

T. LUND.
LASTING MECHANISM.
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1,382,006.

Patented June 21, 1921.

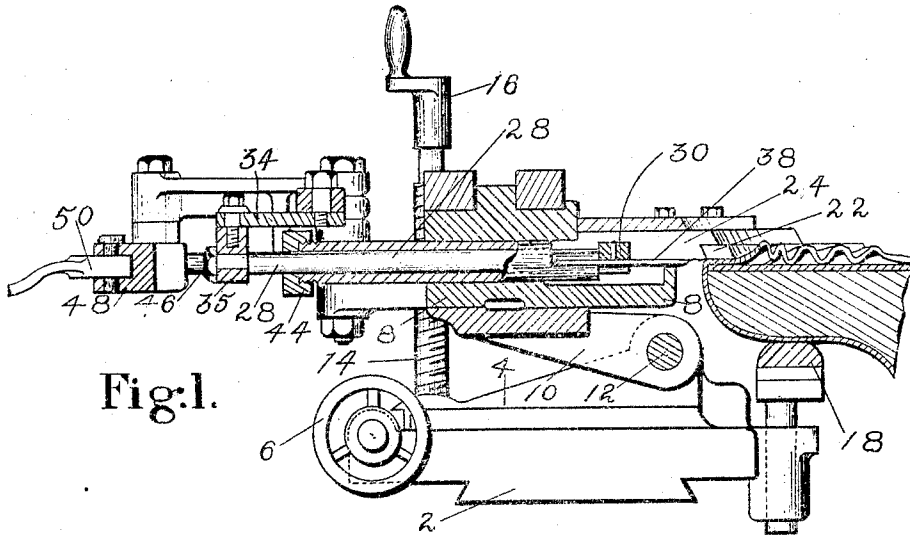


Fig. 1.

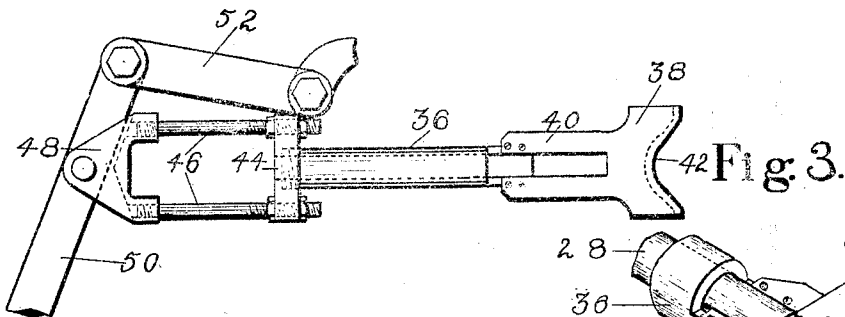


Fig. 3.

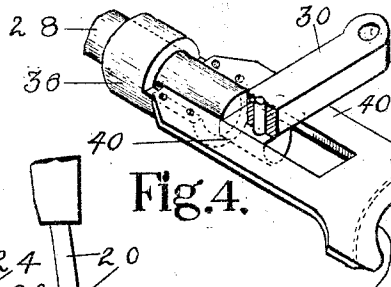


Fig. 4.

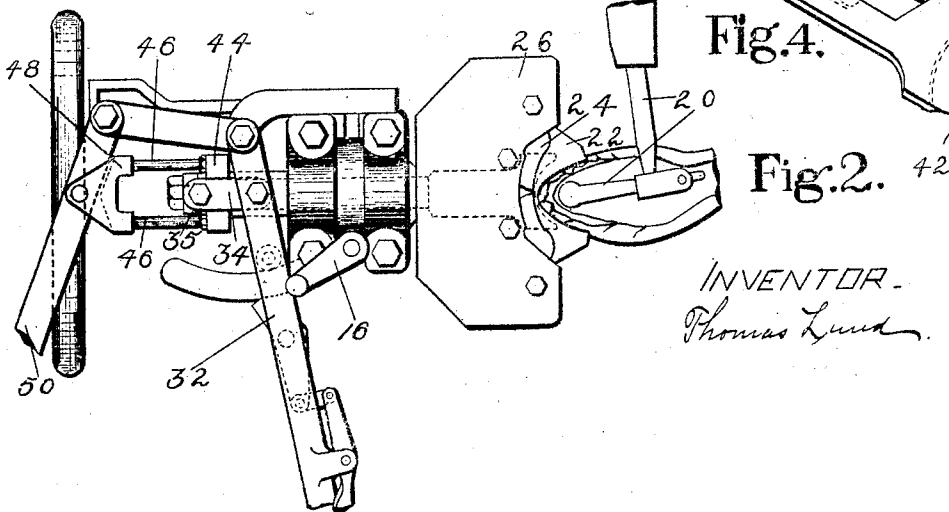


Fig. 2.

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LASTING MECHANISM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS LUND, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Lasting Mechanism, 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 mechanism for use in the lasting or analogous shaping or forming of upper materials in the manufacture of boots and shoes and more particularly to the provision of means for trimming off the surplus margin of the upper materials. The invention is herein illustrated as embodied in a construction designed for use at the toe end of a shoe, but it is to be understood that in many of its aspects the invention is not thus restricted in its applicability.

It has been the usual practice heretofore, after shaping the upper around the toe of a shoe and securing it in lasted position, to trim off the surplus margin of the upper materials as a subsequent operation by the use of a separate machine. An object of this invention, among others, is to provide a construction whereby the margin of the upper may be trimmed quickly and effectively at the time of the lasting or analogous upper shaping operation. A feature of the invention consists in a novel construction and arrangement comprising upper trimming means operatively movable between upper shaping means and the adjacent surface of the upper to trim off the surplus margin of the upper. The construction shown comprises a cutter movable along the overwiping faces of end embracing wipers between said faces and the overwiped upper to trim off the surplus margin of the upper gathered inwardly in front of the wipers. An advantageous characteristic of the illustrative construction comprises an arrangement whereby the upper trimming means is operable independently of the upper shaping means, thus permitting the upper to be shaped in the required manner without interference of the trimming means and permitting the use of the latter at such time in relation to the upper shaping operation

as may be most advantageous for the character of the particular work under treatment. A further novel and advantageous characteristic of the construction shown is to be recognized in an arrangement whereby the cutter, which is movable between the overwiping means and the shoe, is beveled at its cutting edge on the side facing the shoe materials. Such an arrangement of cutter and wipers, for example, permits the cutter to be forced inwardly along the overwiping faces of the wipers with its cutting edge substantially in the plane of said faces, thereby avoiding damage to the shoe by rendering said edge ineffective to cut said materials until it arrives in position to engage that portion of the margin of the upper which is positioned in front of the wiper edges.

A further feature of the invention resides in the provision of upper trimming means adapted to be used in combination with means which holds the upper in position for trimming by inserting it under said holding means, for example between said means and a portion of the shoe materials. In the construction shown the cutter is arranged to be maintained substantially out of engagement with the shoe until the wipers have worked the margin of the upper inwardly over the shoe bottom and then to be wedged inwardly between the wipers and the overwiped upper. An advantage of this arrangement, among others, is to be recognized in the further tightening and compacting effect of the trimming means upon the overwiped margin of the upper.

Still another feature of the invention resides in a simple and effective construction and arrangement for trimming off the entire surplus margin of the upper at the end of a shoe at a single operation, the construction shown comprising a cutting blade constructed and arranged to extend across the entire gathered margin of the upper from one side to the other to trim off the surplus margin by a single cutting movement lengthwise of the shoe.

These and other features of the invention will appear more fully from the following description of an illustrative embodiment of the invention considered in connection with the accompanying drawings, and will be then pointed out in the claims.

Figure 1 of the drawings is a view in side elevation partly in section, of the toe lasting head of a machine of the "bed" type embodying the present invention;

Fig. 2 is a plan view of the mechanism disclosed in Fig. 1, showing, additionally, the usual hold down engaging the sole of the shoe;

Fig. 3 is a plan view of the upper trimming means detached, and

Fig. 4 is a detail view illustrating the independent operating connections for the wipers and trimming cutter.

The toe lasting mechanism selected for illustration and exemplifying a type of lasting mechanism in which the upper trimming means may be used is of the general type disclosed in prior United States Letters Patent No. 1,018,477, granted February 27, 1912, on application of Matthias Brock, and comprises the base 2 for the toe lasting mechanism supported for vertical treadle effected movement and for longitudinal adjustment by hand wheel and screw as shown in said patent and on which the carriage 4 is pivoted for angular transverse adjustment by a hand wheel 6 and a screw (not shown). The toe lasting head 8 is pivotally mounted by means of an arm 10, on a spindle 12 extending transversely of the carriage 4 and is vertically adjustable through a threaded rod 14 upstanding from the carriage 4 and having an operating crank 16. A toe support or rest 18 is guided for vertical movement by the base 2 and coöperates with a hold down 20 (Fig. 2) to clamp the toe end of the shoe in position to be operated upon by the toe lasting mechanism. Toe wipers 22 are secured to the under sides of carrier plates 24 which are mounted in the head and are retained on said head by a plate 26. These wiper carriers and wipers are advanced and closed by link connections from a plunger operated cross bar and by cam slots in the carrier plates and coöperating rolls carried by the head 8, as shown and described in said prior patent. The head 8 is formed with a bore to receive and guide the wiper-operating plunger 28 to the forward end of which the cross bar 30 is attached. The plunger 28 is reciprocated through a hand lever 32 pivoted to the head 8 and having a link 34 connected to a member 35 fixed on the rear end of the plunger.

In accordance with the present invention, in its illustrative embodiment, the bore which receives and guides the plunger 28 is enlarged to receive a tubular plunger 36 within which the wiper operating plunger 28 is seated for sliding movement, the forward end of the tubular plunger being cut down to expose the forward end of the wiper plunger 28 whose end, in turn, is cut down to form a seat for the cross bar 30 (see Fig. 4) which is pinned to this end of the

plunger. An upper trimming cutter 38 has a rearwardly extending shank portion 40 (Fig. 3) bifurcated to straddle the forward end of wiper plunger 28 and secured, as by screws, to the cut down edges of the forward end of the tubular plunger 36. The forward cut down ends of plungers 28 and 36 are relatively formed to provide sufficient clearance between the under face of cross bar 30 and the upper face of the shank 40 of the upper trimming cutter.

The forward edge of the cutter 38, which in the construction shown is curved similarly to the end of the shoe and located immediately below and contiguous to the overwiping faces of the wipers 22, has its edge beveled on the side facing the upper materials and concaved to form a chisel cutting edge 42 which is effective to plane off even with the lower faces of the wipers that portion of the upper gathered in by the wipers which is located ahead of their wiping edges. The cutter is operable independently of the operation of the wipers by operating means connected to the rear end of the tubular cutter plunger 36 and operable independently of the wiper operating plunger 28 and lever 32.

For this purpose, the rear end of the retracted tubular plunger 36 terminates forwardly of the rear end of retracted wiper plunger 28 a sufficient distance to permit a full, or substantially full wiper advancing and closing movement of the wiper plunger before the lever connected member 35 on the end of said plunger contacts with a transverse bar 44 fixed at its central point to the rear end of the tubular plunger 36 and bored to receive the wiper plunger 28. To the opposite ends of the cross bar 44 are threaded the forward ends of spaced rods 46 which extend rearwardly to and are threaded into a bifurcated head 48. A cutter operating hand lever 50 is connected to the head 48 and is pivoted at one end to a link 52 which in turn is pivoted to the toe lasting head 8 in axial alinement with the pivot of the wiper operating lever 32.

From the preceding description it will be clear that the upper trimming cutter is operable independently of the wipers and may be operated at that time or point in the lasting operation when the removal of the surplus upper materials may be effected to best advantage. In the operation of the described and illustrated mechanism, the toe lasting mechanism is bodily moved vertically by a treadle and the toe wipers are partially advanced and closed, to upwipe the toe as in the machine of said prior patent, the wipers being thereafter advanced and closed over the edge of the sole to lay the upper down over the sole edge. As the wipers gather the upper in over the margin of the shoe sole, plaits form in the upper in

advance of the wiper edges and resist the closing of the wipers and the flattening down of the upper.

The wipers may be wholly or partially advanced and closed and retracted and opened as many times as is necessary to mold the upper closely to the face of the sole without operating the trimming knife. In lasting light shoes having thin upper stock, the plaits formed in advance of the wipers offer less resistance than with shoes having heavy upper materials and the upper trimming knife may be operated substantially at the end of the lasting operation, if desired, or may be advanced to plane off the surplus upper after the wipers have been advanced and partially closed over the sole which is the preferable procedure in lasting heavy shoes having heavy upper stock. In either case the wipers preferably are partially backed off from fully closed position or are only partially closed so as to expose in advance of the wipers that portion of the overwiped upper stock which is to be removed.

The use of a trimming knife with its beveled chisel edge arranged as above described is particularly advantageous in that the advance of the knife through lever 50 and plunger 36 to insert its beveled edge between the wipers and the shoe causes the knife first to exert a wedging final ironing down pressure against the upper at the edge of the sole, producing a sharp clearly defined edge formation and thereafter to plane off level with the under face of the wipers that portion of the upper in advance of the wiper edges, thereby providing a flat seat for the outsole. It will be evident, moreover, that with the bevel at the edge of the knife facing the overwiped upper materials there is no danger of scraping that portion of the surface of the materials which underlies the wipers.

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

1. In mechanism of the class described, in combination, means for gathering an upper inwardly around the end of a shoe, and independently operable upper trimming means permanently associated with said gathering means, said upper trimming means comprising a cutter guided for trimming movement inwardly over the shoe bottom in a direction substantially parallel to the lengthwise dimension of the shoe and constructed to extend continuously across the shoe from one side of the gathered upper to the other side to trim off the entire surplus margin of the upper around the end of the shoe at a single operation.

2. In mechanism of the class described, in combination, a lasting wiper for working the upper inwardly over the margin of the

sole of a shoe, and upper trimming means comprising a cutter permanently positioned substantially in the plane of the overwiping face of said wiper and operable independently of said wiper.

3. In mechanism of the class described, in combination, a lasting wiper and manually operable means for advancing said wiper over the edge of a shoe sole, an upper trimmer permanently associated with said wiper and guided for operative movement between the shoe and the overwiping face of said wiper, and means for independently and manually operating said trimmer to trim off the upper material extending beyond the inner edge of said wiper.

4. In mechanism of the class described, the combination with end embracing wipers, of upper trimming means comprising a single cutting blade permanently positioned for movement in a plane substantially parallel to the plane of the wipers and in such relation to the wipers as to trim off the entire surplus margin of the upper gathered inwardly by the wipers.

5. In mechanism of the class described, in combination, means to gather the upper inwardly over the margin of the sole of a shoe, and a thin chisel-edged cutter associated with said gathering means and supported and arranged for movement between the gathering means and the underlying face of the inwardly-gathered upper to trim off the upper extending inwardly beyond said means.

6. In mechanism of the class described, the combination with overwiping means, of upper trimming means comprising a cutting blade mounted for movement along the overwiping face of said overwiping means between said face and the shoe, said blade being beveled at its cutting edge on the side facing the overwiped upper materials.

7. In mechanism of the class described, in combination, end embracing wipers, and upper trimming means associated with said wipers and constructed and arranged for operative movement between the overwiping faces of the wipers and the adjacent face of the upper gathered inwardly by said wipers.

8. In mechanism of the class described, the combination with end embracing wipers, of upper trimming means comprising a cutting blade adapted to be inserted under the wipers after the wipers have been closed inwardly over the shoe for trimming off the surplus margin of the upper.

9. In mechanism of the class described, the combination with end embracing wipers, of an upper trimming cutter mounted with its cutting edge closely adjacent to the overwiping faces of the wipers, and means operable independently of the wipers to advance the cutter along said faces between the wipers and the inwiped upper and to project it in-

wardly beyond the wipers to trim the upper.

10. In mechanism of the class described, the combination with means for wiping the margin of an upper inwardly over the sole of a shoe, of upper trimming means comprising a cutter constructed and arranged to be wedged inwardly between said wiping means and the shoe to compact the overwiped upper on the margin of the sole and to trim off a portion of the margin of the upper extending inwardly beyond said wiping means.

11. In a mechanism of the class described, the combination with means for wiping the margin of an upper inwardly at the bottom of a shoe, of upper trimming means comprising a cutter arranged to be maintained in a retracted position out of engagement with the shoe during the operation of said wiping means and to be moved subsequently inward between said wiping means and the overwiped upper to trim off a portion of the margin of the upper.

12. In mechanism of the class described, the combination with means for gathering the margin of an upper inwardly around the end of a shoe, of upper trimming means comprising a cutting blade constructed and arranged to extend across the opposite side portions of the gathered margin of the upper and to be moved lengthwise of the shoe to trim said opposite side portions of the margin simultaneously.

13. In mechanism of the class described, in combination, means for gathering the upper material inwardly over the edge of the sole of a shoe and for holding it in position for the removal of the surplus material beyond said gathering means, and an upper trimming knife permanently associated with said means and located immediately adjacent to said means, said knife having a beveled trimming edge arranged to be wedged between the gathering means and the underlying face of the upper to compact the upper on the margin of the sole and to plane off substantially even with the overlying face of the gathering means that portion of the upper extending beyond said means.

14. In mechanism of the class described, in combination, means operable to hold shoe upper material down upon the margin of the sole in position for the removal of the surplus upper material, an upper trimming chisel cutter arranged for insertion between said holding means and the underlying face of the upper to trim off the surplus upper material beyond said holding means, and operating means for said cutter.

15. In mechanism of the class described, the combination with a wiper for wiping the margin of an upper inwardly at the bottom of a shoe, of upper trimming means comprising a cutting blade mounted for operative

movement along the overwiping face of said wiper between said face and the overwiped upper to trim off the surplus margin of the upper.

16. In mechanism of the class described, in combination, means to gather the upper at the toe inwardly over the margin of the sole of a shoe and to hold it for the removal of the surplus upper, and upper trimming means comprising a cutting blade associated with said gathering means and constructed and arranged for insertion between the gathering means and the underlying face of the ingathered upper to trim off the surplus upper entirely around the toe end by a single cutting movement.

17. In mechanism of the class described, the combination with end embracing wipers and means for operating said wipers, of upper trimming means comprising a cutting blade having a cutting edge curved to embrace portions of the margin of the upper extending inwardly beyond the edges of said wipers along the opposite side portions of the shoe, and means for moving said blade inwardly over the shoe bottom lengthwise of the shoe to trim off said opposite side portions of the margin of the upper.

18. In an end lasting mechanism, last and shoe supporting means, end embracing wipers, a plunger for operating said wipers to wipe the upper over the edge of the sole and to hold it in position for the removal of the surplus upper material beyond the inner edge of said wipers, an upper trimming knife supported immediately adjacent to said wipers, and a second plunger concentric with said first named plunger for operating said knife.

19. In an end lasting mechanism, in combination, a last and shoe support, end lasting wipers mounted for movement to wipe the upper inwardly over the edge of the sole, an upper trimming cutter supported immediately adjacent to the active faces of said wipers, a tubular plunger to the forward end of which said knife is connected, and a wiper operating plunger guided in said tubular plunger and movable to actuate said wipers independently of said tubular plunger.

20. In mechanism of the class described, the combination with end embracing wipers, of upper trimming means comprising a cutter constructed and arranged to extend continuously across the end portion of the shoe from side to side, and means for moving said cutter inwardly over the shoe bottom between the wipers and the shoe to trim off a portion of the margin of the upper extending inwardly beyond the edges of said wipers.

In testimony whereof I have signed my name to this specification.

THOMAS LUND.