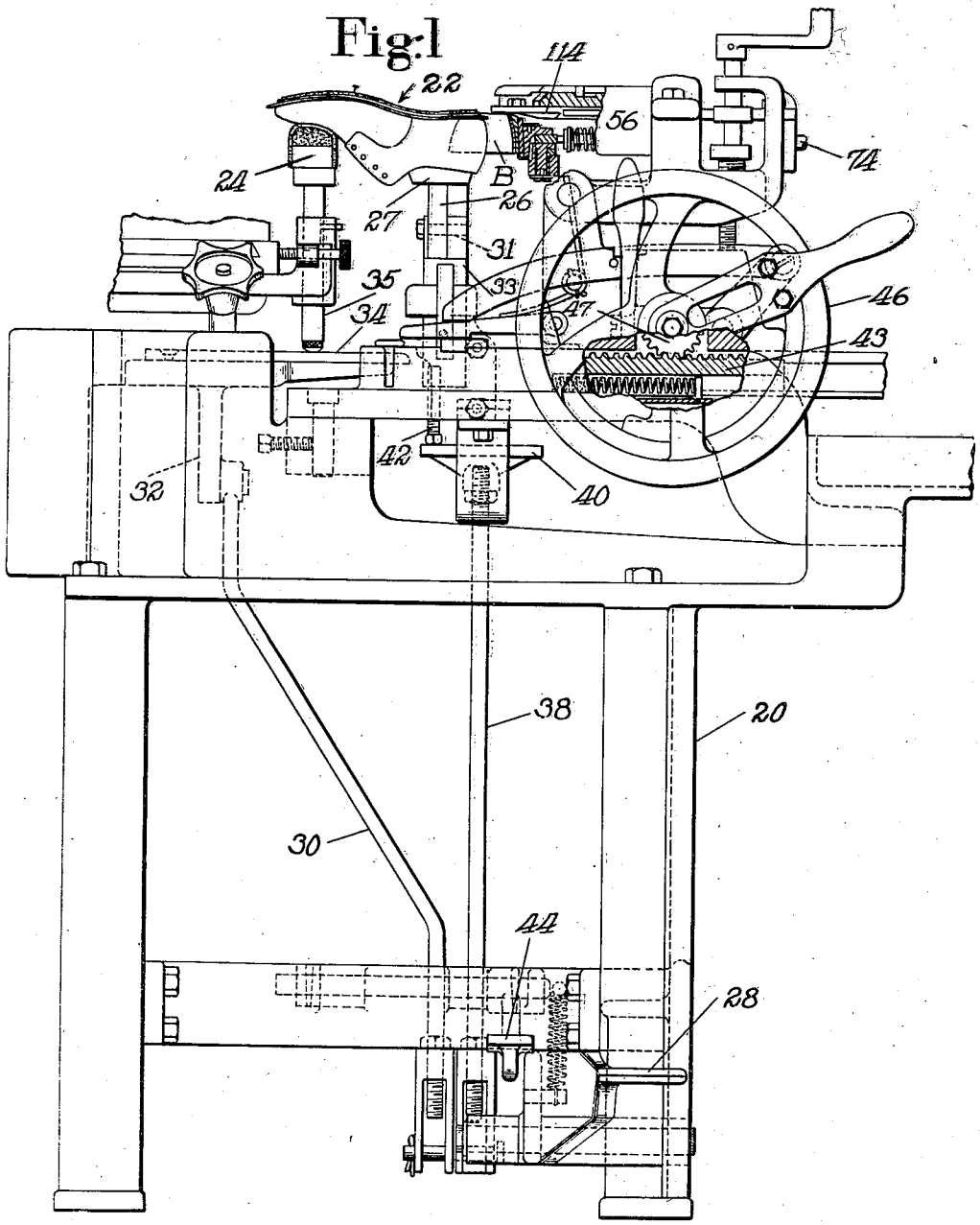
Jan. 25, 1944. A. EPPLER, JR 2,339,774

LASTING MACHINE

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Fig. 1



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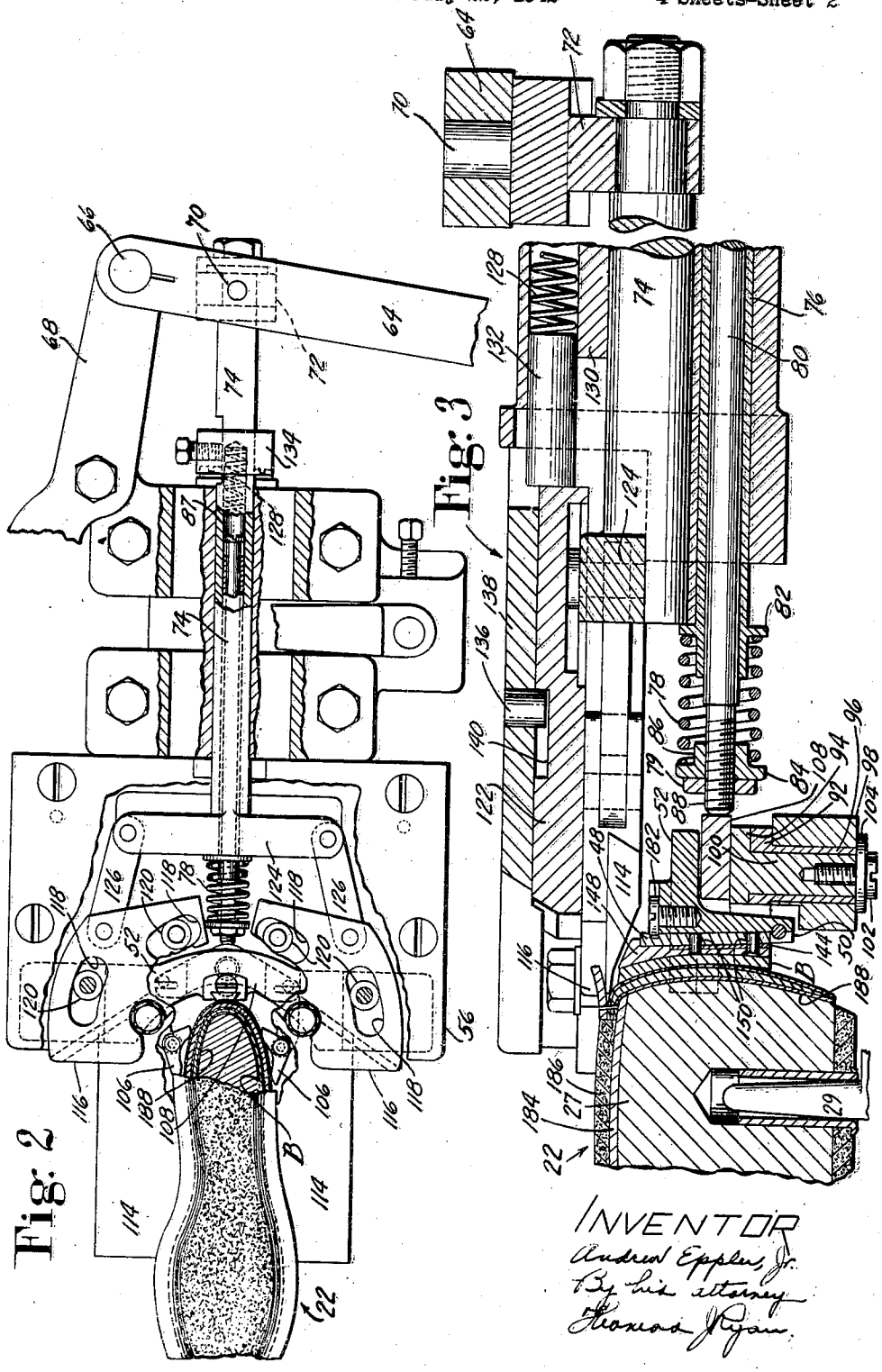


Fig. 2

Fig. 3

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Fig: 4.

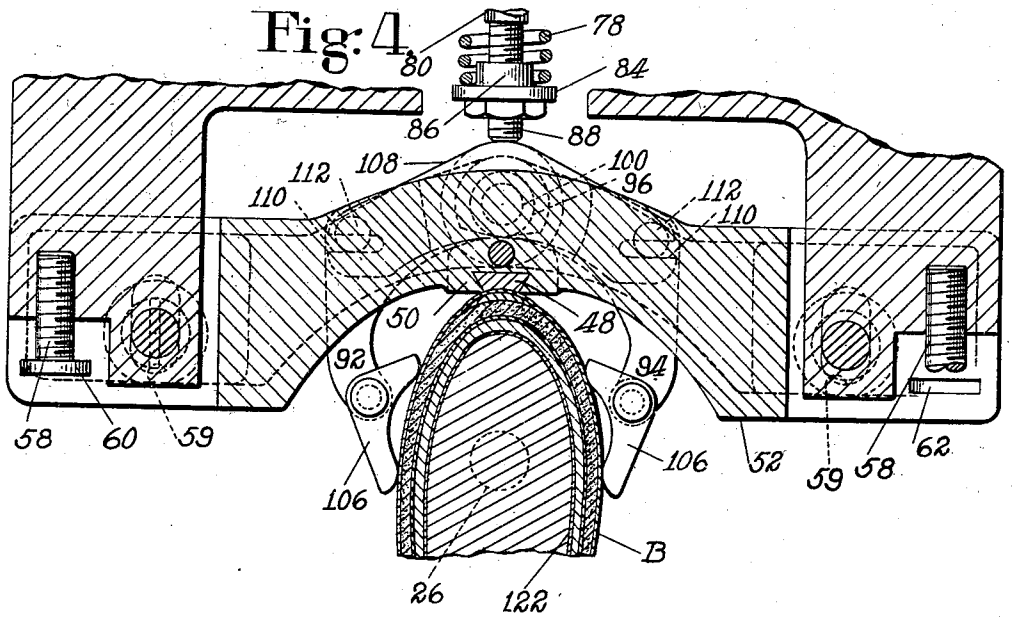
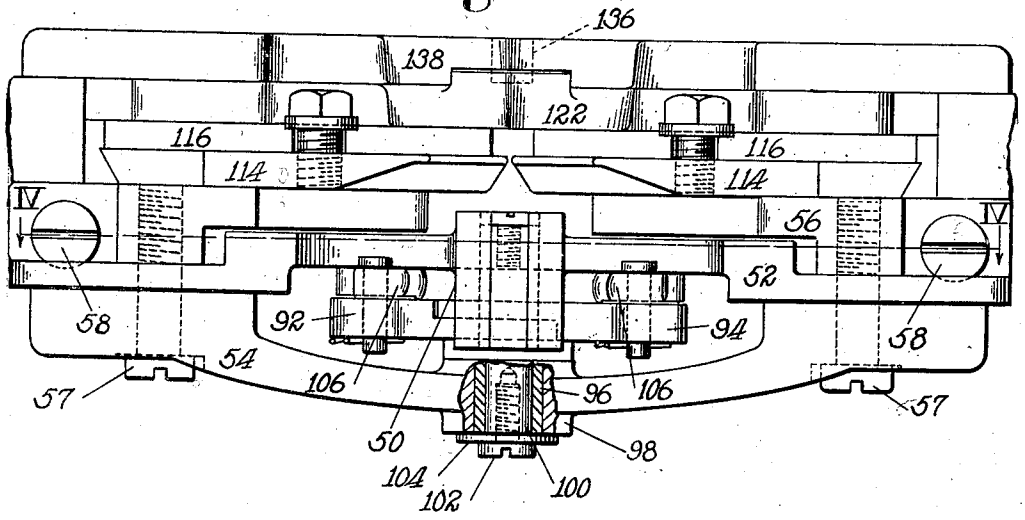


Fig: 5.



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Fig. 6

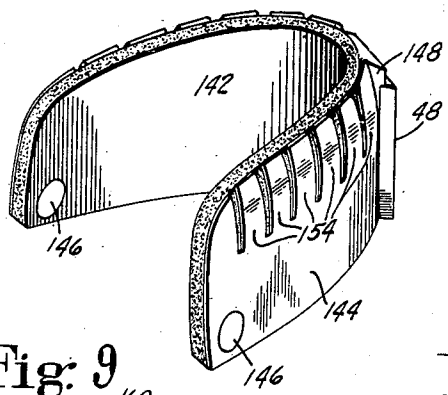


Fig. 7

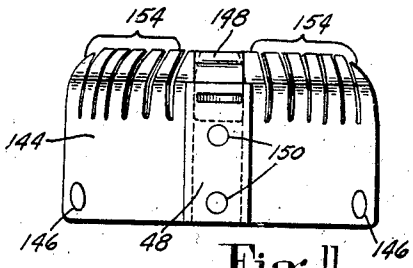


Fig. 11

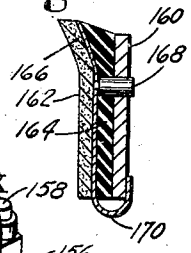


Fig. 9

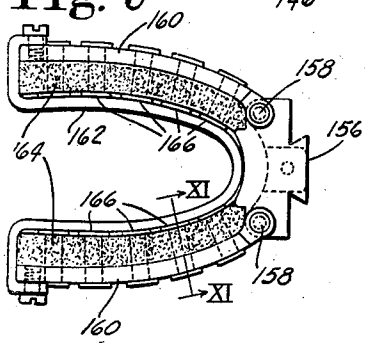


Fig. 8

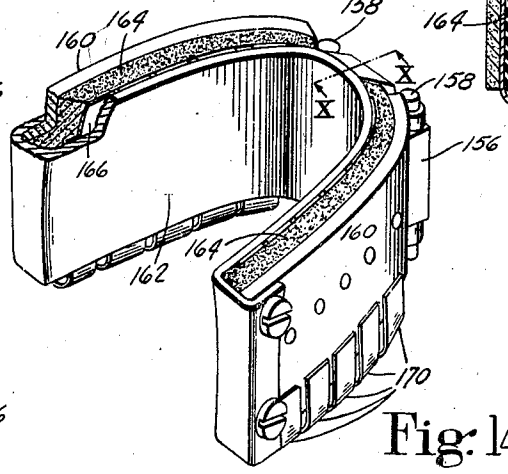


Fig. 10

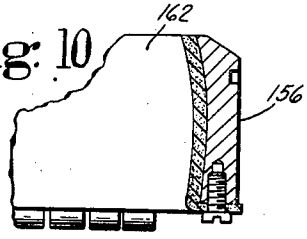


Fig. 14

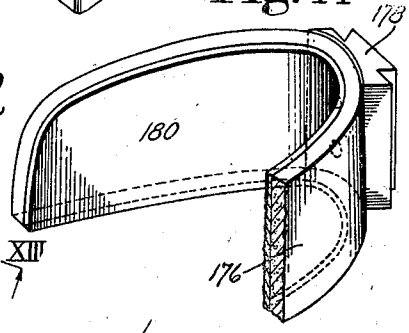


Fig. 12

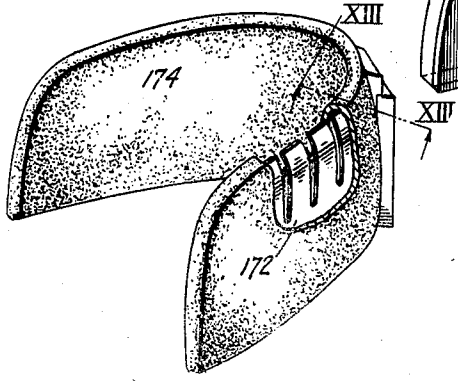
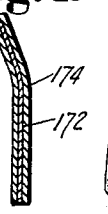


Fig. 13



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UNITED STATES PATENT OFFICE

2,339,774

LASTING MACHINE

Andrew Eppler, Jr., Lynn, Mass., assignor to United Shoe Machinery Corporation, Flemington, N. J., a corporation of New Jersey

Application July 22, 1942, Serial No. 451,889

22 Claims. (Cl. 12—14)

This invention relates to upper-shaping machines and is herein illustrated as embodied in a machine for lasting prewelt shoes. A machine of this type is illustrated in United States Letters Patent No. 2,045,595, granted June 30, 1936 on an application filed in the names of A. E. C. Hall et al.

In the manufacture of prewelt shoes, in order to obtain accurately matched pairs, it is important to achieve a high degree of uniformity in the operation of the lasting wipers. While such uniformity is important in lasting machines generally, it is particularly important in prewelt lasting machines, the operation of which involves the placement of the welt as well as the overwiping of the upper. The desired uniformity in the lasting operation involves not only the accurate limitation of the advancement of the wipers themselves lengthwise of the shoe but also the accurate positioning of the shoe relatively to the wipers for the lasting operation. It is usual in machines of this type to position the shoe relatively to the wipers by means of an end-embracing band. In prewelt lasting machines it is highly desirable that the band be accurately located and securely held in operating position in order to insure the correct location of the shoe both lengthwise thereof and widthwise thereof relatively to the wipers.

It is an object of the present invention to provide, in an upper-shaping machine, an organization which insures the location of the central portion of the end-embracing band rigidly in a position having a positively predetermined relation to the limit of movement of the lasting wipers, thereby to insure a predetermined and uniform overwipe of the extreme end portion of the upper. With the above and other objects in view, the present invention in one aspect thereof, as applied to a lasting machine having end-lasting wipers which advance bodily in their open position to a predetermined point and then close about said point as a fulcrum, provides a rigidly mounted member having a definite relation to said predetermined point and constructed and arranged to support the end-embracing band, and means on the central portion of the band for rigidly mounting said central portion on said band-supporting member. The illustrated band is constructed and arranged to operate on the heel end portion of the shoe, but it is to be understood that it is within the scope of the present invention to provide such a band for the toe portion of the shoe, if so desired. In order to permit the extent of overwipe of the end portion of the upper to be altered as may be required, means is provided for adjusting the band-supporting member lengthwise of the shoe.

In the illustrated machine, as in end-lasting machines generally, the band performs the additional function of bringing the end portion of the upper into intimate contact with the last prior to the wiping operation. For performing this function, the illustrated machine, in accordance with a further feature of the invention, is provided, in combination with means for rigidly supporting the central portion of the band, with an actuator for closing the end portions of the band on the shoe, and equalizing means through which said actuator operates to press the end portions of the band uniformly against the opposite sides of the shoe, said equalizing means comprising presser members constructed and arranged to operate on end portions of the band and mounted for closing movement about a common axis extending heightwise of the shoe and a crosshead supported by said presser members and freely movable with said members or either of them. As herein illustrated, the end portions of said crosshead are pivoted to said presser members respectively, and movement of said crosshead toward the shoe causes said presser members to close the band on the shoe.

In another aspect thereof, the invention provides an end embracing band comprising a rigid central member and flexible work-engaging means carried by said central member, a fixed rigid member in which said central member is mounted, and band-closing means constructed and arranged to engage opposite side portions of the band but having no physical connection thereto. In order to insure the intimate contact of the end portion of the upper with the last, said rigid member, in accordance with a further feature of the invention, is provided with an upper-facing surface having a curvature heightwise of the upper complemental to the heightwise curvature of the end portion of the last.

Other features of the invention are to be recognized in a band characterized by a rigid central member such as that above described, on which member opposite side members are hinged, and shoe-engaging means carried by said side members. To enable said band to conform readily to the contours of the opposite side portions of the shoe, cushioning means is interposed between said hinged side members and the shoe-engaging means. To insure an intimate contact of the upper with the convex side portions of the last, said band is preferably provided with a

plurality of resilient members interposed between the shoe-engaging means and the cushioning means and constructed and arranged to bring the top marginal portion of the band firmly against the upper.

Invention is also to be recognized in another type of band comprising a central member, an end-embracing plate secured to said member, and a seamless envelope or cover which provides the work-engaging surface of the heel band. The illustrated end-embracing plate has upwardly extending resilient fingers which together with the body portion of the plate are embedded in said cover which provides the work-engaging surface of the heel band.

These and other features of the invention will now be described with reference to the accompanying drawings and pointed out in the appended claims.

In the drawings,

Fig. 1 is a front elevation, partly broken away and partly in section, illustrating a prewelt lasting machine embodying the features of the present invention;

Fig. 2 is a plan view illustrating mechanism which operates on the rear part of the shoe, certain parts being sectioned to show underlying parts;

Fig. 3 is a vertical sectional view taken on a plane common to the longitudinal median line of a shoe in the machine and illustrating the mechanism which operates on the rear part of the shoe;

Fig. 4 is a sectional view taken substantially on the line IV—IV of Fig. 5;

Fig. 5 is a view in elevation of the heel head looking from the center of the machine;

Fig. 6 is a perspective view of a heel band provided for the illustrated machine;

Fig. 7 is a view in elevation of the heel band shown in Fig. 6;

Fig. 8 is a perspective view illustrating another type of heel band;

Fig. 9 is a plan view of the heel band illustrated in Fig. 8;

Fig. 10 is a section on the line X—X of Fig. 8;

Fig. 11 is a section on the line XI—XI of Fig. 9;

Fig. 12 is a perspective view, partly broken away, illustrating still another form of heel band;

Fig. 13 is a section on the line XIII—XIII of Fig. 12; and

Fig. 14 is a perspective view, partly in section, illustrating a modification of the heel band shown in Fig. 6.

In Fig. 1 there is illustrated a prewelt lasting machine of the type disclosed in the Hall et al. patent hereinbefore mentioned. The illustrated machine is provided with a standard **20** which carries a toe head and a heel head which in their general organization are similar to the toe head and heel head in the machine of the Hall et al. patent. A shoe **22** is supported in inverted position in the machine by a toe rest **24** and a last support **26** which has its upper extremity a pin **29** which enters a thimble in a last **27**. The last support is mounted for limited swinging movement widthwise of the shoe on a stud **31** at the upper end of a standard **33**, such swinging movement of the last support permitting the rear part of the shoe to be positioned widthwise thereof by a heel band B as hereinafter described. The toe rest and the last support are so positioned vertically that a shoe mounted thereon is initially located below the lasting elevation in order to enable the operator to locate the welted margin of the upper accurately with relation to the lasting instrumentalities by the depression of a treadle **28** which lifts the toe rest and the last support as a unit to bring the shoe into the lasting elevation. The movement of the treadle is imparted to the toe rest through a link **30**, the upper end of which is connected to a downward extension **32** of a head **34** on which the stem **35** of the toe rest is supported. The movement of the treadle is imparted to the last support **26** through a vertical slide rod **38** having at its upper end a head **40** on which rests the head of a screw **42** extending downwardly from the standard **33**. The shoe is held in the vertical position in which it is located by the depression of the treadle **28** by means of a pawl-and-ratchet mechanism which is substantially the same in its construction and operation as the pawl-and-ratchet mechanism illustrated in Fig. 6 of the Hall et al. patent. In the illustrated machine, said pawl-and-ratchet mechanism (not herein illustrated) is released by the depression of a treadle **44** to permit the return of the shoe to its initial position.

As usual in machines of this type, the last supporting assembly is in its forward position illustrated in Fig. 1 when the shoe is placed on the work supports. After the shoe has been moved upwardly into the correct lasting elevation the last supporting assembly is moved to the right, as the machine is viewed in Fig. 1, by the actuation of a slide **43** on which the standard **33** is mounted, to bring the shoe into operating relation to the heel end-lasting mechanism, such movement of the slide **43** being effected as usual by the operation of a hand wheel **46** which turns a pinion **47** arranged to mesh with rack teeth in the slide. Simultaneously with the operation of the hand wheel **46** the toe rest **24** is moved to the right with the shoe by the operation of a hand wheel (not shown) common to machines of this type. See Fig. 1 of United States Letters Patent No. 2,042,518, granted June 2, 1936, on an application filed in the name of Karl Engel. The position of the shoe relatively to the heel head is accurately determined by the engagement of the shoe with the central portion of the heel band B, as shown in Fig. 3. In order that the shoe may be located relatively to the rear part of the heel head with a high degree of accuracy, the heel band is so constructed and so mounted that it provides a positive stop for the shoe. As illustrated in Figs. 3 and 4, the heel band is secured or riveted to a rigid supporting member **48**, herein illustrated as a dovetailed plate which is mounted in a complemental groove in a central vertical portion **50** of a croshead **52** which, as illustrated in Fig. 5, is mounted on flat end portions of a lower crosshead **54** secured to a wiper-carrying head **56** by screws **57** extending upwardly through slots **59** (Fig. 4) in the crosshead **52**, said slots permitting adjustment of the crosshead **52** for a purpose now to be described. It will be understood that the screws **57** will be retracted somewhat to permit such adjustive movement of the crosshead **52** and upon resetting will secure the crosshead **52** in adjusted position. Inasmuch as the lasting wipers hereinafter described have a predetermined movement relatively to the heel head **56**, it will be understood that the heel band, by positioning the shoe accurately relatively to the heel head determines the extent of overwipe of the lasting wipers over the back-seam portion of the upper. In order to permit an adjustment of the extent of overwipe of said back-seam portion, the cross-

head 52 may be adjusted, as above described, relatively to the wiper-carrying head 56 by turning two screws 58 threaded into horizontal tapped holes at opposite sides of the wiper-carrying head, said screws being provided with flat, round heads 60 which operate in complemental grooves 62 in opposite end portions of the crosshead 52.

When the machine is at rest, the opposite side or end portions of the heel band B are spaced apart from each other to an extent somewhat greater than the width of the rear portion of the shoe. After the central portion of the heel band has been brought into engagement with the back-seam portion of the upper by the advancement of the shoe by the hand wheel 46, the opposite side portions of the heel band are pressed against the upper with sufficient force to bring the upper into intimate contact with the last by mechanism now to be described. In the illustrated organization, the heel band is thus closed on the upper by the operation of the usual wiper-actuating hand lever, a portion of which is identified by the numeral 64 in Fig. 2. The hand lever 64 is fulcrumed at 66 on a swinging arm 68 and is pivotally connected to a pin 70 projecting upwardly from a collar 72 which is secured to a sliding shaft 74 which actuates the wipers. Referring to Fig. 3, the left end of the shaft 74 acts against a flange 82 on a sleeve 76 to close the heel band. In order that the hand lever 64 may first close the heel band on the upper and then continue its operation to actuate the wipers, the sleeve 76 acts against a spring 78 surrounding a shaft 80 slidably mounted in said sleeve and projecting from the left end of the sleeve, as seen in Fig. 3. The spring 78 is confined between the flange 82 on the sleeve 76 and a flange 84 on a nut 86 mounted on a threaded end portion 88 of the shaft 80. When the machine is at rest the shaft 80 is positioned with the head 87 (Fig. 2) at the right end of said shaft abutting the sleeve 76 and the spring 78 under slight compression. The pressure of the side portions of the heel band against the upper effected by the operation of the hand lever 64 may be varied by adjusting the position of the nut 86 on the shaft 80 in order to vary the initial compression of the spring 78, said nut being secured in adjusted position by a lock nut 79. To facilitate such adjustment of the nut 86, the head 87 of the shaft 80 is grooved to receive a screw driver.

For closing the heel band on the upper, two L-shaped arms or jaws 92 and 94 (Fig. 4) are pivoted together at a fulcrum point positioned in alinement with the longitudinal median line of a shoe in the machine and in alinement with the shaft 80. Referring to Fig. 3, the arm 92 has a hollow hub 96 which is journaled in an enlarged central portion 98 of the lower crosshead 54 while the arm 94 has a hub 100 which is journaled in the hollow hub 96 of the arm 92. As seen in Figs. 3 and 5, the adjacent end portions of the arms 92 and 94 form a halved joint which is held against separation and against upward movement away from the crosshead 54 by a headed screw 102 threaded into a tapped hole in the hub 100, said screw carrying a washer 104 which engages the bottom surface of the crosshead to hold the arms 92 and 94 against the upward movement. At their free ends, the arms 92 and 94 carry heel band engaging presser feet 106 (Fig. 4) mounted for rocking movement on said arms 92 and 94. Mounted in the space between said arms and the crosshead 52 (Fig. 3) is an angular crosshead 108 the opposite end portions of which are provided with open-ended slots 110 (Fig. 4) which receive slabbed portions of pivot pins 112 extending upwardly from the elbows of the L-shaped arms 92 and 94. The central portion of the angular crosshead 108 lies adjacent to one end of the shaft 80 which is moved to the left, as seen in Fig. 3, by the operation of the heel wiper lever 64 to advance said crosshead and thereby to actuate the heel band closing assembly. It will be understood that the heel band closing assembly will require no adjustment for operating alternately on right and left shoes, since each of the arms 92 and 94 is free to swing independently of the other and the angular crosshead 108 is freely mounted for swinging movement with said arms. Thus, if in the heel band closing operation the arm 92 comes to the limit of its band-closing movement prior to the arm 94, the angular crosshead will swing about the pivot pin 112 in the arm 92 to complete the closing movement of the arm 94. Upon completion of the closing movements of both of said arms, the heel band B will be closed on the upper with a pressure which will be uniform on opposite sides of the upper, the degree of pressure being determined by the adjustment of the spring 78 (Fig. 3).

The wiper-actuating mechanism is substantially the same as illustrated in United States Letters Patent No. 2,297,697, granted October 6, 1942, on an application filed in the names of the present applicant and E. L. Butler. Referring to Figs. 2 and 3, rear part wipers 114 are removably secured to wiper carriers 116 having cam slots 118 in which operate rolls 120 carried by a plate 122 (Fig. 3) mounted in the heel head for sliding movement lengthwise of the shoe. The wipers are actuated by the advancement of the sliding shaft 74 by the hand lever 64, said shaft having a crosshead 124 which is connected by links 126 to the wiper carriers 116. During the first stage of the advancement of the wiper assembly, the wipers are held in their open or outspread position, since the plate 122 is advanced by the hand lever 64 through the action of a spring 128 mounted in a horizontal bore 130 in the wiper-carrying head and confined between a cylindrical sliding member 132 in said bore and a collar 134 secured to the shaft 74, the member 132 engaging the plate 122. Upon completion of the overwiping of the back-seam portion of the upper, the plate 122 is arrested by a stop pin 136 in a cover plate 138 secured to the wiper-carrying head, said pin projecting downwardly into a longitudinal groove 140 in the sliding plate 122. During the continued movement of the shaft 74 after the plate 122 has been thus arrested, the wiper carriers 116 move relatively to said plate 122, thus bringing the cam mechanism comprising the slots 118 and rolls 120 into operation to close the wipers on the sides of the rear part of the shoe without further toeward movement of their adjacent heel portions.

In Figs. 6 to 14 there are illustrated four types of heel band which may be employed in the illustrated machine. The heel band illustrated in Figs. 6 and 7 is shown in Fig. 3 mounted in the machine. This heel band comprises a leather lining 142 and a resilient metal backing plate 144 secured together by rivets 146. At its central portion, the plate 144 is positioned between the dovetailed plate 48 and a rigid member 148, the three parts being secured together by rivets 150 (Fig. 7). Referring to Fig. 3, the heel band is positioned heightwise of the shoe in the machine by a screw 182 threaded into a tapped hole in

the crosshead 52, said screw having a round flat head which enters a complementally shaped groove in the plate 48. The lining-engaging surface of the rigid member 148 has a curvature, as shown in Fig. 3, which is complemental to the heightwise curvature of the back-line portion of the last 27 on which the upper is to be shaped, thereby enabling the heel band to bring the bottom margin of the upper in the region of its back seam into intimate contact with the last. In order to insure intimate contact with the last of that portion of the upper adjacent to its lasting margin, the resilient backing plate 144 is provided with upwardly extending fingers 154 which are bent inwardly, as seen in Figs. 6 and 7.

Figs. 8 to 11, inclusive, illustrate a hinged type of heel band having a rigid supporting member 156 which has the structural features of the combined dovetailed plate 48 and rigid member 148 in Fig. 6 and is extended laterally to provide bearings for pivot pins 158 on which are hinged plates 160 having a curvature substantially complemental to the peripheral curvature of the rear part of the last 27. The plates 160 carry a leather lining member 162 and interposed between the lining member and the plates are resilient cushions 164. At regularly spaced intervals, resilient metal fingers 166 are located between the cushions and the lining member, as seen in Fig. 9. Referring to Fig. 11, each finger 166 carries an outwardly extending pin 168 which projects through alined holes in the cushion 164 and the plate 160 and serves to locate both the cushion and the finger heightwise of the heel band. The lower portion of each finger 166 has a curved extension 170 which provides a clip for holding the cushion and the plate together and for holding the finger against separation from the cushion.

In Figs. 12 and 13 there is illustrated a heel band which differs from the heel band illustrated in Fig. 6 only in that the resilient metal plate 172 which forms the backing or reinforcing member of the heel band is encased in a seamless envelope or cover 174 which provides the work-engaging surface. This envelope may be provided by spraying a solution containing a suitable plastic substance on said plate, or alternatively, by dipping the plate into such a solution. Fig. 14 illustrates a heel band comprising a relatively thick leather cover 176 riveted to a rigid member 178 similar to the rigid member illustrated in Fig. 9, a thin leather lining 180 being cement-attached to the inner surface of the cover member to cover the rivets attaching the member 176 and the rigid member 178. It will be understood that other types of heel band than those herein illustrated may be employed in conjunction with the rigid heel band supporting member.

In the operation of the machine, a last such, for example, as the last 27 illustrated in Fig. 3 having an upper assembled thereon and having mounted on its sole face an insole 184 and a filler 186, is mounted on the last support 26, which is then in its toeward position illustrated in Fig. 1. The operator then depresses the treadle 28 to lift the shoe until the welted margin of the upper is so located heightwise that the wipers 114 will engage the prewelt upper 188 within the welt crease. After positioning the shoe heightwise, the hand wheel 46 is actuated to bring the shoe into engagement with the heel band. The operator then actuates the hand lever 64 to close the heel band on the upper and to actuate the wipers 114 to wipe the welted margin of the upper in over the insole 184 and into abutting relation to the filler 186. The heel band serves the double purpose of bringing the rear part of the upper into intimate contact with the last and of so positioning the rear part of the last and upper widthwise thereof that the longitudinal median line of the last is centrally located relatively to the wipers and consequently the wipers overwipe the welted margin at opposite sides of the rear part of the upper to a uniform extent. The correct widthwise position of the shoe is assured by the rigid mounting of the dovetailed plate 48 and the rigid attachment of said plate to the central portion of the heel band, thus holding said central portion of the band against movement widthwise of the shoe. Inasmuch as the central portion of the heel band is substantially rigid in construction and symmetrical in shape, as shown in Fig. 4, and inasmuch as that portion of the heel end of the shoe engaged by said central portion of the heel band is complementally symmetrical in shape, it will be understood that the heel band will operate uniformly on right and left shoes. Because of its rigid central portion the heel band holds the last and the upper firmly in lasting position and prevents any widthwise movement thereof by reason of a difference in the resistance of opposite side portions of the upper to the wipers. Such difference in resistance of opposite sides of the upper is particularly pronounced in those types of uppers in which the inside line of the shank has an inward curvature substantially greater than the inward curvature at the outside line of the shank, thus necessitating a greater inward bending of the welted margin at one side of the upper than at the other side.

After the heel wipers 114 and toe wipers (not shown) have completed their lasting operations, the upper is secured in lasted position in any known manner but preferably by cement-attaching a sole to the welt while the welt is supported by the wipers.

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

1. In a lasting machine, the combination with a wiper-supporting head and a pair of wipers which advance bodily in their open position to a predetermined point having a fixed relation to said head and then close about said point as a fulcrum, of an end-embracing band which by contact with the shoe operates to determine the relation of said point to the shoe longitudinally of the shoe, a rigidly mounted band-supporting member, and means fixed to the central portion of the band for rigidly mounting said central portion on said band-supporting member.

2. In a lasting machine, the combination with a wiper-supporting head and a pair of wipers which advance bodily in their open position to a predetermined point having a fixed relation to said head and then close about said point as a fulcrum, of a crosshead rigidly secured to said wiper-supporting head for positively determining the relation of said point to the shoe longitudinally of the shoe, and an end-embracing band rigidly mounted on said crosshead and arranged to position the shoe widthwise relatively to the wipers.

3. In a lasting machine, the combination with a wiper-supporting head and a pair of wipers which advance bodily in their open position to a predetermined point having a fixed relation to said head and then close about said point as a fulcrum, of an unyielding means rigidly secured

to said head for positively determining the relation of said point to the shoe longitudinally of the shoe at the time when the wipers begin to close.

4. In a lasting machine, the combination with a wiper-supporting head and a pair of wipers which advance bodily in their open position to a predetermined point having a fixed relation to said head and then close about said point as a fulcrum, of an unyielding member rigidly secured to said head, and an end-embracing band rigidly mounted on said unyielding member and arranged to position the shoe widthwise relatively to the wipers.

5. In a lasting machine, the combination with a wiper-supporting head and a pair of wipers mounted in said head, of a crosshead extending widthwise of the shoe and rigidly secured to said wiper-supporting head and arranged to determine the longitudinal position of the shoe relatively to said head, means for adjusting said crosshead lengthwise of the shoe relatively to said wiper carrying head, and an end-embracing band rigidly mounted on said cross head.

6. In a shoe machine, a machine head, an end-embracing band, means for rigidly supporting the central portion of said band in a predetermined position relatively to said head, an actuator for closing the end portions of said band on the shoe, presser members movable by said actuator and constructed and arranged to operate on the end portions of said band, said presser members being mounted for closing movements about a common axis extending heightwise of the shoe, and a crosshead constructed and arranged to act on both said presser members, said crosshead being freely movable with said members.

7. In a lasting machine, a wiper head, a pair of end-lasting wipers mounted in said head, an actuator for said wipers, an end-embracing band, means for rigidly supporting the central portion of said band in a predetermined position relatively to the wiper head, and connections from the wiper actuator for closing the end portions of said band on the shoe including upper clamping members constructed and arranged to operate on the end portions of said band, said members being mounted for closing movements about an axis extending heightwise of the shoe, and a crosshead connected to said members for operating them and freely movable with said members.

8. In a shoe machine, a machine head, an end-embracing band, means for supporting the central portion of said band in a predetermined position relatively to said head, a pair of pressers for closing the end portions of said band on the shoe, said pressers being arranged for closing movements widthwise of the shoe on a common axis extending heightwise of the shoe, a crosshead the opposite ends of which are pivotally connected respectively to said pressers and freely movable therewith, and an actuator constructed and arranged to operate against said crosshead to press said pressers against the band.

9. In a lasting machine, the combination with a wiper head and a pair of lasting wipers mounted in said head, of a band-supporting member rigidly secured to said head, and an end-embracing band comprising a flexible upper-engaging member, a resilient backing member, and a rigid member secured to the central portion of said backing member and constructed and arranged to mount the band rigidly on said band-supporting member.

10. In a lasting machine, the combination with a wiper head and a pair of lasting wipers mounted in said head, of a band-supporting member rigidly secured to said head, and an end-embracing band comprising a flexible upper-engaging member, a resilient backing member, and a rigid member secured to the central portion of said backing member and constructed and arranged to mount the band rigidly on said supporting member, the upper facing surface of said rigid member having a curvature heightwise of the upper complemental to the heightwise curvature of the extreme end portion of the upper.

11. In a lasting machine, the combination with a wiper head and a pair of wipers mounted in said head, of a band-supporting member extending widthwise of the shoe and rigidly secured to opposite side portions of said head, an end-embracing band, a rigid mounting member projecting from the central portion of said band and interlocking connections between said mounting member and the band supporting member.

12. In a lasting machine, an end-embracing band comprising a rigid central member and flexible work engaging means carried by said central member, a fixed rigid member in which said central member is mounted, and band-closing means constructed and arranged to engage opposite side portions of the band but having no physical connection thereto.

13. In a lasting machine, an end-embracing band comprising a rigid central member, a backing member carried by said central member, a work engaging member carried by said backing member, a fixed rigid member in which said central member is immovably mounted, and a pair of band-closing arms constructed and arranged to engage opposite side portions of the band but having no physical connection thereto.

14. In a lasting machine, an end-embracing band for bringing an end portion of an upper into intimate contact with a last comprising a flexible upper-engaging means and a rigid central member on which said flexible upper-engaging means is mounted, said central member being characterized by an upper-facing surface having a curvature heightwise of the last complemental to the curvature of an end portion of the last, and a pair of band-closing arms constructed and arranged to exert like pressure against opposite side portions of the band but having no physical connection thereto.

15. In a lasting machine, an end-embracing band comprising a rigid central member, opposite side members carried by said central member, a lining, cushioning means interposed between said side members and said lining, and a plurality of resilient members interposed between the lining and the cushioning means and constructed and arranged to determine the contour heightwise of the shoe of the shoe-engaging surface of the band.

16. In a lasting machine, an end-embracing band comprising a rigid central member, opposite side members carried by said central member, a lining, cushioning means interposed between said side members and said lining, a plurality of resilient members interposed between the lining and the cushioning means and constructed and arranged to determine the contour heightwise of the shoe of the shoe-engaging surface of the band, and locking means on said rigid central member constructed and arranged

for interlocking engagement with a band supporting member.

17. In a lasting machine, an end-embracing band comprising an inflexible central member, an end-embracing plate secured to said member, and a seamless envelope encasing said plate and providing the work-engaging surface of the band.

18. In a lasting machine, an end-embracing band comprising an inflexible central member, a flexible end-embracing plate secured to said member, and a seamless cover completely coating said plate.

19. In a lasting machine, an end-embracing band comprising an inflexible central member, an end-embracing plate the central portion of which is rigidly secured to said member, said plate having upwardly extending resilient fingers and a seamless coating completely covering said plate.

20. In a lasting machine, an end-embracing band comprising an inflexible central member, an end-embracing plate the central portion of which is secured to said member, and a coating in which said plate is embedded.

21. In a lasting machine, an end-embracing band comprising an inflexible central member, a resilient end-embracing plate the central portion of which is rigidly secured to said member, a plurality of upwardly extending fingers forming the upper portion of said plate, and a flexible coating in which said plate is fully embedded.

22. In a lasting machine, the combination with a wiper-carrying head and a pair of wipers which advance bodily in their open position to a predetermined point having a fixed relation to said head and then close about said point as a fulcrum, of an end-embracing band which operates to determine the relation of said point to the shoe longitudinally of the shoe, a rigidly mounted band-supporting member, means fixed to the central portion of the band for rigidly mounting said central portion on said band-supporting member, means for supporting the shoe for the lasting operation comprising a toe rest and a heel support, and an actuator for lifting said toe rest and heel support as a unit to bring the shoe into lasting elevation.

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