

No. 877,858.

PATENTED JAN. 28, 1908.

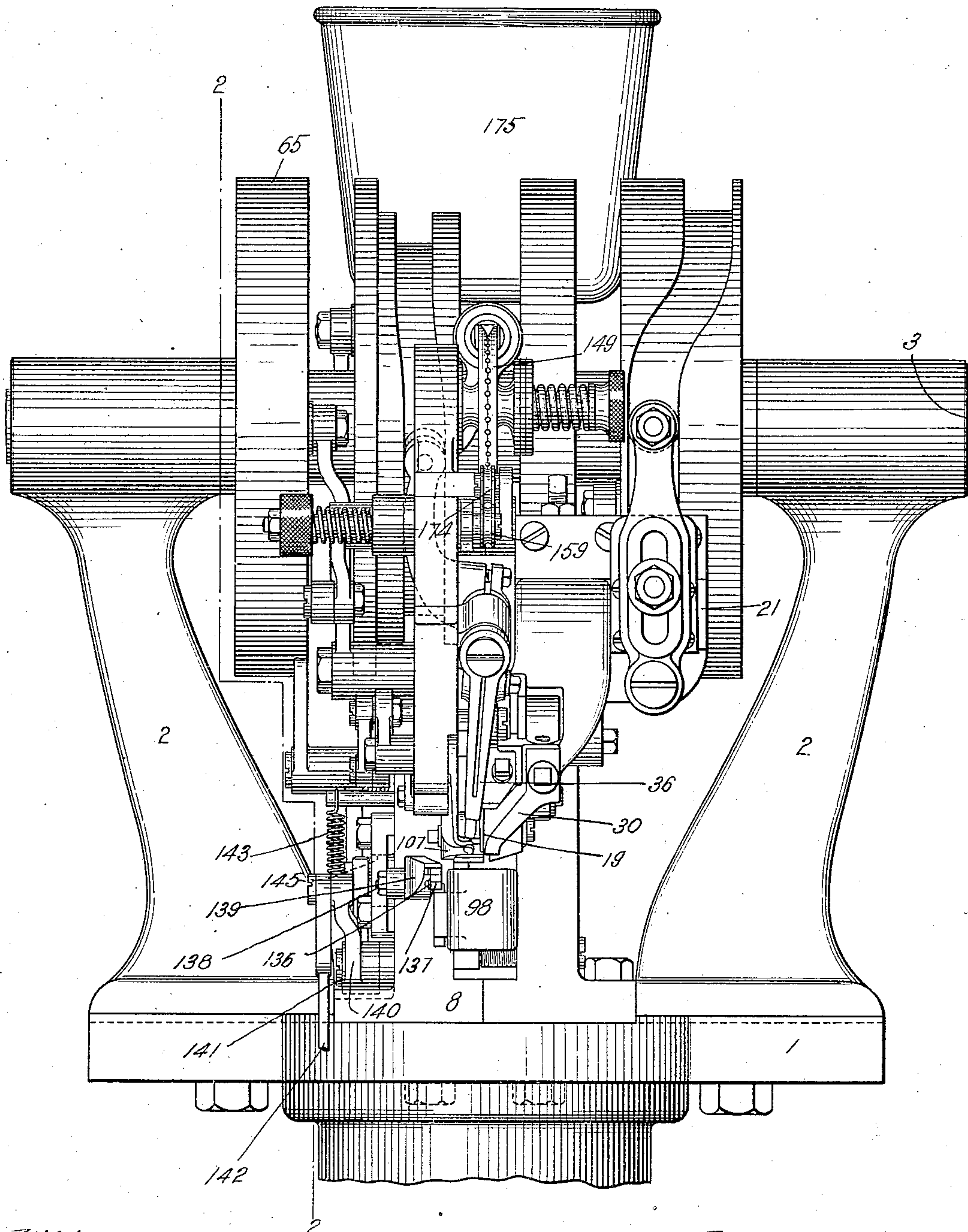
T. G. PLANT.

WELT AND THREAD CUTTING MEANS FOR SEWING MACHINES.

APPLICATION FILED SEPT. 27, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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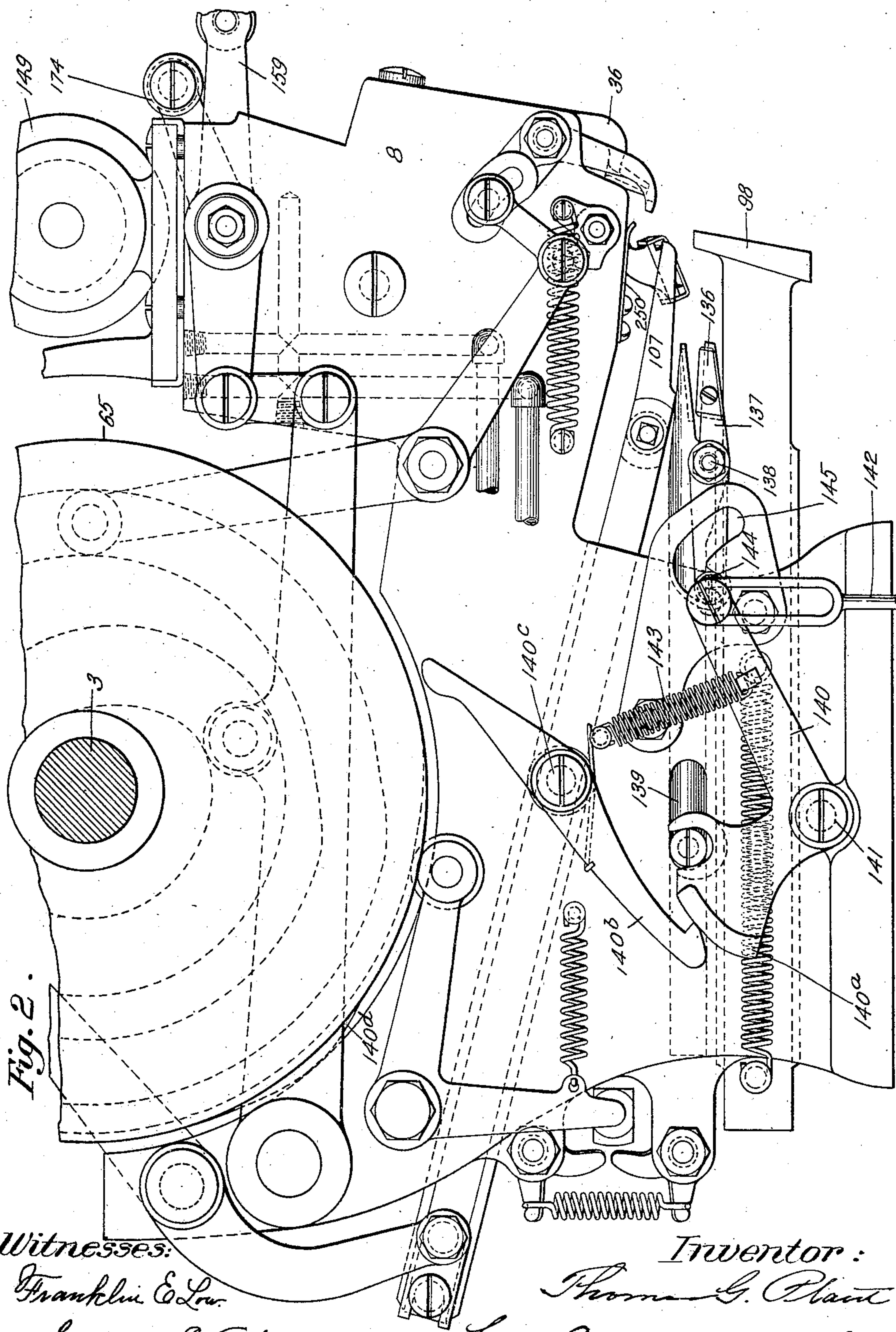
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 3.

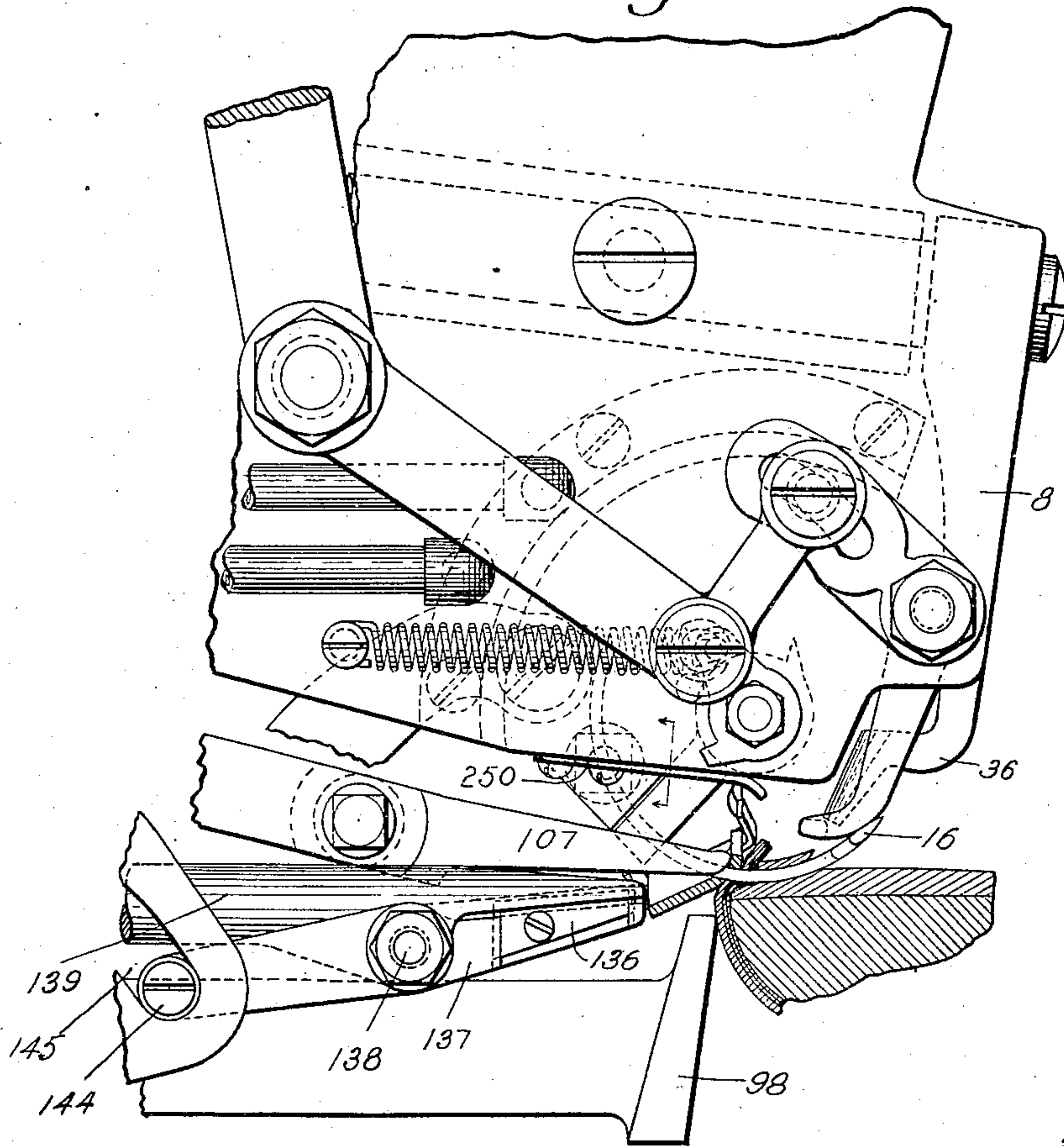


Fig. 6.

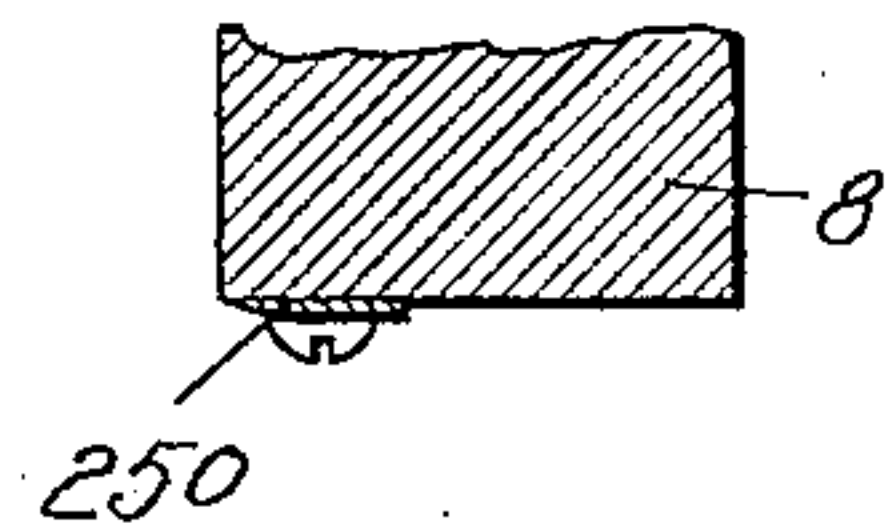


Fig. 4.

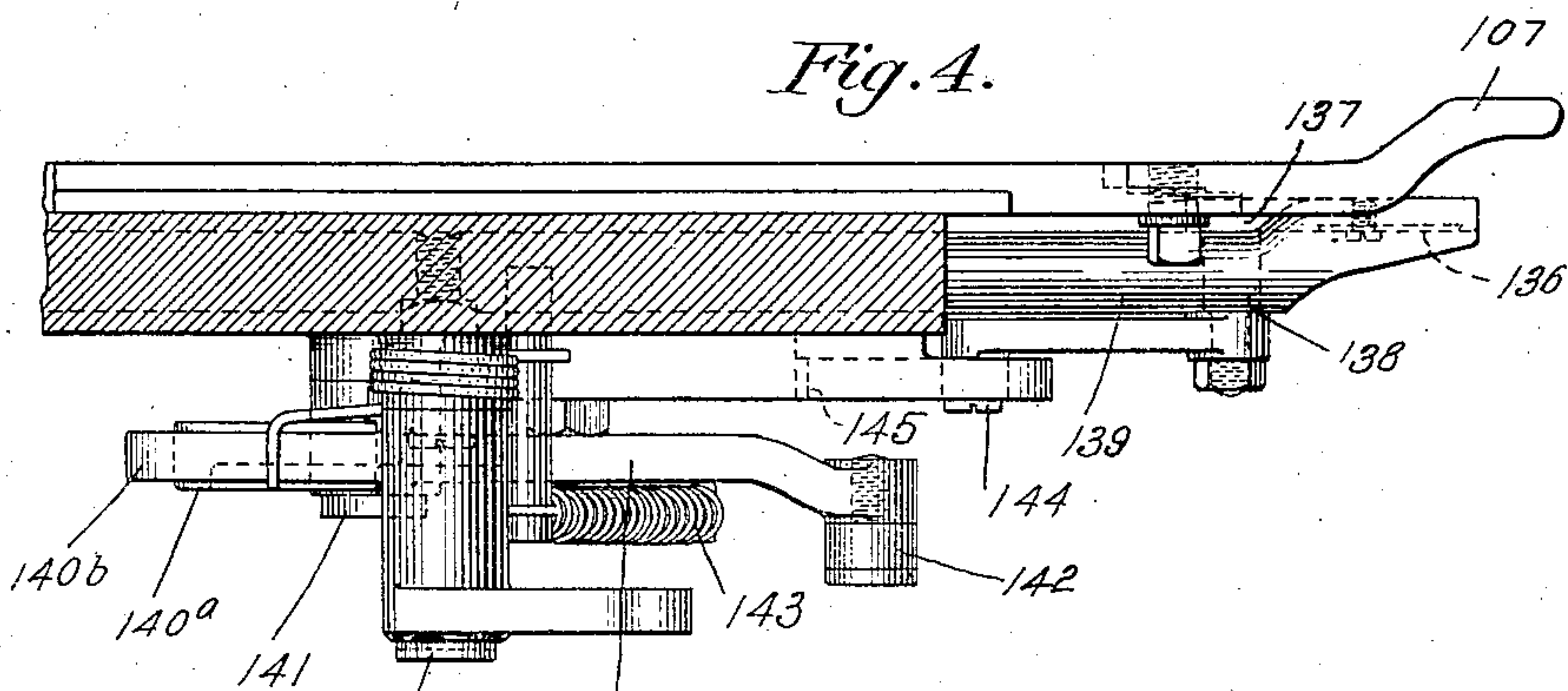
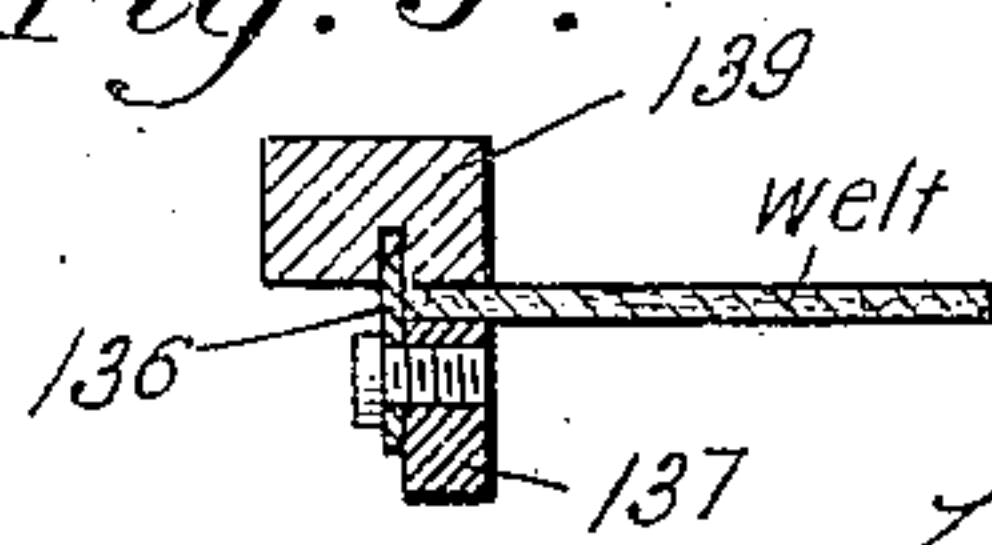


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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WELT AND THREAD CUTTING MEANS FOR SEWING-MACHINES.

No. 877,858.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Application filed September 27, 1906. Serial No. 336,465.

To all whom it may concern:

Be it known that I, THOMAS G. PLANT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Welt and Thread Cutting Means for Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention in sewing machines relates more particularly to curved needle, wax thread machines for producing chain stitches. Such machines are used principally in the manufacture of boots and shoes for uniting the uppers, insoles and welts of welt shoes.

My invention relates more particularly to means for presenting the welt to the needle and also to means for cutting or severing the welt at the completion of the operation of welting a shoe. This with other features of my invention will be better understood from a description of one embodiment of the same illustrated in the accompanying drawings.

In the drawings; Figure 1 is a front elevation of a machine illustrating one such embodiment of my invention; Fig. 2 is a partial side elevation looking from the left of Fig. 1 on a somewhat larger scale, with one of the standards omitted and with the main shaft in section. Fig. 3 is a detail in side elevation illustrating parts of the machine to be referred to; Figs. 4 and 5 are details illustrating the welt cutting or severing and end holding means employed in this machine; and Fig. 6 a cross sectional detail showing the preferred form of thread cutting and thread end holding device.

In the particular embodiment of my invention selected for illustration herein and shown in the drawings, referring first to Fig. 1, the bed plate 1 adapted to be carried upon any suitable column, its standards 2 carrying the main shaft 3, the needle 16, its carrier and actuating means therefor, the feed slide 21, the awl 19 arranged to be moved therewith and awl actuating means, the channel feed guide 30 also carried by said feed slide, the looper 36, the back gage 107, slide rest 98 and locking means therefor, the waxing means 175, tension 149, auxiliary take up 174, and pull off and give up lever or main take up 159 if used or required, with operating means for these parts are or may be of desired construction so far as concerns

my present invention. Since these parts as above indicated or parts corresponding in general thereto are well-known to and understood by those skilled in the art, it is unnecessary further to describe the same or other functions herein. In machines of this general type as at present commonly used, it is customary to provide the back gage with a welt guide so positioned as to direct the welt to the work in front of the needle, so that the latter in advancing in the formation of the stitches shall pierce the welt before piercing the upper, linings and insole, thereby to unite the welt to such upper, linings and insole by a series of stitches. When the shoe has been completed the operative after having retracted the needle and advanced it slightly to cast off the last loop, draws the shoe away from the stitch forming mechanism in order to get at the welt and the thread for cutting the same, both the welt and thread being drawn out from the machine by and with the work.

The operative in cutting the welt seldom cuts it close to the shoe, in fact it is inconvenient for him so to cut it, the operative almost invariably cutting it at some distance from the shoe, leaving a waste end on the shoe and beyond the end of the inseam or line of stitches, and leaving also a longer length protruding from the welt guide. Before beginning to sew upon a new shoe he draws the end of the welt that was left protruding through the welt guide inward or backward somewhat, but still leaves enough protruding to enable him to seize such protruding end between the fingers of the left hand and the shoe to hold the said welt in position against the shoe to receive the initial advance of the needle to sew it in position. This also involves a waste of welt because so much of the welt end as was required for its holding between the fingers and the shoe and which projects beyond and in front of the initial stitch of the new seam must be cut off and thrown away. The result is that the present practice with the present commercial machines involves a tremendous waste of welting and one of the principal objects of my invention is to provide means for eliminating this waste and its consequent expense.

Referring to Figs. 3 to 5 inclusive, the center head 8 of the machine is fitted with bearings for the horizontal slide rod 139, the for-

ward end of which is provided at its under side (see Fig. 5) with a groove or recess having a cutting edge and which receives the cutting edge of the welt cutting blade 136 adjustably carried at the end of a cutting lever 137 (see Fig. 3). This cutting lever is fulcrumed at 138 on the forward end of said slide rod 139. This slide rod (see Fig. 2) is actuated longitudinally by a bell crank 140, fulcrumed at 141 on the said head and provided at the forward end of its horizontal arm with a depending treadle controlled rod 142, the treadle of which is conveniently positioned for operation by the operative after the machine has come to rest, or at any other time desired. Said bell crank 140 and the treadle are controlled (see Fig. 2) by a spring 143 that tends to lift the treadle and withdraw said slide rod 139 to its innermost position also the cutting lever 137 referred to. It is desirable during the normal progress of the work that this cutting lever and its cutting blade be thus withdrawn away from the work so as not to impede the free manipulation of the work. When it is so withdrawn the tail end of said cutting lever, which has a roller stud 144 that works in a cam slot 145 on said head, is caused to be moved first to drop down and away from the cooperating cutting face at the end of said slide rod 139. As the said lever approaches the end of its inward movement it is again moved to throw the cutting blade and its adjacent end of said lever again upward so that during the normal progress of the work the cutting lever and its blade are completely withdrawn, so to speak, from any possible interference with the work.

When the shoe has been welted the operative releases the running treadle of the machine, permitting the latter to be stopped, and gives to the machine the usual slight return movement to cause the needle to cast off its loop to free the work. He then preferably pushes the work slightly inward to cause the welt to be positioned opposite but nearer to the welt cutting device. He then swings his foot upon the welt cutting treadle and by depressing the latter causes said slide rod 139 to be advanced to carry the welt cutting lever 137 also forward, said lever during its advance movement being first dropped at its cutting end so as to approach the welt at a level below the same and, as it approaches its forward position said lever is swung upward to cause its cutting blade 136 to engage the welt from beneath and cut through the latter, severing it to permit withdrawal of the shoe without any waste end of consequence attached thereto.

Simultaneously with the severance of the welt, the body of the lever end 137 meets the under face of the welt and in cooperation with the under face of the end of said slide rod 139 furnishes one form of pincer or hold-

ing device to hold the severed supply end of the welt in correct position to receive the initial stitch of the next shoe without further attention upon the part of the operative and without any needless waste of welt. Of course the supply end of the welt after severance thereof may be again released by release of the cutting treadle, if there be no back pull to draw the welt back through the welt guide, and the said treadle may be again depressed just before the machine is again started to cause the clamping end of the cutting lever again to advance and rise to lift said welt end for penetration of the needle in the formation of the initial stitch, it being released before the first feed of the work, in order that it may not interfere therewith. I prefer, however, to employ the construction shown in Fig. 2, wherein the bell crank lever 140 referred to is provided with a tail piece 140^a which, when said lever is thrown forward by depression of the treadle rod 142, is caught and there held by a latch 140^b pivoted at 140^c on said head 8. Thus the welt end remains held in the clamp referred to so long as said lever remains locked and the machine at rest. Upon initial rotation of the main shaft in the formation of the new stitch upon the next shoe the upper end of said latch lever 140^b is engaged by a lug 140^b on the main shaft or on one of the cams as 65 on said shaft, and is released to permit instant return of said bell crank lever and withdrawal of the welt clamping or holding members before the first feed begins. Thus the operative's time is greatly economized, the welt cutting being almost automatic in its cutting action and fully automatic in its release and at the same time a great saving is made in the welt consumed. Since the welt is severed on the one side close to the last stitch on the shoe about to be removed and at the opposite side close to the welt guide which leads the welt to the shoe, substantially no waste results, there being merely enough hold in front of the welt guide to permit the entrance of the needle point at the beginning of the next seam. When the seam upon any one shoe has been completed not only must the welt be cut, for instance as described, to permit removal of the work, but the thread must also be cut. To do this the operative now customarily uses a knife. The inexperienced operative is obliged to wait and reach for the knife, picking it up to cut the thread, while the more experienced operatives usually holds the knife in the right hand during the entire operation of welting, so as to have it for convenient cutting of the thread when the stitching is completed. This is objectionable for many reasons including the danger of accidentally slashing a shoe while handling it and the liability of soiling the shoe from wax on the knife or its handle or from more or less diffi-

cult handling of the same because of the effort to hold the knife as well as the shoe.

Further objection and perhaps one of the most important is that the operative before cutting the thread pulls out enough so that after he has cut it, a sufficient end is left to be seized by him with the welt when beginning to stitch upon a new shoe, for the looper cannot lay its thread with certainty about the needle barb for the making of the initial stitch on the next shoe unless the thread end is held in some manner to keep it from whipping around the needle with the looper. This thread end is a great objection because it is a waxed thread and unless very carefully handled is likely to come into contact with the upper or some other part of the shoe and, especially if the shoe be made of light colored leather, leaves a waxy mark or stain, which it is difficult and sometimes impossible entirely to remove.

My invention comprehends a thread cutting blade or cutter 250 Figs. 3 and 6, screwed or otherwise secured to the under side of the head 8 or in any convenient position, and so shaped and located relative to the adjacent head or other surface as to form in connection therewith a yielding V-shaped clamp. When the operative pushes the shoe inward for cutting the welt as described, he may continue practically the same movement to carry the thread leading to the machine into its thread clamp, which severs the same at one side of the clamp, leaving the thread end held in the clamp somewhat as the welt end is left in its clamp. This effects a saving in thread and avoids damage to the shoe because the thread end is held out of the way, and so that certain looping is assured for the initial stitch in the next shoe. The combined thread severing and clamping device might be formed of a single member instead of by combining two members as described, or they or either may be formed in any other manner. Thus the operative is required to hold neither the welt end nor the thread end in starting the shoe, thereby increasing his speed and keeping his hands cleaner and more free from wax, consequently keeping the shoe cleaner than would otherwise be possible. Because of the yielding and tapering or converging form of the clamp the thread end may pull out readily as the stitching and feed upon the new shoe progresses, so that the progression of the work is not impeded by the clamp.

What I claim is:

1. In a boot and shoe sewing machine, the combination with stitch-forming devices, welt-guiding means and welt severing means comprising relatively movable members, one of which sustains the welt as it is cut, means to move one member relative to the other, and means for holding the end of the severed welt.

2. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of a welt-guide, and welt-severing and holding means whereby the welt may be severed and the welt strip held for the next stitching operation.

3. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of welt guiding means, and a welt-severing device movable toward and from the stitch-forming devices and means for holding the end of the severed welt.

4. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of a welt-severing device comprising a plurality of cooperating severing members, and treadle-operated means for relatively moving said members.

5. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of a welt-severing device movable toward and from the said stitch-forming devices, treadle-actuated means for operating said welt-severing device in one direction to position it for welt cutting, and automatic means for moving it in an opposite direction.

6. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of a welt-severing and welt-holding device movable toward and from said stitch-forming devices, means for actuating the said welt-severing device to cause it to move to sever the welt and to hold the end of the severed welt, and means for retaining said welt-severing device in welt-holding position.

7. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of a welt-severing and welt-holding device movable toward and from said stitch-forming devices, means for actuating the said welt-severing and holding device to cause it to move to sever the welt and to hold the end of the severed welt, means for retaining said welt-severing device in welt-holding position, and automatic means for retiring said welt severing device from welt severing position.

8. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of welt guiding means, a slide bar

carrying a welt-severing device comprising cooperating members one of which is movable towards and from the other, means to close the said severing device, and means for moving said bar to cause said severing device to move to position for the welt-severing operation and then to return the same.

9. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of welt guiding means, a slide bar carrying a welt-severing device comprising cooperating relatively movable cutting and holding members, means to close the said severing and holding device, and means for sliding said bar to cause said severing and holding device to move to position for the welt severing and holding operation and then be retracted to remove the said device out of the way.

10. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of welt guiding means, a slide bar carrying a welt-severing device comprising cooperating cutting and holding members, means to close the said severing and holding device, means to reciprocate said bar to cause said severing and holding device to move to position for the welt severing and holding operation and then be retracted, and means for locking said welt-severing and holding device in its welt holding position.

11. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of welt guiding means, a slide bar carrying a welt-severing device comprising cooperating cutting and holding members, means to close the said severing and holding device, means for sliding said bar to cause said severing and holding device to move into position for the welt severing and holding operation and then be retracted, means for retaining said welt-severing and holding device in welt holding position, and automatic means for releasing said retaining device.

12. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of a welt-guide, a thread-cutting device, and welt severing means comprising relatively movable members, and means for advancing one of said members towards the other in the welt cutting movement and means for holding the end of the severed welt.

13. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching

operations, of welt guiding means, a thread-cutting device, welt severing means, and welt holding means for holding the welt when severed.

14. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of welt guiding means, and welt-severing and holding means whereby the welt may be severed and the severed end held and means to subsequently operate the holding means to release the end of the welt.

15. In a boot and shoe sewing machine, the combination with stitch-forming devices, and means for guiding a boot or shoe in proper relation thereto for the stitching operations, of welt guiding means, a thread-cutting and thread-holding device, and welt-severing and holding means.

16. A boot and shoe sewing machine comprising stitch-forming mechanism, guiding means for the boot or shoe, and welt guiding means combined with welt severing means comprising cooperating members, and treadle-operated means to impart to one of said members an advancing movement towards the other to sever the welt between them, and means to retract said member subsequent to the cutting operation.

17. A boot and shoe sewing machine comprising stitch-forming mechanism, means to guide a boot or shoe, and welt guiding means combined with welt severing means comprising a plurality of cutting members, and means to advance the same towards the welt and thereafter operate the cutting members to sever the welt.

18. A boot and shoe sewing machine comprising stitch-forming mechanism, guiding means for a boot or shoe, and welt guiding means combined with welt severing means comprising cutting members, and means to advance the same towards the welt and to open the cutting members during such advance movement.

19. A sewing machine comprising stitch-forming mechanism and welt guiding means combined with welt holding means, and means automatically to open the same to release the welt by and upon operation of the machine.

20. A sewing machine comprising stitch-forming mechanism, starting and stopping means, and welt guiding means combined with welt holding means, means moved by the operative to operate the same to hold the welt, and means operated by the machine on starting of the latter for releasing said welt holding means.

21. A boot and shoe sewing machine comprising in combination stitch-forming mechanism, movable work-guiding means and welt severing and welt holding means normally closed and retracted from said welt

severing position, and means to cause said
welt severing means to advance, open and
close to sever the welt and thereafter hold
the end of the severed welt, and means to re-
5 turn the said device to its normally retracted
position.

In testimony whereof, I have signed my

name to this specification, in the presence of
two subscribing witnesses.

THOMAS G. PLANT.

Witnesses:

FREDERICK L. EMERY,
FRANCIS A. MILLS.