

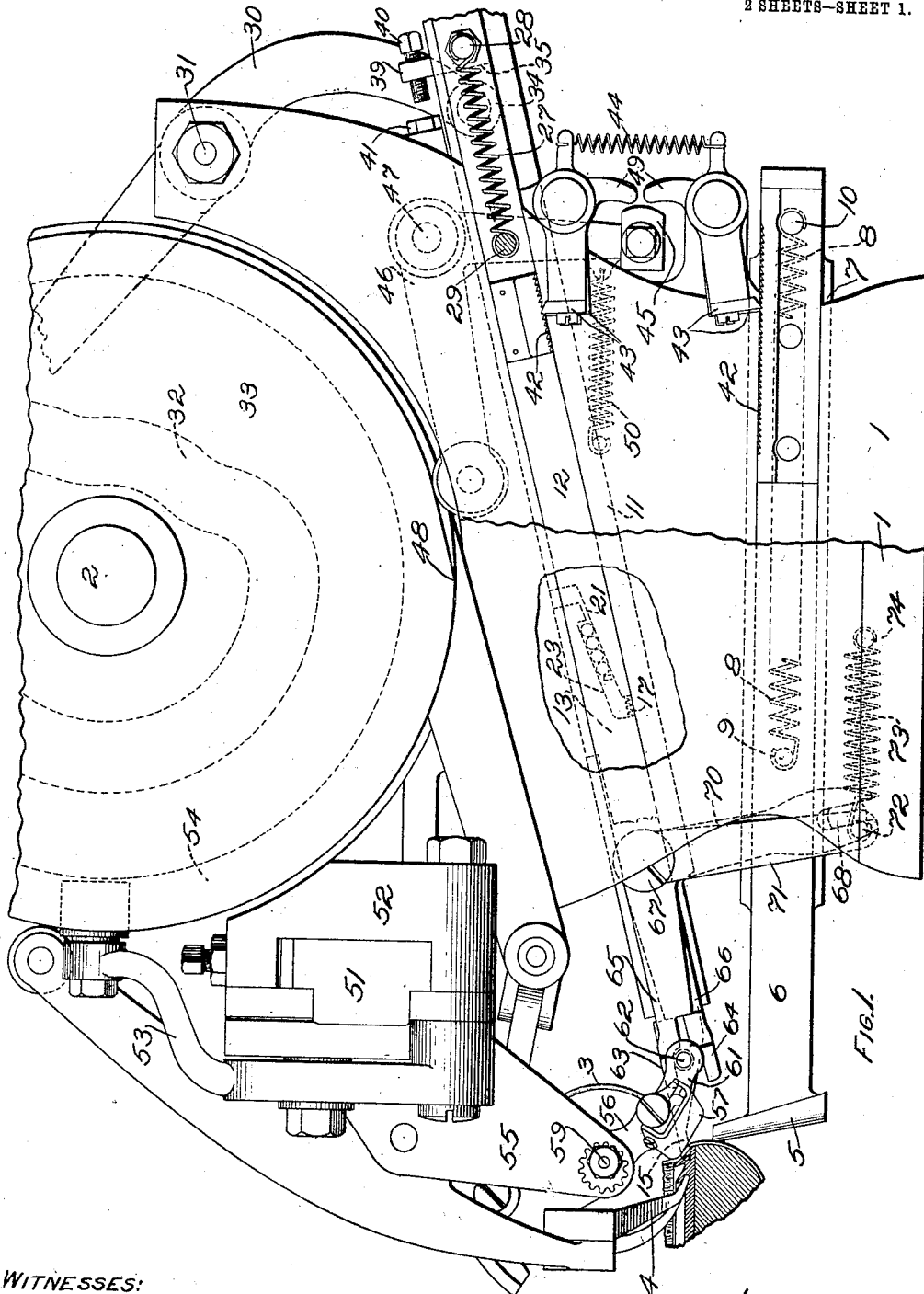
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SEWING MACHINE.

APPLICATION FILED JAN. 29, 1908. RENEWED APR. 14, 1909.

940,053.

Patented Nov. 16, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

*Samuel F. Hatch.*  
*Redfield H. Allen*

INVENTOR,  
THOMAS G. PLANT,  
BY *Robt. P. Hains*  
ATTY

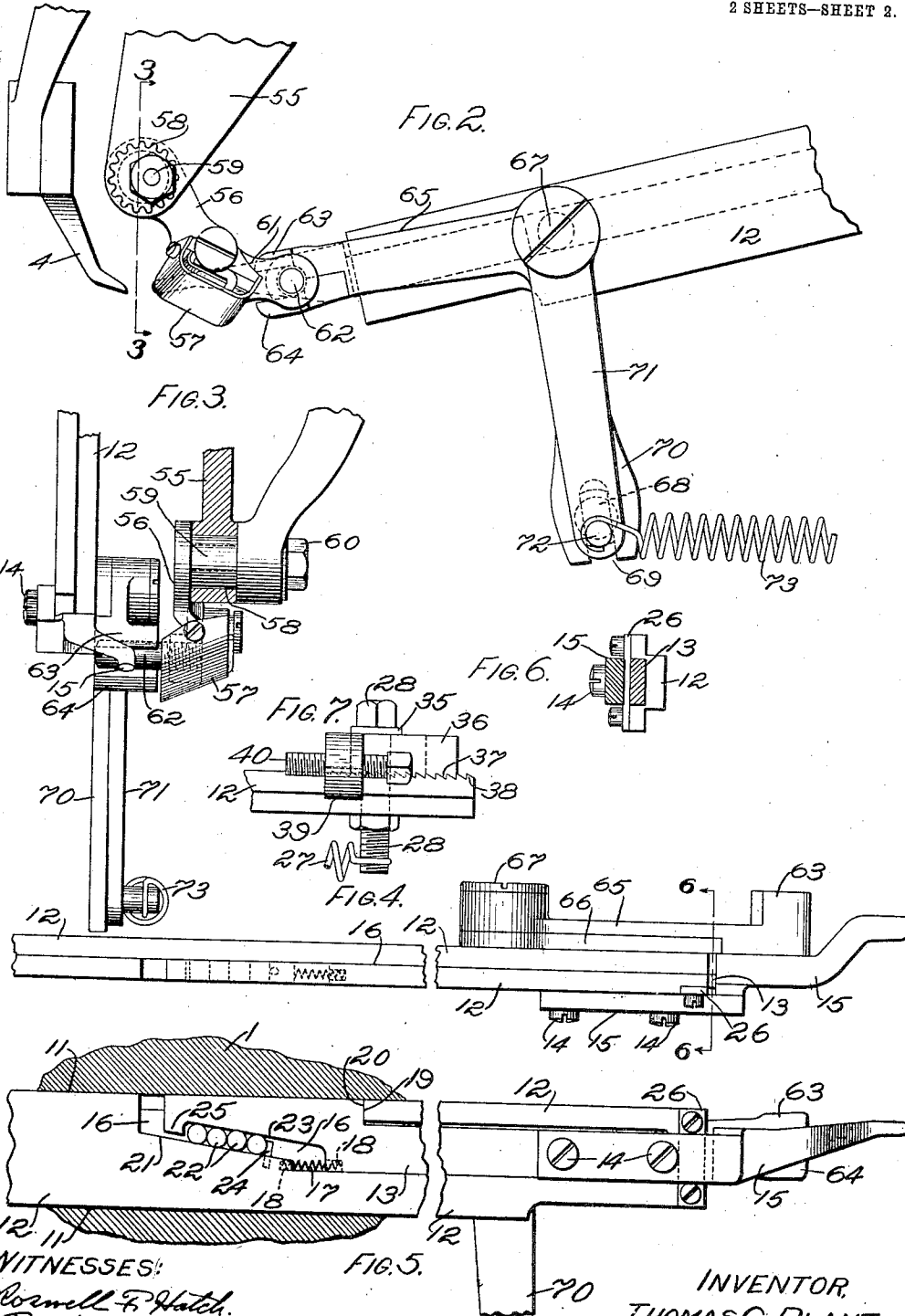
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# UNITED STATES PATENT OFFICE.

THOMAS G. PLANT, OF BOSTON, MASSACHUSETTS.

## SEWING-MACHINE.

940,053.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed January 29, 1908, Serial No. 413,159. Renewed April 14, 1909. Serial No. 489,892.

*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 Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

The invention to be hereinafter described relates to sewing machines and more particularly to that type ordinarily known as the "welter", employed for uniting the insole, upper, and welt of boots and shoes.

As well known by those skilled in the art, the welt is positioned with reference to the insole and upper by means of a guide, which has movement in and out to follow the changing contour of the work. While this movement is desirable, the welt guide should, however, be withdrawn from engagement with the work during the periods of work feed to obviate drag on the work or wrinkling thereof, and after the completion of feed movement the welt guide should be moved into contact with the work. But this recurring disengagement and engagement of the welt guide and work is liable to produce a hammering action against the work and unsteady condition of the shoe in the hands of the operative with consequent objections.

The object of the present invention is to provide means, whereby the welt guide may be engaged with the work, following its recurring disengagement, by a feeling action free from the objections generally noted; and whereby, also, the back gage may likewise move into contact with the work after each recurring disengagement without noticeably disturbing the steadiness of the shoe in the hands of the operative. These and other objects of the invention will best be understood from the following description and accompanying drawings of one form or embodiment of the invention selected for illustrative purposes.

In the drawings:—Figure 1 is a sectional side elevation of a typical form of welter or shoe sewing machine illustrating the present invention associated therewith, parts being broken away; Fig. 2 is a detached detail, showing the welt guide and its connection

with the back gage; Fig. 3 is a section on line 3—3 of Fig. 2 looking to the right; Fig. 4 is a detached detail plan view of the back gage and associated parts; Fig. 5 is a side view of the parts shown in Fig. 4, the head framing being shown in section; Fig. 6 is a section on line 6—6, Fig. 4, and Fig. 7 is a detached detail showing the manner of connecting the back gage slide and its withdrawing block.

The machine frame and head 1 may be of any usual or desirable character for supporting the shaft 2 and working parts. Likewise the sewing elements comprising the needle 3, channel guide 4, the awl, and their operating devices may be of any usual or desired character.

The back rest 5 is suitably carried by the back rest slide 6 slidably mounted in guides 7 formed in the head framing 1, and is normally pressed forward or into work engaging position by a spring 8, one end of which is connected to a pin 9 on the head framing and the other end to a pin 10 on the back rest slide 6, Fig. 1.

Mounted in suitable guide ways 11 in the head framing 1, as shown by dotted lines, Fig. 1, and by Fig. 5, is the back gage normally pressed forward or into work engaging position by a spring 27 one end of which is connected to a pin 28 on the back gage slide 12 and the other end to a pin 29 on the head framing. The back gage is withdrawn from the work at times by means of a lever 30, pivoted at 31, and having one end engaging a groove 32 of a cam 33 secured to the shaft 2, the other end 34 of said lever being disposed to engage the face 35 of a block 36 secured by a bolt 28 to the back gage slide 12. The block 36 is preferably provided with teeth 37, Fig. 7, adapted to engage teeth 38 in the back gage slide to thus insure against slip, and a screw threaded lug 39 furnishes an adjustable bearing for an adjusting bolt 40 which is adapted to contact with a stop 41 on the machine framing in case no work is presented to the machine, as will be readily understood by those skilled in the art. From this construction it will be clear that upon rearward movement of the end 34 of the lever 30, said end will pick up or contact with the face 35 of the block 36 and move the back gage slide 12 to the rear; and when the end 34 moves

forward, the spring 27 will cause the block 36 to follow and the back gage slide to move forward until the work is met whereupon the gage slide will stop, though the end 34 of the lever 30 may continue its movement forward.

As heretofore constructed, the back gage has been mounted rigidly upon the end of its slide bar which is withdrawn prior to or during each feed of the shoe, so as to withdraw the back gage from objectionable interference therewith, and is then freed and permitted to spring forward under the strong stress of the actuating spring until it strikes the work. The back gage thus operated, constitutes a serious disturbing element in the machine, owing to the impact against the work which produces unsteadiness and jarring of the shoe in the hands of the operative. Likewise, when the welt guide has been permitted to strike the work after each withdrawal, the resultant vibrations and unsteadiness of the work held by the operative has introduced many objections. The present invention aims to overcome these and other defects in the machine operation and as one means to these ends the back gage is formed to act as a feeler for the work under easily retarded forward movement, and upon finding the shoe to at once stop further forward movement both of the back gage and welt guide, so that each of these elements come into light touching contact with the work and are then stopped or locked in their proper positions.

In the present embodiment of the invention, the back gage slide 12, Figs. 1, 4 and 5, is formed with a seat 16 adjacent its forward or work end for the reception of a light member 13, which, for identification, may be termed the feeler slide. This feeler slide 13 has secured thereto, as by screws 14, 14, the back gage end 15 which is to feel for the work and then act as a gage therefor. The feeler slide 13 is normally pressed forward or to the right, Fig. 5, by a light spring 17, disposed between the slide 12 and feeler slide 13, the ends of the spring being preferably seated in retaining sockets 18, 18; and a stop or shoulder 20 on the feeler slide contacting with a stop or shoulder 19 on the back gage slide 12, limits the action of the spring 17.

The back gage slide 12 has an inclined seat 21 for a series of balls or rollers 22, upon which rests an inclined portion 23 of the feeler slide 13, said balls or rollers being retained in place by a pin 24 on the back gage slide and an abutment 25 on the end of the feeler slide 13. It will thus be seen that while the feeler slide is carried by the back gage slide, it has provisions for a slight movement relative thereto, and is normally maintained in its advanced position by the light feeler spring 17. In order to guide the

feeler slide in its movement relative to the back gage slide 12, the end of the feeler slide 13 beyond the screw connection 14, 14 with the back gage end 15, is extended forward beyond and under a cross piece 26, 70 Figs. 4 and 6.

As before noted, the back gage slide 12 and feeler slide 13 carrying the gage end 15, constituting what may, for identification, be known as the feeler back gage, are slidably mounted in suitable slide bearings 11 in the head framing 1, Figs. 1 and 5, so that, upon forward movement of the back gage toward the work, should the end 15 come into light engagement therewith, it will immediately be arrested owing to the light feeling character of the spring 17. Slight continued forward movement of the back gage slide 12, however, will, by reason of the inclined surfaces 21 and 23, cause relative spreading movement of the feeler slide and back gage slide with the result that the back gage will bind and be locked in its slide bearings thus stopping any further forward movement. It will also be noted that this stopping or locking action is made effective by the light feeling impulse of the feeler slide and that all jar or disturbing impact against the work is avoided.

To hold the back gage slide and back rest in their forward position during the action of the tools in forming the stitch, each is provided with ratchet teeth 42 adapted to be engaged by the pawls 43, 43, respectively, acted upon by a spring 44. To withdraw these pawls at intervals, a dog 45 on the end of a bell crank lever 46, pivoted at 47, and operated by a cam 48, on the shaft 2 with which it is held in contact by a spring 50, is adapted to engage the tail pieces 49, 49 of said pawls, as will be readily understood.

Mounted upon the feed slide 51, which is reciprocated in its slide bearings 52 by any suitable means, as by the link 53 engaging at its upper end a cam groove 54 of cam 33 secured to the shaft 2, is a bracket arm 55 to which is pivotally connected the radius arm 56, carrying the welt guide 57. As already stated, the welt guide should bear upon the work, as indicated in Fig. 1, during the stitch formation, but should be withdrawn from such engagement at the time of or during the feed of the work by the awl or other means, and when again brought into welt guiding position it should come against the work with a light feeling action to avoid imparting vibrations or severe impacts to the shoe.

In order to permit proper adjustment of the welt guide, it is connected to the bracket 55 by an eccentric mounting, preferably comprising the bushing 58 having eccentrically supported therein the pivot pin 59 of the radius arm 56, Figs. 2 and 3, a nut 60 serving to retain the parts in adjusted posi-

tion. Thus while the welt guide is adapted for oscillation about its pivotal center, it is also adjustable toward and from the work.

The radius arm 56 carrying the welt guide has an extension 61 carrying a pin 62, which is embraced by the jaws 63, 64, formed by the adjacent ends of the arms 65, 66, of two bell crank levers pivoted to the back gage slide 12, at 67. The downwardly extending arm of one of these bell crank levers, preferably that carrying the lower jaw 64, is connected to a pin 68 secured to the head framing 1, such connection, in the present form of the invention, being secured by means of a slot 69 in the arm 70 embracing said pin 68. The downwardly extended arm 71 of the other bell crank lever is provided with a pin 72 engaged by one end of a spring 73, Figs. 1 and 2, the other end of said spring being connected to a pin 74, on the head framing 1.

From the construction thus described, it will be noted that the jaws 63 and 64 will yieldingly embrace the pin 62 projecting from the arm 61 of the welt guide, and upon rearward movement of the back gage slide 12 to withdraw the back gage end 15 from contact with the work, the fulcrum 67 of the bell cranks will move with it, while the downwardly projecting end 70 of the bell crank carrying the lower jaw 64 will be held fixed, thus the lower jaw 64 will rise and move the welt guide away from the work, the upper jaw at such time yielding through its spring 73. Likewise when the back gage slide 12 moves forward to place the back gage end 15 in contact with the work, the welt guide will be lowered into engagement with the work also, the spring 73 permitting movement of the back gage, at times, even after the welt guide is stopped. Inasmuch, however, as the movement of the back gage slide is controlled or stopped by the light feeling contact of the feeler slide, it follows that the welt guide will likewise be brought to rest in welt guiding position without percussive action or blow upon the work, thus the shoe in the hands of the operative is held steadily, the numerous objections heretofore present are overcome, and more accurate and satisfactory results are secured, all of which will be readily apparent to those skilled in the art.

While for purposes of exploitation of the invention particulars of structure have been necessarily pointed out as one embodiment thereof, it is to be understood that the invention is not circumscribed thereby, as it is new, so far as known, to provide a sewing machine with a welt guide and a back gage which can be brought into operative relation with the work by a light feeling action and then locked in such position.

It will be at once apparent to those skilled

in the art that various mechanism may be employed to carry into effect the inventive originality demonstrated by the present invention which is definitely set forth in the claims.

What is claimed is:—

1. A sewing machine of the character described, comprising, in combination, a welt guide, means for moving the welt guide toward and from the work, and means rendered effective by feeling contact with the work for locking said welt guide in welt guiding position.

2. A sewing machine of the character described, comprising, in combination, an oscillatory welt guide, means for oscillating said welt guide, and means rendered effective by feeling contact with the work for locking said welt guide in guiding position.

3. A sewing machine of the general character described, comprising, in combination, a back gage movable relative to the work, means to cause the back gage to move forward to feel for the work, a welt guide operatively connected to said back gage, and a lock rendered effective upon the gage finding the work to lock the back gage and welt guide in position.

4. In a sewing machine of the character described, the combination of a back gage, means to yieldingly move the back gage toward the work, means to periodically withdraw the back gage from the work, a welt guide connected to and movable by said back gage, and means rendered effective upon contact of the gage with the work to lock the gage and welt guide in position.

5. In a sewing machine of the character described, the combination of a back gage, a welt guide, means to move the back gage and welt guide into feeling contact with the work, and means rendered effective by such feeling contact with the work to lock the back gage and welt guide from further movement.

6. In a sewing machine of the character described, the combination of a back gage, means to move said back gage into feeling contact with the work, a welt guide, yielding connections between the welt guide and back gage to permit movement of one at times independent of the other, and means rendered effective by feeling contact of the back gage with the work to lock the back gage.

7. In a sewing machine, a back gage comprising a back gage slide and a relatively movable feeler slide, a welt guide, means disposed between the welt guide and back gage for operating the former from the latter, a bearing for said back gage, and means for locking the back gage upon relative movement of the back gage slide and feeler slide.

8. In a sewing machine, the combination of a back gage comprising a back gage slide

and a feeler slide movable relatively thereto, a welt guide, means for moving the welt guide from the back gage, and means for locking the back gage made effective by  
5 arresting movement of the feeler slide.

9. In a sewing machine, the combination of a back gage, a welt guide, yielding connections between the back gage and welt guide, means for moving the back gage to  
10 and from the work, and locking means

rendered effective for stopping the movement of the back gage toward the work upon feeling contact with the work.

In testimony whereof, I have signed my name to this specification, in the presence 15 of two subscribing witnesses.

THOMAS G. PLANT.

Witnesses:

AMELIA M. ROSS,

MARION F. KIMBALL.