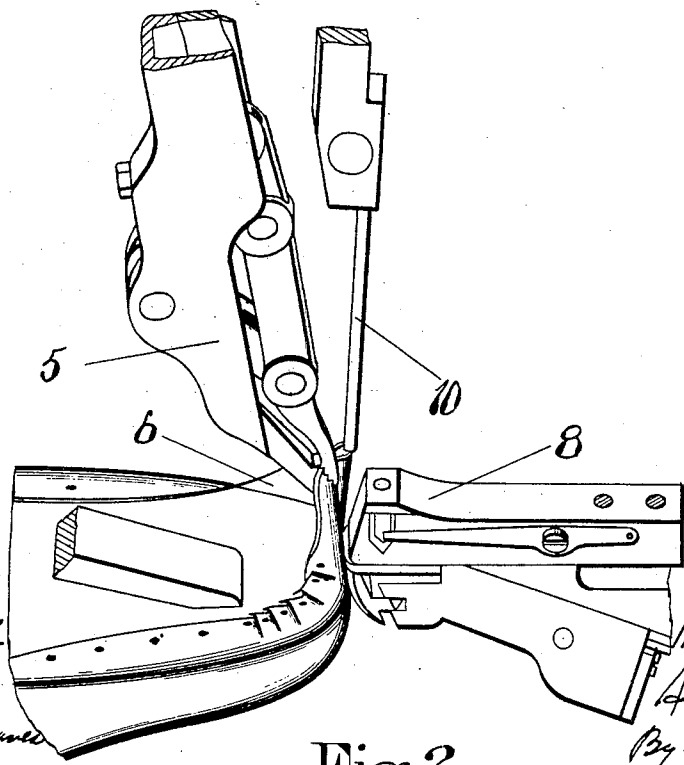
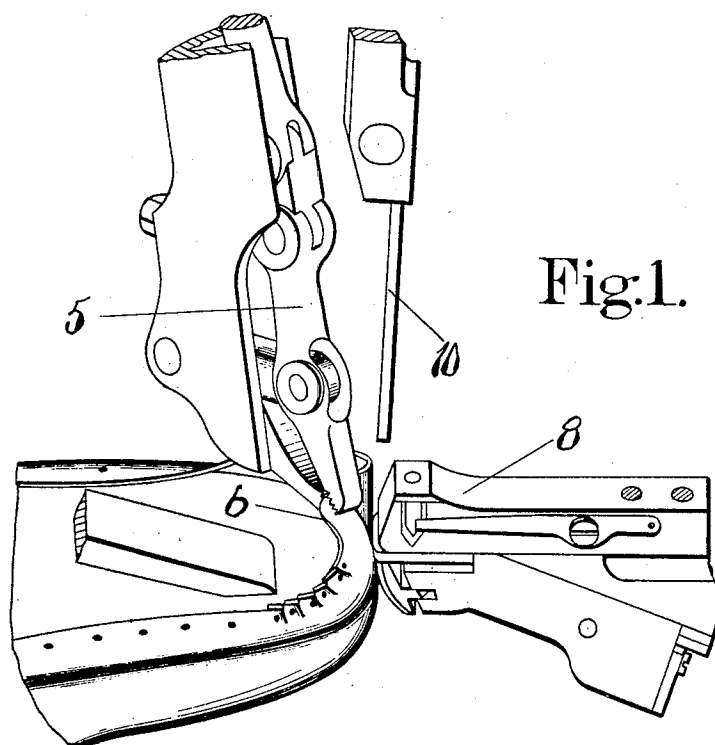


A. BATES.
LASTING MACHINE.
APPLICATION FILED JULY 18, 1912.

1,060,967.

Patented May 6, 1913.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

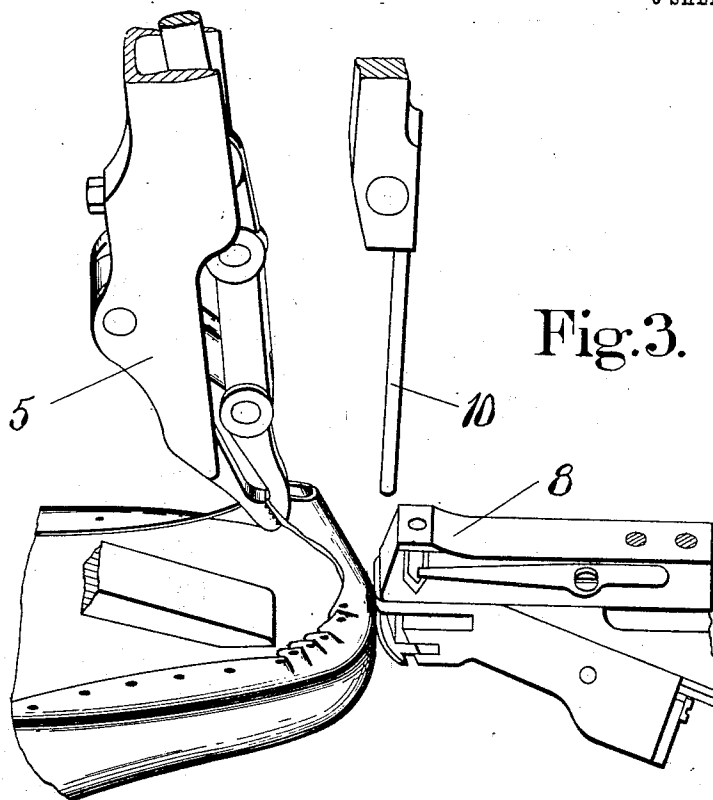


Fig. 3.

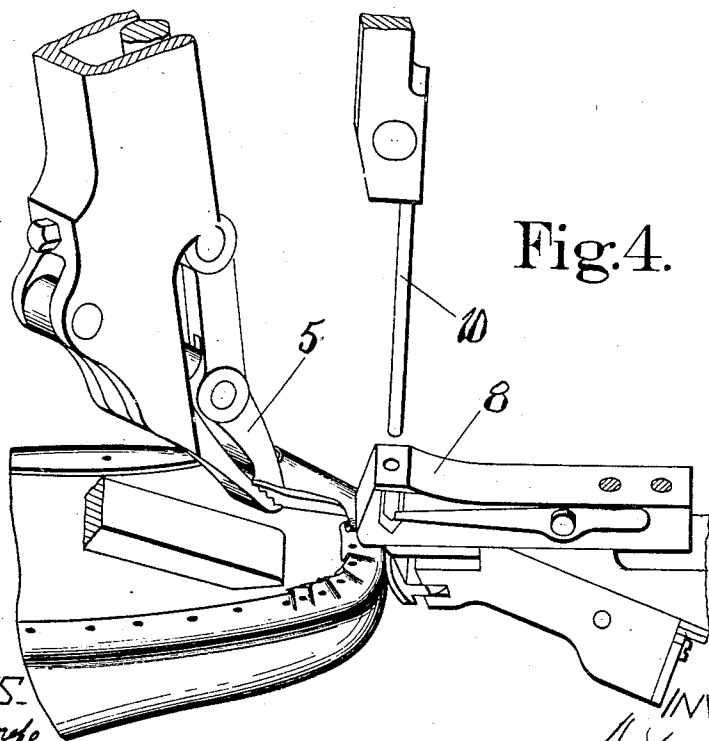


Fig. 4.

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3 SHEETS—SHEET 3.

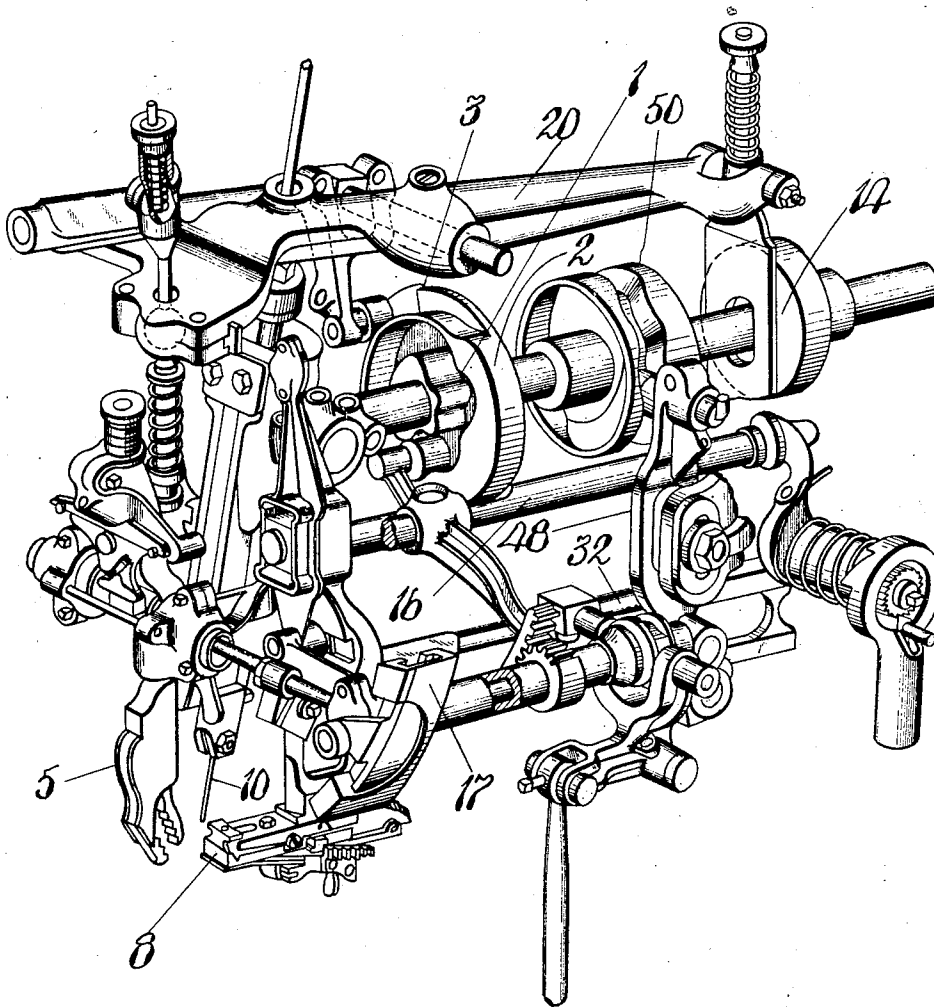


Fig. 5.

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UNITED STATES PATENT OFFICE.

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LASTING-MACHINE.

1,060,967.

Specification of Letters Patent.

Patented May 6, 1913.

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To all whom it may concern:

Be it known that I, ARTHUR BATES, a subject of the King of England, residing at Leicester, Leicestershire, England, have invented certain Improvements in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to pincer-lasting machines and it has for its general object to improve the operation of such machines.

The invention is herein described as applied to a lasting machine of the type disclosed in the United States Letters Patent No. 584,744, granted June 15, 1897, but it is to be understood that the invention is not limited in its application to such type as it could be embodied in other types of pincer-lasting machines without departing from the spirit of the invention. The machine of the said prior patent comprises pincers and mechanism for imparting to the pincers an updraw motion to pull the upper about the last and an overdraw motion to lay the pulled upper down upon the last; and at certain parts of the shoe the pincers are given a plaiting motion to plait the upper. In the said machine the plaiting motion of the pincers is a compound motion made up of a turning or twisting motion as well as a lateral motion, but it is to be understood that herein the term "plaiting motion" of the pincers is intended to cover either the twisting motion alone or the lateral motion alone as well as the compound motion aforesaid. In the said machine the plaiting motion is begun during the overdraw motion. I have found that better results will be obtained if the overdraw motion does not start until after the plaiting motion has begun. The advantages of this will be appreciated when it is considered that in the use of this type of lasting machine the upper is updrawn without bending it over the edge of the shoe bottom, and therefore the upper is free to be drawn laterally at and below the shoe edge by the plaiting motion of the pincers if that motion is initiated before the overdraw bends the upper across the shoe edge. This permits each plaiting operation, whether it includes a lateral movement of the pincers or a twisting movement or a combined lateral and twisting movement as

herein shown, to affect more stock or to accomplish more work in taking care of surplus stock than was the case in the machine of the prior patent. Also by starting the plaiting motion earlier in the cycle of the machine's operation there is better assurance that the plait or fold will be carried across the path of the tack carrier and that the tack will be delivered upon and driven through the plait.

Accordingly a feature of the present invention is a pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises mechanism for imparting to the pincers an updraw motion, an overdraw motion, and a plaiting motion which is initiated prior to the overdraw motion or both prior to the overdraw motion and during the updraw motion. And preferably, although not necessarily, the plaiting motion continues after the overdraw motion is completed.

Another feature of this invention consists in the combination with pincers and operating mechanism therefor, of a tack carrier and operating mechanism for advancing the carrier over the shoe step-by-step with a pause between steps. As herein shown the tack carrier is made to cooperate with the described plaiting mechanism in an important way by advancing into engagement with the edge only of the shoe bottom soon after the beginning of the plaiting movement of the pincers to press into smooth condition the upper over the edge of the shoe bottom and to hold the stock from wrinkling at the edge while the plait is completed. After the plait is formed in front of the tack carrier, the carrier completes its advance, rubbing down the plait to compact it, and delivers the tack over the plait through which it is then driven.

In lasting the toe or other curved parts of the boot by hand it is usual for the workman to seize the margin of the upper with the pincers and repeatedly to wriggle or twist the pincers to right and left until all the fullness of the upper is taken care of.

It is an object of the present invention to improve the mode of operation of the machine so that it approximates more closely than heretofore to the aforesaid hand operation of the workman.

To this end another feature of the inven-

tion is a pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises mechanism for imparting to the pincers a plaiting motion a plurality of times during each operation of the machine.

In the accompanying drawings which illustrate four positions which the pincers occupy during the lasting operation as modified in accordance with a feature of the present invention:—Figure 1 shows the pincers in a position in which, after having gripped the upper, they have started upon their updraw motion; Fig. 2 shows the pincers at the end of their updraw motion; their plaiting motion having begun; Fig. 3 shows the pincers at the end of their overdraw motion, their plaiting motion having twisted them slightly farther from the position shown in Fig. 2 and the tack carrier advanced one step to upper holding position; Fig. 4 shows the pincers at the end of their plaiting motion and the tack carrier advanced its final step to tack delivering position; and Fig. 5 is a perspective view of the operating mechanism of the machine.

In a preferred construction of machine according to the present invention the pincer-operating mechanism comprises a cam-operated lever 20 for effecting the updraw motion of the pincers, a cam-controlled thrust rod 16 for giving to the pincers their overdraw motion, and a cam-oscillated driver 17 for imparting the twisting and lateral movements that constitute the plaiting motion of the pincers. These parts may be substantially the same in construction as those described in the specification of the prior patent aforesaid, but according to the present invention the operation of the parts is modified by the angular displacement of the cam surface 1 of cam block 2 that effects the plaiting motion of the pincers, in relation to the cam surfaces 3 and 14 that impart to the pincers the overdraw and updraw motions. This displacement is such that the plaiting motion will begin before the overdraw motion occurs and preferably the cam surface 1 for the plaiting motion is so disposed in relation to that for the updraw motion that the former motion begins during the occurrence of the latter. If desired, the cam surface 1 for the plaiting motion may be modified so as to cause that motion to continue after the overdraw motion is completed.

In order that the plaiting motion may be repeated a plurality of times during the operation of the machine to produce a wriggling motion of the pincers for the purpose hereinbefore stated, the cam surface for imparting the plaiting motion, in accordance with a preferred construction embodying the present invention, is provided with a plu-

rality of undulations so as to actuate the plaiting mechanism several times during one rotation of the main shaft instead of only once as in the machines as heretofore constructed.

The tack carrier 8 the lower face of which constitutes the wiper and which is actuated through the slide 32 and lever 48 by the cam 50 may be made to advance in two steps, the first of which occurs at about the end of the updraw, Fig. 3, and has for its purpose to hold the upper more securely than heretofore and also to avoid the extension of plaiting wrinkles to a visible portion of the finished shoe, and the second and final step occurs at the end of the plaiting movement and lays or presses the plait down and also delivers the tack in position to fasten the plait. These two steps are produced by forming the cam path in cam block 50 with its offset in two steps, see Fig. 5.

The operation of the machine as modified in accordance with one feature of the present invention is as follows:—The pincers 5 seize the upper 6 and then move upwardly to stretch it about the last as shown in Fig. 1. During the updraw movement of the pincers and before the starting of the overdraw motion the plaiting motion commences (see Fig. 2) and this motion continues during the overdraw motion and after that motion has stopped, as is shown in Figs. 3 and 4. The tack carrier and presser 8 of the machine then advances over the work to wipe the upper into lasted position and finally a tack from the tack carrier is driven by the usual driver 10 into the work to secure the upper in place. Preferably, the timing of the several motions of the pincers is such that the plaiting motion is half completed before the overdraw motion begins and the latter motion is ended at or before three-fourths of the plaiting motion has occurred. The tack carrier 8 advances its first step at about the end of the overdraw, Fig. 3, and there pauses until the plaiting movement has been completed, or nearly so, and the pincers are about to release the upper and it then advances its final step to tack delivering position in time relation to the opening of the pincers. The cam surface for the plaiting motion may be arranged as aforesaid to produce a wriggling or twisting of the pincers to take care of the fullness of the upper as before explained, in which case the plaiting motion will be repeated a plurality of times during the updraw and overdraw motions, the pincers at the end of their plaiting motion arriving at the position shown in Fig. 4.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and

that comprises pincers and operating mechanism for imparting to the pincers an updraw motion, an overdraw motion, and a plaiting motion which is initiated prior to the overdraw motion or both prior to the overdraw motion and during the updraw motion.

2. A pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises pincers and operating mechanism for imparting to the pincers an updraw motion, an overdraw motion, and a plaiting motion which is initiated prior to the overdraw motion.

3. A pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises pincers and operating mechanism for imparting to the pincers an updraw motion, an overdraw motion, and a plaiting motion which continues after the overdraw motion is completed.

4. A pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises pincers and operating mechanism for imparting to the pincers an updraw motion, an overdraw motion, and a plaiting motion which is repeated a plurality of times during each cycle of the operation of the machine for the purpose described.

5. A pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises pincers and operating mechanism including an updraw cam, an overdraw cam and a plaiter cam relatively arranged for the plaiting motion to begin during the updraw motion and to continue relatively slowly through and until after the termination of the overdraw motion.

6. A pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises pincers and operating mechanism including an updraw cam, an overdraw cam, and a plaiter cam, said plaiter cam being formed to wriggle the pincers forth and back substantially as described during the progress of the pincers laterally for effecting the plaiting operation.

7. A pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises pincers and operating mechanism including an updraw cam and an overdraw cam to work the upper into position to be fastened, and fastening mechanism

comprising a tack carrier which is advanced in two steps and has a dwell after it has come into upper holding position and then a final advance to tack delivering position when the pincers release the upper. 65

8. A pincer-lasting machine that is adapted to operate successively upon different portions of the margin of a shoe upper and that comprises mechanism for imparting to the pincers an updraw motion, an overdraw motion and a plaiting motion, and fastening mechanism including a tack carrier and operating mechanism including a cam which is formed and timed to advance the tack carrier over the edge of the shoe bottom at the beginning of the overdraw motion and there permit a dwell and finally to advance the carrier to tack delivering position at the completion of the plaiting motion. 75

9. A pincer-lasting machine having, in combination, pincers and operating mechanism therefor including means for imparting an operative upper pulling movement to the pincer progressively step-by-step with a backward movement between two steps. 85

10. A pincer-lasting machine having, in combination, pincers and operating mechanism therefor, and a tack carrier and operating mechanism for actuating the carrier over the shoe step-by-step with a pause between steps into position to present a tack for fastening the shoe upper. 90

11. A pincer-lasting machine having, in combination, pincers and operating mechanism therefor including means for imparting upper plaiting movements to the pincers, and means moved automatically into engagement with the edge only of the shoe bottom in time relation with the beginning of the plaiting movement to hold the upper from wrinkling at the edge while the plait is being formed. 100

12. A pincer-lasting machine having, in combination, pincers and operating mechanism therefor including means for imparting upper plaiting movements to the pincers, and means moved automatically into engagement with the edge only of the shoe bottom after the upper is updrawn and having a dwell while the plait is being formed and for thereafter rubbing down the plait, and mechanism for so actuating said means. 110

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

ARTHUR BATES.

Witnesses:

WILLIAM THOMAS BUCKINGHAM ROBERTS,
FREDERICK WILLIAM WORTH.