M. BROCK.

UPPER FORMING MACHINE.

APPLICATION FILED FEB. 2, 1916.

1,197,439.

Patented Sept. 5, 1916.

3 SHEETS—SHEET 1.

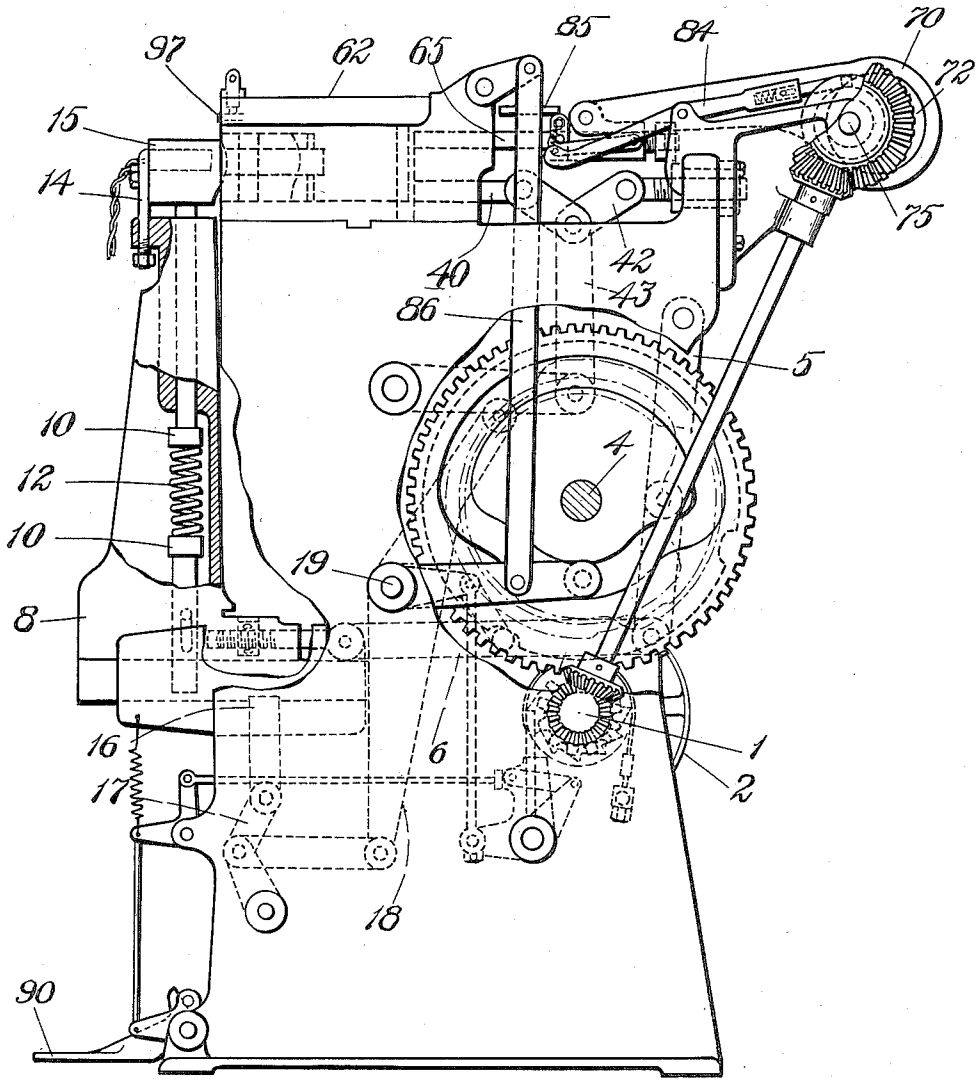


Fig. 1.

INVENTOR.

Matthias Brock

By his Attorney

Nelson W. Durand

M. BROCK.

UPPER FORMING MACHINE.

APPLICATION FILED FEB. 2, 1916.

1,197,439.

Patented Sept. 5, 1916.

3 SHEETS—SHEET 2.

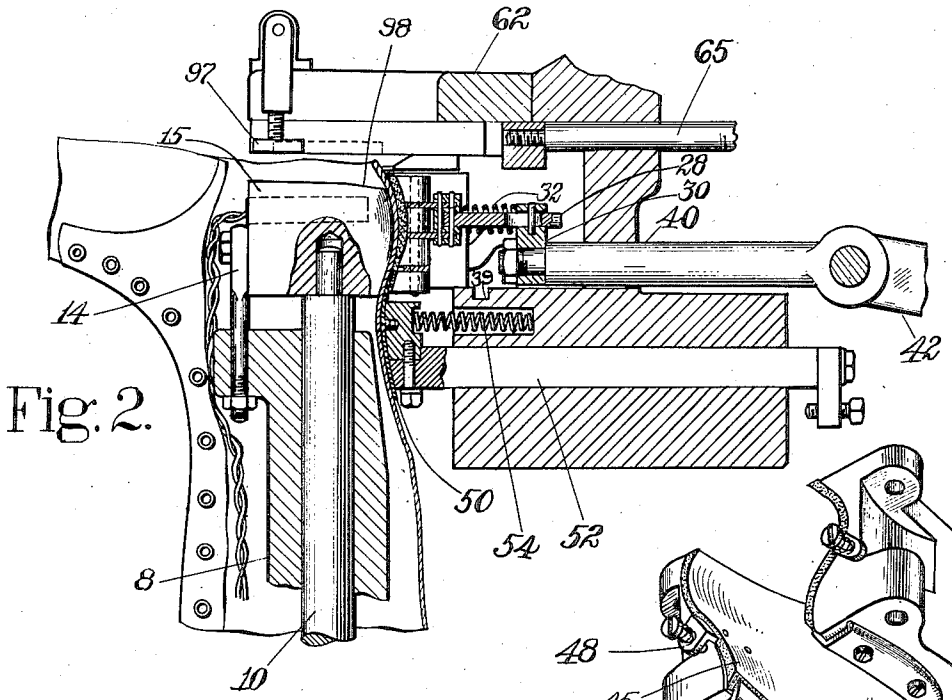


Fig. 2.

Fig. 4.

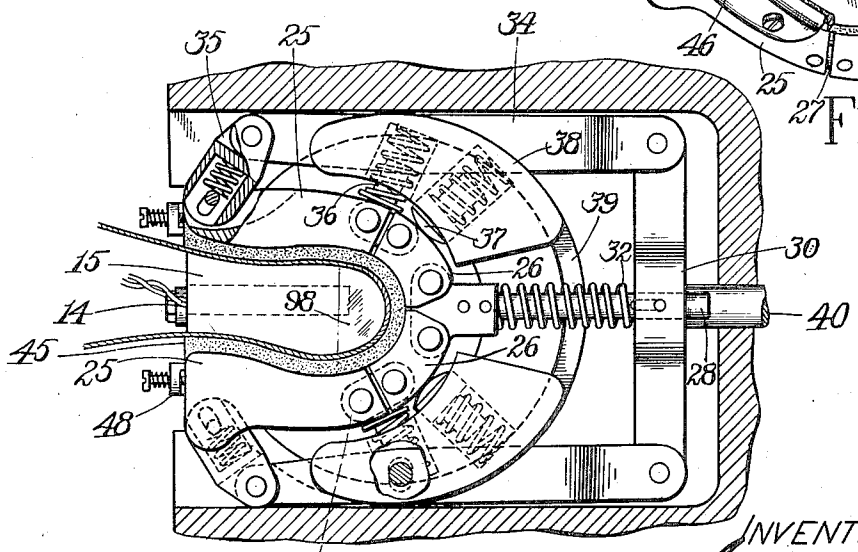


Fig. 3.

INVENTOR.

Matthias Brock

By his Attorney

Edson Mcdonald

M. BROCK.

UPPER FORMING MACHINE.

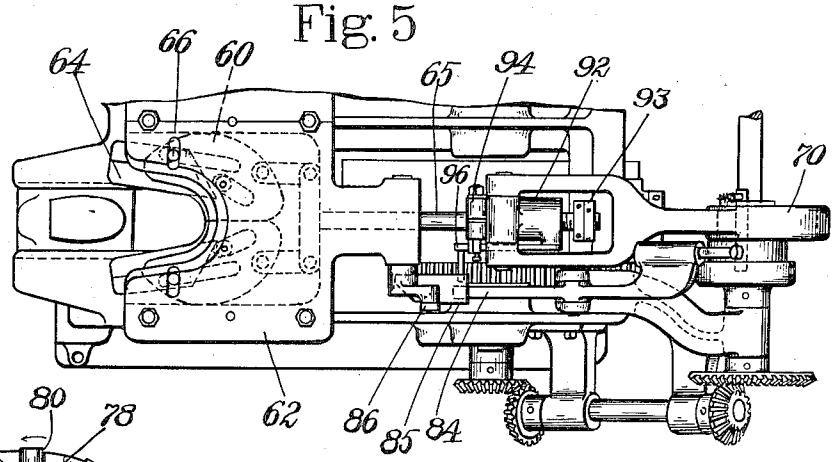
APPLICATION FILED FEB. 2, 1916.

1,197,439.

Patented Sept. 5, 1916.

3 SHEETS—SHEET 3.

Fig. 5



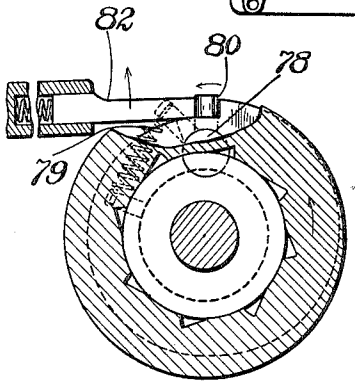


Fig. 7.

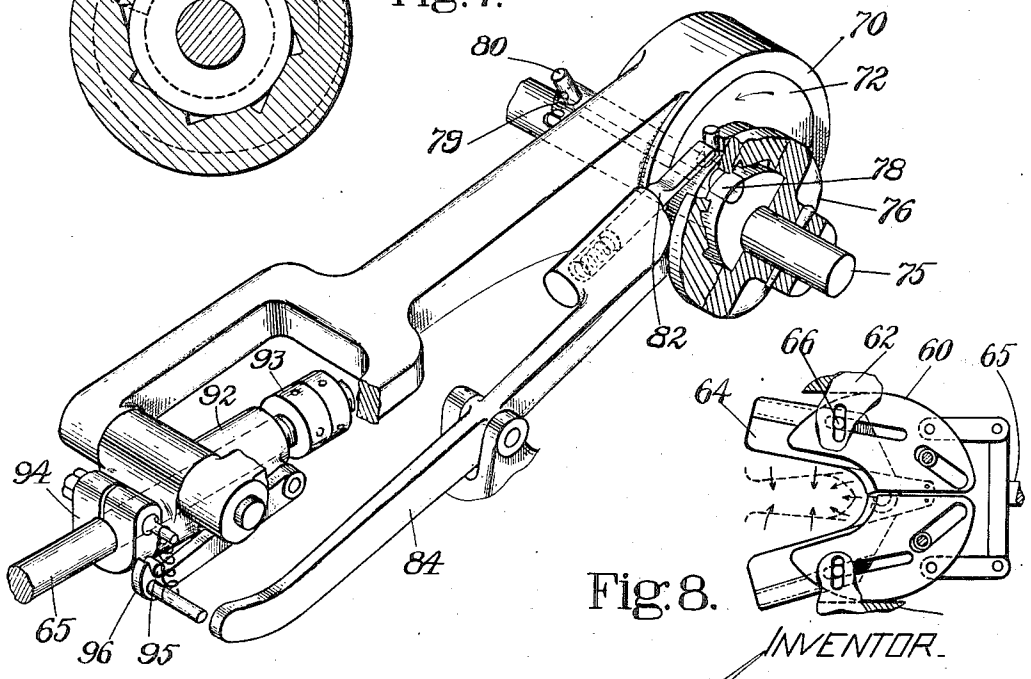


Fig. 6.

Fig. 8.

INVENTOR.

Matthias Brock

By his Attorney

Nelson W. Howard

UNITED STATES PATENT OFFICE.

MATTHIAS BROCK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

UPPER-FORMING MACHINE.

1,197,439. Specification of Letters Patent. Patented Sept. 5, 1916.

Application filed February 2, 1916. Serial No. 75,825.

To all whom it may concern:

Be it known that I, MATTHIAS BROCK, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Upper-Forming 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 upper shaping machines and is herein shown as embodied, for the purpose of explanation, in a machine of the type shown in my prior application, Ser. No. 728,183, filed Oct. 28, 1912, for shaping the assembled upper materials, including the heel stiffener, of the rear portion of a shoe.

The object of this present invention is to provide means by which to perfect the shaping of upper materials both as to the contour produced and as to the permanence of the shape, whereby the subsequent lasting operation can be performed more expeditiously and also a more perfect product insured when the shoe is completed.

It is contemplated that some portions of this invention will be found to be also applicable to lasting machinery.

A very important feature of this invention consists in a molding machine having novel means for turning a sole attaching flange and shaping the flange. It has heretofore been proposed to turn a flange, either inwardly as in McKay and welt work or outwardly as in stitch-down work, and to shape it by pressure applied perpendicularly to the flange. In accordance with an important portion of this invention mechanism is provided to shape the flange by a plurality of rubbing movements directed alternately inwardly and then outwardly on the flange after the flange has been turned. It has heretofore been proposed to repeat flange turning movements by closing and then fully opening heel seat wipers an indefinite plurality of times as set forth in United States Letters Patent No. 1,130,142, granted March 2, 1915, on application of James Cavanagh. The present invention is an improvement thereover in that, among other things, the flange shaping and setting movements which follow the flange turning operation produce a square edge around the heel seat. For this purpose the rubbing movements are preferably so limited in their backward stroke that the wipers do not uncover the line of bend but make short forward and backward rubbing strokes while remaining continuously in pressing engagement with the flange. As shown, the mechanism is constructed and arranged to effect automatically a plurality of short reciprocations of the flange setting means and at the will of the operator to make a full length stroke back to starting position.

A further feature of the invention consists in improved means for drawing out the stock of a sole attaching flange. The operation of smoothly shaping an upper to either end portion of a last is largely concerned with redistributing the stock to transform a substantially straight sheet of material into a pocket-shaped heel or toe covering which shall be as free as possible from wrinkles and plaits. I have found that by repeatedly rubbing an inturned flange under pressure which increases as the rubbing proceeds inwardly the stock of the flange is extended or lengthened inwardly, or in the direction of the width of the flange, and simultaneously the wrinkles and plaits are smoothed out to a large extent so as to form, for example, a satisfactory heel seat. In the illustrated embodiment of the invention the increased pressure employed as the wipers advance is obtained, or is accentuated, by forming the seat face of an inside former in a plane at an angle to the plane in which the wipers move. The inside former is supported by a stiff spring which permits the former to yield downwardly. This movement of the former may advantageously be sufficient to cause it to travel down and up slightly in rubbing contact with the inner side of the upper, which is held by the outside former. This movement of the inside former effects an ironing or smoothing and shaping of the foot engaging surface of the upper materials.

Another feature of the invention consists in novel outside forming means.

The foregoing and other features of the invention including certain combinations of parts and more important details of construction will now be described in connection with the accompanying drawings and will then be pointed out in the claims, except the novel method herein disclosed

which is claimed in co-pending application Ser. No. 62,041, filed Nov. 17, 1915.

Figure 1 of the drawings is a side elevation of a machine embodying this invention. Fig. 2 is a vertical longitudinal section through a part of the machine and shows shoe upper materials being operated upon. Fig. 3 is a plan view on a larger scale in a plane below the heel seat wipers and above the outside former. Fig. 4 shows the outside former in perspective view. Fig. 5 is a plan view showing the inside former advanced to work receiving position and illustrating the heel seat wiper operating mechanism. Fig. 6 is a perspective view of the heel seat wiper operating mechanism. Fig. 7 is a sectional detail of the clutch of said operating mechanism. Fig. 8 is a plan view of the wiper mechanism.

The illustrative machine has a driving shaft 1 continuously rotated from a pulley 2 and operating through speed reducing gears to turn the cam shaft 4. The shaft 4 has a cam operating through a swinging bar 5 and a link 6 and suitable adjustable connections to slide the work support horizontally between work receiving and work shaping positions in a guideway formed for it in the frame of the machine. This work support comprises a column 8 the foot of which has a horizontal bearing in the guideway of the machine frame and the upright portion of which has bearings for a two-part plunger 10 between the members of which is located a stiff compression spring 12. The upper end of the plunger 10 supports the inside former 15. This former has the general shape of the heel portion of a last, being somewhat narrower than the corresponding portion of the last and having its curvatures exaggerated for the purpose of overmolding the work in anticipation of more or less re-action of the molded work after it is withdrawn from the molding mechanism. A depending lug 14 is rigidly bolted to the front face of the former 15 and has a sliding fit in a portion of the column 8 to assist in holding the former securely against angular movement relatively to the column 8.

For elevating the inside former there is provided in the frame of the machine a sliding member 16 supported by a toggle 17 which is arranged to be straightened by a connection with a lever 18 that is fulcrumed at 19 and has on its upper end a roll standing in a track of a cam on the cam shaft 4. When the column 8 has been moved to carry the inside former into position for the upper materials to be operated upon, the plunger 10 will be over the sliding member 16 in position to be elevated by the straightening of the toggle 17.

The head of the machine supports the outside former which is shown in dotted lines in Fig. 1 and more fully in Figs. 2, 3 and 4 to comprise four sections including two front sections 25 and two rear sections 26 connected to the respective side sections by links 27. Each of the rear sections 26 is separately pivoted to the head of a plunger 28, the rear end of which slides in a yoke 30. The plunger is encircled by a spring 32 which presses the former forwardly with relation to the yoke but allows it to yield backwardly to a limited extent as the inside former is drawn rearwardly into the outside former. A pin and slot connection between the yoke 30 and plunger 28 limits the forward movement effected by the spring 32. The yoke 30 has at opposite ends push bars 34 which act through yielding links 35 to press the end members 25 of the outside former forwardly and inwardly. The members of the outside former, the push bars, the links 35 and the cross-head 30 are fitted within an appropriately shaped recess in the head plate of the machine, and the push bars 34 are guided against the lateral walls of said recess so that forward movement of said push bars against the links 35 affects both a forward and an inward pressure upon the front ends of the formers 25. The former members 25 and 26 are also operated upon at the corners of the heel by spring plungers 36, 37 which are carried in blocks 38 that are movable in arc-shaped guideways 39 formed in the lower face of the recess that contains the outside formers. The cross-head 30 is operated by a rod 40 that is connected with one member of a toggle 42, see Fig. 1. A link 43 depending from the toggle carries a roll running in a track in the side of a cam on the cam shaft 4. This organization provides for opening and slightly retracting the members of the outside former for receiving the work and for reversely moving them to embrace shoe upper materials carried by the inside former after said former has been drawn into the machine. The outside former is shown as provided with a continuous lining 45 that bridges the joints between the members of the former. A tough hard sole leather has been found to make a good lining for the outside former. The lining is confined in place by supporting clips 46, Fig. 4, applied to the lower sides of members 25 and by spring clips 48 mounted on the front ends of the former members 25. These clips permit the slight relative longitudinal movement that occurs between the lining and the members of the former as the former is opened and closed and maintains the lining seated against the rear members 26 of the former.

In addition to the outside former above described the machine is provided with

means for pressing the upper materials inwardly at and adjacent to the upper edge of the heel stiffener prior to the engagement of the outside former therewith. The means shown comprises a thin plate 50 which overlaps the lower edge of the lining 45 and extends around the rear portion of the heel. The plate 50 is mounted on a slide bar 52 and a spring 54 holds it normally pressed forward beyond the adjacent portion of the outside former as shown in Fig. 2.

The head plate of the machine frame is provided with bearings for heel seat wipers which are overlapped and confined against upward displacement by a cap plate 62. The wipers may be of any suitable construction but are preferably of the two-part type shown in my prior application Ser. No. 36,736, filed June 28, 1915 in which their construction is claimed. It is sufficient here to describe that each wiper comprises a rear end member indicated at 60 in Figs. 2 and 5 and a side member 64. The rear member 60 is provided with a cam slot in which stands a stationary stud as shown by dotted lines in Fig. 5. The outer edge of member 60 is curved in an arc and bears against an edge wall of the recess in which the wipers slide. Each wiper member 60 is connected by a link to the cross-head of an operating rod 65. The described arrangement is such that the wiper member 60 receives, in response to the forward movement of the rod 65, a combined advancing and closing movement over the rear end of the heel seat. The side member 64 has a sliding connection with the rear end member 60 by which the member 64 is caused to partake of the closing movement of member 60. A fixed stud 66, however, projects into a transverse slot in the member 62, restraining member 64 from partaking of the advancing movement of the member 60 and causing its acting edge to swing inwardly and backwardly over the shank and the front part of the heel seat.

For operating the wipers the rod 65 is connected with a strap 70 that embraces an eccentric 72 which is loose on a counter-shaft 75. The counter-shaft is not dependent upon the cam shaft 4 but is continuously operated by a bevel gear connection from the main driving shaft 1 as shown in Fig. 1. A clutch shown in Figs. 6 and 7 is arranged to cause the eccentric to be operated from the counter-shaft 75. The clutch comprises a sleeve 76 pinned to the shaft 75 and provided on its interior surface with shoulders adapted to be engaged by a clutch bolt 78 carried by the hub of the eccentric, when the bolt is turned by its spring 79 into a position to project tangentially from said hub. The clutch bolt has an upstanding stud 80 which is adapted to be engaged by a clutch controller 82 for tipping the bolt into the position shown in Figs. 6 and 7 where it is out of position for engagement with the shoulders on the sleeve 76. The clutch controller is carried by a lever 84 the front end of which is in position to be engaged by a plate 85 carried by a vertical bar 86, the lower end of which has a connection, shown in Fig. 1, with a roll standing in a track in the side face of a cam carried on the cam shaft 4.

The operation of the cam shaft is controlled by a starting treadle 90 through a suitable one-revolution clutch and brake mechanism described in my prior application Ser. No. 728,183.

The described arrangement is such that when the cam shaft is started in response to pressure on treadle 90 the column 8, carrying the inside former 15 with the work arranged around it, and preferably held under tension longitudinally of the shoe, is drawn back into the outside former, engaging first with the plate 50 to press the upper materials inwardly or forwardly at and adjacent to the upper edge of the heel stiffener. After the inside former has been seated back against the outside former the inside former is elevated by straightening of toggle 17 and then the outside former is closed by the straightening of its toggle 42 after which the slide bar 86 is drawn downwardly to rock lever 84 and release the clutch bolt 78 that controls the counter-shaft 75. Thereupon the eccentric 72 commences to turn and the wipers are closed for bending the margin of the upper materials inwardly over the heel seat face of former 15 for turning the sole attaching flange of the upper. The clutch controlled by the starting treadle 90 is so constructed and arranged as to bring the cam shaft automatically to rest with the work clamped between the inside and outside formers and with the inside former upraised. The cam track operating the slide 86 is so formed that the slide and its plate 85 are in lowered position when the cam shaft comes to rest and therefore the clutch controller 84 is upraised leaving the wiper reciprocating mechanism in continuous operation by reason of its direct connection to the driving shaft 1.

The wipers make their flange turning movement, by which they bend the margin of the upper materials over the heel seat face of the former, from a fully retracted position. The connection between the operating rod 65 and the eccentric strap 70 preferably comprises a lost motion which, when operative, causes a shortening of the backward movement of the wipers so that they are not fully withdrawn from over the heel seat but their movement terminates with the edge of the wipers inside the edge of the rear end of the heel seat. For the purpose of obtaining this lost motion the rod 65 has a sliding engagement with its bearing 92 in the eccentric strap member

and is provided with adjustable stop nuts 93 and a collar 94 spaced apart a distance greater than the length of the bearing 92. From the collar 94 projects laterally a stud 95 adapted to be engaged by an upwardly faced hook 96 that is carried by the bearing 92. The hook 96 is provided with a laterally projecting stud which extends under the plate 85, previously identified, and when the plate 85 is lowered it engages the stud on hook 96 and disengages the hook from stud 95 and holds it out of engagement with the stud during the period in which the cam shaft is at rest. While the hook is held depressed the lost motion between the bearings 92 and the nuts 93 is operative so that the backward movement of the wipers is shortened to terminate inside the edge of the heel seat as above described. This arrangement provides for giving to the wipers a short reciprocation continuously in contact with the heel seat flange for repeatedly rubbing the flange first inwardly and then outwardly. When it is desired to discontinue the rubbing of the flange the starting treadle 90 is again depressed whereupon the cam controlling elevation of the inside former depresses the former to relieve drag of the wipers over the shaped flange and the cam controlling the slide bar and plate 85 effects a lifting of the plate 85, thereby releasing the hook 96 and allowing it to reëngage the stud 95 so that at the next complete rotation of the counter-shaft 75 the wipers will be fully retracted for uncovering the work. Elevation of plate 85 also releases lever 84 whereupon the controller 82 will operate the clutch bolt 78 to discontinue wiper movement with the wipers fully retracted. Also the cams controlling the outside and inside formers will be turned for unclamping the work and thereafter projecting the inside former forwardly into position for the shaped upper materials to be removed therefrom and a fresh upper to be applied to said inside former.

A height gage 97, Figs. 1 and 2, is provided to assist the operator in arranging the upper materials to present the desired projection thereof above the tread face of the inside former 15 so that a sole attaching flange of the desired width will be produced by the operation of the machine. The height gage is herein shown as mounted on a fixed portion of the machine frame in position to be over the rear edge of the inside former when said former occupies its work receiving position, Fig. 1. The gage is pivoted to adapt it to be swung backwardly by the operator to get it out of the way when he is putting the upper materials around the inside former. The gage swings back into operative position by gravity as soon as it is free to do so. The inside former will preferably be maintained hot by an electric heating unit so that the upper materials are subjected to the action of heat while they are being shaped, it being found by experience that the application of heat to the upper materials facilitates the successful operation of the shaping means on the work.

In the use of the machine the upper materials, properly prepared and assembled together and usually including a heel stiffener, are passed rearwardly over the inside former 15 when the former occupies the position shown in Fig. 1, the gage 97 being readily pressed back out of the way by the workman as the work is being positioned. The upper materials, having been arranged around the inside former, are positioned vertically according to the gage to provide for the desired width of heel seat flange. The treadle 90 is now depressed for jacking the work and in response to such pressure the cam shaft is turned for drawing the inside former into the outside former, then elevating the inside former, and then closing the outside former to jack the shoe. It may be here stated that vertical movement of the inside former is not absolutely essential and good results can be obtained in this machine without the use of the elevating mechanism. The stop clutch controlled by the treadle 90 brings the cam shaft to rest with the work under shaping pressure but before this occurs the rotation of the cam shaft acts through the slide 86 and connected parts to close that clutch which connects the continuously running shaft 75 with the wiper, and it is the movement of the eccentric 72 on said shaft which effects the advance of the wipers to turn in the heel seat flange. The plate 85 on the slide 86 continues the clutch closed while the cam shaft is at rest so that the wipers are reciprocated repeatedly and effect a multitude of outward and inward rubbing movements over the inturned flange. The plate 85 on the slide 86 also holds the hook 96, Fig. 6, out of engagement with the plunger 65 and thereby renders operative the lost motion between the plunger and the eccentric 72. This lost motion shortens the outward movement of the wipers over the heel seat flange and causes that movement to terminate inside the edge of the rear end of the heel seat so that during their repeated rubbing movements over the flange the wipers remain in continuous shaping engagement with the flange. The wipers 64 effect, in their closing movement, a gathering of the stock from the forepart of the heel and from the shank inwardly and slightly backwardly and then in their repeated movements the wipers operate to effect the shaping of this rearwardly gathered stock into the heel seat flange. This serves to hold the sides of the upper close together at the shank.

As the wipers advance in their closing movement they move inwardly over an incline 98 on the rear end of the tread face of the inside former, traveling in a plane slightly inclined therefore to the underlying portion of the flange supporting surface, and are caused to bite into the stock of the flange and rub it in a manner to reduce its thickness and extend the width of the flange inwardly. As the wipers ride inwardly over the incline on the inside former the former is slightly depressed, the spring 12 yielding to permit such action, and when the wipers move outwardly, the spring returns the former to elevated position as far as permitted by the controlling member 14. This action of the wipers therefore produces a short up and down movement of the inside former within the upper and in rubbing engagement with the inner face of the upper materials. This movement of the former effects a smoothing and shaping of the inner face of the upper materials, and each time the former rises it applies molding pressure to the upper materials at and adjacent to the line on which the flange was turned inwardly.

The operator uses his judgment as to the length of time during which the work should be subjected to the repeated rubbing movements of the shaping instrumentalities and then again depresses the treadle 90. This results in the rotation of the cam shaft to elevate the slide 86 and allow the hook 96 to reëngage the plunger 65 preparatory to making a complete retraction of the wipers to their starting position. The elevation of the slide 86 also allows the wiper clutch to be opened at the next complete rotation of the shaft, the said clutch being arranged, of course, to be opened at the end of the retraction of the wipers. The rotation of the cam shaft unjacks the shoe and restores all of the upper shaping instrumentalities to their starting positions, returning the inside former to the position shown in Fig. 1 preparatory to the removal of the shaped upper therefrom and the application of a fresh piece of work.

Having explained the nature of this invention and described a preferred embodiment thereof, I claim as new and desire to secure by Letters Patent of the United States:—

1. In an upper shaping machine, the combination with an inside former, and an outside former constructed and arranged to embrace upper materials including a heel stiffener applied to the inside former and shape the same to said inside former, of a plate located at an altitude to engage the work at and adjacent to the upper edge of the heel stiffener, said plate being arranged to overlap the lower edge of the outside former and constitute substantially a continuation of the rear part thereof, and means for holding said plate normally pressed forwardly into position to engage the work prior to the engagement of the outside former therewith.

2. In an upper shaping machine, the combination with an inside shaping member and outside shaping means between which to clamp the rear part of upper materials including a heel stiffener, of a plate overlapping the lower edge of the outside shaping means and adapted to extend down the back of the upper materials, and means for holding said plate yieldingly advanced relatively to said outside shaping means in position to press toward the inside shaping member the portion of the work opposed to the plate before engagement of the work with the outside shaping means above the plate.

3. In an upper shaping machine, the combination with an inside former, and an outside former constructed and arranged to embrace upper materials including a heel stiffener applied to the inside former and shape the same to said inside former, of a plunger and operating mechanism for yieldingly elevating the inside former, a column in which the plunger is movable, a leg secured flat against a face of the inside former and extending downwardly through a guideway in the column to prevent angular movement of the inside former, and elevation limiting means for the inside former.

4. In an upper shaping machine, the combination with an inside heel former, of an outside former comprising connected rear end sections, front end sections pivotally connected to the adjacent ends of the rear sections, and separately yielding pressure applying means acting through said former at the rear end, front end and intermediate corners of the heel.

5. In a heel embracing means, a carrier constructed and arranged to flex at the corners of the heel, a lining or band in the carrier to engage the heel, and pressure applying means arranged to act on the carrier adjacent to where it flexes and in the direction to apply pressure at the corners of the heel.

6. In an upper shaping machine, the combination with an inside heel former, of an outside former comprising rear end and side sections, a pressure applying plunger to the head of which the rear end sections of the outside former are separately connected pivotally at opposite lateral sides of the center line of the former, pivotal connections between the rear end sections and the respective side sections, and operating connections between said side sections and the pressure applying plunger.

7. In an upper shaping machine, the combination with an inside shaping member, of outside shaping means comprising mem-

bers adapted for opening and closing operation and for forward pressure against the work, and a pressure applying plunger yieldingly connected with the rear end of the said shaping means and having separately yielding closing connections with the respective side members of the outside shaping means.

8. In an upper shaping machine, the combination with an inside heel shaping member, of outside shaping means comprising side members supported at their rear ends to permit forward and closing movements, forwardly movable closing members confined against outward displacement, and yielding links forwardly and inwardly inclined from said closing members to the outside shaping members to apply forward drawing movement and inward closing pressure to the outside forming means.

9. In an upper shaping machine, the combination with an inside heel shaping member and outside shaping means comprising side members, pressure bars, and links pivotally connected to the bars and each having a slot at its inner end and a spring chamber, a pivot pin extending from the adjacent side member through the slot in the link, and a spring contained in the link chamber and abutting against the pivot pin.

10. In an upper shaping machine, the combination with an inside heel shaping member, of outside shaping means adapted to embrace the inside member, and two spring pressure applying devices arranged one in advance of the other to act inwardly and forwardly against the forming means at points which are opposite to each corner of the heel.

11. In an upper shaping machine, the combination with an inside heel shaping member, of outside shaping means adapted to embrace the inside member, said shaping member and means being relatively movable longitudinally of the upper to apply shaping pressure to the rear end of the heel, means for closing the outside shaping means, and means for applying pressure at the corners of the heel comprising carriers movable in guideways curved around the corners of the heel and spring pressure applying means mounted in the carriers and acting against the shaping means forwardly and inwardly relatively to the corners of the heel.

12. In a heel embracing means, closing mechanism including longitudinally extending push bars confined against outward displacement and yielding links extending obliquely forwardly and inwardly from the push bars to the forward ends of the embracing means.

13. In an upper shaping machine, the combination with an inside heel shaping member, of outside shaping means contoured to fit the inside member and comprising relatively movable sections, a lining for said sections, supporting clips applied to the lower side of certain sections and arranged to extend under the lining and to allow the lining to slide forward as the shaping means is closed, and spring-actuated devices arranged to engage the front ends of the lining and hold it yieldingly pressed backwardly.

14. In an upper shaping machine, the combination with an inside heel shaping member, of outside shaping means adapted to embrace the inside member and comprising carrier members arranged to open and close, a lining for said members, and springs arranged to act through the front portions of the lining and press it backwardly into the carrier members.

15. In an upper shaping machine, an inside former having a portion shaped similarly to the rear part of a last, an outside former to clamp upper materials around the inside former, and means for pressing the upper materials inwardly adjacent to the upper edge of the heel stiffener, said means presenting a thin upper edge to overlap the lower edge of the outside former and being yieldingly held normally pressed forward beyond the adjacent portion of the outside former.

16. In an upper shaping machine, an inside former, an outside former, operating mechanism including means to move the inside former backwardly into the outside former for an upper shaping operation and to return the inside former to an advanced position for removal and reception of work, and a gage arranged relatively to the advanced position of the former to aid the operative in arranging the work on said former and with relation to which the backward movement of the former takes place.

17. In an upper shaping machine, an inside former, an outside former, operating mechanism including means to move the inside former backwardly into the outside former for an upper shaping operation and to return the inside former to an advanced position for removal and reception of work, and a gage stationarily mounted in relation to the work receiving position of the inside former to guide the operative in locating the upper at the right height relatively to the rear end of the former.

18. In an upper shaping machine, an inside former, an outside former, operating mechanism including means to move the inside former backwardly into the outside former for an upper shaping operation and to return the inside former to an advanced position for removal and reception of work, a support with relation to which the movement of the inside former takes place, and a gage mounted thereon to stand normally

adjacent to the rear end of the inside former and guide the operative in arranging the work, said gage being adapted to be moved aside in applying the work and to return automatically to work gaging relation to the former.

19. In an upper shaping machine, the combination with means for shaping an upper to fit around an end portion of a last, said means presenting a face over which to turn a sole attaching flange of the upper, means adapted to turn the margin of the upper into position for use as the sole attaching flange, and power operating mechanism organized to cause the flange turning means to rub the flange alternately in opposite directions while maintaining continuous engagement with the flange.

20. In an upper shaping machine, the combination with means for shaping an upper to fit around an end portion of a last, said means presenting a face over which to turn a sole attaching flange of the upper, means adapted to turn the margin of the upper into a position for use as the sole attaching flange, and power operating mechanism organized to advance the flange turning means from a position beyond the line of bend and to bend the flange over upon the face of the shaping means and then to rub the flange repeatedly inwardly and outwardly without entirely withdrawing from it.

21. In an upper shaping machine, the combination with means for turning a heel seat flange inwardly, of power operating mechanism organized to effect a plurality of short inward and outward rubbing movements over the flange and a relatively long outward movement of withdrawal from the flange.

22. In an upper shaping machine, the combination with means for turning a heel seat flange, of power operating mechanism organized to advance the turning means to turn the flange, then reciprocate it to rub the flange alternately in opposite directions while in continuous engagement with the flange, and thereafter to withdraw said means from the flange.

23. In an upper shaping machine, the combination with means for turning a heel seat flange inwardly, of power operating mechanism constructed and arranged to advance said means from a shoe receiving position and to effect repeated short reciprocating movements of said means in pressing engagement with the flange.

24. In an upper shaping machine, the combination with a support for the heel portion of an upper, and heel seat flange rubbing means, of operating means therefor, including a lost motion connection responsive to manual control, to advance said rubbing means fully over the flange, then partially retract the rubbing means and effect short reciprocatory movements thereof and, at the will of the operator, to effect a full length retraction of the rubbing means to starting position.

25. In an upper shaping machine, the combination with a support for an end portion of an upper, and flange rubbing means, of power operating means therefor responsive to manual control to effect a long forward rub and then a plurality of short rubbing movements and a final long backward movement to starting position.

26. In an upper shaping machine, the combination with a support for an end portion of an upper, and flange rubbing means, of power operating means organized to cause the rubbing means to advance over the work, rub it repeatedly, and then return to starting position and come automatically to rest.

27. In an upper shaping machine, work supporting means, end embracing wipers, and connected operating mechanism to jack the work, advance the wipers and repeatedly reciprocate the wipers and thereafter to retract the wipers and unjack the work.

28. In an upper shaping machine, the combination with a support for an end portion of an upper, and flange rubbing means, of power operating means for reciprocating the rubbing means including an operating rod, a driver, a lost motion connection arranged to shorten the backward stroke, a hook controlling said connection, and manually controlled means adapted upon one actuation to start said mechanism and release the hook and upon a second actuation to set the hook and thereafter stop the machine.

29. In an upper shaping machine, end embracing wipers and operating means constructed and arranged to advance the wipers and then to impart to the wipers backward and forward reciprocatory movements which are shorter by a definite distance than the original advance movement.

30. In an upper shaping machine, end embracing wipers, operating means constructed and arranged to advance the wipers and then to impart to the wipers backward and forward reciprocatory movements, and means for automatically causing the said reciprocatory movements to be shorter than the original advancing movement.

31. In an upper shaping machine, end embracing wipers and power operating mechanism organized to advance the wipers over the work and then to impart to the wipers backward and forward reciprocatory movements which are shorter than the original advancing movement.

32. In an upper shaping machine, end embracing wipers and power operating mechanism organized to advance the wipers over the work and then to impart to the wipers backward and forward reciprocatory movements which are shorter than the origi-

nal advancing movement, said mechanism being constructed and arranged to impart to the wipers at the will of the operative a long backward stroke and then bring them to rest.

33. In an upper shaping machine, a work rubbing member and power operating mechanism therefor organized to advance said member from an inoperative position to a position over the work and then to operate said member to rub the work repeatedly and at the will of the operator to stop the work rubbing member in starting position.

34. In a shoe mechine, the combination with means for supporting the work, of means for rubbing the work, said work rubbing means having a position of rest removed from the work, and power operating mechanism organized to advance the work support and the work rubbing means relatively into position of engagement of said means with the work and then repeatedly move said rubbing means over the work while in that position and, at the will of the operative, to return the work rubbing means and work support relatively to starting position and bring the rubbing means to rest.

35. In a shoe machine, the combination with means for supporting the work, of means for rubbing the work, said work rubbing means having a position of rest removed from the work, and power operating mechanism organized to advance the work rubbing means into engagement with the work and then repeatedly to reciprocate the rubbing means over the work without withdrawing it from the work.

36. In an upper shaping machine, a support for an end portion of an upper, end embracing wipers, and mechanism for operating the wipers to form an inturned sole attaching flange on the tread face of the support, said support presenting a flange forming face of unyielding material inclined inwardly and upwardly with relation to the plane in which the wipers are moved to cause the wipers to bite with increasing pressure on the work as they advance, whereby thinning of the flange stock and lengthening of the flange is effected by the wipers.

37. In an upper shaping machine, an inside former shaped similarly to an end portion of a last and having its tread face beveled downwardly and outwardly at the end, end embracing wipers mounted to move in a plane intersecting the plane of said bevel for rubbing an inturned flange of the upper, and mechanism to operate the wipers and cause them to pinch the flange stock against said beveled face as they advance.

38. In an upper shaping machine, an inside former shaped similarly to an end portion of a last, heel embracing wipers, and means for operating the wipers over the tread face of the former in a plane inclined to the plane of the rear portion of said tread face for reducing the thickness of the upper material gathered inwardly over the rear curved end of the former.

39. In a shaping machine, a work support, a wiper, and operating mechanism comprising a power shaft, a cam shaft, a stop clutch connecting said shafts, a cam and connections from the cam shaft to the work support to jack and unjack the work, a counter shaft, a continuously running connection from the counter shaft to the power shaft, a clutch and operating connections between the counter shaft and the wiper, and connections from the cam shaft to close the wiper clutch when the work is jacked and hold the clutch closed and to open the wiper clutch when the work is unjacked.

40. In a shaping machine, a work support, a wiper, and operating mechanism comprising a power shaft, a cam shaft, a stop clutch connecting said shafts, a cam and connections from the cam shaft to the work support to jack and unjack the work, a counter shaft, a continuously running connection from the counter shaft to the power shaft, a clutch and operating connections between the counter shaft and the wiper to reciprocate the wiper, and connections from the cam shaft to close the wiper clutch when the work is jacked and hold the clutch closed and to open the wiper clutch when the work is unjacked, said operating connections between the wiper and the continuously running shaft comprising a lost motion connection which is automatically rendered operative to shorten the back stroke of the wiper while the wiper is reciprocating and is automatically rendered inoperative in time to insure a complete retraction of the wiper when the work is to be unjacked.

41. In a shaping machine, a work support, a wiper, and power driven operating mechanism organized to advance the wiper and thereafter impart to the wiper reciprocating movements which are in substantially the same plane as the advancing movement and are automatically rendered shorter than the advancing movement.

42. In an upper shaping machine, means for supporting an upper, means for turning the margin of the rear portion of the upper to form a sole attaching flange, and connected operating mechanism for moving said support and the flange turning means relatively to turn the flange, press it into substantially right angular relation to adjacent parts of the body portion of the upper and then subject the flange to a multitude of rubbing movements alternately in opposite directions.

43. In an upper shaping machine, means,

for supporting an upper, means for turning the margin of the rear portion of the upper to form a sole attaching flange, and connected operating mechanism for moving said support and the flange turning means relatively to turn the flange into substantially right angular relation to adjacent parts of the body portion of the upper and then subject the flange to a multitude of rubbing movements directed alternately outwardly and then inwardly, and terminating said outward rubbing movements inside the outer edge line of the flange.

44. In an upper shaping machine, means for supporting an upper, means for turning the margin of the rear portion of the upper to form a sole attaching flange, and connected operating mechanism for moving said support and the flange turning means relatively to turn the flange into substantially right angular relation to adjacent parts of the body portion of the upper and then rub the flange repeatedly in a plane which intersects the top face of the flange at a slight angle.

45. In an upper shaping machine, means for supporting an upper, means for turning the margin of the rear portion of the upper to form a sole attaching flange, and connected operating mechanism for moving said support and the flange turning means relatively to turn the flange and gather the margin of the upper from the rear part of the shank portion of the upper inwardly and rearwardly into the flange.

46. In an upper shaping machine, means for supporting an upper, means for turning the margin of the rear portion of the upper to form a sole attaching flange, and connected operating mechanism for moving said support and the flange turning means relatively to turn the flange and gather the margin of the upper from the rear part of the shank portion of the upper inwardly and rearwardly into the flange and then shaping the flange while the stock is so gathered.

47. In an upper shaping machine, means for supporting an upper, means for turning the margin of the rear portion of the upper to form a sole attaching flange, and connected operating mechanism for moving said support and the flange turning means relatively to turn the flange and gather the margin of the upper from the rear part of the shank portion of the upper inwardly and rearwardly into the flange and then subjecting the gathered stock to a multitude of rubbing movements alternately in opposite directions to set the flange.

48. In an upper shaping machine, means for supporing an upper, means for turning the margin of the rear portion of the upper to form a sole attaching flange, power driven mechanism to operate the flange turning means for rubbing the flange to set it, and means for subjecting the flange to the action of heat during the rubbing operation.

49. In an upper shaping machine, means for supporting an upper, means for turning the margin of the rear portion of the upper to form a sole attaching flange, means for heating the flange, and operating mechanism for subjecting the stock at and adjacent to the turning line to molding pressure in the presence of heat.

50. In an upper shaping machine, end embracing wipers, mechanism for reciprocating the wipers, and an inside former having a portion shaped similarly to an end portion of a last, and having the rear portion of its tread face beveled to present a flange supporting face in a plane oblique to the plane of movement of the wipers.

51. In an upper shaping machine, end embracing wipers, mechanism for reciprocating the wipers, an inside former having a beveled tread face, and means for yieldingly sustaining the former, said parts being organized to support an end portion of an upper and to shape a sole attaching flange thereof by a movement of the wipers over stock supported on said beveled face while the yielding sustaining means controls the pressure on the stock as the wipers advance up said incline of the tread face of the former.

52. In an upper shaping machine, end embracing wipers, mechanism for reciprocating the wipers in a plane, and an inside former having a portion shaped similarly to the portion of a last from its shank to the heel end and having the heel end of its tread face beveled to accommodate a backstay of the upper and present an upwardly inclined plane over which the wipers advance in rubbing that portion of the flange which is gathered from around the curved end of the heel.

53. In an upper shaping machine, end embracing wipers, mechanism for reciprocating the wipers in a plane, an inside former having a portion shaped similarly to the portion of a last from its shank to the heel end and having the heel end of its tread face beveled, and means for yieldingly sustaining the former.

54. In an upper shaping machine, a wiper, means for reciprocating the wiper, a yieldingly uppressed former presenting a flange supporting face inclined inwardly and upwardly relatively to the plane of movement of the wiper and capable of yielding downwardly as the wiper advances over it, and means for limiting the upward movement of the former.

55. In a shaping machine, an inside heel former, an outside former, flange forming wipers, a column, a spindle movable in the

column and supporting the inside former, a spring acting upwardly against the spindle, and a guide member extending from the former to the column and having a sliding connection with one of said parts and a stop for limiting the upward movement of the former by the spring.

56. In a shaping machine, an inside former, an outside former, and operating mechanism organized to cause the inside former to rub the inner face of the shoe upper materials.

57. In a shaping machine, an inside former, an outside former, flange rubbing means, and operating mechanism, said parts being organized to cause the inside former to rub the inner face of the shoe upper materials.

58. In a shaping machine, means for holding a shoe upper, and power operated means constructed and arranged to rub the inside face of the heel portion of the upper.

59. In a shaping machine, means for holding a shoe upper, shaping means constructed and arranged to extend into the heel portion of the shoe upper, and operating mechanism to cause said means to apply shaping pressure intermittently to the inner face of the heel portion of the upper.

60. In a shaping machine, an inside former, an outside former, and operating mechanism organized to cause the inside former to rub the inner face of the shoe upper materials repeatedly up and down and to compress the sole attaching flange of the upper.

61. In a shaping machine, an inside former, an outside former, and operating mechanism organized to cause the inside former to apply shaping pressure intermittently at the junction of the sole attaching flange of the upper with the body portion of the upper.

62. In a shaping machine, an inside former, an outside former, flange rubbing means, and mechanism for operating said parts relatively, said machine being organized to cause said former to move intermittently in work shaping engagement with the inside of the upper.

63. In an upper shaping machine, the combination with an inside heel shaping member, of outside shaping means adapted to embrace the inside member and comprising carrier members arranged to open and close, a lining for said members, and springs arranged to press the lining backwardly into the carrier members.

64. In a shaping machine, a work support, a wiper, and operating mechanism comprising a power shaft, a cam shaft, a stop clutch connecting said shafts, a cam and connections from the cam shaft to the work support to jack and unjack the work, a continuously running counter shaft, a clutch and operating connections between the counter shaft and the wiper, and connections from the cam shaft to close the wiper clutch when the work is jacked and hold the clutch closed and to open the wiper clutch when the work is unjacked.

65. In an upper shaping machine, a wiper, means for reciprocating the wiper, and a yieldingly uppressed former presenting a flange supporting face inclined inwardly and upwardly relatively to the plane of movement of the wiper and capable of yielding downwardly as the wiper advances over it.

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

MATTHIAS BROCK.