

J. L. DOW.
INSEAM TRIMMING MACHINE.
APPLICATION FILED, MAR. 11, 1912.

1,049,462.

Patented Jan. 7, 1913.

Fig. 1.

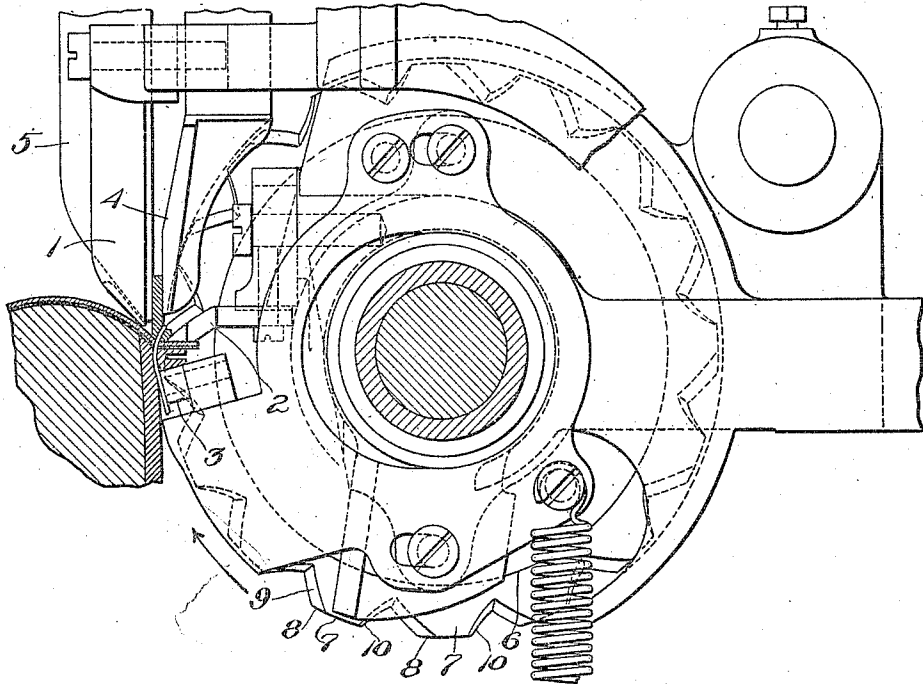


Fig. 3.

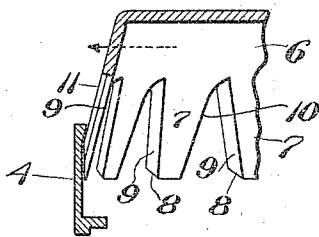


Fig. 2.

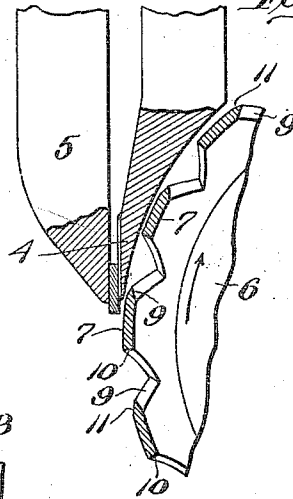
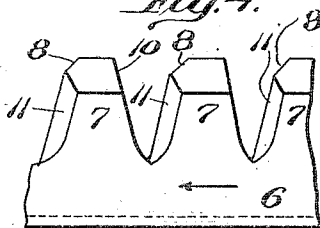


Fig. 4.



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UNITED STATES PATENT OFFICE.

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INSEAM-TRIMMING MACHINE.

1,049,462.

Specification of Letters Patent.

Patented Jan. 7, 1913.

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To all whom it may concern:

Be it known that I, JOHN L. Dow, a citizen of the United States, residing at Melrose Highlands, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Inseam-Trimming 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 invention relates to machines for operating upon shoes, and more particularly to machines for use in trimming the inseams of welted shoes.

One of the commercial types of inseam trimming machines comprises a cylindrical trimming knife provided with a series of cutting teeth, a crease guide against which the operator holds the shoe as it is fed through the machine, and a four-motion feed device consisting of a rear two-motion feed jaw and a front four-motion feed jaw which are arranged to feed the work by engagement with the welt. In order to permit the cylindrical knife to reach the parts to be trimmed, the back of the rear two-motion feed jaw is reduced in thickness along a curve corresponding to the curvature of the cylindrical knife so that the knife may operate as close as possible to the feed jaw without engagement therewith. In the operation of these machines it occasionally happens that the rear two-motion feed jaw and the knife strike together, resulting in the breaking of the knife and the interruption of the inseam trimming operation. It has been discovered that this occasional interference of the jaw and knife is caused by distortions of the jaw or of the knife, or of both jaw and knife, during the inseam trimming operation. As the jaw is reduced in thickness to permit the knife to operate in close proximity thereto it is weakened to such extent as to subject it to distortion under the pressure of the front four-motion feed-jaw whenever an unusually thick piece of welt is clamped between the jaws. Any distortion of the rear two-motion feed jaw forces it rearwardly into the path of the cutting teeth which strike solidly against the lower edge of the distorted feed jaw, thus causing the teeth to be ripped off and the knife ruined. As the cutting teeth are

formed on the free peripheral edge of the cylindrical knife, which is rotated at a high speed during the inseam trimming operation, the teeth are liable to distortion under the influence of the centrifugal force generated by the rotation of the knife. Heretofore it has been the practice, in order to avoid interference between the feed jaw and the knife, and consequent damage to the latter, to operate the knife at such a distance from the rear two-motion feed jaw that a distortion of the jaw or knife would not be liable to cause interference. Such an adjustment of the parts is objectionable, however, in that it prevents trimming close to the inseam.

The object of the present invention is to provide an inseam trimming machine with means whereby the occasional interference of the feed jaw and knife may occur without danger of the knife being broken or the inseam trimming operation interrupted, thus permitting a closer adjustment of knife and jaw and a corresponding closer trimming of the inseam.

To the accomplishment of this object, the present invention contemplates the provision, in an inseam trimming machine provided with a feed jaw and a trimming knife arranged to operate in such close proximity to the jaw as to expose the jaw and knife to interference during the inseam trimming operation, of means for regulating the relative position of the knife and jaw upon their interference to prevent breaking of the parts or interruption in the continued operation of the knife.

Broadly considered the means for regulating the relative position of the feed jaw and knife upon their interference may take any form found desirable or expedient and may be formed upon the jaw or the knife or upon both the jaw and the knife. It is preferred, however, to provide the knife with a cam surface which, upon interference between the feed jaw and the knife, cooperates with the feed jaw to regulate the relative position of the feed jaw and knife so as to permit the continued operation of the knife. In embodying this form of the invention in a machine provided with a cylindrical trimming knife consisting of a series of cutting teeth, the cam surface is formed upon the knife by exteriorly beveling the longitudinal forward edge of each tooth,

this construction regulating the relative positions of the feed jaw and each interfering tooth successively and preventing injury to the teeth during the in-seam trimming operation.

5 The present invention will be readily understood from an inspection of the accompanying drawing, in which—

10 Figure 1 is an end view partly in section of an in-seam trimming machine embodying the present invention in the best form at present devised, and showing a shoe in position to be acted upon by the instrumentalities of the machine; Fig. 2 is a detail in
15 sectional elevation showing the trimming knife and feed jaws; Fig. 3 is a detail in sectional plan showing the trimming knife and rear feed jaw; and Fig. 4 is a detail in elevation showing the exterior surface of
20 the trimming knife.

Referring now to the drawings, the machine is provided with a crease guide 1 arranged to engage the upper of the shoe in the welt crease, a guard 2 arranged to bear
25 upon the edge of the upper and welt; and a yielding channel guide roll 3 arranged below the crease guide in position to engage the lip of the insole and hold the shoe firmly up against the channel guide while the shoe
30 is being passed through the machine. The machine is also provided with a four-motion feed device consisting of a rear two-motion feed jaw 4 arranged to vibrate in the line of feed, and a front four-motion feed jaw 5
35 arranged to vibrate both parallel with and transversely to the line of feed. These jaws feed the work by engagement with the welt.

The parts above described are constructed and arranged as in the machine disclosed in
40 the United States Letters Patent granted to Albert E. Johnson, No. 956,971, and dated May 3, 1910, with the exception that the welt engaging faces of the crease guide and feed jaws are not arranged at an incline to the plane of the shoe sole when in position
45 in the machine.

The illustrated embodiment of the invention is provided with a cylindrical knife 6 formed with a series of cutting teeth 7 each
50 having the cutting edge 8 and the forward or advancing longitudinal edge or face 9 and rear or following longitudinal edge or face 10. In the machine disclosed in the patent to Johnson hereinbefore mentioned
55 the advancing longitudinal edge 9 meets the outer peripheral face of the teeth at an acute angle, so that when the two-motion feed jaw is distorted rearwardly under the excessive clamping pressure caused by an
60 unusually thick piece of welt or otherwise, or the cutting teeth become distorted forwardly under the influence of centrifugal force produced by the high speed of rotation of the cylindrical knife, and as a result of
65 these distortions, either separately or com-

bined, the forward longitudinal edges of the teeth strike against the lower edge of the feed jaw, the teeth will catch upon the jaw and be ripped off, thus ruining the knife besides endangering the operator.

In the illustrated embodiment of the invention in order to provide means for regulating the relative position of the feed jaw 4 and the knife 6 upon their interference to avoid damage to the knife and to permit the continued operation of the machine, the longitudinal forward edges 9 of the teeth 7 are exteriorly beveled as shown at 11, Figs. 2 and 4, to form a cam surface upon the cylindrical knife 6, which, upon the interference of the feed jaw and teeth of the cutter, regulates the relative position of the jaw 4 and teeth 7 and permits the latter to pass the jaw without catching and breaking. This relative regulation of jaw and knife is accomplished either by forcing the jaw forward toward its normal position or by springing the teeth rearward toward the center of the cylindrical knife or by both forcing the jaw forward and the teeth rearward.

Since the present invention avoids all danger of a broken knife and the resulting interruption of the in-seam trimming operation, it is possible to adjust the knife and feed jaw in closer proximity than has been possible in in-seam trimming machines as heretofore devised, and thus to trim the in-seam more closely, a great desideratum in this type of machine.

Having explained the nature and object of the invention and specifically described one form of machine in which it may be embodied, what is claimed is:—

1. A trimming machine, having, in combination, a work engaging device, a trimming knife provided with a cutting edge arranged to act intermittently upon the work, said knife being arranged to operate in such close proximity to such device as to expose the device and knife to interference during the trimming operation, mechanism for actuating the knife, and means for automatically regulating the relative position of knife and device upon their interference to permit the continued operation of the knife, substantially as described.

2. An in-seam trimming machine, having, in combination, a feed jaw, a rotary trimming knife provided with a plurality of teeth and arranged to operate in such close proximity to the jaw as to expose the jaw and said teeth to interference during the in-seam trimming operation, and means formed upon one of said parts for automatically regulating the relative position of the knife and jaw upon their interference to permit the continued operation of the knife, substantially as described.

3. An in-seam trimming machine, having,

in combination, a feed jaw, a trimming knife arranged to operate in such close proximity to the jaw as to expose the jaw and knife to interference during the in-
5 seam trimming operation, and a cam surface formed upon the knife for regulating the relative position of the knife and jaw upon their interference to permit the continued operation of the knife, substantially as de-
10 scribed.

4. An in-seam trimming machine, having, in combination, a feed jaw and a cylindrical knife consisting of a series of cutting teeth arranged to operate in such close proximity
15 to the feed jaw as to expose the teeth to interference with the jaw during the in-seam trimming operation, each of said teeth hav-

ing its longitudinal forward edge exteriorly beveled to form a cam surface to regulate the relative position of the jaw and the in-
20 terfering teeth to prevent injury to the teeth upon contact with the feed jaw, substantially as described.

5. A rotary knife for in-seam trimming machines comprising a substantially cylin-
25 drical portion provided on one edge with a plurality of cutting teeth having their longitudinal forward edges exteriorly beveled, substantially as described.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."