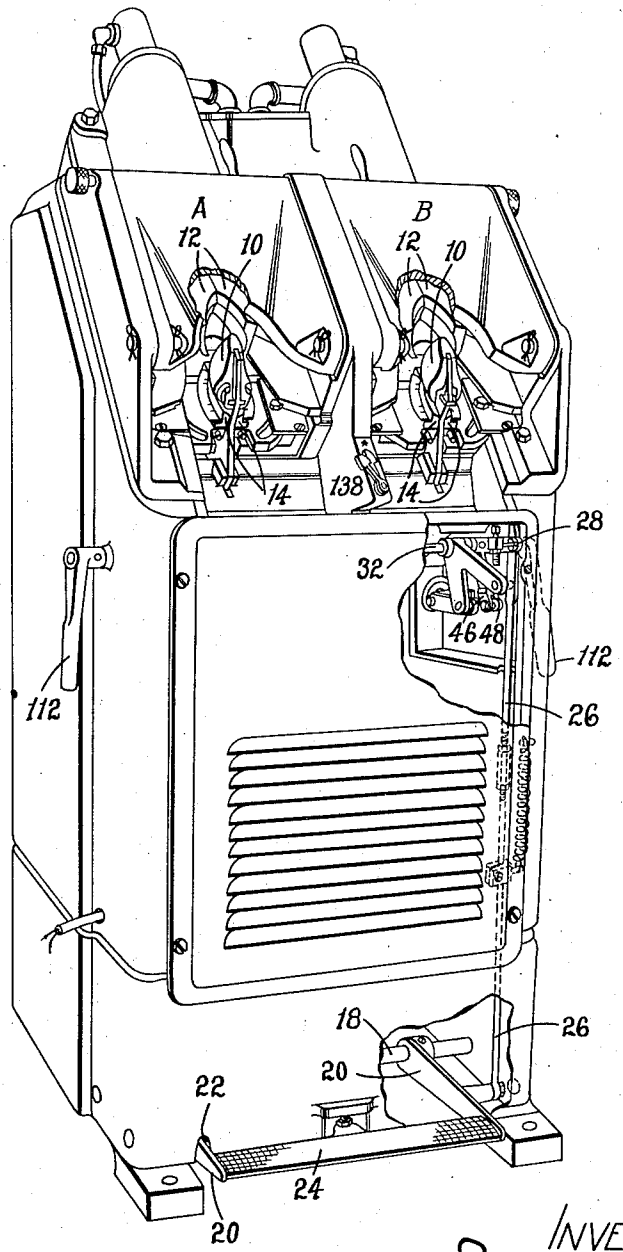
Sept. 25, 1945. R. E. DUPLESSIS 2,385,336

MACHINE FOR SHAPING SHOE UPPERS

Filed May 11, 1943 3 Sheets-Sheet 1

Fig. 1.



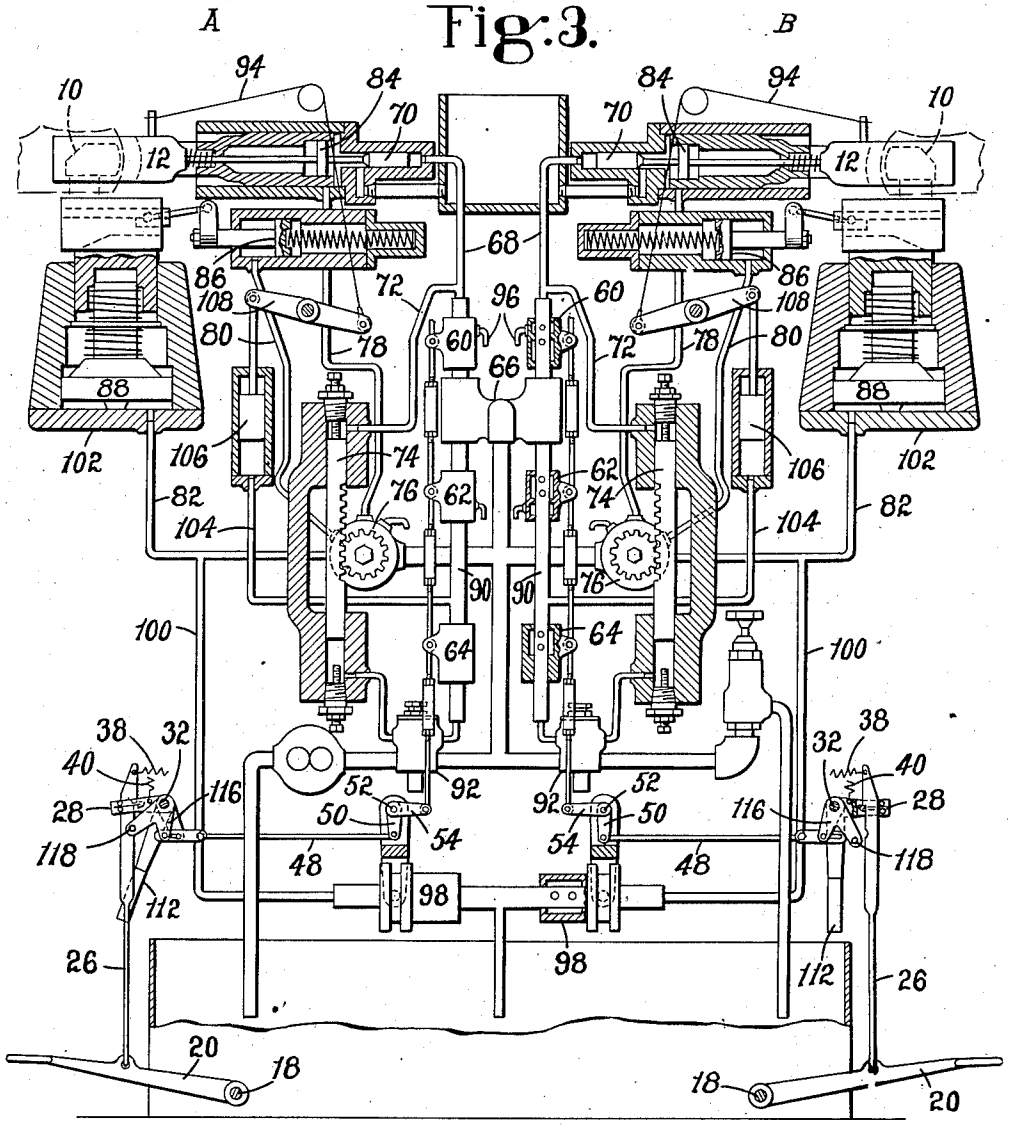
INVENTOR
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Fig. 3.



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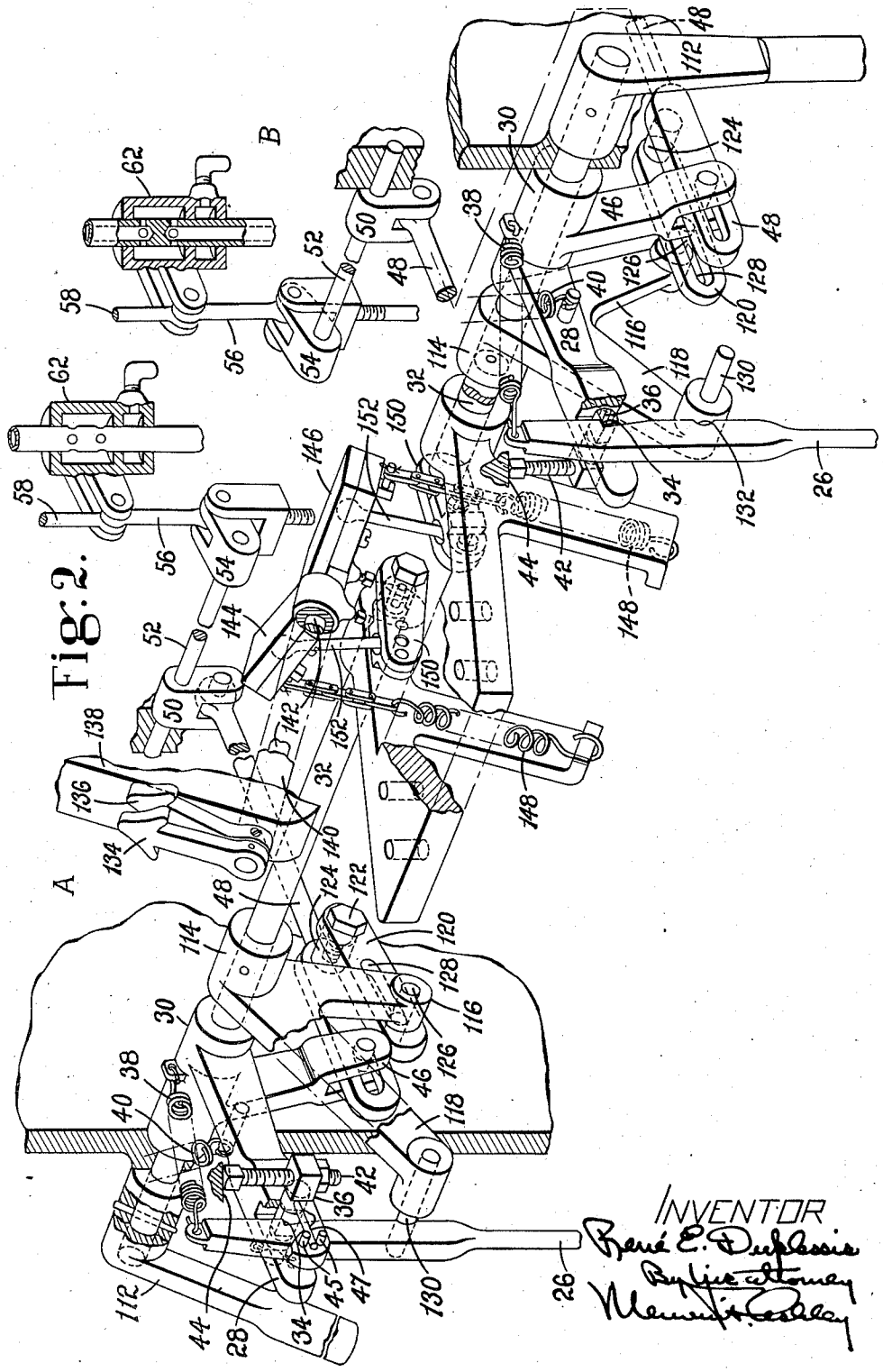


Fig. 2.

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UNITED STATES PATENT OFFICE

2,385,336

MACHINE FOR SHAPING SHOE UPPERS

René E. Duplessis, Beverly, Mass., assignor to United Shoe Machinery Corporation, Flemington, N. J., a corporation of New Jersey

Application May 11, 1943, Serial No. 486,567

13 Claims. (Cl. 12—97)

This invention relates to means for shaping shoe uppers or shoe parts such, for example, as separate back parts, and is herein illustrated as embodied in a machine for forming outturned flanges on the rear parts of stitchdown uppers. Such a machine is illustrated and described in United States Letters Patent No. 2,379,425, granted July 3, 1945 on an application filed in my name; and specifically, the present invention comprises improvements in machines of the type illustrated in said copending application. While the machine illustrated in said application is organized to form outturned flanges in shoe uppers, it is to be understood that the improvements provided by the present invention are not limited in their application to a machine so organized but are applicable to machines for performing other operations on shoe uppers. Moreover, in its broader aspects the invention is applicable to machines other than shoe machines.

The machine illustrated in Patent No. 2,379,425 above referred to, is a twin machine, each station of which has an inner form on which a shoe upper is mounted, a pair of outer forms or molds which close on the upper to shape it against the inner form, and a pair of wipers which move outwardly to form an outturned flange in the upper and then move heightwise of the upper to mold and crease said flange against the bottoms of said outer forms. The machine is so organized that two cycles of operation are required to complete the work on the upper. During the first cycle the outer forms close on the upper and the wipers operate to shape and mold the outturned flange, and during the second cycle continuous molding pressure is applied for a brief interval and thereafter the operating parts are retracted leaving the upper free to be removed from the machine. In order to enable the operator to handle one upper at a time in the operation of the machine the two cycles occur alternately in the two stations. Thus, after each operation of the machine the outer forms in one station are closed and the outer forms in the other station are retracted to permit the introduction into the machine of another upper to be operated upon. Upon completing the flanging of a given lot of uppers, it has been the practice to insert a discarded upper into the machine so that the inner and outer forms which remain closed while the machine is at rest will not be in contact. It will, of course, be understood that such contact of the operating parts would be injurious to them since they would not contact each other throughout the entire extent of their upper engaging surfaces but only at certain portions, which portions would thus be subjected to excessive wear.

It is an object of the present invention to improve twin machines of the type above described by providing for the retraction of the operating parts in one station without disturbing the retracted position of the operating parts in the other station to the end that the operating parts in both stations may be in retracted position when the machine is at rest.

To this end the present invention, in one aspect thereof, consists in the provision, in a twin machine of that type in which two cycles are required for the complete operation of each station, of a common actuator for initiating the operation of each station, and a manually operated auxiliary actuator for initiating only the second cycle in only one station. In order to insure the alternate operation of the two stations of the machine upon resumption of operation of the machine after a rest period, the invention provides means constructed and arranged to be operated by an auxiliary actuator to render the common actuator inoperative in only one station of the machine. Thus, the first operation of the common actuator initiates the first cycle in only one station of the machine. In order that the actuator may initiate the first cycle in the opposite station when it is operated a second time the actuating mechanism is so constructed and arranged that the first operation of the common actuator renders ineffective the above mentioned means operated by the auxiliary actuator for rendering the common actuator inoperative in one station, thus insuring the usual routine operation of the common actuator after the first cycle has been completed. In order that the operator may readily determine which station will operate first after a rest period, the invention provides means for indicating that station in which the common actuator has been rendered inoperative by the operation of the auxiliary actuator.

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

In the drawings,

Fig. 1 is a perspective view illustrating a machine embodying the features of the present invention with a portion of the front cover plate broken away to illustrate said operating mechanism;

Fig. 2 is an enlarged perspective view illustrating the operating mechanism disclosed in Fig. 1, together with other associated parts, certain parts

being broken and other parts shown in section; and

Fig. 3 is a diagrammatic view of the hydraulic system and the actuating mechanism.

In Fig. 1 there is illustrated a twin machine for molding and flanging the heel portions of stitchdown uppers, the two stations being identified as A and B, respectively, for convenience of reference. In common with the machine illustrated in United States Letters Patent No. 2,379,425, hereinbefore referred to, this machine is provided with duplicate molding and flanging mechanisms comprising an inner form 10 having the general shape of the heel portion of a last and a pair of outer forms or molds 12 constructed and arranged to advance as a unit until they engage the back seam portion of an upper mounted on the inside form 10 and then to close on the upper to mold it to the shape of said inner form. For outwardly flanging the bottom margin at the heel portion of the upper each station of the machine is provided with a pair of wipers 14 which move outwardly and rearwardly to flange the bottom margin against the bottom surfaces of the outer molds 12, and then move heightwise of the upper under heavy fluid pressure to mold and crease the outturned margin. A full description of the construction and operation of the mechanism generally described above will be found in my application above referred to. The organization of the machine is such that two cycles of operation are required to complete the work on the upper and to return the operating parts to their rest positions to permit the removal of the work from the machine. During the first cycle the outer molds 12 close on the work and the flange forming wipers 14 perform the flange forming operation and the machine comes to rest at the end of the first cycle with the upper held under molding pressure by said operating mechanism. During the second cycle there is a short dwell during which the upper remains under the molding pressure and thereafter the wipers 14 and the outer molds 12 are retracted to permit the molded upper to be removed from the machine. In the routine operation of the machine the first cycle in one station occurs concomitantly with the second cycle in the other station.

In such routine operation the machine is initiated by a single treadle mounted on a cross shaft 18 in the base of the machine, said treadle being the common actuator hereinbefore referred to. The illustrated treadle comprises two forwardly extending parallel arms 20 extending through notches 22 in the base of the machine frame and connected at their forward ends by a tread plate 24. Pivoted to each arm 20 is the lower end of a link 26, said links being elements of duplicate operating mechanisms in the two stations of the machine. The following description will apply to either of said mechanisms, but for convenience of reference is directed for the most part to the mechanism in station B. Referring to Fig. 2 the link 26 at its upper end terminates in an enlarged rectangular portion which is mounted in the bifurcated end portion of an arm 28 extending forwardly from a hub 30 freely mounted on a cross shaft 32. The rectangular portion of the link 26 is recessed to provide a latching surface 34 which acts against a slabbed off surface of a headed pin 36 extending through the bifurcated portion of the arm 28 and rigidly mounted therein. The link 26 is normally held in contact with the pin 36 by a spring 38 while the arm 28 is yieldingly held in its rest position by a spring 40, said rest position being accurately determined by the engagement of an adjustable screw 42 mounted in the head of the pin 36 with a fixed stop surface 44. The vertical position of the screw 42 is maintained by two retaining pins 45 (shown in station A) projecting outwardly from the arm 28 and holding between them a small pin 47 projecting radially from the pin 36. Extending downwardly from the hub 30 which carries the bifurcated arm 28 is an arm 46 the bifurcated end portion of which has a pin and slot connection to the forward end of a link 48 the rear end of which is connected to a short arm 50 fixed to a cross shaft 52. The depression of the treadle moves the link 26 downwardly thus imparting downward movement to the arm 28 and rearward movement to the arm 46. If the operating parts are set for the performance of the first cycle of their operation the rearward movement of the arm 46 causes a like movement of the link 48 and the arm 50, thus rocking the cross shaft 52 which operates through a short arm 54 secured thereto and links 56 and 58 to impart upward movement to three slide valves 60, 62, and 64 (Fig. 3). A resilient retaining member (not shown), operating on the valve 60, holds the three valves in their raised position. With said valves at the limit of their upward movement, station B of the machine is set for the first cycle of its operation. Referring to Fig. 3, when the valves 60, 62 and 64 in station B are at the limit of their upward movement, the upper valve 60 is in its open position, permitting the flow of pressure fluid from a manifold 66 through a pipe 68 to the small head 70 of the piston which operates to close the outer forms 12. The opening of the valve 60 also permits the flow of pressure fluid through a pipe 72 to the upper end of a hydraulic motor 74 having a rack and gear connection to a rotary valve mounted in a casing 76. The operation of the rotary valve successively opens pressure lines through pipes 78, 80, and 82 in the order named. The pipe 78 conducts pressure fluid to the large head 84 of the piston which closes the outer forms 12 while the pipe 80 conducts pressure fluid to a piston 86 which imparts wiping movement to the flange forming wipers 14 and the pipe 82 conducts pressure fluid to the piston 88 which imparts pressure heightwise of the upper to the wipers 14 to mold and crease the outturned flange of the upper. The upward movement of the slide valve 62 closes said valve and prevents the flow of pressure fluid from the manifold 66 downwardly through the pipe 90. The upward movement of the lower slide valve 64 closes the lower portion of the pipe 90 and forces exhaust fluid which is expelled by downward movement of the motor 74 to be discharged through a governor valve 92. Upon completion of the operation of the rotary valve the first cycle in station B terminates with the upper under the molding pressure of the outer forms 12 and the wipers 14. While the upper remains under pressure another upper is mounted on the inner form 10 in station A and the treadle is again depressed to start the first cycle of operations in that station. Such depression of the treadle has no effect in station B in which the upper is held under pressure since in that station the horizontal link 48 is so positioned that the vertical treadle-actuated arm 46 (Fig. 2) merely traverses idly the length of the slot in the link 48 without imparting longitudinal movement to said link. In station A the second depression of the treadle closes the outer forms 12 as above de-

scribed. The closing movement of said forms operates a cable 94 which is connected to a lever (not shown) which operates to impart downward movement to the valves 60, 62 and 64 in station B, thus initiating the second cycle in the latter station. Downward movement of said valves closes the upper valve 60 to pressure fluid from the manifold 66 and opens the valves 62 and 64 and opens an exhaust outlet 96 in the valve 60. Downward movement of the valves 62 and 64 opens the pipe 90 to pressure fluid from the manifold 66. Concomitantly with the downward movement of the valves 60, 62 and 64 a valve 98 operates to open an exhaust line 100 from the cylinder 102 in which the piston 88 operates. Pressure fluid flowing downwardly through the pipe 90 passes through a pipe 104 to operate a piston 106 which actuates a lever 108 to impart downward movement to the cable 94 thereby retracting the outer forms 12 in station B. Pressure fluid flowing downwardly through the pipe 90 also operates to return the hydraulic motor 74 to its raised position, such movement of the motor turning the rotary valve to permit the exhaust of hydraulic fluid through the pipes 78 and 80. The second cycle terminates with the outer forms 12 and the wipers 14 withdrawn from the upper leaving the upper free to be removed from the machine. Further details of the construction and operation of the hydraulic system will be found in my copending application above referred to.

In order to permit the removal from the machine of the last upper in a given lot to be operated upon the illustrated machine is provided with mechanism for effecting the second cycle of operations in one station by the operation of an auxiliary actuator herein illustrated as a hand lever 112 which effects said second cycle without causing any change in the position of the operating parts in the opposite station, thus causing the operating parts in both stations to be in retracted position after the work on the last upper has been completed. It will be understood that there are two hand levers 112, one for each station of the machine. The following description will apply equally well to the lever actuated mechanism of both stations. Referring to Fig. 2, a V-shaped member 114 is secured to the shaft 32, one arm 116 of said member extending downwardly and rearwardly while the other arm extends downwardly and forwardly. In the routine operation of the machine the member 114 performs no function whatever but is held stationary by gravity while the machine is operated by the treadle. The rear arm 116 of the member 114 has a pin and slot connection to a link 120 which is pivotally mounted on a headed pin 122 mounted in a boss 124 projecting from the link 48. Upon the completion of the first cycle the pin 126 carried by the arm 116 is positioned at the forward end of the slot 128 in the link 120. Thus, it will be seen that forward movement of the hand lever 112, at this time, imparts like forward movement to the link 48, said link acting through mechanism above described to impart downward movement to the valves 60, 62 and 64, and moving the valve 98 in a direction to open the exhaust line from the cylinder 102. It will be understood that such operation of said valves initiates the second cycle of operations hereinbefore briefly described. After the operation of the hand lever 112 the outer molds and the wipers in both stations of the machine are retracted and both stations are set for the first cycle.

In order to insure the resumption of the alternate operation of the two stations when the machine is started again the hand lever 112 operates during its forward movement to disengage the upper portion of the treadle link 26 from the slabbed off pin 36 in the arm 28 so that upon the next depression of the treadle the link 26 thus disconnected from the arm will move idly with the treadle without starting the operating mechanism. In the opposite station of the machine the treadle link 26 will operate in the usual manner to initiate the first cycle of the operating mechanism. For thus disconnecting the treadle link 26 from the slabbed off pin 36 the forwardly extending arm 118 of the V-shaped member 114 carries at its free end a laterally extending pin 130 which engages the upper portion of the treadle link 26 during the forward movement of the hand lever 112 and forces said link forwardly away from the pin 36. In order to retain or lock the arm 118 in its operative position the upper portion of the treadle link 26 is provided with a semicircular recess 132 which receives the pin 130 as the hand lever 112 comes to the limit of its forward movement. The spring 38, acting on the upper portion of the treadle link 26, yieldingly holds the link and the pin 130 in their interlocked position as illustrated in station A (Fig. 2). Upon the first treadle operation of the machine following the operation of the hand lever 112 both treadle links 26 move downwardly, one moving idly as above described and the other initiating the first cycle of operations. During such downward movement of the idle link 26 the V-shaped member 114 moves downwardly and rearwardly until the pin 130 is disengaged from the recess 132 in the link whereupon the V-shaped member is carried by gravity into its normal rest position illustrated in station B in Fig. 2. It will be understood that upon return movement of the treadle the treadle link 26 will come into latching engagement with the slabbed off surface of the pin 36 and thereafter the alternate operation of the two stations of the machine will continue until one of the hand levers 112 is again operated.

In order that the operator may conveniently determine which station of the machine will operate first following the operation of one of the hand levers 112, the machine is provided with two indicators or arrows 134 and 136 so connected to the respective hand levers that upon operation of either hand lever one of the arrows moves to indicate that station which will operate upon the next depression of the treadle. The arrows 134 and 136 are mounted one in front of the other on the forward edge face of a vertical wall 138 centrally located between the two stations of the machine. The rearmost arrow 136 is secured to a hollow shaft 140 journaled in the wall 138 and extending rearwardly and downwardly from its forward edge face while the forward arrow 134 is secured to a shaft 142 journaled in the hollow shaft 140. For operating the arrow 136 a short arm 144 is secured to the rear end portion of the hollow shaft 140, and similarly, for operating the arrow 134 a short arm 146 is secured to the rear end portion of the shaft 142 projecting beyond the end of the hollow shaft 140. Two light springs 148 acting on the free ends of the arms 144 and 146, respectively, normally hold each arrow 134 and 136 in its upwardly directed or neutral position. Substantially duplicate mechanisms are provided for operatively connecting each hand lever 112 to

one of the arrow operating arms, said mechanism comprising an arm 150 secured to and extending forwardly from the cross shaft 32 and a link 152 connecting said arm to one of the arrow operating arms 144, 146. As herein illustrated, the hand lever 112 in station A is operatively connected to the arm 144 which operates the rear arrow 136 while the hand lever 112 in station B is operatively connected to the arm 146 which operates the forward arrow 134.

The operation of the illustrated machine, insofar as it concerns the mechanism embodying the present invention, is set forth in the foregoing description. A complete description of the routine operation of the machine on stitchdown uppers apears in Patent No. 2,379,425, hereinbefore referred to.

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

1. In a twin machine of that type in which two cycles are required for the complete operation of each station, and in which the machine comes to rest at the end of the first cycle and remains at rest until the operator starts the second cycle, a common actuator for initiating the operation of each cycle in each station, and a manually operated auxiliary actuator for initiating only the second cycle in only one station.

2. In a twin machine of that type in which two cycles are required for the complete operation of each station, and in which the machine comes to rest at the end of the first cycle and remains at rest until the operator starts the second cycle, a common actuator for initiating the operation of each cycle in each station, and two auxiliary actuators, one for each station, for initiating the second cycle only.

3. In a twin machine of that type in which two cycles are required for the complete operation of each station, and in which the machine comes to rest at the end of the first cycle and remains at rest until the operator starts the second cycle, a common actuator for initiating the operation of each cycle in each station, two auxiliary actuators, one for each station, for initiating the second cycle only, and means operated by each auxiliary actuator for rendering said common actuator inoperative in only one station of the machine.

4. In a twin machine of that type in which two cycles are required for the complete operation of each station, and in which the machine comes to rest at the end of the first cycle and remains at rest until the operator starts the second cycle, a common actuator for initiating the operation of each cycle in each station, two auxiliary actuators, one for each station, for initiating the second cycle only, and means operated by each auxiliary actuator for rendering only the next succeeding operation of the common actuator inoperative in only one station of the machine.

5. In a twin machine of that type in which two cycles are required for the complete operation of each station, a common actuator for initiating the operation of each station, means operating automatically at an intermediate stage in the operation of the first cycle in one station for effecting the second cycle in the opposite station, two auxiliary actuators, one for each station, for initiating the second cycle only, and disconnecting means operated by each auxiliary actuator for rendering said common actuator inoperative in only one station of the machine.

6. In a twin machine of that type in which two cycles are required for the complete operation of each station, a common actuator for initiating the operation of each station, means operating automatically at an intermediate stage in the operation of the first cycle in one station for effecting the second cycle in the opposite station, two auxiliary actuators, one for each station, for initiating the second cycle only, and two levers operated by said auxiliary actuators respectively for rendering only the next succeeding operation of said common actuator inoperative in only one station of the machine.

7. In a twin machine of that type in which two cycles are required for the complete operation of each station, a common actuator for initiating the operation of each station, two auxiliary actuators, one for each station, for initiating the second cycle only, means operated by each auxiliary actuator for rendering only the next succeeding operation of the common actuator inoperative in only one station of the machine, and means for indicating that station in which the common actuator is inoperative after operation of an auxiliary actuator.

8. In a twin machine of that type in which two cycles are required for the complete operation of each station, a common actuator for initiating the operation of each station, two auxiliary actuators, one for each station, for initiating the second cycle only, means operated by each auxiliary actuator for rendering only the next succeeding operation of the common actuator inoperative in only one station of the machine, and means operated by said auxiliary actuators for indicating that station in which the common actuator is inoperative after operation of an auxiliary actuator.

9. In a twin machine of that type in which two cycles are required for the complete operation of each station, a common actuator for initiating the operation of each station, two auxiliary actuators, one for each station, for initiating the second cycle only, means operated by each auxiliary actuator for rendering only the next succeeding operation of the common actuator inoperative in only one station of the machine, and two indicators constructed and arranged to be operated by said auxiliary actuators, respectively, to indicate that station in which the common actuator is inoperative after operation of an auxiliary actuator.

10. In a twin machine of the type in which two cycles of operation of the machine are required for the complete operation of each station, operating mechanism including molds constructed and arranged to close on an end portion of a shoe upper, members for flanging the bottom margin of the upper, a common actuator operatively connected to both stations of the machine, and an auxiliary actuator for retracting said molds and said flanging members in only one station.

11. In a twin machine of the type in which two cycles of operation of the machine are required for the complete operation of each station, operating mechanism including molds constructed and arranged to close on an end portion of a shoe upper, members for flanging the bottom margin of the upper, a treadle operatively connected to both stations of the machine, a hand lever for retracting said molds and said flanging members in only one station, and means operated by the treadle for moving said hand lever into an inoperative position.

12. In a twin machine of that type in which two cycles are required for the complete operation of

each station, one treadle for initiating the operation of both stations, two operating members, one in each station, said operating members being so constructed and arranged that movement thereof in one direction initiates the first cycle and movement thereof in the opposite direction, after the performance of the first cycle, initiates the second cycle, connections from the treadle to each of said operating members for moving said members to initiate the first cycle, two hand levers one for each station, and connections from the respective hand levers to said operating members to move said members to initiate the second cycle.

13. In a twin machine of that type in which two cycles are required for the complete operation of each station, one treadle for initiating the operation of both stations, two operating members, one in each station, said operating members being so constructed and arranged that movement thereof in one direction initiates the first cycle and movement thereof in the opposite direction after the performance of the first cycle initiates the second cycle, connections from the treadle to each of said operating members for moving said members to initiate the first cycle, two hand levers one for each station, connections from the respective levers to said operating members to move said members to initiate the second cycle, means operated by the respective hand levers for disconnecting the treadle from said operating members, and means operating during the next succeeding operation of the treadle to restore the connections from the treadle to said operating members.

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