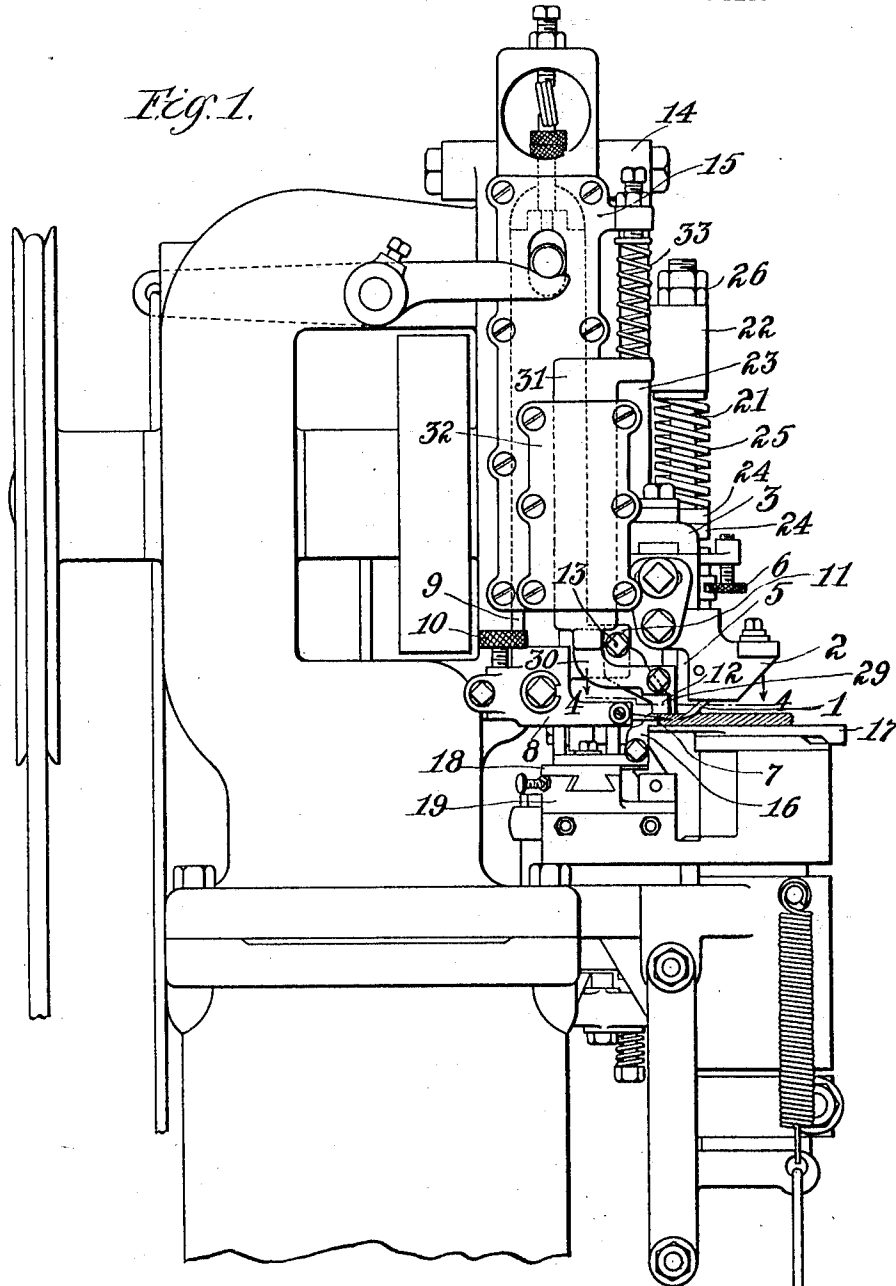


F. E. BERTRAND.
CHANNELING MACHINE.
APPLICATION FILED OCT. 25, 1911.

1,054,388.

Patented Feb. 25, 1913.

2 SHEETS—SHEET 1.



Witnesses.

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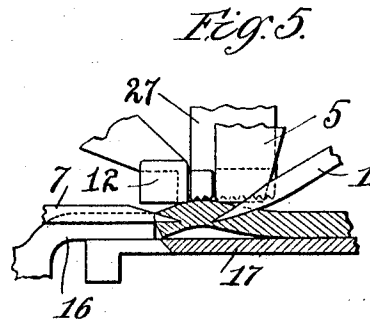
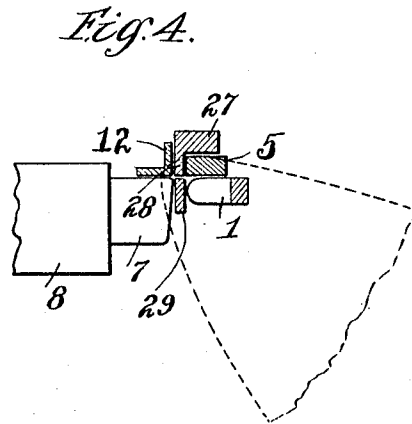
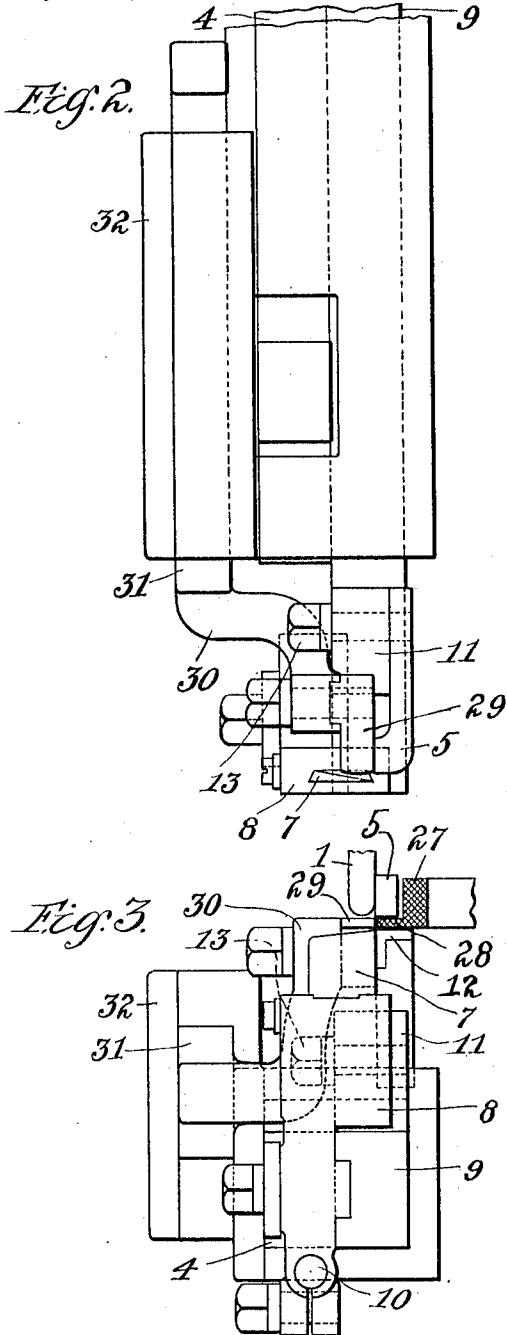
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UNITED STATES PATENT OFFICE.

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CHANNELING-MACHINE.

1,054,388.

Specification of Letters Patent.

Patented Feb. 25, 1913.

Application filed October 25, 1911. Serial No. 656,609.

To all whom it may concern:

Be it known that I, FREDERIC E. BERTRAND, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Channeling-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to machines used in the manufacture of boots and shoes for forming a channel or feather or both in the marginal portion of an insole, such machines being known generally as channeling machines, and more particularly to that type of channeling machine for operating upon welt insoles disclosed in Letters Patent of the United States No. 1,023,801, issued to United Shoe Machinery Company on an application filed by the present inventor. In this class of machines the insole is fed through the machine automatically but it is swung about the edge gage by the operative to maintain the cutting knives in proper relationship to the sole edge as the point of operation of the knives is transferred around the insole. The stock for welt insoles is often soft and pliable, and owing to these characteristics, it has been found, in channeling the sole, that the pressure of the edge of the sole against the edge gage when the operative swings the sole to bring the various curvatures of its periphery in the line of feed causes the marginal portion to buckle. The buckling of the marginal portion of the sole interferes with the proper operation of the channel and edge knives upon the insole. The digging of the knives into the sole, even in slight cases of buckling, destroys the uniformity in the depth of the channel and thickness of the feather necessary for a successful in-seam sewing operation. In aggravated cases of buckling the edge knife may cut a strip off the grain side of the insole, and the channel knife may cut through the between substance, or may even cut entirely through the insole. In any event the insole is ruined.

The principal object of the invention is to produce an insole channeling machine in which the buckling up of the marginal portion of the insole is prevented, and the flesh side of the insole uniformly present-

ed for the cut of the lip forming knife or knives in such manner that the channel or feather edge, or both, will be accurately produced. In accordance with this object a feature of the invention contemplates the provision, in a channeling machine provided with a lip forming knife, of a foot arranged to hold down the marginal portion of the insole and prevent its buckling up. In the preferred form of the invention such a foot is provided to engage the between substance of the marginal portion of the insole substantially opposite the point of operation of the lip forming knife. This arrangement places it in position to bear upon the marginal portion of the sole and hold it down upon the work table at the point where the insole has the greatest tendency to buckle. The provision of a hold-down foot acting upon the marginal portion of the sole as described, by holding the marginal portion of the sole flat also prevents both the channel and edge knives from making an improper cut when the machine is provided with channel and edge knives to produce a regular welt insole.

The specific manner in which the foot is mounted and arranged so that it may prevent the buckling up of the insole is not essential and may be varied as found desirable or expedient. It is desirable, however, to mount the foot so that it moves back and forth over the work with the lip forming knife, and at the same time is movable vertically independent of the lip forming knife.

Broadly considered the invention contemplates the provision of any suitable form of hold-down foot, but in order that the insole may be swung to the right or left to bring the reversely curved portions of the edge of the sole in the line of feed without danger of the between substance being torn out by the hold-down foot, the latter is preferably rounded on its bottom so that it may easily ride over the between substance.

These and other features of the invention including certain details of construction and combinations of parts will be further explained in the following description and then particularly pointed out in the appended claims.

The various features of the present invention will be readily understood from an inspection of the accompanying drawings

showing the best form of the invention at present known to the inventor, in which—

Figure 1 is a rear elevation of the machine head including a portion of the base upon which the head is mounted; Fig. 2 is a detail front elevation; Fig. 3 is an under side view showing in detail the cutters, presser gages, hold-down foot and work retainer; Fig. 4 is a sectional plan on the line 4—4, Fig. 1, showing the relative location of the cutter, presser gages, work retaining foot, and between substance presser foot, the toe portion of an insole being shown in dotted lines; and Fig. 5 is a view similar to Fig. 14 of the Letters Patent referred to, but illustrating the effect on both the edge and channel cuts when the marginal portion of the sole is permitted to buckle up.

The construction and mode of operation of the machine shown in the drawings, except for the additional features embodied in the present invention, are substantially identical with the construction and mode of operation of the machine disclosed in the Letters Patent hereinbefore referred to. This type of machine for operating upon welt insoles is provided with channel and edge knives carried by a carrier mounted for movement forwardly and backwardly over a work support, presser gages associated with the channel and edge knives, an edge gage movable both across and in the direction of feed, and a yieldingly mounted work retainer provided with a foot which has a serrated under surface for firmly engaging the surface of the work. The sole is fed on the forward movement of the knife carrier by the presser gages, the knives at this time riding over the surface of the sole and when the limit of the stroke of the carrier is reached the work retaining foot is moved down into contact with the sole to hold it rigidly from movement. As the knife carrier moves backward the knives enter the sole, move toward the work retainer and cut the channel and slit the edge of the sole.

In the construction shown in the drawings a channel knife 1 is adjustably mounted in a carrier 2 secured to a bracket 3 projecting from the lower end of a slide 4. The channel knife carrier 2 is provided with a guideway which sustains a channel knife presser gage 5. This presser gage is held in place close beside the channel knife and is adjustable vertically in the guideway by means of a thumb-screw 6 mounted in the usual manner.

The edge knife 7 is adjustably secured to a carrier 8 sustained in a guideway in the lower end of a slide 9. The carrier is adjustable vertically in the guideway by means of a thumb-screw 10. The edge knife slide also has projecting from its lower end a bracket 11 provided with a vertical guideway in which is suitably mounted an edge

presser gage 12. This gage is held in any position of vertical adjustment by means of a bolt 13.

The knife slides 4 and 9 are held within a carrier 14 by means of a cover plate 15. The machine of the drawings is provided with an edge gage 16 which projects over the work table 17, and is mounted on two slides 18 and 19 arranged at right angles to each other so that the gage may move in and out transversely of the line of feed and at the same time move with the knife.

The work retainer is mounted for adjustment on the lower end of a rod 21 carried by a bearing 22 on a vertically reciprocating slide 23. The rod is provided with lock nuts 24 supporting a coiled take-up spring 25 which surrounds the rod and bears at its upper end against the lower surface of the bearing 22. The upper end of the rod is provided with lock nuts 26. The work retainer is provided with a main bearing foot 27 extending across the operative portions of the cutting edges of the channel and edge knives to effectively bear upon and rigidly hold the sole from movement at the particular point where the cuts are to be made, and with an auxiliary toe 28 which projects forwardly between the two presser gages 5 and 12 and bears on the between substance just behind the edge and channel knives as in Fig. 4. With this construction a grip is insured at all times, even when making the last cuts in running off the toe. These parts are the same as in said Letters Patent.

When the character of the stock used for welt insoles is soft and flexible, in the operation of the machine of the type described, there is a tendency for the marginal portion of the sole to buckle up (see Fig. 5) when the edge of the sole is pressed laterally against the edge gage as the operative swings the sole to bring the various curvatures of its periphery in the line of feed. In order to prevent the buckling up of the sole and thus insure the proper presentation of the upper surface of the marginal portion of the insole to the channel and edge knives, the machine of the present invention is provided with a foot arranged to apply pressure on the marginal portion of the sole at the point where the sole has the greatest tendency to buckle up, namely, upon the between substance substantially opposite the knives. Such a hold-down foot is shown at 29. It is arranged to engage the between substance of the insole in the space between the channel and edge knives as illustrated in Fig. 4. The foot 29 is adjustably mounted upon a toe 30 projecting from the lower end of a vertically movable slide 31 arranged to slide on the cover plate 15. In order to insure the free vertical movement of the between sub-

stance presser foot 29 under pressure of the work the position of the slide 31 on the cover plate is advanced toward the right, viewing Fig. 1, so that the slide 31 overlaps the parallel knife slides 4 and 9. Furthermore, square ways are provided beneath a plate 32 within which the slide works and a spring 33 is arranged, as shown in Fig. 1, to bear upon the presser foot slide at a point substantially in a vertical plane passing from front to rear of the machine through the point of operation of the presser foot. The arrangement of the slide, the provision of the square ways and the point of application of the spring effectively prevents any sticking tendency of the slide and thus insures a free vertical movement to the between substance presser foot. In order that the foot may constantly press down upon the sole without liability of tearing out the between substance as the insole is swung to the right and left to bring the reversely curved portions of the edge of the sole in the line of feed, the bottom of the foot is rounded at its front and rear edges as shown in Fig. 2.

While it is preferred to employ the specific arrangement of the parts shown and described, since this is the most efficient embodiment of the invention which has yet been devised, it will be understood that this construction and arrangement is not essential except so far as it is specified in the claims, and may be varied or modified without departing from the broader features of the invention.

What is claimed as new is:—

1. A channeling machine, having, in combination, a lip forming knife, means for feeding the sole and holding it for the cut of the knife, and separate means for preventing the buckling up of the marginal portion of the insole at the point of operation of the knife, substantially as described.

2. A channeling machine, having, in combination, a lip forming knife, a presser gage therefor, means for feeding the sole, and an independently mounted hold-down foot continuously engaged with the sole, and arranged to apply pressure upon the between substance of the sole, substantially as described.

3. A channeling machine, having, in combination, a lip forming knife, means for

feeding the sole and holding it for the cut of the knife, and a separate foot for applying pressure upon the marginal portion of the sole opposite the point of operation of the knife to prevent buckling, substantially as described.

4. A channeling machine, having, in combination, a lip forming knife, a presser gage therefor, means for feeding the sole, and an independently mounted between substance presser foot continuously engaged with the sole, and means for yieldingly pressing the foot down upon the sole, substantially as described.

5. A channeling machine, having, in combination, a lip forming knife, a presser gage therefor, means for reciprocating said knife and presser, and a between substance presser foot mounted to move back and forth over the work with the knife and presser and to move vertically independently of the knife and presser, substantially as described.

6. A machine for operating upon welt insoles, having, in combination, a channel knife, an edge knife, means for feeding the sole and a hold-down foot continuously engaged with the sole and mounted independently of the knives and feeding means and arranged to apply pressure on the between substance of the sole at a point between the two knives, substantially as described.

7. A machine for operating upon welt insoles, having, in combination, a channel knife, a channel knife presser gage, an edge knife, an edge knife presser gage, a work retaining foot, an edge gage, and a between substance presser foot, substantially as described.

8. A channeling machine, having, in combination, an edge knife, an edge knife presser gage, means for feeding the sole and holding it for the cut of the edge knife, and a separate between substance hold-down foot having its bottom rounded at its front and rear edges to permit the sole to be swung to the right or left to bring the reversely curved portions of the edge of the sole in the line of feed, substantially as described.

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Witnesses:

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