Oct. 16, 1923. 1,470,595

M. BROCK

SHOE BOTTOMING MACHINE

Filed Jan. 27, 1919 8 Sheets-Sheet 1

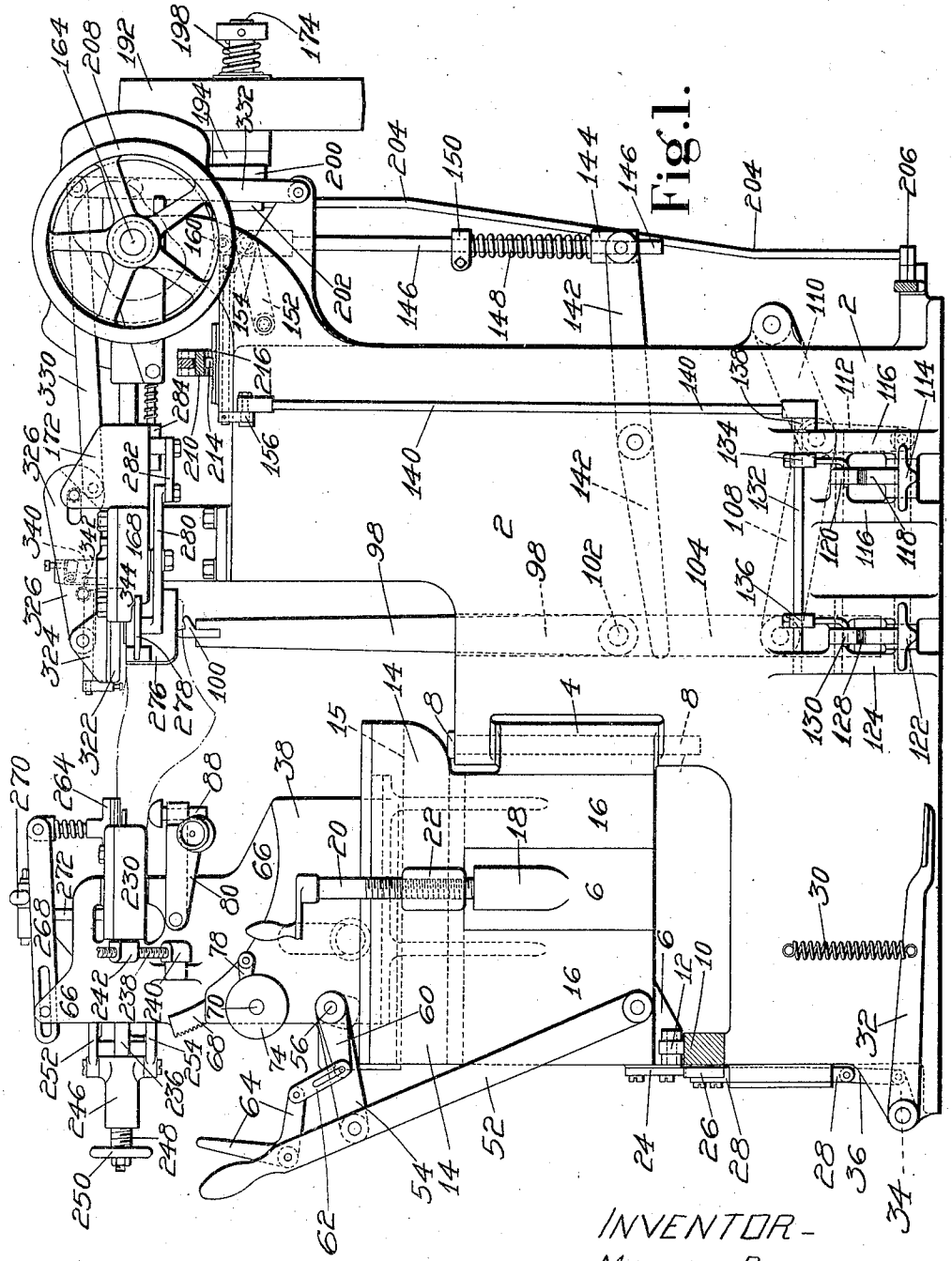


Fig. 1.

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Nelson Mitchell

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SHOE BOTTOMING MACHINE

Filed Jan. 27, 1919 8 Sheets-Sheet 2

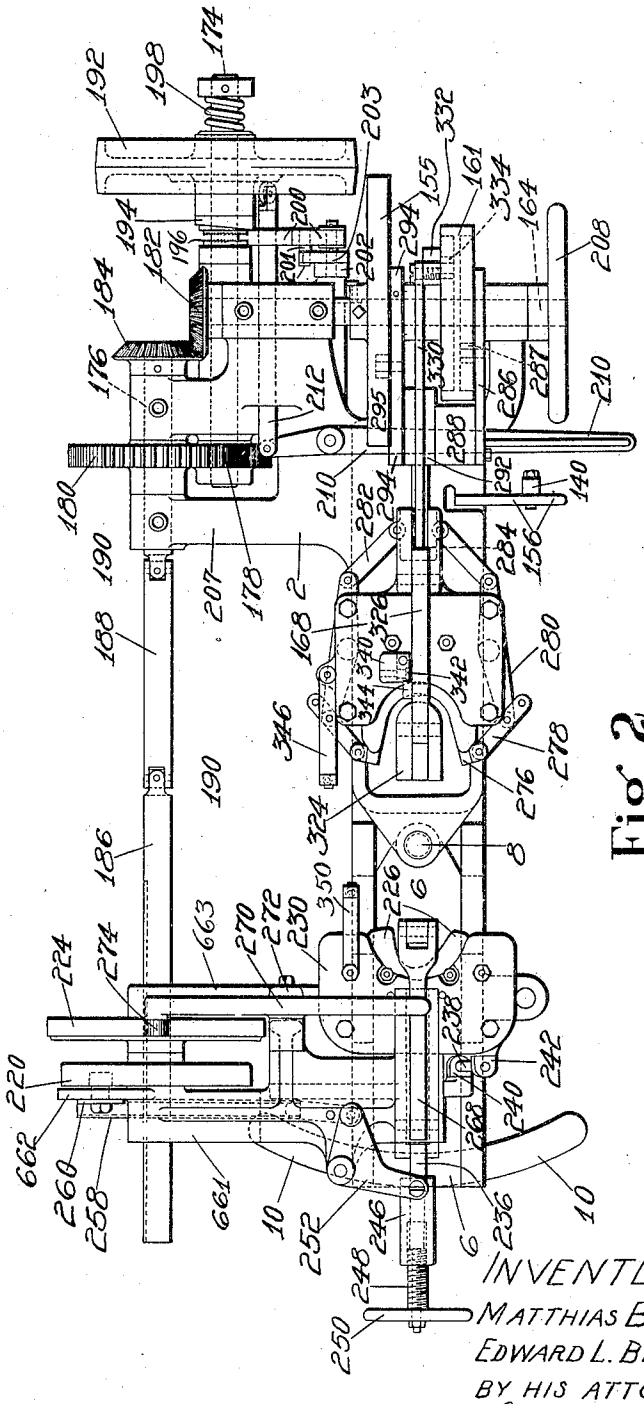


Fig. 2.

INVENTOR-
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Oct. 16, 1923. 1,470,595

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SHOE BOTTOMING MACHINE

Filed Jan. 27, 1919 8 Sheets-Sheet 3

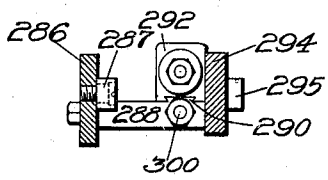


Fig.19.

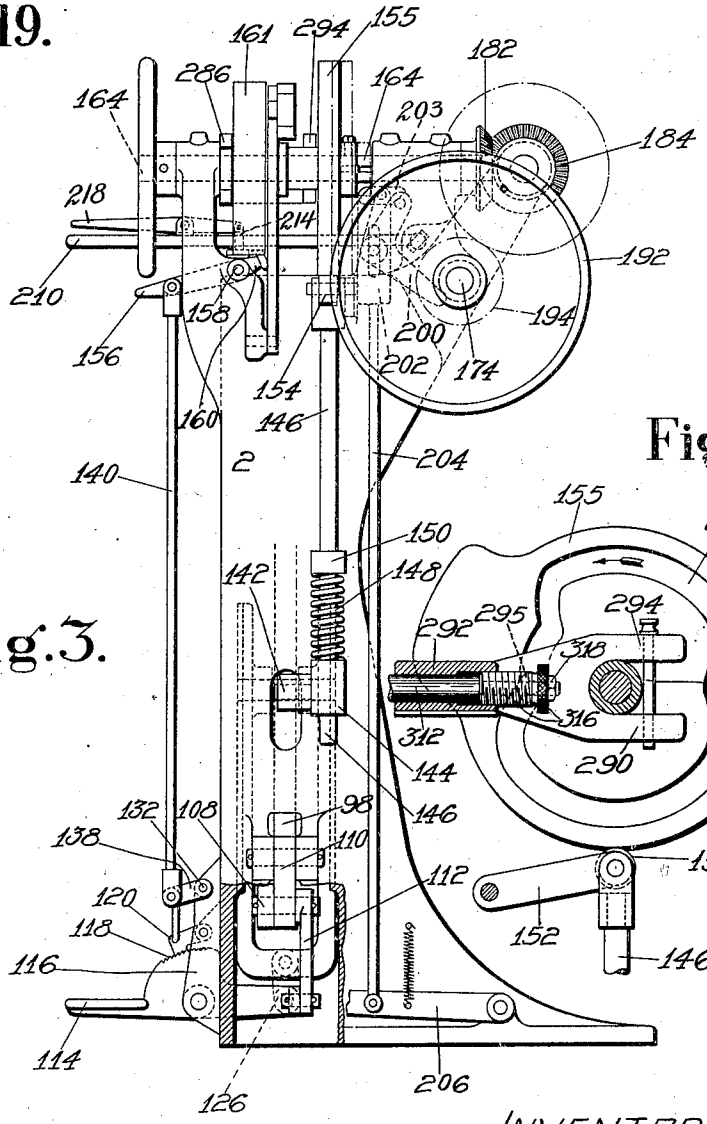


Fig.3.

Fig.18.

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SHOE BOTTOMING MACHINE

Filed Jan. 27, 1919 8 Sheets-Sheet 4

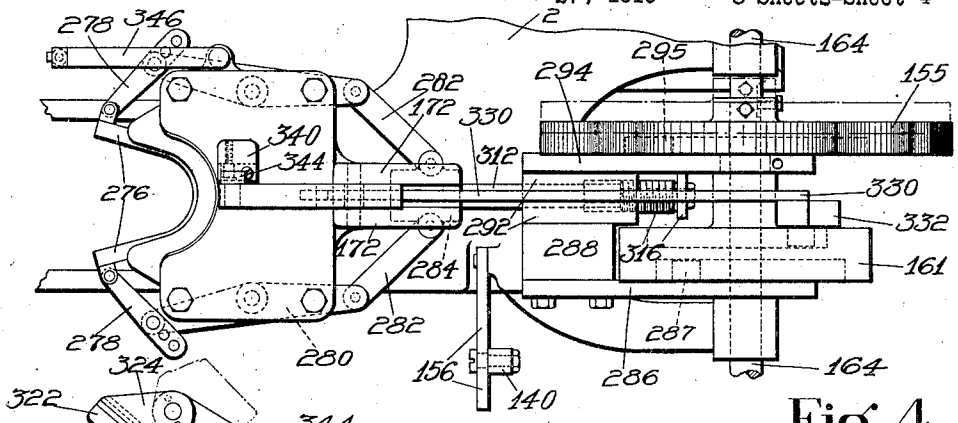


Fig. 4.

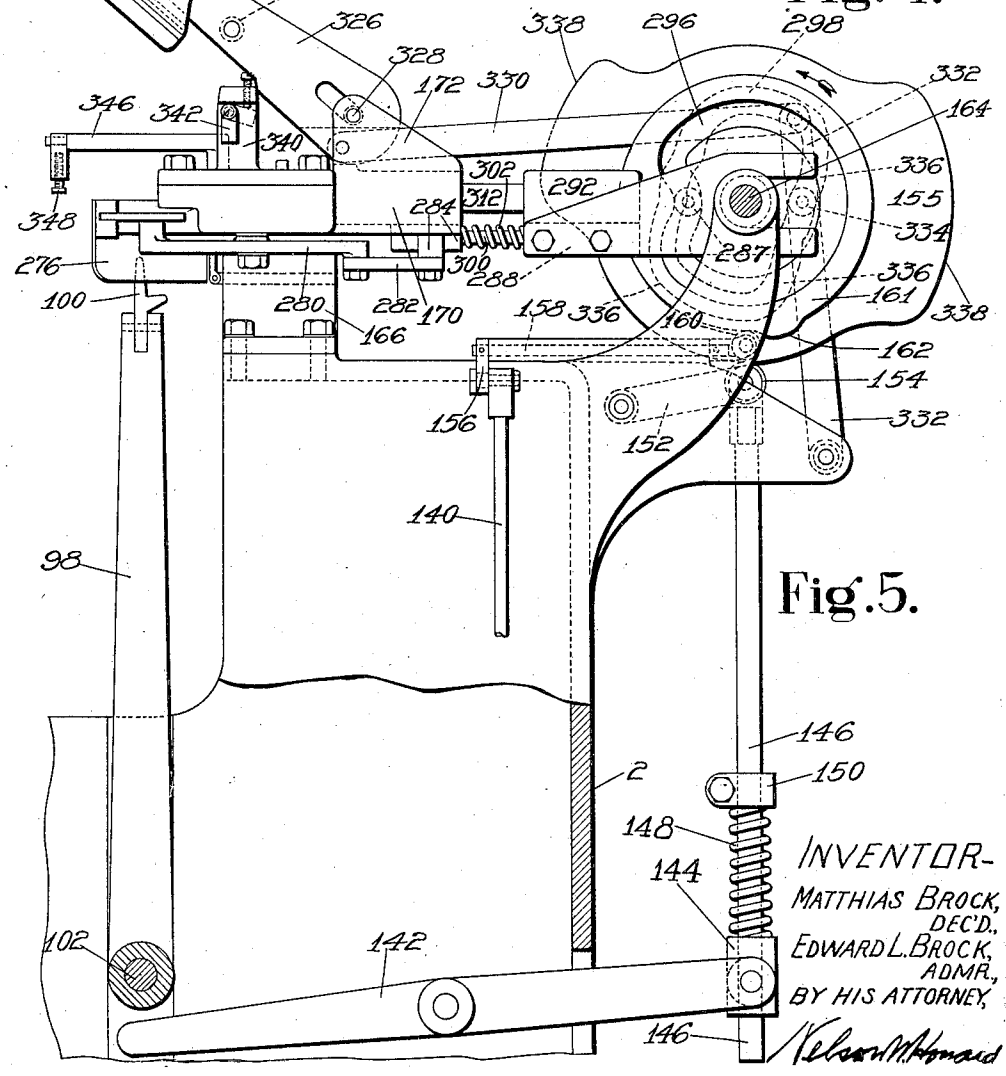


Fig. 5.

INVENTOR-
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Oct. 16, 1923. 1,470,595

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SHOE BOTTOMING MACHINE

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Fig.6.

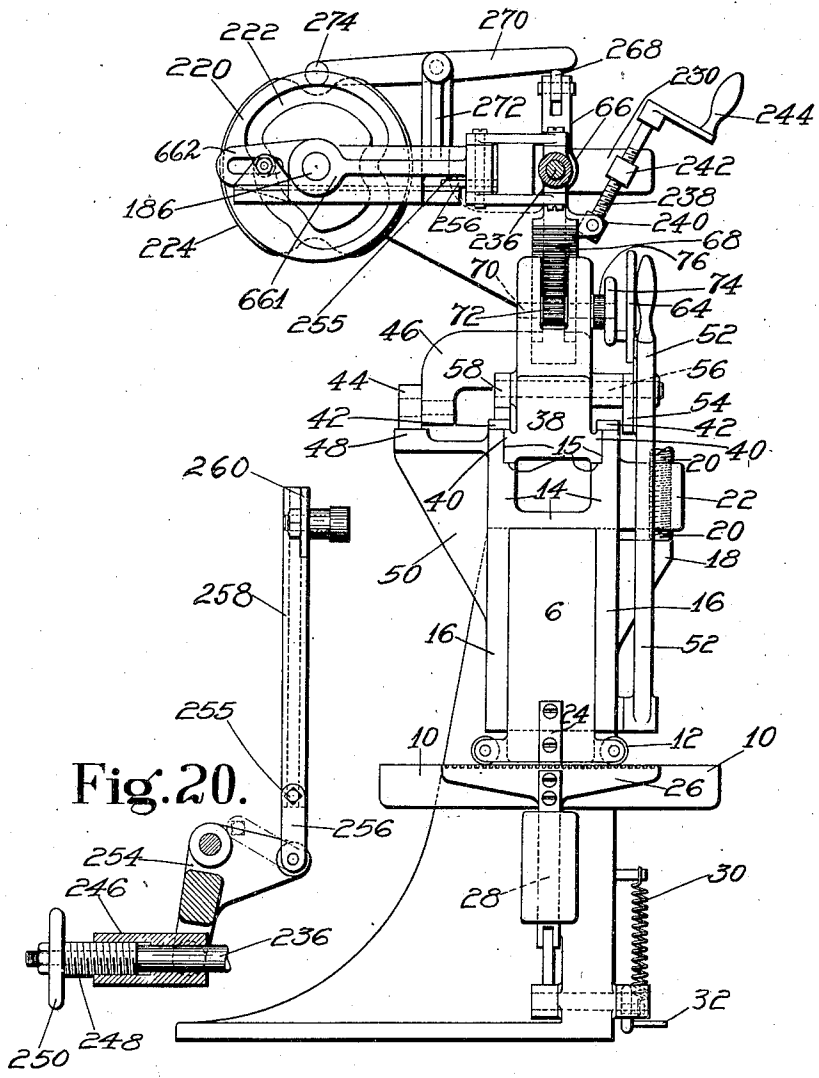


Fig.20.

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SHOE BOTTOMING MACHINE

Filed Jan. 27, 1919 8 Sheets-Sheet 6

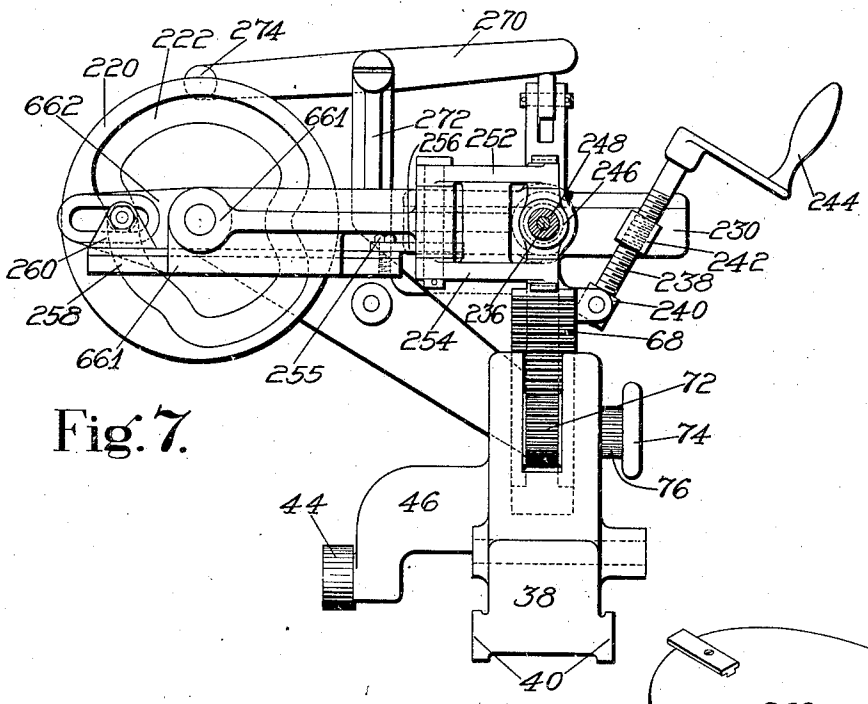


Fig. 7.

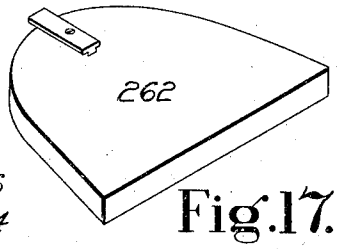


Fig. 17.

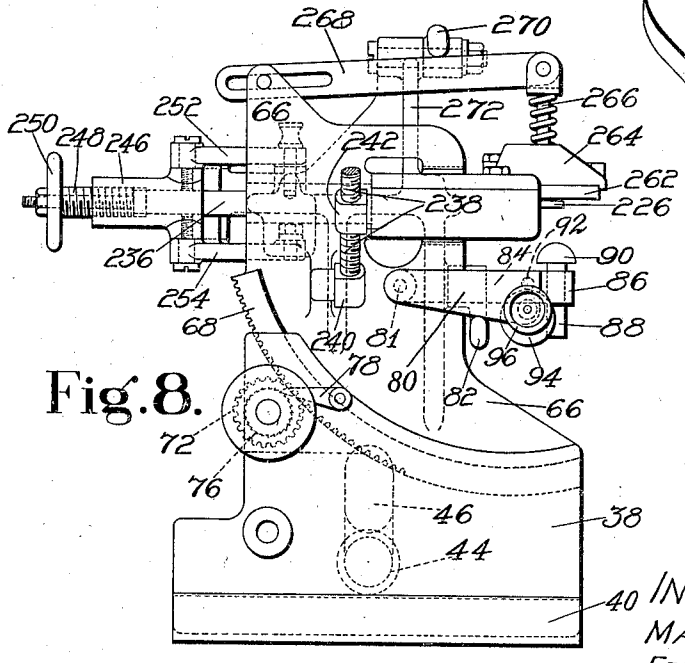


Fig. 8.

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Oct. 16, 1923. 1,470,595

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SHOE BOTTOMING MACHINE

Filed Jan. 27, 1919 8 Sheets-Sheet 7

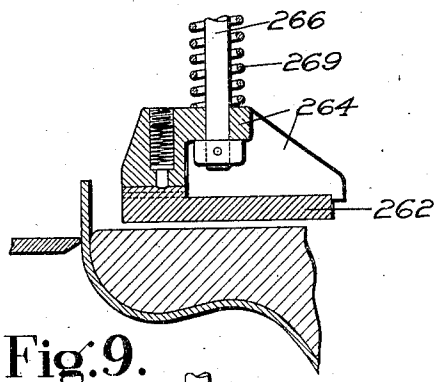


Fig. 9.

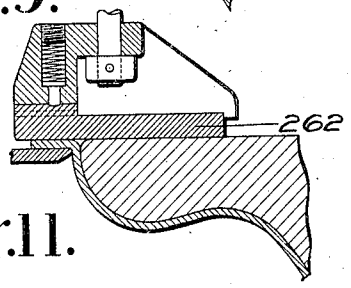


Fig. 11.

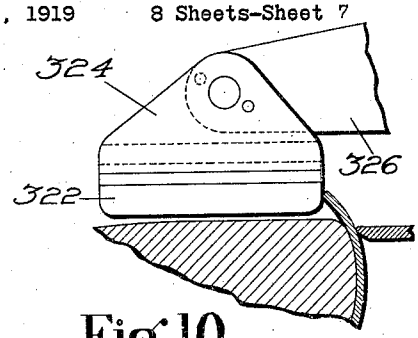


Fig. 10.

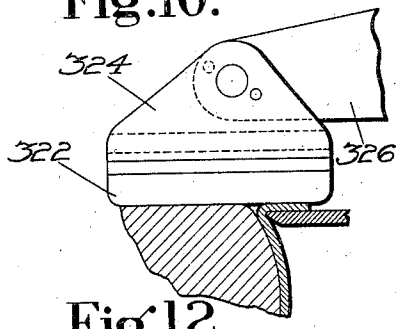


Fig. 12.

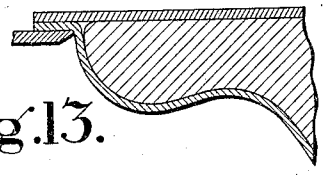


Fig. 13.

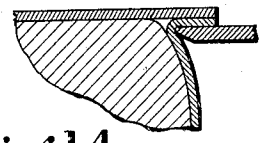


Fig. 14.

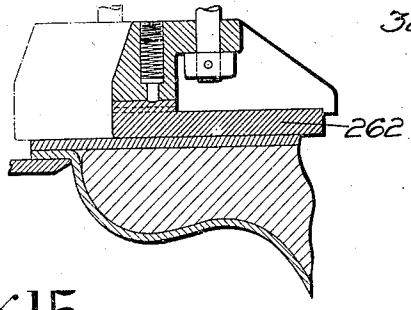


Fig. 15.

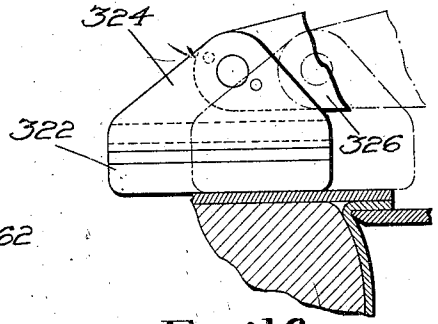


Fig. 16.

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Oct. 16, 1923. 1,470,595

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SHOE BOTTOMING MACHINE

Filed Jan. 27, 1919 8 Sheets-Sheet 8

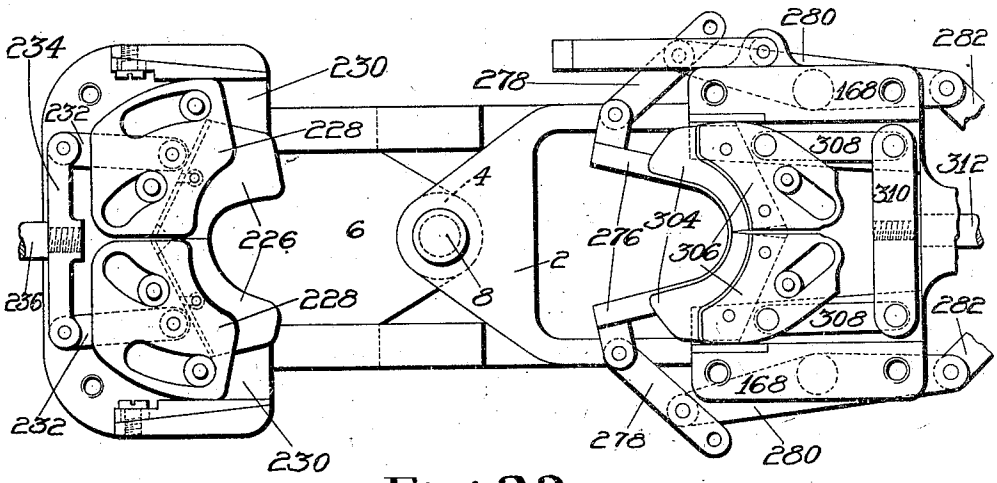


Fig. 22.

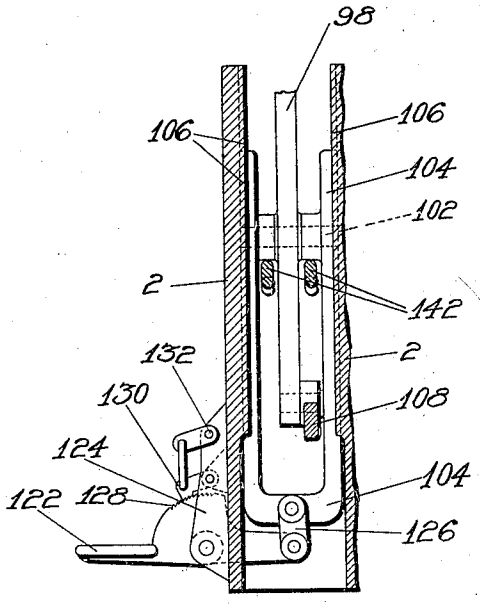


Fig. 21.

INVENTOR-
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EDWARD L. BROCK, ADMR.,
BY HIS ATTORNEY,
Nelson H. Brock

Patented Oct. 16, 1923. 1,470,595

UNITED STATES PATENT OFFICE.

MATTHIAS BROCK, DECEASED, LATE OF BOSTON, MASSACHUSETTS, BY EDWARD L. BROCK, ADMINISTRATOR, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SHOE-BOTTOMING MACHINE.

Application filed January 27, 1919. Serial No. 273,454.

To all whom it may concern:

Be it known that MATTHIAS BROCK, late of Boston, in the county of Suffolk and State of Massachusetts, deceased, invented certain Improvements in Shoe-Bottoming 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 shoe making machinery. The invention is herein illustrated as embodied in a machine organized both to last the ends of boots and shoes and also to perform a subsequent operation such as sole laying, the end lasting mechanism of the illustrated machine being of the "bed" type, a characteristic example of which is shown in United States Letters Patent No. 1,018,477, granted Feb. 27, 1912, on an application of Matthias Brock.

So far as is known to me, no lasting machine has heretofore been proposed or constructed which would be adapted to last interchangeably both shoes the uppers of which are to have inturned flanges, such as welt and McKay shoes, and also shoes whose uppers are to be formed with outturned flanges, characteristically so-called stitchdown shoes. An object of the present invention is to provide a machine which will be well adapted for forming uppers over lasts, whether the uppers are for shoes of the type having inturned flanges or of the so-called stitchdown type characterized by outturned flanges at one or both ends.

In this aspect of the invention, important features consist in a novel organization providing end lasting mechanisms which may be used as desired to form the margin of a shoe upper inwardly into lasted position, or to last shoes of the type having outturned flanges. For its use upon shoes of the latter type, the illustrated machine is organized to provide for flanging the margin of the upper outwardly at either or both ends in accordance with the specific type of stitchdown shoe to be lasted. As shown, inward and outward flanging instrumentalities for the toe and heel ends of the shoe are arranged for elective use and operation by the operating mechanism of the machine, the organization of which is such that the machine is well adapted to last interchangeably shoes of the different standard types without change in the machine organization and through easily and quickly effected adjustments in passing from one type of shoe to another.

Also, although lasting machines of the type illustrated, for example, in said prior patent, as heretofore constructed, have been provided with power driven shafts operative to clamp a shoe and its last and also to unjack the shoe, the flanging of the upper has been effected by manual operation of the toe and heel wipers. This manual operation of the wipers has necessarily involved substantial labor on the part of the operator and has, moreover, considerably limited the output of such a machine. Another object of the invention is to provide improved end lasting mechanism of the general type shown in said Letters Patent in which power means, such as the power driven shaft, will be utilized to operate lasting wipers. Preferably and as shown, the machine will be constructed to provide for manual operation of the wipers in addition to and independently of the power driven operation of the wipers.

Accordingly, from this aspect, another feature of the invention consists in a novel organization of lasting machine of the bed type in which provision is made for power operation of the lasting wipers. As shown, the machine organization, in common with prior lasting machines of the bed type, provides for relative adjustments of the toe and heel mechanisms to adapt them to the last and shoe to be operated upon and the power driven operating mechanisms for the toe and heel wipers are constructed and arranged to operate the wipers in all positions of relative adjustment of said toe and heel lasting mechanisms.

So far as is known to me, no machine has heretofore been constructed for lasting the toe and heel ends of shoes, which machine has been arranged also and subsequently to lay a sole, without removing the last and shoe from the machine. An additional object of the present invention is to provide a machine organized to last a shoe and thereafter to lay a sole on the shoe bottom over the flanged edges of the lasted upper with-

out necessitating the removal of the last and shoe between the lasting and sole laying operations.

In this aspect, important features of the invention consist in a novel organization of mechanism constructed and arranged, to lay a sole on the bottom of the shoe over the edges of the upper which have been flanged in the preceding lasting operation. In the illustrative construction the sole laying may be effected upon shoes having their uppers flanged inwardly or outwardly at either or both ends. For its use in laying soles on shoes of the outwardly flanged or stitchdown type, the illustrated machine is organized to lay the sole through the same instrumentalities previously employed to flange the upper outwardly at the ends of the shoes.

The organization of the machine shown is such that at the completion of the flanging operation the parts are conditioned to permit the placing of the sole on the shoe bottom over the flanged edges of the upper, and are subsequently operable to lay the sole, all without removing the last and shoe from the machine. The flanging and sole laying operations may be effected by power, or optionally, by manually effected operation of the parts, and the power operating mechanisms are organized automatically to come to a pause at the end of the flanging operation with the parts conditioned to permit the placing of the sole on the shoe bottom.

These and other features of the invention, including certain novel combinations and subcombinations of parts are shown in the accompanying drawings and will be described in the detailed specification following and then pointed out in the appended claims.

In these drawings;

Figure 1 is a front elevation of the preferable embodiment of the invention;

Fig. 2 is a top plan view of the machine shown in Fig. 1;

Fig. 3 is a view in elevation of the right hand or heel lasting end of the machine shown in Fig. 1;

Fig. 4 is a fragmentary top plan view on an enlarged scale of the heel lasting mechanism at said right hand end of the machine;

Fig. 5 is a front elevation of said mechanism on an enlarged scale;

Fig. 6 is a view in end elevation of the left hand or toe lasting end of the machine shown in Fig. 1;

Fig. 7 is an end elevation on an enlarged scale, of the toe lasting head and its carriage;

Fig. 8 is a front elevation on an enlarged scale of said head and carriage;

Figs. 9 and 10 illustrate the positions of the presser members before the start of the outward flanging or stitchdown lasting operation;

Figs. 11 and 12 show said parts in flanging positions;

Figs. 13 and 14 illustrate the subsequent step of placing the sole on the flanged upper;

Figs. 15 and 16 illustrate the presser members functioning to "lay" the sole;

Fig. 17 is a perspective view of the toe presser plate;

Fig. 18 is a vertical section showing more clearly than Fig. 5 a portion of the heel wiper operating and controlling means;

Fig. 19 is a transverse vertical section showing more in detail the connections for operating the heel band and the heel wipers;

Fig. 20 is a detail view of the toe wiper operating connections;

Fig. 21 is a vertical section showing the treadle means for lifting the shoe supporting standard, and

Fig. 22 is a plan view, with parts removed, showing the toe and heel wipers and the heel band.

The toe and heel lasting mechanisms are at the opposite ends of a frame 2, the heel lasting mechanism as a whole being secured in fixed lasting position upon the top of the right hand end of the frame, as viewed in Fig. 1, said frame being stepped down from said heel lasting mechanism toward its left hand end and being formed with hinge jaws approximately midway of its length between which the knuckle 4 of a yoke 6 is journaled by a hinge pin 8 to turn about a substantially perpendicular axis located beneath and between the ends of a supported shoe and last. The top face of the left hand end of the frame is formed as a laterally extending arcuate track 10 based on the hinge pin 8 as a center, the yoke 6 being formed with lateral ears journaled rollers 12 (Fig. 1).

Mounted on and supported by the yoke and vertically adjustable relatively thereto is the base for the toe lasting mechanism. This base has a longitudinally hollowed head 14 resting on top of yoke 6 and having its top edges channeled to form longitudinally extending ways 15, and is provided with depending spaced plates 16 embracing and guiding on the sides of yoke 6. The plate 16 at the front of the machine frame is bifurcated to permit the projection therethrough of an abutment 18 laterally offset from the body of yoke 6. An adjusting screw 20 having an operating crank is threaded through a sleeve 22 laterally offset from the head 14 of the base in vertical alinement with abutment 18 and bears with its lower end against said abutment. By operating this screw the base may be adjusted relatively to its supporting yoke 6 in a direction substantially perpendicular to the plane of a supported

shoe bottom. The yoke and base may be manually adjustable transversely of the frame about the axis of pivot pin 8 by releasing a latch holding the yoke in position and swinging the yoke and base on rollers 12 about said pivot to the desired position. This adjustment, as will be seen later, enables the toe lasting mechanism to be adapted to the swing of right and left crooked lasts, the median lines of the forepart and heel part of which are at an angle to each other. A toothed plate 24 is secured to the lower edge of the yoke 6 adjacent to the track 10 and is engaged by a laterally extending latching bar 26 having a toothed upper edge and carried at the upper end of a rod 28 guided for vertical movement in an offset at the base of the frame. A spring 30 anchored to the frame and attached to a treadle 32 having a crank arm 34 connected to rod 28 by link 36, normally tends to move said treadle and crank arm in a direction to hold the latching bar 26 in holding engagement with the toothed plate 24. By depressing the treadle this plate is released and the yoke and base may be swung laterally to the desired position in which they are latched by releasing the treadle.

The toe lasting mechanism, proper, is supported on a carriage 38 having flanges 40 at its lower front and rear edges (Fig. 6) seating in the ways 15 formed in the head 14 of the base and retained therein by overlying strips 42. To enable the carriage to be easily moved longitudinally in these ways, a roller 44 carried by a rigid offset 46 at the rear side of the carriage, rests upon and is supported by the horizontal track 48 formed upon the upper face of a bracket 50 laterally and rearwardly offset from the head 14 and rear plate 16 of the base. To facilitate longitudinal adjustment of carriage 38 on the base, a lever 52 pivoted to the lower edge of the front plate 16 is connected by a link 54 to the side of the carriage 38. This link is journaled on a rock shaft 56 extending transversely through and beyond the carriage and having fixed on its rear end adjacent to the strip 42 an eccentric locking plate 58. A crank arm 60 fixed to the front end of this shaft which projects outwardly from link 54 (Fig. 1) has a pin and slot connection with a link 62 carried by the lower arm of a bell crank lever 64 mounted on lever 52 at its upper end, the upper arm of this bell crank lever forming a handle grasped by the operator in manipulating the lever 52 to move the carriage 38 longitudinally in ways 15 and acting to turn rock shaft 56 to release the eccentric lock 58 so that the carriage can be released and moved longitudinally by grasping the upper end of lever 52 and the upper arm of bell crank lever 64 and thereafter swinging lever 52 in the desired direction lengthwise of the machine and frame.

The head 66 of the toe lasting mechanism has its lower edge formed as an arcuate rack 68 guided in a correspondingly curved channel in the top of carriage 38, this channel and rack being formed on an arc based approximately upon the median extremity of the toe end of a supported shoe as center. A spindle 70 extending transversely through carriage 38 carries a pinion 72 (Fig. 6) meshing with rack 68, an operating knob 74 being mounted on the end of this spindle which extends out beyond the front face of the carriage and having an attached ratchet wheel 76 with which a pawl 78 on the carriage co-operates. By means of this mechanism the toe wipers carried by head 66 may be tilted about an axis extending transversely of a supported shoe to adjust the wipers to the longitudinal inclination of the toe end of the bottom of the supported last.

To support the toe end of the shoe upper and last, an arm 80 at the outer face of the toe lasting head 66 carries a spindle 81 (Fig. 8) journaled in said head and has its lower edge resting against a laterally extending bar 82 rigidly supported from said head. Journaled on the spindle 81 between the arm 80 and the outer face of the head is a toe rest bar 84 which extends beyond the free end of arm 80 and is formed with a boss 86 into which is threaded a standard 88 carrying at its upper end the toe rest 90. The bar 84 carries a stud 92 laterally offset toward arm 80 and overlying and supported by an eccentric 94 carried at the inner side of arm 80 on a short spindle journaled in said arm and having an operating knob 96 at the outer face of the arm. Preferably the spindle has a frictionally tight fit in the arm to hold the eccentric in the position to which it is turned, although any suitable means may be employed to provide this position-retaining friction. Obviously, by turning the knob 96, the eccentric may be made to raise or lower the bar 84 and the toe rest.

The toe lasting mechanism which will be described in detail later, is arranged to be operated through a power driven shaft, and independently by hand, the heel lasting mechanism being similarly operable and the last and shoe support or carrier being automatically unjacked or released through this shaft. The heel lasting mechanism includes upper flanging means and a heel band, and the last and shoe carrier is arranged for movement backwardly and upwardly to jack the heel end of a supported last and shoe upper back into the heel band and up to the plane of operation of the flanging means, it being understood, of course, that in "bed" lasting machines, the last and shoe are supported in inverted position during the lasting operation.

This last and shoe carrier comprises an upright standard 98 having a suitable heel pin 100 pivotally mounted upon its upper end and itself journaled adjacent to its lower end upon a transverse spindle 102 extending through opposite sides of a substantially U-shaped plate 104 (Fig. 21) sliding in and guided for vertical movement by vertical ribs or ways 106 formed on the opposite inner faces of the frame plates 2, the closed end of the U-shaped plate being lowermost. The lower end of the standard is positioned above the lower closed end of plate 104 and is connected by a link 108 to a second link 110 pivoted to an ear offset from frame 2, these two links forming a toggle which, when straightened, will swing the upper end of the bar 98 and its heel pin toward the heel band of the heel lasting mechanism and when flexed, will swing the bar in the reverse direction to unjack the shoe carried thereby. It will be noted that this standard is located between the toe and heel lasting mechanisms at a point midway of the frame where the latter is stepped down in height and that the standard projects above the top of the frame a sufficient distance and is formed to take the leg portion of a long legged boot without folding or distortion.

A link 112 depending from the joint of the toggle is connected to the inner end of a treadle 114 pivoted to an ear 116 at the outer side of frame 2. This treadle is formed with an upstanding toothed arcuate ratchet portion 118 with which co-operates a pawl 120 pivoted to ear 116 and arranged to lock the treadle in toggle-straightened position and to be automatically lifted to permit the treadle to drop and the toggle 108, 110 to flex by gravity. A second treadle 122 positioned adjacent to the first named treadle 114 so that both treadles may be operated by one foot or separately at the will of the operator, is pivoted to an ear 124 at the outer side of the frame and has its inner end extended to a point beneath the lower closed end of the U-shaped plate 104 to which it is connected by a link 126 (Fig. 21). This treadle is formed also with an upstanding arcuate ratchet portion 128 with a co-operating pawl 130 pivoted to ear 124. By depressing this treadle the plate 104 with the bar 98 and heel pin may be raised and by prior or coincident depression of treadle 114 the bar and heel pin may be swung back toward the heel band. Means are provided for simultaneously and automatically releasing the pawls 120 and 130 and treadles 114 and 122.

To this end a short rock shaft 132 journaled in the upper portions of ears 116, 124, carries crank arms 134, 136 (Fig. 1) connected by links with the respective pawls and is operated through a third crank 138 connected to the lower end of a rod 140 which in turn may be operated through certain power actuated mechanism, or manually when it is elected to operate the lasting mechanisms manually.

After the last and shoe carrier have been jacked up and back by depression of the treadles, the standard 98 is given a further upward thrust automatically at a predetermined point in the cycle of operations by means of a horizontal lever 142 journaled at a point intermediate of its ends upon a spindle extended between the front and rear plates of the frame 2 and having its forward end bifurcated (see Fig. 21) to embrace the standard and to extend beneath the spindle 102 upon which the standard is pivotally mounted.

The rear or outer end of this lever is pivoted to a sleeve 144 slidably mounted on the lower end of a vertically extending plunger 146 and is normally pressed downwardly by a coiled spring 148 sleeved on said plunger between an abutment sleeve 150 clamped to the plunger and the slidable sleeve 144. The upper end of the plunger is connected by a link 152 with the frame and carries a roll 154 acted upon by the periphery of a cam disk 155 which will be described in connection with the power operated mechanism of the machine.

The rod 140 controlling the pawls of the treadle ratchets has its upper end pivoted to an arm 156 fixed to a rock shaft 158 journaled on top of and extending lengthwise of the frame and having a second and rearwardly extending arm 160 positioned in co-operative relation to the peripheral face of a second cam disk 161 to be engaged and rocked by contact with a raised portion 162 on said periphery. The two cam disks are both mounted on a cam shaft 164 extending transversely of the frame and journaled in arms upstanding from the rear (or right hand) end of the frame. The heel lasting mechanism is carried by and supported from a lasting head 168 elevated above the top of the frame by a supporting bracket 166 and having a rearward extension 170 with spaced upstanding arms 172. A heel band, heel wipers and a displaceable outwardly flanging presser member are carried by or supported from these parts and are operated by connections extending to the cam disks 155, 161 on cam shaft 164. The toe lasting mechanism is also operable by connections extending to cam disks on a cam shaft, these cam shafts being driven from a common power operated shaft. Before describing the toe and heel lasting mechanisms in detail, the power operating mechanism may advantageously be referred to.

The frame 2 is formed at its right hand end, as viewed in Fig. 2, with rearward extensions in which are journaled a power driven shaft 174, a parallel counter shaft

176 with reducing gears 178, 180 connecting said shafts, and the cam shaft 164 for the heel lasting mechanism with bevel gear connections 182, 184 with said shaft 176. A second cam shaft 186 at the left hand end of the machine is journaled in arms outstanding from the toe lasting mechanism and is connected to the adjacent end of the counter shaft 176 by a floating link member 188 having universal joint connections 190 with the ends of said counter and cam shafts.

On the right hand end of shaft 174 is loosely journaled a pulley 192 designed to be driven by belt from any suitable power source such as a line shaft or individual electric motor. This pulley is provided with a hub 194 having a toothed clutch face arranged to engage the similarly toothed face of a sleeve 196 fixed to shaft 174 and is normally urged toward said face by a coiled spring 198 interposed between the outer face of the pulley and a collar fixed to the outer end of the shaft. A suitable controlling mechanism is provided for automatically unclutching the pulley and shaft at the end of one revolution of the pulley and a half revolution of the counter shaft 176 which turns in a one to two gear ratio to shaft 174 and which is geared to the cam shaft 164 in one-to-one ratio. The illustrated clutch controlling mechanism provides an inclined or wedge face on the hub 194 arranged to be engaged by one end of a bell crank lever 200 which is journaled on a pin outstanding from the frame (Fig. 2) and has an offset pin 201 engaged by the inclined edge of a finger 203 (Fig. 3) extending laterally from a block 202 guided on said pin 201 for vertical movement and attached to the upper end of a bent rod 204 operated through a treadle 206 normally urged by a spring in a direction to permit the bell crank lever 200 to engage the clutch incline and release the clutch, the lever then operating on an inner end face of the pulley hub to hold the pulley in idle position.

The end of cam shaft 164 of the heel lasting mechanism extends to the front of the machine and is provided with a hand wheel 208 for turning the cam shaft and operating the heel lasting mechanism by hand independently of the power drive, and through its connection with counter shaft 176 and cam shaft 186 for also and coincidentally operating said cam shaft and the toe lasting mechanism. This can be effected when the pulley is unclutched from the power driven shaft 174. Further to control the operation of the machine, a lever 210 extends transversely of the frame and is pivoted to the top thereof, a thrust rod 212 being pivoted to the rear end of the lever and guided for longitudinal movement. This rod terminates adjacent to the inner face of pulley 192 and carries an anti-friction roller rotatable about an axis extending substantially radially of the pulley. The free end of lever 210 extends to the front of the machine and is provided with a toothed plate 214 normally engaging teeth on a locking plate 216 on top of the frame, these teeth being radial to the pivot of said lever. A thumb piece 218 pivoted on the lever, is connected with the plate 214 to lift said plate and release the lever when the latter is grasped to throw out the clutch. By means of this lever and its connections, the machine may be stopped at any time during the power drive independently of the automatic clutch control, and after it has been thus stopped the machine may be operated manually through the hand wheel 208.

Returning to the toe lasting mechanism: the toe lasting head 66, in addition to carrying the lasting mechanism, has rearwardly extending arms 661, 662 and 663 in which the cam shaft 186 is journaled, and a wiper cam 220 having an actuating cam groove 222 in one face is mounted on said shaft in spaced relation to a peripheral cam disk 224 operating the flanging presser plate later to be described. These cam disks are keyed on the shaft for sliding movement together with said arms longitudinally of the shaft when the toe lasting mechanism is bodily moved longitudinally of the machine in adjusting for length of last. The floating link 188 with its joint connections to cam shaft 186 and the counter shaft 176, permits the various described tilting adjustments of the toe lasting head and toe wipers to be effected without disturbing the operative driving connection between said counter shaft 176 and the cam shaft 186 so that the operating connections from the power shaft to the toe lasting mechanism are operative in all positions of adjustment of the toe lasting mechanism. The heel lasting mechanism occupies a fixed lasting position and the driving connections to said mechanisms are permanent and always operative.

The toe lasting mechanism, per se, consists of toe lasting wipers and a displaceable presser member arranged in one position to act as a holddown when the wipers are operated to flange the margin of the upper inwardly over the edge of the sole and in another position to act as a flanging member for spreading and flanging the toe end of the upper outwardly from the margin of the last bottom in making shoes of the stitchdown class.

The toe lasting wipers shown in Fig. 2 correspond in construction and operation to the toe wipers of United States Letters Patent No. 1,018,477, previously referred to, and include formed toe embracing wiper plates 226 mounted in wiper carriers 228 seated and guided in a casing 230 and connected by links 232 and a cross bar 234

(Fig. 22) to a plunger 236 guided in a bore in the upper portion of head 66 for longitudinal reciprocating movement and for angular adjustment about the axis of said bore by means of a spindle 238 having its lower end swiveled in a block 240 pivotally mounted in an ear offset from said head, said spindle extending upwardly through and threading in the bore of an ear 242 pivoted on the wiper casing 230. A crank handle 244 (Fig. 6) is secured to the upper end of this spindle, rotation of which is effective to turn said casing and wipers about the wiper operating plunger 238 as an axis to tilt and adjust the wipers into the transverse plane of the last bottom.

The plunger 236 extends out beyond the end of head 66, as best seen in Figs. 1 and 8, and through a collar 246 having the outer half of its bore threaded and enlarged to receive an adjusting exteriorly threaded sleeve 248 whose bore is of less diameter than the plunger and which has an operating hand wheel 250 at its outer extremity. The plunger is reduced in diameter to form a shoulder engaging the inner end of the sleeve and an end portion extending loosely through the sleeve and threaded at its outer end to receive a nut abutting the hub of wheel 250 and by which the plunger is swiveled in the collar and may turn therein about the axis of the plunger when the cranked spindle 238 is rotated.

The collar 246 is connected to the plunger by the sleeve 248 threading into the collar and is reciprocated to thereby operate the wipers by connections to the power driven cam shaft 186 when the machine is to be used for lasting the toes of shoes of the welt or McKay class, these connections including a manually displaceable element for disconnecting the power means, and means being provided for anchoring the collar to the lasting head 66 so that the wipers may be adjusted to the edge contour of the toe end of the last by turning hand wheel 250 and its attached sleeve 248. Accordingly, the collar 246 is formed with diametrically opposed bosses upon which are pivotally mounted the ends of the outer arms of upper and lower bell crank levers 252, 254 having a connecting web making them integral, these levers at the junction of their arms being journaled upon a rearward extension of the head 66. The inner arm of the upper bell crank 252 carries loosely a headed pin adapted to be inserted in holes formed in the top of said extension to anchor the bell crank and collar to the head when the collar is disconnected from the power operating means. The end of the inner arm of the lower bell crank lever 254 is pivoted to one end of a link 256 whose other and rear end is pivotally connected by means of an easily disconnected element such as a collared bolt screw 255 to the front end of a slide 258 having a flange resting upon and guided for horizontal movement by the flanged lower edge of arm 661 of the lasting head and having an upstanding ear 260 at its rear end. A stud extends from this ear through a horizontal slot formed in the adjacent arm 662 and carries a roll riding in the cam groove 222 of the cam disk 220. This groove is formed to give two reciprocations of the slide to each revolution of the shaft 186 and through link 256 and bell cranks 252, 254, gives two reciprocations to the wiper operating plunger, the cam shaft 186 and cam 220 turning through a half revolution for each revolution of the clutch controlled driving shaft 174.

The power effected operation of the toe wipers, (and as will be seen later, of the heel wipers), is utilized for inwardly flanging the margin of the shoe upper. The toe lasting mechanism may, however, be electively used for work on this class of shoes and on stitchdown shoes. To pass from inwardly flanged work to stitchdown work, the operator disconnects the lower bell crank arm 254 from the power operated slide 258 by removing the connecting element 255 and anchors the upper and lower bell crank arms and collar 246 to the toe lasting head 66 by inserting the pin carried by the upper bell crank arm in a hole in the top of the head 66. The hand wheel 250 may now be operated to move the plunger 236 and adjust the wipers to the edge contour of the toe end of the last so that a presser member may flange the margin of the upper outwardly from the edge over the adjusted wipers.

This presser member comprises a flat presser plate 262 (Fig. 17 and Figs. 9, 11 and 15) contoured similarly to the toe end of the last and of a size to flange the upper outwardly at the sides as well as at the end of the toe. This plate has an upstanding rib dovetailing into the lower edge of a hollow head 264 to which it is detachably held by a spring pressed plunger (Fig. 9) having a friction hold in a depression formed in said rib so that differently shaped plates may be readily attached and detached by sliding movement of the plates. A rod 266 has its lower end loosely fitted through the top of said head and provided with a retaining washer (Fig. 9), the upper end of the rod being pivoted to one end of a bar 268 extending longitudinally of the frame with its other end longitudinally slotted and guided on a pin connecting spaced walls extending upwardly from head 66. A coiled spring 269 encircling the rod normally tends to hold the member 264 depressed relatively to the bar 268. On its top edge the bar 268 is engaged by the outer end of a presser arm 270 pivoted intermediate of its ends on a post 272 upstanding from the

head and having its rear end provided with an offset roll 274 engaging the periphery of cam disk 224. The cam 224 has two diametrically opposed drops or depressions in its periphery in which the roll 274 lies at the end of each half revolution of the cam shaft 186. In forming the toes of shoes with inwardly extending flanges the presser member with an appropriately shaped presser plate 262 is positioned over the insole with its margin located the proper distance from the margin of the last bottom and when the cam shaft 186 is turned by power or through hand wheel 208, the rise or high point on the cam periphery adjacent to this drop or depression will act against roll 274 and arm 270, depressing bar 268 and rod 266 and through spring 269 pressing the last down in the toe of the upper and clamping the last and upper on the toe rest 90 until the end of a half revolution of the cam shaft when the roll is permitted to drop in the other depression in the periphery of cam 224, rod 268 being lifted to relieve the pressure against the presser plate 262 and the sole on the last bottom. If the presser member is to be used to flange the upper outwardly in working on shoes of the stitchdown class, the operator (having first disconnected the wiper operating cam connections to the toe wipers and adjusted the wipers as described), grasps the presser member and slides it back (as from the position shown in Fig. 9 to that shown in Fig. 11) spreading the upper outwardly from the edge of the last over the adjusted wipers. Downward pressure on the plate 262, as previously described, will now compress the upper between the plate and the wipers, forming an outturned flange. The subsequent stopping of the cam at the end of a half revolution will relieve the pressure against the plate 262 and permit the placing of a sole on the last bottom beneath said plate, the flanged edge of the upper being, preferably, first coated with cement, and the cam shaft being again turned through another half revolution, causing the plate 262 to "lay" the sole on the flanged upper. The heel end of the upper may be flanged outwardly also, if desired, and the same pressing and sole laying action may take place as will be later described. It will be understood that in the operation of the toe lasting mechanism, the presser device is manually displaced from outward flanging position to "holddown" or shoe clamping position when the machine is used for work on shoes to flange the upper inwardly and is manually re-positioned when passing from work of this class to work on shoes of the stitchdown class.

Turning now to the heel lasting mechanism: this mechanism has a fixed lasting position on the frame, the toe lasting mechanism, as stated, being angularly adjustable transversely of the shoe to accord with the swing and transverse inclination of the forepart; of right and left crooked lasts, and being adjustable lengthwise of the shoe and last to adapt the mechanisms to the length and inclination of lasts. Heel lasting wipers, which will be later described, are mounted in the lasting head 168 and together with a heel band and an outflanging presser member, are operated from the cam shaft 164. A substantially U-shaped heel embracing band 276 which may be of leather or other suitable material, is positioned in front of the lasting head 168 with its upper edge slightly below the plane of the heel wipers and is supported at its ends by links 278 pivoted at their inner ends to ears attached to the ends of the band and adjustably pivoted adjacent to their outer ends to the forward ends of band opening and closing levers 280 which are pivoted intermediate of their ends to the bottom of the head 168. The links 278 preferably are provided with a plurality of pivot holes co-operating with removable pivot pins and the pivot holes in the co-operating ends of levers 280 to adjust the band to accommodate different sizes or grades of heel ends, such as those of men's, women's and children's shoes.

From the other ends of levers 280 extend links 282 connecting said levers to the opposite ends of a cross bar 284. A vertical plate 286 is bifurcated at its rear end to embrace and guide upon cam shaft 164 immediately adjacent to the front face of cam disk 161 and is bolted at the lower edge of its front end to a horizontally extending heel band actuating plate 288, this plate being formed at its back edge with a beveled rib 290 (Fig. 19) dovetailed into a groove in the base of a wiper actuating block 292 extending horizontally from the front face of a vertical plate 294 having its rear end bifurcated to embrace cam shaft 164 immediately adjacent to the front face of cam disk 155. Plate 286 carries a roll 287 on its rear face entering a cam groove 296 in the front face of cam disk 161, and plate 294 carries a roll 295 on its rear face entering a cam groove 298 in the front face of cam disk 155. A rod 300 sliding through bores in the plate 288 and cross bar 284 has its ends provided with holding nuts and by means of a spring 302 sleeved thereon between cross bar 284 and plate 288 yieldingly connects the plate 288 with said cross bar so that when the cam groove 296 acts against roll 287 to move the plates 286, 288 forwardly toward the cross bar, the latter will be advanced, actuating links 282, levers 280 and band links 278 to close the heel band. This groove, best seen in Fig. 5, is formed to hold the band closed until at the end of a complete revolution of the cam shaft 164, which is given a half revolution

to each revolution of the main driving shaft 174. Therefore, the band will remain closed during both reciprocations of the wipers for inwardly flanging the heel seat of shoes of this class, and during the outward flanging and subsequent sole laying of stitch-down shoes, as will be explained.

The heel lasting wipers comprise formed end embracing wiper plates 304 mounted in wiper carriers 306 supported in and guided by the head 168 for bodily longitudinal movement and having the usual cam slots in which are seated rolls carried by studs depending from the cover plate of the head 168 and effective to guide the carriers and wiper plates to swing about an axis substantially centrally of the wipers toward and from each other as the carriers are moved longitudinally of the lasting head and are simultaneously swung by the usual links 308 connected to a cross bar 310 which is reciprocable by a plunger 312 connected to the block 292 offset from plate 294 carrying cam roll 295. To this end the block 292 is formed with a longitudinal bore threaded to receive an externally threaded sleeve 316. The plunger 312 is of a diameter to slide freely through the bore in said block and shouldered down adjacent to its end and threaded to receive a nut 318 (Fig. 18) engaging a shoulder at the outer end of the plunger 312 and swivelling the sleeve 316 on the plunger. The inner end of the sleeve abuts a shoulder on the plunger so that by rotating and thereby moving the sleeve longitudinally of the block 292, the plunger 312 may be moved longitudinally in either direction so that the heel wipers may be adjusted initially to the heel end of the class of shoes, such as men's, women's, or children's, to be operated upon or may be adjusted to the specific shoe to be lasted. The cam disk 155 is keyed on the shaft for longitudinal sliding movement and may be moved away from the roll 295 to disconnect the wipers from the power drive, a suitable set screw being provided for locking the cam in adjusted position.

The cam 155 is displaced as described when it is desired to flange the heel end of the upper outwardly from the edge of the last bottom in making one species of stitch-down shoes. This displacement of the cam disconnects the heel wipers from the power drive and in order to adjust and hold the wipers in conformity to the contour of the edge of the heel seat for outward flanging, the plate 294 is moved rearwardly if necessary to bring the closed or inner portion of its bifurcated end against the sleeve on the cam shaft upon which it is guided, and a headed pin 314 is dropped through alined apertures in the arms of the bifurcation to hold the plate 294 rigid against the cam shaft sleeve, said apertures being positioned to bring the pin 314 into very close proximity with the shaft sleeve, the plate 294 now being stationary and rigidly held so that sleeve 316 may be adjusted to advance or retract plunger 312 and to adapt the heel wipers to the edge contour of the heel seat. Since the thrust against the heel wipers in outward flanging is outwardly toward the end of the machine, this thrust is taken by the closed end of the bifurcation and the shaft sleeve and any slight play between the pin 314 and shaft sleeve will not affect the adjustment and rigidity of the wipers.

The outward flanging operation is effected through the cam shaft 164 which is in operative connection with a heel presser plate 322 preferably detachably dovetailed in the base of holder 324, similarly to the toe presser plate. This holder depends from and is pivoted to an arm 326 having its rear end longitudinally slotted and embraced between the spaced arms 172 upstanding from the heel lasting head, a pin 328 extending between said arms and through said slot to guide the arm for longitudinal movement and to pivot the arm for upward and downward swinging movement. When not in use for outward flanging or sole laying, this presser plate 322 is displaced and inoperatively positioned as suggested in dotted lines in Fig. 5. The holder 324 at a point adjacent to its pivot is formed with an aperture and arm 326 is formed with a similar arcuately coincident aperture so that the presser plate 324 and its holder 326 can be swung upwardly on said pivot to inoperative position where said two apertures will be alined. A pin may be inserted through the alined apertures to hold the presser plate so displaced until it is desired to use it for outflanging or sole laying.

A longitudinally extending bar 330 is pivoted on the lower edge portion of the arm 326 adjacent to the pivot pin 328 and acts as a crank with relation to said pivot, the rear end of said bar 330 being pivoted to the upper end of a vertically extending link 332 having its lower end pivoted to a bracket offset longitudinally from the end of the machine frame. Adjacent to its upper end, said link carries a roll 334 riding in a cam groove 336 formed in the rear face of cam disk 161, as best seen in Figs. 4 and 5. This cam groove is shaped first to swing the arm 326 downwardly from the position shown in Fig. 5 which it occupies at the end and beginning of a work cycle, then by reverse movement to move it longitudinally to the end of its slot causing plate 322 to outflange the upper, and then to lift the plate and stop at the end of a half revolution of the cam shaft in order to permit a sole to be positioned beneath the presser plate and against the flanged edge of the upper. In the second half revolution of the cam, these

movements are repeated, the plate 322 pressing and laying the sole on the flanged upper whose edges will have previously been coated with cement.

During each of the closing over or inward flanging movements of the heel wipers 304, on inwardly flanged work, the last and upper are automatically and yieldingly pressed upwardly against the flanging members or wipers to give additional compacting pressure, this additional pressure being of longer duration in the second half of the cycle—i. e., the final closing movement of the inwardly flanging heel wipers 304. To this end, the periphery of cam disk 155 is formed with opposed raised portions 338 which act against roll 154 and rod 146 in timed relation to the flanging operations to effect yieldingly upward pressure of the last and shoe carrier 98.

During the described longitudinal outflanging and subsequent sole laying movement of the presser plate 322, it is desirable to cause said plate to exert downward compacting pressure against the upper and sole, respectively. To this end, the cover plate of the heel lasting head 168 is provided with an upstanding bracket 340 having a flanged upper end from which an abutment screw depends, a pressure applying plate 342 being journaled in the side of the bracket below its upper end with which said screw contacts when said plate is engaged and swung upwardly against said screw by a roll 344 offset from arm 326, the position of the lower end of the screw determining the pressure angle of said plate and the degree of downward pressure applied by the plate against the roll 344 and arm 326 as the latter slides backwardly.

To locate the heel seat face of the last bottom in the plane for co-operation with the described lasting means, a horizontal arm 346 (Figs. 4 and 5) is pivoted to the back edge of the heel lasting head and carries a depending adjustable stop 348, the arm being swung over to position said stop above the heel end of the last before the shoe is jacked up and back into the heel band. When the treadles 114, 122 are operated to jack the shoe backwardly and upwardly, the bottom of the last will engage the stop 348 and position the last bottom at the proper height. The arm 346 is then swung to one side out of the way as seen in Fig. 4. A similar positioning stop 350 may be used on the toe lasting head in positioning the forepart of the shoe and to guide in the adjustment of the toe rest as previously described.

With the above described constructions of lasting mechanisms, the operation of the machine is briefly as follows:

Inward flanging.

The last and shoe are mounted on the carrier 98, 100, the heel presser plate being turned back over the top edge of arm 326 out of the way, and the heel height gage 348 is swung into position. The treadles 114, 122 are operated to jack the shoe back and up into the heel band, the heel height gage being then swung to one side. Any necessary adjustments of the heel wipers and heel band are made, the toe lasting head is adjusted as necessary to the length and swing of last, and the toe wipers are given any of the described tilting adjustments necessary to place them in the longitudinal and transverse planes of the forepart of the last bottom. Previous to this, the toe rest is adjusted, if necessary, to support the toe at the proper elevation and the toe presser 262 is positioned over and within the margin of the last bottom at the toe. Assuming that the machine is to be operated by power and that the toe and heel wipers are operatively connected to their operating cams the operator depresses treadle 206 and immediately releases it. This throws in the one cycle clutch mechanism turning the cam shafts 164 and 186 through half a revolution and coming to a stop. At the beginning of this half revolution the heel band is closed through cam groove 296 and held closed and the toe presser 262 functions as a holddown, cam 224 acting through lever 270 to press the last down into the toe of the upper and to clamp the upper and last on the toe rest. The heel and toe wipers then advance and close in over the margin of the last bottom, wiping the margin of the upper inwardly and forming an inturned flange and thereafter partially back off or retract and stop. As the heel wipers advance over the edge of the heel seat, a high point 338 on the periphery of cam disk 155 lifts the standard 98 and causes the last and shoe to press the upper against the heel wipers, the pressure being released before the wipers retract. The toe and heel wipers stop automatically in partially retracted position at the end of a half revolution of their cam shafts to enable the inwardly flanged upper at the heel to be tacked to the sole or insole and to enable the inturned upper at the toe end to be tacked, or wired, depending upon the species of shoe—i. e., McKay or turn or welt. After the inwardly flanged upper has been tacked or wired, as the case requires, the treadle 206 is again actuated and the toe and heel wipers again advance and then fully retract, the shoe being again pressed upwardly against the heel wipers. As the wipers retract, the heel band is opened and the high point 162 on the periphery of cam disk 161 engages arm 160, turning rock shaft 132 and unlocking treadles 114, 122, unjacking the shoe.

If it is desired to operate these mechanisms manually, or to repeat the cycle man-

ually, the cam shafts 164, 186 are turned by hand wheel 208 to effect the desired operations. In both the power and manually effected rotations of the cam shaft 164 of the heel lasting mechanism, the operating connections from the cam shaft to the presser plate 322 are operated, but since the presser plate is displaced from operative position it does not interfere with the operation of the heel wipers for inwardly flanging the upper over the heel seat.

Outward (stitchdown) flanging and sole laying.

For stitchdown work, the toe wipers are disconnected from the power driven shaft by removing the connecting element 255, as previously described, the bell crank levers 252 and 254 are fixed to the toe lasting head, and the toe wipers are adjusted through hand wheel 250 to the contour of the margin of the last bottom, the wipers having been reversed to present them bottom side uppermost. The last and shoe are jacked back into the heel band in the same manner as in operating upon welt and McKay shoes and the same adjustments of the toe lasting head are made. The toe presser plate is now moved by hand to spread the upper out over the adjusted wipers, or a suitable hand tool may be used, and the presser plate is then placed in position over the outspread upper. If the heel end of the upper is also to be flanged outwardly, the heel presser plate is turned right side down to the position shown in Fig. 5, the cam wheel 155 having first been moved to disconnect the heel wipers from the power drive and the heel wipers manually adjusted. Preferably also the sleeve 150 is loosened to prevent upward pressure of the last against the presser plate. The treadle 206 is now actuated to connect the power driven pulley with the cam shafts to turn said shafts through the first half revolution of the work cycle. The toe presser is pressed down hard by its cam 224 and the heel presser is drawn lengthwise over the heel end of the last and pressed down, flanging the upper outwardly over the stationary wipers. The cam shafts now stop with the upper flanged outwardly from the margin of the last bottom at the heel and toe ends and with the heel presser raised to permit the placing of a sole on the bottom of the last and over the flanged margin of the upper which is coated with cement or other binder before the sole is placed thereover. It will be understood that to permit the placing of the sole at the toe the presser 262 is lifted by hand.

When that species of stitchdown shoes having inwardly flanged and tacked heel seats is to be made, the heel wiper mechanism is operated through the first half revolution of the cam shaft to wipe the upper inwardly over an insole the toe end of which is turned up to permit the operation of the toe flanging means, the cam disk is then disconnected and the heel and toe pressers operatively positioned after an outsole has been placed over the cemented inwardly flanged margin of the upper at the heel and over the downturned insole at the toe for the second half (and sole laying) portion of the cycle.

The treadle 206 is now again operated and the toe and heel pressers are forced against the sole, "laying" the sole upon the shoe bottom and over the flanged marginal portion of the lasted upper. All this is effected without removing the last and shoe from the machine, the heel band being closed to clamp the shoe on the last until the end of a complete revolution of the cam shaft. Toward the end of the sole laying half revolution of the cam shaft, the heel band opens and the shoe is automatically unjacked. It may then be removed and the sole and flanged upper secured together by permanent fastenings.

It will be noted that the disclosed machine may be utilized, if desired, for successive lasting and sole laying operations upon shoes having inturned flanges in which the flange is suitably fastened to the insole, the outsole laid over the flanged (and secured) edge of the upper and the parts subsequently united by permanent fastenings. In this event, the toe and heel wipers would be operated from their cam shafts for the first half revolution, then backed off and disconnected from their cam shafts, the outsole then applied, and the presser plates operated during the second half revolution, to lay the sole. Preferably, in all classes of work, the shoe comes to the machine with its sides properly lasted so that, when removed from the machine, the lasting operation is completed.

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

1. An end lasting mechanism having, in combination, means for inwardly flanging an upper at one end of a shoe, means for outwardly flanging an upper at said end of a shoe, and operating mechanisms for said flanges means organized for elective use to flange the margin of an upper inwardly over the edge of the shoe bottom or outwardly from said edge.

2. An end lasting mechanism having, in combination, inwardly flanging end wipers and outwardly flanging means organized and operative for elective use for inwardly flanging the margin of an upper at one end of a shoe or for outwardly flanging the margin at said end of a shoe.

3. A heel and toe lasting machine having, in combination, inwardly flanging means for the heel and toe ends of a shoe, outwardly flanging means for said ends of a shoe, and operating mechanisms for said inward and outward flanging means respectively, organized and constructed for elective use to flange an upper inwardly or outwardly.

4. A heel and toe lasting machine having, in combination, inwardly flanging heel and toe wipers, outwardly flanging means for the heel and toe ends of a shoe, and operating mechanisms for said heel and toe wipers and for said outwardly flanging means respectively, organized and constructed for elective use to flange an upper inwardly or outwardly.

5. A heel and toe lasting machine having inwardly flanging heel and toe wipers, outwardly flanging means for the heel and toe, and operating means organized and constructed for elective use to flange an upper inwardly or outwardly at the toe and heel at the will of the operator.

6. A heel and toe lasting machine having inwardly flanging wipers for the toe and heel ends of shoes, displaceable outwardly flanging means for the toe and heel ends of shoes, and operating mechanisms for said wipers and outwardly flanging means organized and constructed for elective use to flange the upper inwardly over the margin of the toe and heel ends of shoes by the operation of said wipers or by operative placement and operation of the outwardly flanging means, to flange the upper outwardly from the margin of the toe and heel ends.

7. A heel and toe lasting machine having inwardly flanging heel and toe wipers and outwardly flanging means for the toe organized and operative for elective use for inwardly flanging an upper at the toe and heel or for outwardly flanging an upper at the toe and inwardly flanging the upper at the heel.

8. A heel and toe lasting machine having inwardly flanging wipers for the heel and toe ends of a shoe, displaceable outwardly flanging means for the toe end of a shoe, and operating mechanisms for said wipers and outwardly flanging means organized for elective use to flange an upper inwardly over the margin of a sole at the heel and toe ends of a shoe or to flange the toe end outwardly and the heel end inwardly.

9. A heel and toe lasting machine having inwardly flanging heel and toe wipers and outwardly flanging means for the heel and toe organized and constructed for elective use to flange the margin of an upper inwardly at both ends, to flange the toe end of an upper outwardly and the heel end inwardly, or to flange both ends outwardly.

10. A heel and toe lasting machine having inwardly flanging wipers for the toe and heel ends of shoes, displaceable outwardly flanging means for the toe end of a shoe, and operating mechanisms for said wipers and flanging means constructed and organized for elective use to flange the toe and heel ends of an upper inwardly or, by adjustment of the toe wipers and of said flanging means, to flange the upper outwardly at the toe end and inwardly at the heel end.

11. A heel and toe lasting machine having inwardly flanging heel and toe wipers, displaceable outwardly flanging means for the toe and heel, and operating mechanisms for said wipers and flanging means organized and constructed for elective operation of the wipers to flange the upper inwardly over the margin of the sole at the toe and heel ends of shoes, by operation of the heel wipers and of said outwardly flanging means for the toe to flange the heel end inwardly and the toe end outwardly or by operation of the toe and heel flanging means to flange both ends outwardly.

12. A heel and toe lasting machine having, in combination, toe and heel wipers, means for operating said wipers to flange the margin of an upper inwardly over the edge of a sole at the toe and heel ends of a shoe, means for adjusting and holding the toe and heel wipers in determinate relation to the edge of the shoe bottom, outwardly flanging means for the toe and heel ends of a shoe comprising presser members arranged to be displaced from or placed in operative flanging position and effective in co-operation with the adjusted wipers to flange the marginal portion of an upper outwardly, and means for operating said presser members.

13. A heel and toe lasting machine having, in combination, heel and toe inwardly flanging wipers, operating means for said wipers arranged for disconnection from or connection to the toe wipers, displaceable outwardly flanging means for the toe, and means for operating said flanging means to flange the toe end of the upper outwardly from the edge of the shoe bottom over the disconnected toe wipers while the heel wipers are operable to flange the heel end of the upper inwardly over the margin of the shoe bottom.

14. A heel and toe lasting machine having, in combination, heel and toe inwardly flanging wipers, power operated actuating means for said wipers arranged for manually effected disconnection from or connection to the toe wipers, displaceable outwardly flanging means for the toe, and means for operating said flanging means to flange the toe end of the upper outwardly from the

edge of the shoe bottom over the disconnected toe wipers in time relation to the power operation of the heel wipers to flange the heel end of the upper inwardly over the margin of the shoe bottom.

15. A heel and toe lasting machine having, in combination, heel and toe inwardly flanging wipers, operating means for said wipers arranged for manually effected disconnection from or connection to the toe wipers, manually operable means for adjusting the disconnected toe wipers, displaceable outwardly flanging means for the toe, and means for operating said flanging means, when operatively positioned, to flange the toe end of the upper outwardly from the edge of the shoe bottom over the disconnected, adjusted toe wipers.

16. A heel and toe lasting machine having, in combination, heel and toe inwardly flanging wipers, operating means for said heel and toe wipers arranged for elective disconnection from or connection to said wipers, manually operable means for effecting and maintaining adjustment of the disconnetced wipers, outwardly flanging means for the toe and heel ends of the upper arranged for elective displacement or operative positioning, and means for operating said flanging means, when operatively positioned, to flange the ends of the upper outwardly from the edge of the shoe bottom over the disconnected wipers.

17. A heel and toe lasting machine having, in combination, heel and toe inwardly flanging wipers, power operated actuating means for said heel and the toe wipers arranged for elective disconnection from or connection to said wipers, manually operable means for effecting and maintaining adjustment of the disconnected wipers, outwardly flanging means for the heel and toe ends of the upper arranged for elective displacement or operative positioning, and means for operating said flanging means, when operatively positioned, to flange the ends of the upper outwardly from the edge of the shoe bottom over the disconnected adjusted wipers.

18. A heel and toe lasting machine having, in combination, heel and toe inwardly flanging wipers, means for flanging the heel and toe ends of an upper outwardly, and operating mechanisms for said wipers and outwardly flanging means organized for independent and elective use to flange inwardly over a sole the toe and heel ends of uppers of shoes, to apply outwardly flanging pressure at the toe end or to flange inwardly the heel end, and to apply outwardly flanging pressure at both the toe and heel ends.

19. A heel and toe lasting machine having, in combination, heel and toe wipers movable to flange inwardly over the edge of a sole the marginal portion of the upper at the heel and toe ends of a shoe, means for flanging the heel and toe ends of the upper outwardly arranged for elective displacement and operative positioning, and power operated means for operating said wipers and operatively positioned outward flanging means organized and constructed for elective use to flange inwardly the toe and heel ends of uppers, to apply outwardly flanging pressure at the toe end and to flange inwardly the heel end or to apply outwardly flanging pressure at both the toe and heel ends.

20. A heel and toe lasting machine having, in combination, heel and toe wipers movable to flange inwardly over the edge of a sole the marginal portion of the upper at the heel and toe ends of a shoe, power operated actuating means for said wipers electively detachable from said wipers, manually operable means for adjusting the disconnected wipers, means for flanging outwardly from the edge of the shoe bottom the heel and toe ends of an upper arranged for elective displacement and operative positioning, and power operated means for actuating said outward flanging means to apply flange forming pressure when operatively positioned.

21. A lasting machine having, in combination, a heel lasting mechanism, a toe lasting mechanism, a last and shoe support between said mechanisms, means for effecting relative adjusting movements of said mechanisms and support laterally of a shoe supported between said mechanisms and lengthwise of the supported shoe, respectively, said lasting mechanisms each having wipers for flanging the upper at the end of the shoe inwardly over the edge of a sole and the toe lasting mechanism including also means for flanging an upper at the toe outwardly, and operating mechanisms for said wipers and outward flanging means organized and constructed for elective use to flange an upper inwardly over the edge of a sole at the heel and toe ends or to apply pressure for flanging the toe end of an upper outwardly and the heel end inwardly.

22. A lasting machine having, in combination, a heel lasting mechanism, a toe lasting mechanism, a last and shoe support between said mechanisms, means for effecting relative adjusting movements of said mechanisms laterally of a shoe supported between said mechanisms and lengthwise of the supported shoe, respectively, said lasting mechanisms each having wipers for flanging the upper at the end of a shoe inwardly over the edge of a sole and a presser member for flanging an upper at the end of a shoe outwardly, and operating mechanisms for said wipers and presser members organized and

constructed for elective use to flange an upper inwardly over a sole at the heel and toe ends or to apply outwardly flanging pressure at the heel and toe ends of shoes.

23. A lasting machine having, in combination, heel lasting mechanism comprising heel lasting wipers movable to flange the margin of an upper inwardly over an edge of the sole and a manually displaceable presser member arranged, in operative position, to flange the margin of an upper outwardly at the heel end of a shoe, toe lasting mechanism comprising toe lasting wipers movable to flange the margin of an upper inwardly over the edge of a sole and a manually displaceable presser member arranged, in operative position, to flange the margin of an upper outwardly at a toe end of the shoe, a last and shoe support intermediate of said lasting mechanisms, a power driven shaft, means operatively connecting said shaft to the heel and toe lasting wipers for actuating the wipers to flange an upper inwardly, said means being constructed and arranged for manual disconnection from or connection to the wipers, means for manually adjusting said heel and toe wipers to the heel and toe of a shoe when said power operating means are disconnected, and connections from said power shaft to said heel and toe presser members operative to cause said members to apply outwardly flanging pressure to an upper over the disconnected and adjusted wipers when said members are operatively positioned.

24. A lasting machine having, in combination, toe lasting wipers, heel lasting wipers, a last and shoe carrier intermediate of said wipers, a rest to support the forepart of the shoe, mechanism for operating said heel and toe wipers to flange an upper inwardly over the margin of a sole, means for disconnecting the toe wipers from their operating mechanism and for adjustably positioning said wipers to conform to the external contour of the toe, and a presser member constructed and arranged to be electively positioned and operated to clamp the last and shoe against said rest for the inward flanging operation of the toe wipers or to be positioned differently and operated to flange the upper outwardly over the disconnected and adjusted toe wipers.

25. A lasting machine having, in combination, toe lasting plates and heel lasting plates electively operable to flange an upper inwardly over the margin of a sole or to assist in outwardly flanging an upper, and displaceable toe and heel outward flanging means electively operable to flange an upper outwardly over the lasting plates at the toe and heel ends of a shoe.

26. A lasting machine having, in combination, a last and shoe support, inwardly flanging means for the heel and toe ends of a supported shoe and means for applying outwardly flanging pressure at said ends of a shoe, power driven means for electively operating said inward and outward flanging means, and means for manually operating said flanging means independently of the power drive.

27. A lasting machine having, in combination, a last and shoe support, means comprising heel and toe wipers for flanging the margin of the upper inwardly at the heel and toe ends of a supported shoe, electively operable means for applying outwardly flanging pressure to the margin of an upper at said ends of a shoe, power driven means for operating selectively either of said flanging means, and means for manually operating either of said flanging means independently of the power drive.

28. A lasting machine having, in combination, a last and shoe support, heel and toe lasting wipers for flanging the margin of an upper inwardly at the ends of a shoe, electively displaceable means for applying outwardly flanging pressure at said ends, power driven shafts for operating said wipers or outward flanging means, and means for manually rotating said shafts independently of the power drive.

29. In a machine of the class described, the combination of spaced toe and heel outwardly flanging mechanisms, a last and shoe support intermediate of said mechanisms, a power driven shaft, and operating connections from said shaft to each of said mechanisms effective to operate said mechanisms to apply flanging pressure to the toe and heel ends of a shoe upper.

30. In a machine of the class described, the combination of spaced toe and heel outwardly flanging mechanisms, a last and shoe support intermediate of said mechanisms, a power driven shaft, and operating connections from said shaft to said mechanisms effective simultaneously to operate said mechanisms to apply flanging pressure to the upper at the toe and heel ends of a shoe.

31. In a machine of the class described, the combination of spaced toe and heel lasting mechanisms relatively adjustable for different degrees of lateral swing between the foreparts and the heel ends of lasts, a last and shoe support intermediate of said mechanisms, a power driven shaft, and operating connections from said power shaft to each of said lasting mechanisms effective to operate said mechanisms to last the toe and heel ends of a shoe upper.

32. In a machine of the class described, the combination of a last and shoe support, spaced toe and heel lasting mechanisms at opposite sides of said support organized for relative adjustment longitudinally of a supported shoe, one of said mechanisms comprising a plurality of upper engaging mem-

bers adjustable together as a unit laterally of the shoe, a power driven shaft, and operating connections from said power shaft to each of said toe and heel lasting mechanisms effective to operate said mechanisms to last a shoe in all adjusted positions of said mechanisms.

33. In a machine of the class described, the combination of spaced toe and heel flanging mechanisms relatively adjustable about an axis substantially perpendicular to the plane of the shoe bottom, a last and shoe support intermediate of said mechanisms, power driving means, a shaft, a clutch for connecting and disconnecting said shaft and power driving means, and operating connections from said shaft to each of said toe and heel flanging mechanisms effective to operate said mechanisms to flange the toe and heel ends of the shoe upper.

34. In a machine of the class described, the combination of a last and shoe support, spaced toe and heel flanging mechanisms at opposite sides of said support mounted for relative adjustment longitudinally of a supported shoe, one of said mechanisms comprising a plurality of upper engaging members adjustable together as a unit laterally of the shoe, power driving means, a shaft, a clutch for connecting and disconnectinng said shaft and power means, and operating connections from said shaft to each of said toe and heel flanging mechanisms effective to operate said mechanisms to flange the toe and heel ends of a shoe upper in all adjusted positions of said mechanisms.

35. A machine of the class described having, in combination, a last and shoe support, toe and heel lasting mechanisms including toe and heel wipers and a flexible heel clamping band, a power driven shaft, connections from said shaft to the opposite ends of the band to close the band round the end of the shoe, and operating connections from said shaft to the toe and heel wipers for operating said wipers.

36. A machine of the class described having, in combination, a last and shoe support, toe and heel lasting mechanisms including toe and heel wipers and a heel clamping band, a power driven shaft, connections from said shaft operative to close said band to clamp the shoe, and operating connections from said shaft to the toe and heel wipers effective to impart a plurality of inward wiping movements to said wipers.

37. A machine of the class described having, in combination, spaced toe and heel lasting mechanisms including toe and heel wipers and a heel embracing band, a last and shoe support positioned intermediate of said mechanisms and movable to jack a supported last and shoe back into said heel band, a power driven shaft, connections from said shaft for closing said band to clamp the shoe, and operating connections from said power shaft to the heel and toe wipers for operating said wipers to last the shoe.

38. A machine of the class described having, in combination, spaced toe and heel lasting mechanisms including toe and heel wipers and a heel clamping band and a last and shoe support intermediate of said mechanisms relatively movable longitudinally of the shoe into co-operative lasting positions, means for effecting such relative movement of the shoe support and the lasting mechanisms, a power driven shaft, connections from said power shaft for closing said band to clamp the shoe, and operating connections from said power shaft to the toe and heel wipers for operating said wipers to last the shoe.

39. A machine of the class described having, in combination, spaced toe and heel lasting mechanisms, a last and shoe support intermediate of said mechanisms movable to jack a last and shoe back into said heel lasting mechanism, a power driven shaft, operating connections from said power shaft to said toe and heel lasting mechanisms for operating said mechanisms to last the shoe, and connections from said shaft operative to cause a reverse unjacking movement of the supported shoe at the end of the lasting operation.

40. A machine of the class described having, in combination, spaced toe and heel lasting mechanisms and an intermediate last and shoe support relatively movable longitudinally of a last and shoe to jack the shoe into operative relation to said lasting mechanisms, a power driven shaft, operating connections from said power shaft to said mechanisms for operating said mechanisms to last the shoe, and connections from said power shaft effective to cause a lengthwise unjacking movement of the last and shoe at the end of the lasting operations.

41. A machine of the class described having, in combination, a frame, a heel lasting mechanism, including heel wipers and a heel embracing band, having a fixed lasting position longitudinally of said frame, a toe lasting mechanism on said frame spaced from the heel lasting mechanism and mounted for adjustment toward and from said heel lasting mechanism, an intermediate last and shoe support movable to jack the last and shoe back into the heel band, a power driven shaft, connections from said power shaft operative to close the heel band to clamp the jacked shoe, and operating connections from said power shaft to the toe and heel wipers effective to operate said wipers to last the shoe.

42. A machine of the class described having, in combination, a frame, a heel lasting mechanism, including heel wipers and a

heel embracing band, having a fixed lasting position longitudinally of said frame, a toe lasting mechanism on said frame spaced from the heel lasting mechanism and mounted for adjustment toward and from said heel lasting mechanism for the length of shoes and lasts, an intermediate last and shoe support movable to jack the heel end of the last and shoe back into the heel band, a power driven shaft, connections from said power shaft operative to close the heel band to clamp the jacked shoe, and operating connections to said toe wipers effective to operate said wipers to last the toe in all positions of adjustment of the toe lasting mechanism toward and from the heel lasting mechanism.

43. A machine of the class described having, in combination, a frame, spaced toe and heel lasting mechanisms mounted on said frame, one of said mechanisms having a fixed lasting position longitudinally of the frame and the other of said lasting mechanisms being adjustable longitudinally of the frame relatively to the fixed mechanism, a last and shoe support intermediate of said mechanisms movable from last and shoe receiving position to jack a last and shoe into said fixed lasting mechanism, a power driven shaft, operating connections from said power shaft to said lasting mechanisms effective to operate said mechanisms to last the toe and heel ends of a shoe, and connections from said power shaft effective to unjack the last and shoe at the end of the lasting operation.

44. A machine of the class described having, in combination, spaced toe and heel lasting mechanisms arranged for relative adjustment toward and from each other for last and shoe length, an intermediate last and shoe support arranged for preliminary movement to jack a supported last and shoe lengthwise of the shoe into said heel lasting mechanism, a power driven shaft, operating connections from said power shaft to the toe and heel lasting mechanisms effective to operate said mechanisms in the different positions of relative adjustment thereof, and connections from said power shaft effective to cause a reverse unjacking movement of the last and shoe at the end of the lasting operation.

45. A machine of the class described having, in combination, a last and shoe support and spaced toe and heel lasting mechanisms at opposite sides of said support, said last and shoe support being constructed and arranged for movement from a shoe receiving position lengthwise of the shoe to jack one end of a last and shoe into co-operative relation to one of said lasting mechanisms and the other of said lasting mechanisms being arranged for adjustment into co-operative relation to the other end of the shoe, a power driven shaft, operating connections from said power shaft to said toe and heel lasting mechanisms effective to operate said mechanisms to last the shoe, and connections from said power shaft operative to cause a reverse unjacking movement of the shoe at the end of the lasting operation.

46. A machine of the class described having, in combination, a last and shoe support, spaced toe and heel lasting mechanisms at opposite sides of said support constructed and arranged for relative adjustment longitudinally and transversely of a supported last and shoe, manually operable means for moving said support from a shoe receiving position to jack one end of a supported shoe into one of said lasting mechanisms, a power driven shaft, operating connections from said shaft to said toe and heel lasting mechanisms effective to operate said mechanisms to last a shoe in all positions of relative adjustment of said mechanisms, and connections from said power shaft operative to unjack the shoe at the end of the lasting operation.

47. In a machine of the class described, the combination of a last and shoe support, heel and toe lasting mechanisms each comprising a plurality of upper engaging instrumentalities and constructed and arranged for angular adjustment of one of said mechanisms as a unit transversely of a supported shoe about an axis substantially perpendicular to the plane of the bottom of the shoe to adapt said lasting mechanisms to the swing of lasts, a power driven shaft, and operating connections from said shaft to said lasting mechanisms effective to operate said mechanisms in all positions of relative transverse adjustment thereof.

48. In a machine of the class described, the combination of heel and toe lasting mechanisms each comprising a pair of wiper plates with edges curved to embrace the end of a shoe, a shoe support intermediate of said mechanisms, said heel and toe lasting mechanisms being constructed and arranged for relative adjustment longitudinally of the supported shoe for the length of lasts and for relative adjustment transversely of the shoe for the swing of lasts, a power driven shaft, and operating connections from said shaft to said heel and toe lasting mechanisms effective to operate said mechanisms in all positions of relative longitudinal and angularly transverse adjustment thereof.

49. In a machine of the class described, the combination of a last and shoe support, heel and toe lasting mechanisms constructed and arranged for relative angular adjustment transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom and located

between the heel and toe ends of a supported shoe, a power driven shaft, and operating connections from said shaft to said lasting mechanisms effective to operate said mechanisms in all positions of relative transverse angular adjustment thereof.

50. In a machine of the class described, the combination of a shoe support, heel and toe lasting mechanisms, each comprising a plurality of upper engaging members, constructed and arranged for angular adjustment of one of said lasting mechanisms as a unit relatively to the other transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom to adapt the lasting mechanisms to the swing of the last, a power driven shaft, fixed operating connections between said power driven shaft and the relatively stationary lasting mechanism, and operating connections between said power driven shaft and said relatively adjustable lasting mechanism constructed and arranged to operate said mechanism in all positions of transverse angular adjustment thereof.

51. In a machine of the class described, the combinations of a shoe support, heel and toe lasting mechanisms each comprising a plurality of upper engaging members, one of said mechanisms being constructed and arranged for angular adjustments of its members as a unit transversely of a supported shoe and relatively to the other of said lasting mechanisms to accommodate said mechanisms to the swing of the last and for straight line movement longitudinally of the shoe into co-operative lasting relation to the end of the shoe, a power driven shaft, operating connections between said power driven shaft and said other lasting mechanism, and flexible operating connections between said power driven shaft and said relatively movable lasting mechanism constructed and arranged to operate said mechanism in all positions of longitudinal and angular transverse adjustment thereof.

52. In a machine of the class described, the combination of heel and toe lasting mechanisms constructed and arranged for relative angular adjustment transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom and located approximately at the point of intersection of the longitudinal median lines of the forepart and heel part of the shoe, a power driven shaft, and operating connections from said power driven shaft to each of said lasting mechanisms effective to operate said mechanisms to last the ends of the shoe in all positions of relative transverse adjustment of said mechanism.

53. In a machine of the class described, the combination of heel and toe lasting mechanisms, a shoe support intermediate of said mechanisms constructed and arranged for movement to jack the shoe up and back into the heel lasting mechanism, said lasting mechanism being constructed and arranged for relative angular adjustment transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom and located approximately at the point of intersection of the longitudinal median lines of the forepart and heel part of the shoe to adjust said mechanisms to the swing of the last and said toe lasting mechanism being adjustable longitudinally of the shoe for length of last, a power driven shaft, and operating connections from said power driven shaft to said heel and toe lasting mechanisms effective to operate said mechanisms in all positions of relative longitudinal and angularly transverse adjustments thereof.

54. In a machine of the class described, the combination of heel and toe lasting mechanisms, a last and a shoe carrier intermediate of said mechanisms movable to jack the shoe into said heel lasting mechanism, means for locking said carrier in shoe jacked position, means for effecting relative angular adjustment of said lasting mechanisms transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom and located between the heel and toe ends of the shoe, a power driven shaft, and operating connections from said power driven shaft to each of said lasting mechanisms effective to operate said mechanisms in all positions of relative angularly transverse adjustment thereof.

55. In a machine of the class described, the combination of the heel and toe lasting mechanisms, a last and shoe carrier intermediate of said mechanisms movable to jack the shoe into said heel lasting mechanism, means for locking said carrier in shoe jacked position, means for effecting relative angular adjustment of said lasting mechanisms transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom and located between the heel and toe ends of the shoe, a power driven shaft, operating connections from said power driven shaft to each of said lasting mechanisms effective to operate said mechanisms in all positions of relative angularly transverse adjustment thereof, and means operated through said power driven shaft for unjacking the shoe.

56. In a machine of the class described, the combination of a heel lasting mechanism including heel embracing wipers, a toe lasting mechanism including toe embracing wipers, a last and shoe carrier intermediate of said lasting mechanisms, means for effecting relative angular adjustment of said lasting mechanisms transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bot-

tom to accommodate said lasting mechanisms to the swing of the last, a power driven shaft, and operating connections from said power driven shaft to the heel and toe wipers effective to operate said wipers in all relative angularly transverse positions of adjustment of said mechanisms.

57. In a machine of the class described, the combination of a heel lasting mechanism including end clamping means and heel lasting wipers, a toe lasting mechanism including toe lasting wipers, a last and shoe carrier supported intermediate of said lasting mechanisms, means for moving said carrier to jack the heel end of the shoe back into said clamping means, means to lock the carrier in shoe jacked position, means for effecting relative angular adjustment of said lasting mechanisms transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom to accommodate said mechanisms to the swing of the last, a power driven shaft, and operating connections from said shaft to the heel and toe wipers effective to operate said wipers in all positions of relative angular adjustment of said lasting mechanisms.

58. In a machine of the class described, the combination of heel lasting mechanism including heel embracing wipers, toe lasting mechanism including toe embracing wipers, a last and shoe carrier intermediate of said lasting mechanisms, means for effecting relative adjustment of said lasting mechanisms longitudinally of a supported shoe for last length and angularly transversely of said shoe about an axis substantially perpendicular to the plane of the shoe bottom to accommodate said mechanisms to the swing of the last, a power driven shaft, and operating connections from said power driven shaft to said heel and toe wipers effective to operate said wipers in all of said positions of relative adjustment of the heel and toe lasting mechanisms.

59. In a machine of the class described, the combination of heel lasting mechanism including heel embracing wipers, toe lasting mechanism including toe embracing wipers, a last and shoe carrier intermediate of said lasting mechanisms, means for effecting relative adjustment of said lasting mechanisms longitudinally of a supported shoe for last length and angularly transversely of said shoe about an axis substantially perpendicular to the plane of the shoe bottom to accommodate said mechanisms to the swing of the last, means for effecting tilting adjustment of the toe wipers about axes to position said wipers in the longitudinal and transverse planes of the toe end of the shoe bottom, a power driven shaft, and operating connections from said power driven shaft to said heel and toe wipers effective to operate said wipers in all of said positions of relative adjustment of the heel and toe lasting mechanisms.

60. In a machine of the class described, heel and toe lasting mechanisms, including heel and toe embracing wipers, constructed and arranged for relative angular adjustment transversely of a shoe about an axis substantially perpendicular to the plane of the shoe bottom and alined approximately with the point of intersection of the longitudinal median lines of the forepart and heel part of the shoe for accommodation to the swing of the last, a last and shoe carrier movable to jack the shoe into the heel lasting mechanism, means for adjusting the toe lasting mechanism longitudinally of the shoe for accommodation to last length, means for effecting tilting adjustment of said toe wipers about axes to accommodate said wipers to the longitudinal and transverse inclinations of the toe end of the shoe bottom, a power driven shaft, and operating connections from said power driven shaft to said lasting mechanisms effective to operate the heel and toe wipers in all positions of relative adjustment of said lasting mechanisms.

61. In a machine of the class described, the combination of heel lasting mechanism including an end clamping band and heel wipers, a toe lasting mechanism including toe wipers and a toe rest, a last and shoe carrier intermediate of said lasting mechanisms, means for moving said carrier to jack the heel end of the shoe back into said clamping band, means for locking the carrier in shoe jacked position, means for effecting relative angular adjustment of said lasting mechanisms transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom to accommodate said mechanisms to the swing of the last, means for adjusting the toe lasting mechanism including the toe wipers and toe rest longitudinally of the shoe for accommodation to last length, means for adjusting the wipers about axes to accommodate said wipers to the longitudinal and transverse inclinations of the toe end of the shoe bottom, a member arranged to engage the shoe bottom to clamp the shoe toe on said toe rest, a power driven shaft, and operating connections from said power driven shaft to said heel wipers and clamping band and to said toe wipers effective to operate said heel band and the heel and toe wipers in all positions of relative adjustment of said lasting mechanisms.

62. In a machine of the class described, the combination of a heel lasting mechanism including heel wipers, a toe lasting mechanism including toe wipers, a last and shoe carrier positioned between said lasting

mechanisms, means for effecting relative adjustment of said lasting mechanisms transversely of a supported shoe to adapt said mechanisms to the swings of lasts, means for effecting relative movement of said lasting mechanisms substantially perpendicularly to the plane of the shoe bottom relatively to locate their wipers in the plane of the shoe bottom and for relatively adjusting said mechanisms lengthwise of the shoe to adapt them to the length of lasts, a power driven shaft, and operating connections from said shaft to the heel and toe lasting wipers effective to operate said wipers in all positions of adjustment of said lasting mechanisms.

63. In a machine of the class described, the combination of a heel lasting mechanism, a toe lasting mechanism, a last and shoe carrier intermediate of said mechanisms, means for moving said carrier to jack a supported shoe back into the heel lasting mechanism, means for locking said carrier in shoe jacked position, means for effecting relative angular adjustment of said mechanisms transversely of a supported shoe about an axis substantially perpendicular to the plane of the bottom of a supported shoe to accommodate said mechanisms to the swing of lasts, means for effecting adjustment of the toe lasting mechanism longitudinally of a supported shoe for length of lasts, means for effecting tilting adjustments of the toe lasting mechanism about axes extending transversely and longitudinally respectively of a supported shoe to accommodate said toe lasting mechanism to the transverse and longitudinal inclinations of the toe end of the shoe bottom, a power driven shaft, operating connections from said shaft to said lasting mechanisms effective to operate said mechanisms in all positions of relative adjustment thereof, and connections from said power driven shaft operative in time relation to the power operation of the lasting mechanisms to release said carrier and unjack the shoe.

64. In a machine of the class described, the combination of a frame, a last and shoe carrier mounted in said frame, heel and toe lasting mechanisms mounted on said frame to receive a supported shoe between them and constructed and arranged for relative angular adjustment transversely of the shoe about a pivot extending substantially perpendicularly to the plane of the shoe bottom and located between the ends of the shoe to accommodate said mechanisms to the swing of lasts, means for effecting relative adjusting movement of said mechanisms longitudinally of the shoe for length of lasts, a power driven shaft, and operating connections from said shaft to each of said lasting mechanisms effective to operate said mechanisms in all of said positions of relative adjustment thereof.

65. In a machine of the class described, the combination of a frame, a last and shoe carrier, heel and toe lasting mechanisms mounted on said frame to receive a supported shoe between them and constructed and arranged for relative angular adjustment on said frame transversely of the shoe about a pivot extending substantially perpendicular to the plane of the shoe bottom and located between the ends of the shoe to accommodate said mechanisms to the swing of lasts, means for moving said carrier to jack the shoe back into the heel lasting mechanism, means for locking the carrier in shoe jacked position, a toe rest supported by the toe lasting mechanism, means for effecting adjustment of the toe lasting mechanism and toe rest longitudinally of the shoe for length of lasts, a power driven shaft, operating connections from said shaft to each of said lasting mechanisms effective to operate said mechanisms in all of said positions of relative angular and longitudinal adjustment thereof, and means operated through said power driven shaft for releasing the last carrier and unjacking the shoe at the end of the lasting operation.

66. In a machine of the class described, the combination of toe lasting mechanism including a toe rest and toe wipers, heel lasting mechanism including an end clamping band and heel wipers, a last and shoe carrier intermediate of said lasting mechanisms arranged to be moved to jack the heel end of the shoe back into the clamping band and up to the plane of the heel wipers, means for locking the carrier in shoe jacked position, means for effecting relative angular adjustment of said lasting mechanisms transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom to accommodate said mechanisms to the swing of lasts, means for adjusting the toe lasting mechanism longitudinally of the shoe to accommodate said lasting mechanisms to the length of lasts, means for effecting tilting adjustment of the toe wipers about axes extending transversely and longitudinally of the shoe to accommodate the toe wipers to the transverse and longitudinal inclinations of the toe end of the shoe bottom, a power driven shaft, operating connections from said shaft to the heel band and heel wipers and to the toe wipers effective to close said band and to operate said wipers in all said positions of relative adjustment of said lasting mechanisms, and means operated by said shaft for automatically releasing the carrier and unjacking the shoe at the end of the lasting operation.

67. In a machine of the class described,

the combination of a frame, a power driven shaft mounted therein, a heel lasting mechanism having a fixed lasting position longitudinally of said frame and including heel wipers, a toe lasting mechanism including toe wipers mounted on said frame, a last and shoe carrier intermediate of said mechanisms, means for effecting relative angular adjustment of said lasting mechanisms transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom to accommodate said mechanisms to the swing of lasts, manually operable means for moving the toe lasting mechanism substantially perpendicularly to the plane of the shoe bottom to position the toe wipers substantially in the plane of the toe end of the shoe bottom, manually operable means for adjusting the toe lasting mechanism longitudinally of the shoe to accommodate the lasting mechanisms to the length of lasts, and operating connections from said power driven shaft to said heel and toe wipers effective to operate said wipers in all of said positions of relative adjustment of the lasting mechanisms.

68. In a machine of the class described, the combination of a frame, a power driven shaft mounted therein, opposed heel and toe lasting mechanisms mounted on said frame, one of said mechanisms having a fixed lasting position longitudinally of said frame and the other of said mechanisms being constructed and arranged for angular adjustment relatively to the fixed mechanism transversely of a shoe supported between said mechanisms, a last and shoe carrier intermediate of said mechanisms, operating connections between said power driven shaft and said fixed lasting mechanism, and operating connections, including a flexible shaft, between said power driven shaft and the adjustable lasting mechanism effective to operate said mechanism in all positions of angular adjustment thereof.

69. In a machine of the class described, the combination of a frame, a power driven shaft mounted therein, opposed heel and toe lasting mechanisms mounted on said frame, a last and shoe carrier intermediate of said mechanisms, one of said mechanisms having a fixed lasting position longitudinally of said frame and the other of said mechanisms being constructed and arranged for movement substantially perpendicularly to the plane of the bottom of a shoe supported between said mechanisms into cooperative relation to the shoe bottom and for movement lengthwise of the shoe to adjust said mechanism to the length of the last, and operating connections from said power driven shaft to both said lasting mechanisms including connections to said adjustable lasting mechanism effective to operate said mechanism in all positions of adjustment thereof.

70. In a machine of the class described, the combination of a frame, a power driven shaft mounted therein, opposed heel and toe lasting mechanisms mounted on said frame for relative angular adjustment transversely of a shoe supported between said mechanisms about an axis substantially perpendicular to the plane of the shoe bottom, a last and shoe carrier intermediate of said lasting mechanisms, one of said mechanisms having a fixed lasting position longitudinally of the frame and the other of said lasting mechanisms being constructed and arranged for movement substantially perpendicularly to the plane of the bottom of the supported shoe into cooperative relation to the shoe bottom and for movement lengthwise of the shoe to adjust said mechanisms to the length of lasts, and operating connections from said power driven shaft to said lasting mechanisms effective to operate said mechanisms in all of said positions of relative adjustment.

71. In a machine of the class described, the combination of a frame, a power driven shaft mounted therein, opposed heel and toe lasting mechanisms mounted on said frame, a last and shoe carrier intermediate of said mechanisms, the heel lasting mechanism having a fixed lasting position longitudinally of said frame, means for moving the toe lasting mechanism substantially perpendicularly to the plane of the bottom of a supported shoe into co-operative relation to the toe end of the shoe bottom, means for moving said toe lasting mechanism lengthwise of the shoe to adjust said mechanism to the length of lasts, and operating connections from said power driven shaft to said heel and toe lasting mechanisms effective to operate said mechanisms in all of said positions of relative adjustment.

72. In a machine of the class described, the combination of heel and toe lasting mechanisms, a last and shoe carrier intermediate of said mechanisms, said heel and toe lasting mechanisms being constructed and arranged for relative adjustment longitudinally of the supported shoe for last length and for relative angular adjustment transversely of the shoe about an axis substantially perpendicular to the plane of the shoe bottom for the swing of lasts, a power driven shaft, and operating connections from said shaft to said heel and toe lasting mechanisms effective simultaneously to operate said lasting mechanisms and operable in all positions of relative longitudinal and angularly transverse adjustment of said mechanisms.

73. In a machine of the class described, the combination of a last and shoe carrier,

opposed heel and toe lasting mechanisms between which the shoe is supported, said lasting mechanisms being constructed and arranged for relative angular adjustment transversely of the shoe about an axis substantially perpendicular to the plane of the shoe bottom to adapt the lasting mechanisms to the swing of lasts, a power driven shaft, manually controlled means for connecting and disconnecting said shaft with and from the source of power, operating connections from said shaft to each of said lasting mechanisms effective to operate said mechanisms in all positions of relative angular adjustment thereof, and manually operable means for operating said mechanisms independently of the power drive.

74. In a machine of the class decribed, the combination of a last and shoe carrier, opposed heel and toe lasting mechanisms between which the shoe is supported, said lasting mechanisms being constructed and arranged for relative angular adjustment transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom for the swing of lasts and for relative adjustment longitudinally of the shoe for length of lasts, a power shaft operatively connected to said lasting mechanisms, the connections being operative in all said relative adjusted positions of the lasting mechanisms and including a member arranged for manual operation to render the power shaft inoperative by power, and means manually operable to operate said lasting mechanisms when said power shaft is thus rendered inoperative.

75. In a machine of the class described, the combination of heel embracing wipers, toe embracing wipers, a last and shoe carrier intermediate of said wipers, means for effecting relative angular adjustment of said wipers transversely of a supported shoe about an axis substantially perpendicular to the plane of the shoe bottom to adapt the wipers to the swing of lasts, means for moving the toe wipers substantially perpendicularly to the plane of the shoe bottom to place them in co-operative relation to said bottom and for moving them lengthwise of the shoe to adjust them to the length of lasts, a power driven shaft having a clutch manually movable to disconnect the shaft from the power drive, operating connections between said shaft and the heel and toe wipers effective to operate said wipers in all of said positions of relative adjustment thereof, and manually operable means for operating said wipers when said power driven shaft is disconnected.

76. In a machine of the class described, the combination of a last and shoe carrier, opposed heel and toe lasting mechanisms between which the shoe is supported, said mechanisms each comprising a plurality of upper engaging members, said lasting mechanisms being constructed and arranged for relative adjustment of the different mechanisms as units transversely of a supported shoe for the swing of lasts and longitudinally of the shoe for length of lasts, a power driven shaft, and operating connections from said shaft to each of said lasting mechanisms effective simultaneously to operate said mechanisms.

77. In a machine of the class described, a combination of a last and shoe support, heel and toe flanging mechanisms at opposite sides of said support constructed and arranged for relative angular adjustment about an axis substantially perpendicular to the plane of the bottom of a supported shoe for swing of last and for relative straight-line adjustment longitudinally of a supported shoe for length of last, a power driven shaft, operating connections from said shaft to each of the heel and toe mechanisms effective to operate said mechanisms in said angular and longitudinal positions of relative adjustment, and means for manually operating said operating connections independently of the power drive.

78. In a machine of the class described, the combination of a frame, a clutch controlled power driven shaft mounted in said frame, a heel lasting mechanism, including heel wipers and an end clamping band, having a fixed lasting position longitudinally of said frame, a toe lasting mechanism including toe wipers and a toe rest mounted on said frame, said lasting mechanisms being arranged for relative angular adjusting movement transversely of a shoe supported between said mechanisms and about an axis substantially perpendicular to the plane of the shoe bottom, a last and shoe carrier mounted between said mechanisms for movement to jack the shoe back into the heel band, means for locking the carrier in shoe jacked position, means for adjusting the toe wipers and toe rest longitudinally of the shoe to accommodate the lasting mechanisms to the length of lasts, means for moving the toe wipers substantially perpendicularly to the plane of the shoe bottom into co-operative relation to said bottom, a presser for engaging the sole of the shoe opposite to the toe rest, operating connections from said power driven shaft to each of said heel and toe wipers effective to operate said wipers in all positions of relative adjustment thereof, and manually operable means for moving the wipers through said operating connections when said power driven shaft is disconnected from the source of power by said clutch.

79. In a machine of the class described, the combination of spaced heel and toe flang-

ing mechanisms constructed and arranged for relative adjustment transversely of a shoe supported between said mechanisms and for relative adjustment lengthwise of the shoe, a last and shoe carrier intermediate of said mechanisms, and power driven operating means for said mechanisms effective to operate said mechanisms in all relatively adjusted positions thereof and organized to impart a plurality of repeated movements in the same direction to said mechanisms.

80. In a machine of the class described, the combination of spaced heel and toe flanging mechanisms constructed and arranged for relative adjustment transversely of a shoe supported between said mechanisms and for relative adjustment lengthwise of the shoe, a last and shoe carrier intermediate of said mechanisms, and power driven operating means for said mechanisms effective to operate said mechanisms in all adjusted positions thereof and organized to impart a single operative movement to said mechanisms, to come to a halt, and subsequently to impart a second operative movement in the same direction to said mechanisms.

81. In a machine of the class described, the combination of a frame, a clutch controlled power driven shaft mounted therein, a heel lasting mechanism having a fixed lasting position on the frame, a spaced toe lasting mechanism mounted on said frame for angular swinging adjustment transversely of a shoe supported and extending longitudinally between said mechanisms, a last and shoe carrier intermediate of said mechanisms, means for adjusting the toe lasting mechanism longitudinally of the shoe and relatively to the heel lasting mechanism, operating connections from said power driven shaft to the heel lasting mechanism, and operating connections, including a flexible element, between said shaft and the toe lasting mechanism effective to operate said mechanism in all positions of transverse and longitudinal adjustment thereof.

82. In a machine of the class described, the combination of a frame, a clutch controlled power driven shaft mounted therein, a heel lasting mechanism having a fixed lasting position on the frame, a spaced toe lasting mechanism mounted on said frame for angular swinging adjustment transversely of a shoe supported and extending longitudinally between said mechanisms, a last and shoe carrier intermediate of said mechanisms, means for adjusting the toe lasting mechanism longitudinally of the shoe and relatively to the heel lasting mechanism, rigid operating connections from said power driven shaft to the heel lasting mechanism, operating connections including a flexible element between said shaft and the toe lasting mechanism effective to operate said mechanism in all positions of transverse and longitudinal adjustment thereof, and manually operable means for operating said lasting mechanisms independently of the power drive.

83. In a machine of the class described, the combination of a frame, a clutch controlled power driven shaft mounted therein, a heel lasting mechanism, including heel wipers and an end embracing band, having a fixed lasting position on said frame, a spaced toe lasting mechanism including toe wipers and a toe rest mounted on said frame for angular swinging adjustment transversely of a shoe supported between the lasting mechanisms and for bodily adjustment lengthwise of the shoe, a last and shoe carrier mounted between said lasting mechanisms, a fixedly positioned operating shaft connecting said power shaft and said heel lasting mechanism, cams on said fixed shaft in operative connection with the heel wipers and band, an operating shaft for the toe lasting mechanism having flexible driving connection with the power shaft, and a cam on said last named shaft in operative connection with the toe wipers.

84. In a machine of the class described, the combination of a frame, a clutch controlled power driven shaft mounted therein, a heel lasting mechanism, including heel wipers and an end embracing band, having a fixed lasting position on said frame, a spaced toe lasting mechanism including toe wipers and a toe rest mounted on said frame for angular swinging adjustment transversely of a shoe supported between the lasting mechanisms and for bodily adjustment lengthwise of the shoe, a last and shoe carrier mounted between said lasting mechanisms, a fixedly positioned operating shaft connecting said power shaft and said heel lasting mechanism, cams on said fixed shaft in operative connection with the heel wipers and band, an operating shaft for the toe lasting mechanism having flexible driving connection with the power shaft, a cam on said last named shaft in operative connection with the toe wipers, and manually operable means for rotating said operating shafts independently of the power drive.

85. A machine of the class described having, in combination, a last and shoe support, a device constructed for use to form a flange on the margin of a shoe upper and also to lay a sole on the flanged upper, said device and the last and shoe support being relatively movable to receive the sole over the bottom of the last after the upper flanging operation, and means for operating said device to flange the upper and to lay the sole.

86. A machine of the class described hav-

ing, in combination, a shoe support, toe and heel flanging members relatively movable to form outturned flanges on the margin of a shoe upper at the toe and heel ends and constructed also to lay a sole on the flanged upper, said members and the shoe support being relatively movable to receive the sole after the upper flanging operation, and means for operating said members to apply flange forming pressure and subsequently to apply sole laying pressure.

87. A machine of the class described having, in combination, a shoe support, a device constructed to form a flange on the margin of a shoe upper and also to lay a sole on the flanged upper, power driven means for operating said device to apply flange forming pressure and subsequently to apply sole laying pressure, and controlling means automatically operative to bring the machine to a stop after the flange forming operation and again after the sole laying operation.

88. A machine of the class described having, in combination, a last and shoe support, toe and heel flanging members, power operated mechanism for operating said members first to flange the upper of a supported shoe and then to release the upper, and controlling means to cause said mechanism to come to rest with the upper released to permit the application of a sole and upon a subsequent starting of the machine to operate said members to lay a sole on the flanged upper without removing the shoe and last from said support.

89. A machine of the class described having, in combination, a last and shoe support, and co-operating toe and heel lasting mechanisms electively operable to flange the margin of the upper at the toe and heel inwardly over the edge of the last bottom or outwardly from said edge, said lasting mechanisms being also adapted for use to lay a sole on the flanged upper without removing the shoe and last from said support and movable to admit the sole over the flanged upper after the flange forming operation.

90. A machine of the class described having, in combination, a last and shoe support, toe and heel flanging instrumentalities movable to flange the margin of an upper at the toe and heel inwardly over the edge of the last bottom, and other instrumentalities mounted for movement to flange an upper outwardly from said edge and for further and subsequent operation to lay a sole on the flanged upper without removing the shoe and last from said support.

91. A machine of the class described having, in combination, a last and shoe support, toe and heel lasting mechanisms arranged to operate on a shoe on said support and each including means for flanging an upper inwardly over the edge of the last bottom and means for flanging an upper outwardly from said edge, operating mechanisms for said inward and outward flanging means arranged for alternative use to flange an upper inwardly or outwardly, said outward flanging means being arranged for operation subsequently to a flanging operation to lay a sole on the flanged upper without removing the shoe and last from said support.

92. A machine of the class described having, in combination, a last and shoe support, toe and heel lasting mechanisms arranged to operate on a shoe on said support and including lasting wipers for flanging an upper inwardly over the edge of the last bottom and presser members for flanging an upper outwardly from said edge, power driven operating mechanisms for said wipers and presser members arranged for alternative use to flange an upper inwardly or outwardly, the operating mechanism for said presser members being constructed to permit the placing of a sole on a flanged upper subsequently to a flanging operation without removing the shoe and last from said support and for subsequent operation to lay the positioned sole on the flanged upper.

93. A machine of the class described having, in combination, a last and shoe support, toe and heel lasting mechanisms arranged to flange the margin of the upper outwardly from the edge of the last bottom at the toe and heel ends of a shoe on said support, and power operated driving and controlling means for said lasting mechanisms constructed and arranged to cause said lasting mechanisms to flange the upper outwardly, to release the pressure on the upper and to come to a halt to permit the positioning of a sole over the flanged upper, and subsequently to cause said lasting mechanisms to lay the sole, in the sequence named.

94. A machine of the class described having, in combination, a last and shoe support, and mechanism constructed and arranged to flange the margin of the upper inwardly over the edge of the last bottom at the toe and heel ends of a last and shoe mounted on said support and subsequently to lay a sole on the flanged upper, said mechanism being so constructed as to permit the placing of the sole on the last bottom subsequently to the flanging operation without removing the shoe and last from said support.

95. A machine of the class described having, in combination, a last and shoe support, and mechanism organized and operative to flange the margin of the upper outwardly from the edge of the last bottom at the toe end of a last and shoe mounted on said support and inwardly over said edge at the heel end of said shoe and operative subsequently

to lay a sole on the flanged upper without removing the shoe and last from said support.

96. A machine of the class described having, in combination, a last and shoe support, power operated mechanism constructed and arranged to flange the margin of the upper inwardly over the edge of the last bottom at the toe and heel ends of a last and shoe mounted on said support, and controlling means to cause said mechanism to come to a halt to permit the placing of a sole over the flanged upper and subsequently to lay said sole, all without removing the last and shoe from said support and in the sequence named.

97. A machine of the class described having, in combination, a last and shoe support, power operated mechanism constructed and arranged to flange the margin of the upper outwardly from the edge of the last bottom at the toe end of a last and shoe mounted on said support and inwardly over said edge at the heel end of said shoe and last, and controlling means to cause said mechanism to come to a halt to permit the placing of a sole over the flanged upper and subsequently to lay said sole, all without removing the last and shoe from said support and in the sequence named.

98. A machine of the class described having, in combination, a last and shoe support, toe and heel lasting wipers, operating and controlling mechanisms for said wipers electively operable to flange the margin of the upper at the toe and heel ends of a last and shoe on said support inwardly over the edge of the last or to hold said wipers positioned at and in substantial conformity to the contour of the edge of the last bottom at the ends of the last, presser members at the toe and heel ends of the supported last and shoe arranged to be manually displaced from and moved to positions to operate on the margin of the upper, and operating mechanisms for said presser members to operate said members to flange the upper outwardly from the edge of the last bottom over said wipers, said mechanisms being also arranged for operation subsequently to a flanging operation to lay a sole on the flanged upper of a shoe mounted on said support.

99. A machine of the class described having a last and shoe support, co-operating toe and heel flanging and sole laying mechanisms organized and constructed to flange the toe and heel ends of the upper of a supported shoe and to lay a sole over the flanged upper without removing the last and shoe from said support, a power shaft, and connections between the power shaft and said mechanisms for operating them to flange an upper and to lay a sole.

100. A machine of the class described having a last and shoe support, co-operating power operated toe and heel flanging and sole laying mechanisms organized and constructed for operation to flange the toe and heel ends of a supported shoe upper inwardly over the edge of an insole, and controlling means to cause said mechanisms to come to a pause to permit the placing of an outsole over the flanged upper and insole and subsequently to lay said outsole, all without removing the last and shoe from said support.

101. A machine of the class described having a last and shoe support and co-operating toe and heel lasting wipers and sole laying mechanism organized and constructed for operation of the wipers to flange the marginal edges of the toe and heel ends of the upper of a supported shoe inwardly over the edge of the insole and for subsequent operation of said mechanism to lay an outsole over the inwardly flanged upper and the insole, all without removing the last and shoe from said support.

102. A machine of the class described having a last and shoe support and co-operating toe and heel lasting wipers and sole laying instrumentalities organized and constructed for operation in sequence to cause the wipers first to flange the upper inwardly over the insole at the toe and heel ends of a supported shoe, then to come to a pause to permit the placing of an outsole over the inwardly flanged upper and insole, and finally to cause said sole laying instrumentalities to lay the outsole over the flanged upper and the insole, all without removing the last and shoe from said support.

103. A machine of the class described having a last and shoe support and co-operating power operated toe and heel wipers and sole laying members organized and constructed for operation first to cause said wipers to flange the upper inwardly over the insole at the toe and heel ends of a supported shoe, then automatically to come to rest to permit the placing of an outsole over the flanged upper and insole, and thereafter to cause said sole laying members to lay the sole over the flanged upper and the insole, all without removing the last and shoe from said support.

104. A machine of the class described having, in combination, heel lasting mechanism, toe lasting mechanism, a last carrier intermediate of said mechanisms, a toe rest, a sole rest positioned to engage the sole of a supported shoe opposite to said toe rest, mechanism for operating said lasting mechanisms, and means operated in timed relation to said lasting mechanisms for operating the sole rest to clamp the last and shoe against said toe rest.

105. A machine of the class described hav-

ing, in combination, heel lasting mechanism, toe lasting mechanism, a last carrier intermediate of said mechanisms, a toe rest, a sole rest positioned to engage the sole of a supported shoe opposite to said toe rest, a power driven shaft, and operating connections from said shaft to said lasting mechanisms and sole rest effective to operate said sole rest to clamp the last and shoe on said toe rest prior to the operation of said lasting mechanisms.

106. In a machine of the class described, the combination of a last and shoe support, end lasting wipers, power driven operating connections for said wipers including a connecting element displaceable to disconnect the wipers, and manually operated means for adjusting and holding in adjusted position the disconnected wipers.

107. In a machine of the class described, the combination of toe lasting wipers, heel lasting wipers, a last and shoe support positioned between said wipers, power driven operating connections for each of said toe and heel wipers including connecting elements displaceable to disconnect said toe and heel wipers, and manually operable means for independently adjusting and holding in adjusted position the disconnected toe and heel wipers.

108. In a machine of the class described, the combination of a last and shoe support, wipers for flanging the upper of a supported shoe inwardly over the edge of the last bottom at one end of the shoe, a power driven shaft, operating connections from said shaft to said wipers including a connecting element displaceable to disconnect said wipers, and manually operable means for adjusting and holding the disconnected wipers positioned adjacent to and in substantial conformity to the contour of the edge of the last bottom at said end of the shoe.

109. In a machine of the class described, the combination of a last and shoe support, wipers for flanging the upper of a supported shoe inwardly over the edge of the last bottom at one end of the shoe, power driven operating connections for said wipers including a connecting element displaceable to disconnect the wipers, manually operable means for adjusting and holding the disconnected wipers positioned in substantial conformity to the contour of the edge of the last bottom at one end of the shoe, and means operable to flange the upper at said end of the shoe outwardly from the edge of the last bottom over the disconnected and positioned wipers.

110. Toe lasting mechanism comprising, in combination, a support for the toe end of a shoe and last, toe lasting wipers operative to flange the margin of the upper of a supported shoe inwardly over the edge of the last bottom, power driven operating connections for said wipers including a connecting element manually displaceable to disconnect said toe wipers, manually operable means for adjusting and holding the disconnected wipers positioned adjacent to and in substantial conformity to the contour of the edge of the last bottom at the toe end of the shoe, and means constructed for manually effected displacement from and placement in operative relation to the toe end of the last bottom and arranged, in operative position, for actuation to flange the margin of the upper outwardly from said last edge over the disconnected and positioned toe wipers.

111. Heel lasting mechanism comprising, in combination, a last and shoe support, heel seat lasting wipers operative to flange the margin of the upper inwardly over the heel seat face of the last, power driven operating connections for said wipers including a connecting element manually displaceable to disconnect said heel wipers, manually operable means for adjusting and holding the disconnected wipers positioned adjacent to and in substantial conformity to the contour of the edge of the heel seat of the last, and means constructed for manually effected displacement from and placement in operative relation to the heel seat face of the last and arranged, in operative position, for actuation to flange the margin of the upper outwardly from the edge of the heel seat over said disconnected and positioned heel wipers.

112. In a machine of the class described, the combination with a shoe support, of toe lasting mechanism mounted for swinging movement laterally of a shoe on said support to conform to the swing of the last, and a toe rest mounted for swinging movement with said lasting mechanism to maintain it in substantially the same angular relation to said mechanism in different positions of adjustment of the mechanism.

113. In a machine of the class described, the combination with heel lasting mechanism, of a shoe support movable to carry a shoe rearwardly and upwardly into operative relation to said mechanism, separate treadles for imparting respectively said rearward and upward movements to the shoe support, and retaining devices for holding said support against forward and downward movements.

114. In a machine of the class described, the combination with heel lasting mechanism, of a shoe support movable to carry a shoe rearwardly and upwardly into operative relation to said mechanism, and separate treadles for imparting to said support respectively its rearward and upward movements, said treadles being arranged for control simultaneously by the same foot of the

operator to enable him to effect a relative variation of said different movements.

115. In a machine of the class described, the combination with heel lasting mechanism, of a shoe support movable to carry a shoe rearwardly and upwardly into operative relation to said mechanism, treadle operated means for imparting the upward movement to said support, a toggle connected to said support to swing it rearwardly, and a treadle for operating said toggle.

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

EDWARD L. BROCK,
Administrator of the Estate of Matthus Brock, Deceased.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,470,595, granted October 16, 1923, upon the application of Edward Brock, of Beverly, Massachusetts, administrator of Matthias Brock, deceased, late of Boston, Massachusetts, for an improvement in "Shoe-Bottoming Machines," errors appear in the printed specification requiring correction as follows: Page 2, line 108, for the word "journaled" read *journaling;* page 8, lines 122 and 123, strike out the words "by reverse movement" and insert the same to follow the word "then" in line 125; page 10, line 118, claim 1, for the word "flanges" read *flanging;* page 12, line 59, claim 18, for the word "or" read *and*, and line 60, same claim, for the word "and" read *or;* page 16, line 61, claim 52, and line 68, claim 53, for the word "mechanism" read *mechanisms;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of March, A. D., 1924.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.