to provide a looper operating mechanism wherein the eccentric member which imparts oscillations to the looper is secured to the actuating shaft therefor by a sleeve which is rigidly held in a set position on said shaft.

A further object of the invention is to provide a machine of the above character wherein the sleeve which supports the eccentric also serves to join the sections of the actuating shaft which operate the feed and the needle lever respectively.

In the drawings:—

Figure 1 is a plan view of the parts beneath a portion of the cloth plate showing the looper mechanism and the means for imparting oscillating motions to the looper.

Fig. 2 is a view partly in front elevation and partly in section of the looper operating mechanism.

Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 1.

Fig. 4 is a detached perspective view showing the sleeve for joining the ends of the shaft sections and also the eccentric formed integral therewith which imparts oscillations to the looper.

The invention is directed to a looper operating mechanism for sewing machines and is shown as applied to a sewing machine having a supporting bed 1 carrying a cloth plate 2. Mounted for rotation in suitable bearings in the cloth plate is the main shaft which consists of two sections 3 and 4. The section 3 is the driven section and carries the usual crank or eccentric member for imparting vibrations to the needle lever. The section 4 operates the feed and imparts lateral or needle avoiding movements to the looper. The ends of the shaft sections 3 and 4 are joined by a coupling sleeve 5. The coupling sleeve 5 is provided with a keyway 5*a*. The shaft section 3 is provided with a keyway 3*a* and the shaft section 4 is provided with a keyway 4*a*. Located in the keyways in the shaft sections and in the sleeve is a square key 6*b* which positively joins the shafts. Mounted on the coupling sleeve 5 and formed as an integral part thereof is a ball eccentric 8. The keyway 5*a* in the sleeve extends all the way through the connecting member supporting the eccentric and through the eccentric. Cooperating with this ball eccentric 8 is an eccentric strap 9. The eccentric strap 9 engages a ball stud 10 carried by an arm 11 of a rock lever 12. This rock lever 12 is mounted on a suitable supporting shaft carried by the bed of the machine. The rock lever also includes an arm 13 carrying a ball stud 14.

There are two loopers shown in the drawings which are indicated at 15 and 16. These two loopers are mounted on a looper rocker 17 and are connected by a link 18. A link 19 is attached to the looper 15 and to the ball stud 14. This link 19 is made in sections and is adapted to be buckled in order to position the loopers for threading. This link which is capable of buckling forms no part of the present invention, but is shown, described and claimed in the application of Frederick F. Zeier and Clarence C. Smith, filed August 27, 1928, Serial No. 302,229.

The looper rocker 17 is oscillated by means of an eccentric 20 mounted on the shaft section 4. An eccentric strap 21 cooperating with the eccentric 20 engages a ball stud 22 carried by an arm 23 which is rigidly attached to the shaft 24 on which the looper rocker 17 is clamped.

The feed bar carrying the feed dog is indicated at 25 in the drawings. This feed bar is connected to a feed rocker 26. The feed rocker is oscillated by a link 27 cooper-

ating with a crank on the end of the shaft section 4.

From the above it will be apparent that the eccentric 8 is connected to the shaft sections 3 and 4 through the connection of the coupling sleeve to these shaft sections. The shaft section 3 passes through the eccentric. The coupling sleeve serves as the sole means for supporting the eccentric and forms a very rigid support therefor insuring its proper seating on the shaft sections 3 and 4. By making the shaft in sections and coupling the same by the sleeve, it will be readily noted that the section 3 may be provided with a crank and suitably inserted in the bearings therefor, while the section 4 is also provided with a crank and inserted in its supporting bearings by an endwise motion. After the two shafts are in place they are joined by this coupling sleeve and the square key lying in the keyways will always secure the two shaft sections in a predetermined timed relation to each other. They will likewise secure the eccentric to the joined shaft sections in a predetermined time relation thereto. Through this keyway the crank at the feed end of the main shaft and the crank at the needle operating end of the main shaft and also the eccentric for moving the looper into and out of the needle thread loops are all positively joined in a predetermined timed relation to each other. The assembling of the parts cannot disturb this timed relation.

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

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

1. A looper mechanism for sewing machines comprising a sectional main actuating shaft, a coupling sleeve for joining the ends of said sectional shaft, means for securing said sleeve to the ends of said shaft sections for joining the same, an eccentric formed integral with said sleeve, and actuating devices operated by said eccentric for moving the looper into and out of the needle thread loops.

2. A looper mechanism for sewing machines comprising a sectional main actuating shaft, a coupling sleeve for joining the ends of said sectional shaft, means associated with said coupling sleeve and the ends of said shaft sections for securing said sections together in a predetermined timed relation, an eccentric formed integral with said sleeve, and actuating devices operated by said eccentric for moving the looper into and out of the needle loops.

3. In a sewing machine, a sectional main actuating shaft, one of said sections carrying an eccentrically located member for operating certain parts of the sewing machine, a coupling sleeve for joining the ends of said sectional shaft, means associated with said coupling sleeve and the ends of the shaft sections for securing said shaft sections together in a predetermined timed relation, an eccentric formed integral with said sleeve, and actuated devices operated thereby for operating other parts of the sewing machine.

In testimony whereof I affix my signature.

CLARENCE C. SMITH.