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W. D. THOMAS

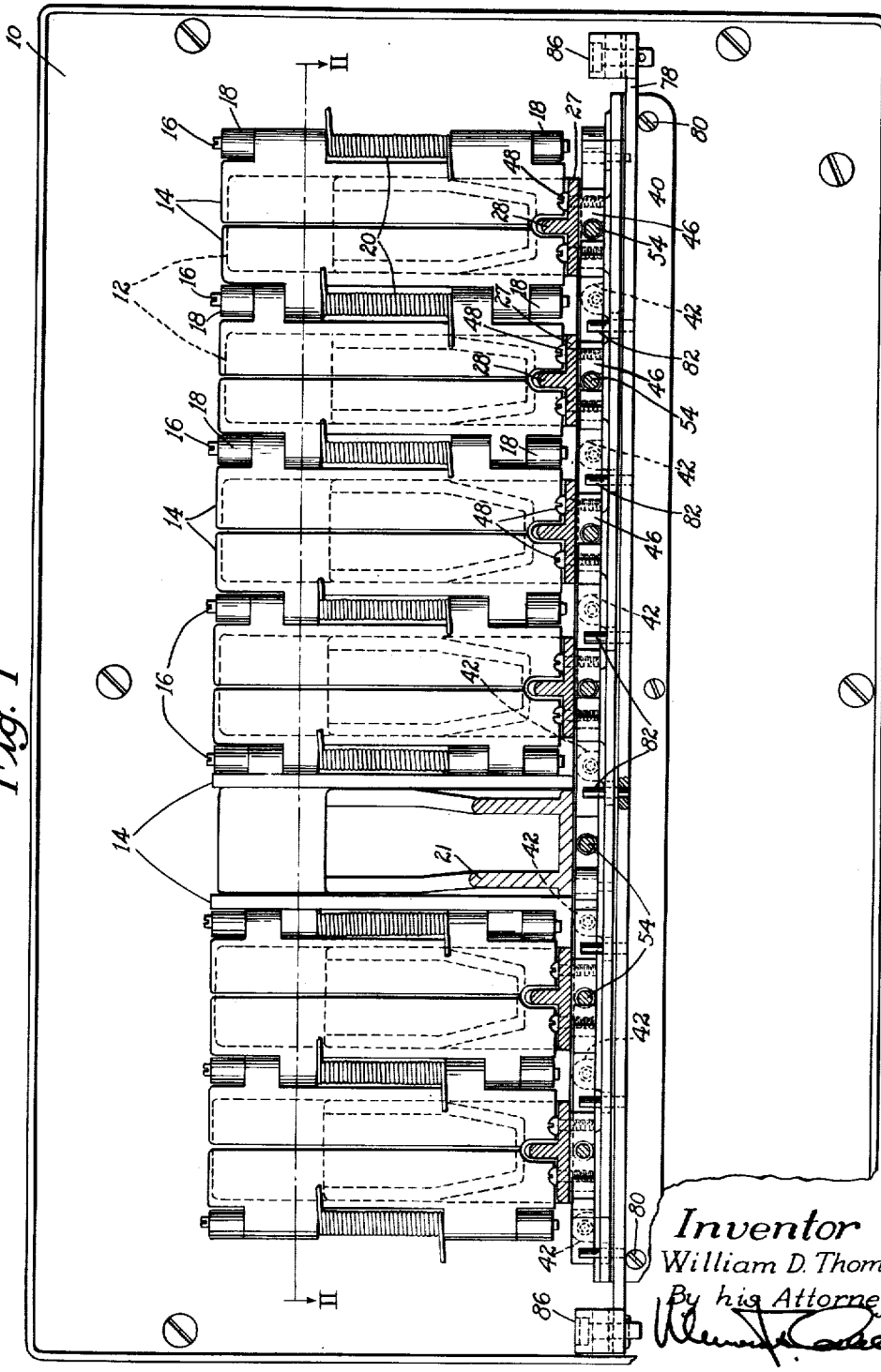
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APPARATUS FOR CONDITIONING SOLES

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3 Sheets-Sheet 1

Fig. 1



Aug. 14, 1951

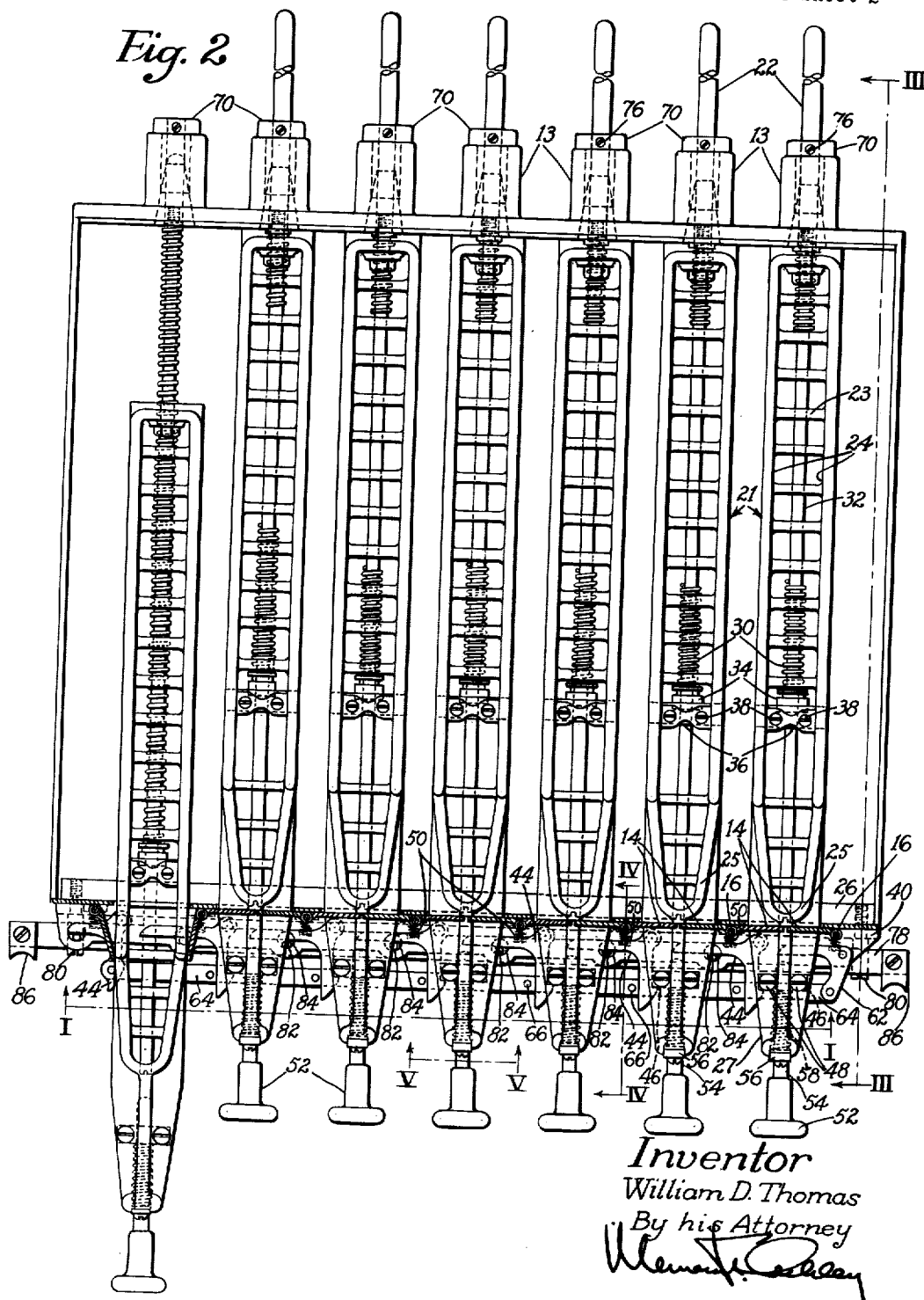
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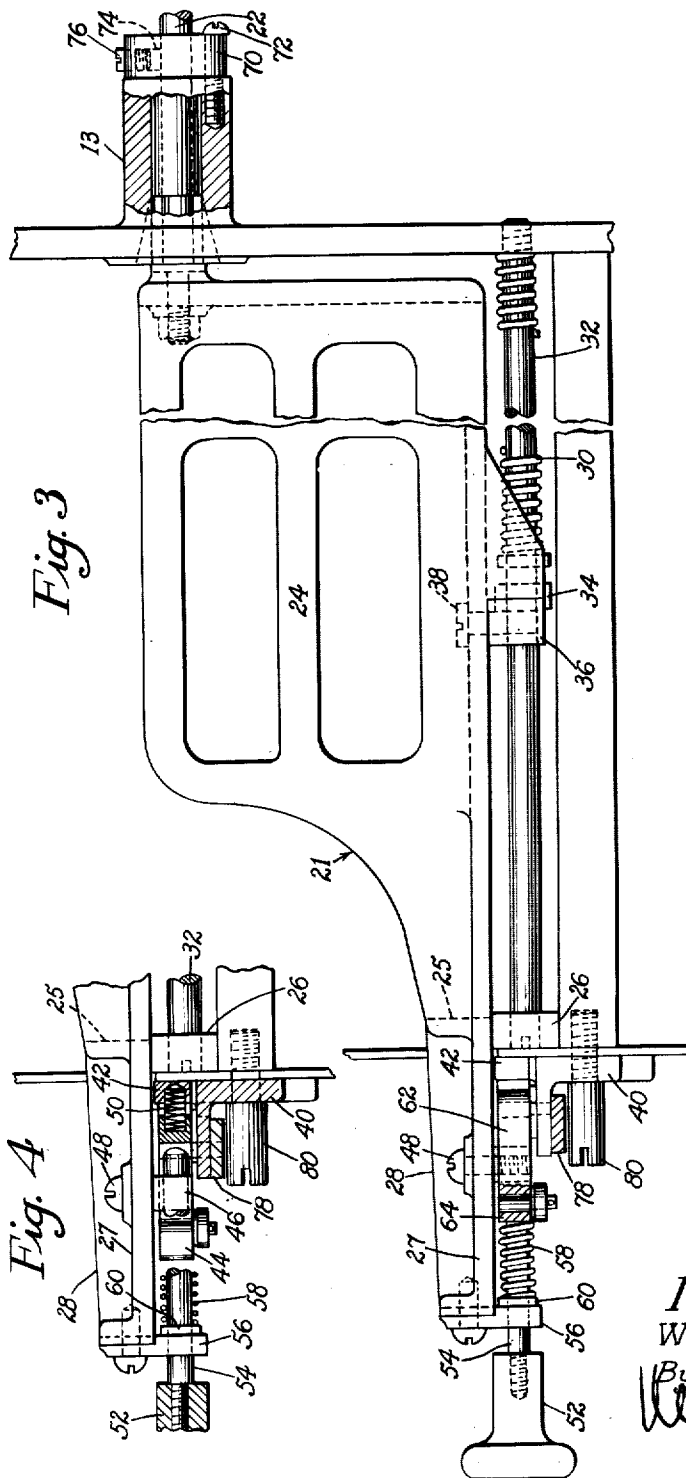
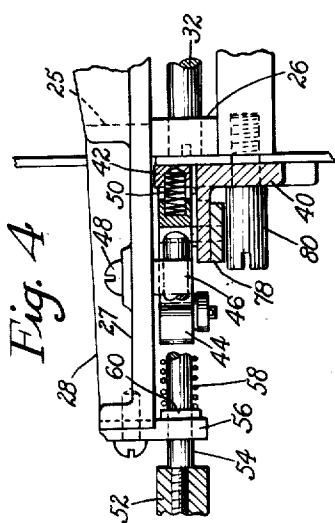
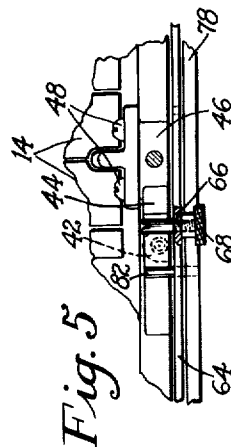
W. D. THOMAS

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APPARATUS FOR CONDITIONING SOLES

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3 Sheets-Sheet 3



Inventor
William D. Thomas
By his Attorney
Wm. D. Thomas

UNITED STATES PATENT OFFICE

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APPARATUS FOR CONDITIONING SOLES

William D. Thomas, Lynnfield, Mass., assignor to
United Shoe Machinery Corporation, Flemington,
N. J., a corporation of New Jersey

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14 Claims. (Cl. 312-273)

1

This invention relates to machines for treating shoe parts and particularly to controls for such machines.

The illustrated machine includes a cabinet for treating a plurality of soles at one time with hot vapor laden air both to temper the soles and activate the cement thereon. Sole carrying trays are provided which are arranged to move in and out of the cabinet so that soles can conveniently be moved into the cabinet for treatment and after treatment be withdrawn from the cabinet to a position convenient to the operator. In accordance with one feature of the invention novel manually controlled means are provided for sequentially withdrawing the trays from the cabinet.

A sole should remain in the cabinet for a period of time ranging from thirty seconds to a minute in order that the cement thereon be properly activated and the leather rendered inert, the length of time depending on the type of cement used and the characteristics of the leather in the soles. To this end and in accordance with another feature of the invention, means are provided for ensuring that the trays remain within the cabinet for a desired length of time. As illustrated, this means consists of sequentially operated controls including tray latches arranged so that when one tray is moved into the cabinet the next tray in the series is unlocked and moved out of the cabinet.

When treated soles are removed from the cabinet they are usually registered with a lasted upper in an adjacent press. This operation takes in the neighborhood of ten seconds. As sixty seconds is usually the longest period required to activate the slower type of cement in general use the cabinet is arranged to hold seven trays, six of which are normally located within the cabinet and the seventh projecting outwardly therefrom for loading purposes. In order to adapt the machine for soles which are conditioned more quickly, means are provided for selectively rendering one or more of the trays inoperative without interfering with the sequentially operated controls for the remainder of the trays so as to correlate the number of trays in use to the minimum treatment time required for the sole being operated upon.

In accordance with another feature of the invention means are provided for simultaneously releasing all latches so that all the trays can be ejected from the cabinet at one time to permit the cabinet to be rapidly cleared of soles when it is desired to discontinue operation for an extended period.

2

These and other features of the invention will appear more fully from the following description when read in connection with the accompanying drawings and will be pointed out in the appended claims.

In the drawings,

Fig. 1 is a front elevation, partly in section, of a cabinet embodying the present invention, the view being taken on line I—I of Fig. 2;

Fig. 2 is a sectional view on line II—II of Fig. 1;

Fig. 3 is a side elevation taken on line III—III of Fig. 2, certain of the parts being broken away to show details of the construction;

Fig. 4 is a side elevation taken on line IV—IV of Fig. 2; and

Fig. 5 is a fragmentary elevation taken along the line V—V of Fig. 2 illustrating a modification of the latch control mechanism.

The illustrated machine includes a cabinet for treating a plurality of soles at one time with hot vapor laden air both to temper the soles and activate the cement thereon. The hot vapor laden air is preferably supplied by apparatus similar to that disclosed in Letters Patent of the United States No. 2,488,533, granted November 22, 1949, on an application filed in the names of Maeser and Gulbrandsen.

The front of the cabinet is provided with seven narrow elongated openings 12 (Fig. 1) through which soles are moved into and out of the treatment chamber. The rear wall of the cabinet is provided with a similar number of hollow cylindrical bearings 13 (Fig. 2) which project outwardly from that wall and are located in alignment with the openings 12 in the front wall of the cabinet. The openings 12 are normally closed by pairs of doors 14 (Fig. 1) which are pivoted on pins 16 located on opposite sides of the openings, the pins 16 being mounted in bosses 18 which project out from the front wall of the cabinet. The doors are biased to a closed position by springs 20 which are sleeved on the mid-portion of the pins 16 and engage the outer surface of the adjacent doors with projecting end portions. At any time during the normal operation of the machine the doors 14 associated with all except one of the openings 12 will be closed thereby reducing the area of the opening leading into the treatment chamber. This will materially assist in maintaining uniform temperature conditions within the chamber.

Slidable through the doors 14 are sole carrying trays 21 (Fig. 3) which move in and out of the cabinet to carry soles into the cabinet for treatment and thereafter withdraw them to a position convenient to the operator, the relative position

3

of the trays within and without the cabinet being best shown in Fig. 2. Each of the trays 21 is supported at its rear end by a stud 22 that extends through the cylindrical rear wall bearing 13 and at its front end is slidably supported on a bar 26 fastened to the rear side of the front wall of the cabinet with its top surface flush with the bottom of the openings 12. The tray 21 is provided with a gridded bottom 23 and spaced side walls 24 arranged to support a sole on its edge, the sides being of reduced height at the front end of the tray and curved inwardly to form a low rounded end wall 25 which is located close behind the doors 14 when the tray is positioned within the cabinet. When the tray is moved outwardly the end wall 25 forces the doors 14 open and they are held in that position by the side walls 24 while the tray is in its projecting position. The front end of the tray 21 which lies forward of the end wall 25 is provided with a flat base portion 27 that extends out from the cabinet and an upstanding central flange 28 which, when the tray is positioned within the cabinet as shown in Fig. 3, fits in complementary shaped recesses formed in the lower portions of the doors 14 (Fig. 1). The trays are urged outwardly from the cabinet by springs 30 sleeved on rods 32 located beneath the trays, the rods 32 being fastened to the rear wall of the cabinet and to the bar 26. The springs 30 are confined between the rear wall of the cabinet and collars 34 which are slidable on the rods 32 and abut against blocks 36 fastened to the under side of the trays by screws 38. When the trays 21 are located within the cabinet, as shown in Fig. 3, the springs 30 are compressed and thus urge the trays outwardly from the cabinet.

The trays are held within the cabinet by a latch assembly which will now be described. Fastened to the front of the cabinet beneath the trays is a latch supporting bracket 40 having seven upstanding ears 42 (Fig. 1) which are located beneath the pivot pins 16, each of these ears being recessed to receive a spring which will be referred to later on. Pivoted on the bracket 40 beneath each of the trays are seven latches 44 which engage behind blocks 46 fastened to the under surface of the tray base portions 27 by screws 48. The latches 44 are urged in a counterclockwise direction, as viewed in Fig. 2, toward their latching position by springs 50 which are seated in the recesses in the ears 42 and engage behind the tail portions of the latches.

The latches are successively released by push buttons 52 mounted on the under side of each of the trays (Fig. 2), the push buttons having studs 54 which extend through aligned openings in brackets 56 depending from the ends of the trays and in the blocks 46 (Fig. 4). Each of the buttons is urged outwardly from the tray by a spring 58 sleeved on the stud 54, the spring being confined between the block 46 and a collar 60 fastened to the stud. The operation of the push buttons is as follows. When pressure is first applied to the button 52 of a projecting tray, the spring 58 collapses allowing the shouldered base portion of the button to engage the bracket 56 and move the tray into the cabinet. Just before the tray reaches the end of its movement into the cabinet the end of the stud 54 will strike the tail of the latch 44 which controls the next tray on its right moving that latch in a clockwise direction as viewed in Fig. 2 to disengage it from the block 46. When the latch has been disengaged from the block 46 the compressed spring

4

30, which is urging the next tray outwardly, will force that tray out through the doors 14 and present a treated sole to the operator. When the tray which has just been moved into the cabinet is latched the operator releases the push button 52 allowing the spring 58 to move the button and its stud outwardly until the collar 60 strikes the flange 56. This outward movement permits the latch associated with the tray which is now projecting from the cabinet to resume its latching position where it can engage the block 46 on the projecting tray when that tray is moved back into the cabinet. When the last tray at the right of the cabinet, as viewed in Fig. 2, is moved into the cabinet its push button stud 54 will strike the end of a bell crank lever 62 causing it to rotate in a clockwise direction and move a link 64 to the left. The link 64 is connected to the head of the latch 44 associated with the tray on the opposite side of the cabinet and this movement of the link will disengage the latch from the block 46 allowing that tray to be ejected from the cabinet by its spring 30.

To prepare soles for cement attachment to uppers the marginal portions of the soles are first coated with cement, usually an appreciable period of time before the attaching operation. In a short time the solvent evaporates leaving the cement deposited on the sole in a hardened non-tacky condition. Immediately prior to the attaching operation the cement is again activated and the leather rendered inert by subjecting the sole to hot vapor laden air in an operation that requires from thirty to sixty seconds depending on the type of cement used and the characteristics of the leather. As the trays in the illustrated machine are sequentially operated and as the operation of registering a treated sole with a lasted upper in an adjacent press requires in the vicinity of ten seconds it will be seen that equipment of the machine with seven trays ensures that a minimum treatment period of sixty seconds will be provided inasmuch as six of the trays are normally located within the cabinet at all times. To adapt the machine for operation upon soles which require less than sixty seconds of treatment, one or more of the trays are rendered inoperative so as to reduce the number of trays in use and thereby correlate the operating cycle with minimum period of time required. This is done by transferring control of the link 64 from the bell crank 62 to the latch associated with the last tray in the series which it is desired to use. To this end the link 64 is provided with holes 66 located behind each of the latches 44 (Fig. 2). To render any number of trays inoperative a headed bolt 68 is inserted in the hole 66 to the right of the last tray in the series which it is intended to use. Then when that tray is pushed back into the machine its push button stud 54 will strike the latch 44 associated with the next tray on the right, as viewed in Fig. 2, in the usual manner. However, when the latch is rotated it will strike the bolt 68 and shift the link 64 to the left thereby cutting out of operation the trays beyond that point and releasing the latch associated with the first tray in the series, which is the left tray shown in Fig. 2. Tray holding means are provided to prevent the tray associated with the control latch from moving out of the cabinet when the control latch is tripped. This holding means consists of a collar 70 (Fig. 3) attached to the bearing 13 by a screw 72. The collar is provided with a tapped opening 74 for the reception of a set screw 76

which when tightened down against the tray stud 22 prevents movement of the tray.

Assuming, for example, it were desired to operate upon soles requiring a thirty second minimum treatment, the adjustments and operation would be as follows. First the bolt 68 would be inserted in the opening behind the fifth tray from the left as viewed in Fig. 2 and the set screw 76 would be tightened against the stud 22 of that tray. This adjustment will render the fifth, sixth and seventh trays inoperative and as one of the remaining four trays is normally out of the machine being loaded or unloaded the remaining three trays have a time dwell in the cabinet of approximately thirty seconds each. Upon operation, the first three trays starting from the left of Fig. 2 will operate in the usual manner when pushed back into the cabinet in that operation of each tray will trip the latch of the next tray to its right. However, when the fourth tray is pushed inwardly, its push button stud 54 will trip the latch associated with the fifth tray rotating that latch in a clockwise direction causing it to strike the bolt 68 and shift the link 64 to the left thereby releasing the first latch and starting the cycle over again. It will be noted that the release of the latch associated with the fifth tray will not result in outward movement of that tray as it is held by the set screw 76 in the collar through which its stud 22 slides. If desired, the set screws 76 associated with the sixth and seventh trays can also be tightened against their studs 22 to prevent accidental ejection of those trays from the cabinet.

When the machine is to be shut down for an extended period as for example at the end of the day, it is desirable to eject all of the trays quickly so that the machine can be unloaded without delay. Simultaneous release of all trays is made possible by a latch release bar 78 (Fig. 1) which is located beneath the flange of the bracket 40 and is supported at each end by a pair of stud screws 80 which are threaded into the front of the cabinet. The bar 78 is provided with seven upstanding pins 82 which extend upwardly through openings 84 in the flange of the bracket 40 (Fig. 2) to a position in front of the tails of each of the latches 44. To release all of the trays the operator pushes inwardly against finger pieces 86 on the ends of the bar 78 thereby applying pressure to the tails of the latches through the pins 82 causing the simultaneous release of all of the latches allowing the trays to move outwardly from the machine.

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

1. A conditioning apparatus comprising a cabinet, means for supporting a plurality of soles for movement into and out of said cabinet, means for independently ejecting said soles from the cabinet, and latches for restraining said ejecting means, said latches being arranged to release the ejecting means associated with one sole upon movement of another sole into the cabinet.

2. A conditioning apparatus comprising a cabinet, a plurality of members for supporting a plurality of soles within said cabinet, manually operated means for moving the soles into the cabinet, and means located between two adjacent supporting members and actuated by said manually operated means for causing adjacent soles to be sequentially ejected from the cabinet, one by one.

3. A conditioning apparatus comprising a cabi-

net, means for supporting a plurality of soles side by side within said cabinet, operator controlled means for moving the soles into the cabinet, and latches releasable sequentially by the operator controlled means for causing successive soles to be sequentially ejected from the cabinet in the order of their relative length of time in the cabinet.

4. A conditioning apparatus comprising a cabinet, a plurality of trays arranged for movement in and out of said cabinet, springs individual to each tray tending constantly to urge each tray out of the cabinet, and means controlled by the movement of each tray into the cabinet for causing an adjacent tray to be ejected from the cabinet by its spring.

5. A conditioning apparatus comprising a cabinet, a plurality of adjacent trays for supporting a plurality of soles side by side within said cabinet, means constantly urging each of said trays outwardly from the cabinet, and sequentially operated latches for normally holding said trays within the cabinet, said latches being arranged to release successive trays for outward movement in a sequential order only.

6. A conditioning apparatus comprising a cabinet, a plurality of trays arranged for movement in and out of said cabinet, means for urging the trays outwardly from the cabinet, latches for retaining the trays within the cabinet, and means for moving the trays into the cabinet, said means being arranged to release the latch associated with the next adjacent tray upon movement of a projecting tray into the cabinet.

7. A conditioning apparatus comprising a cabinet, a plurality of trays located side by side in said cabinet for supporting a plurality of soles within the cabinet to permit the soles to be conditioned, means for urging said trays outwardly from within said cabinet after the soles have been conditioned, a latch for holding each tray within the cabinet, and means for releasing successive latches in a sequential order only thereby to initiate outward movement of the successive trays one at a time in the order of their relative length of time within the cabinet.

8. A conditioning apparatus comprising a cabinet, trays slidable in and out of said cabinet, resilient means for constantly urging the trays outwardly from the cabinet, latches arranged to hold the trays within the cabinet against the action of said resilient means, each of the latches when in latching position having means thereon located in the path of an adjacent tray whereby movement of said adjacent tray into the cabinet releases said latch and thereby permits outward movement of the tray held by said latch.

9. A conditioning apparatus comprising a cabinet, a plurality of trays arranged side by side for movement in and out of said cabinet, means for ejecting successive trays from the cabinet in a sequential order only, and means for rendering selected trays inoperative without interfering with the sequential operation of the remaining trays.

10. A conditioning apparatus comprising a cabinet, a plurality of three or more trays arranged side by side for movement in and out of said cabinet, means for sequentially ejecting the trays from the cabinet, said ejecting means including a displaceable member extending between the end tray on one side of the cabinet and the end tray on the other side of the cabinet, the displaceable member being arranged to cause the outward movement of the second-mentioned tray subsequent to the operation of the first-mentioned

7

tray, and means for transferring the control of the displaceable member from the first-mentioned tray to an intermediate tray for rendering selected trays inoperative thereby to reduce the number of trays in the operating cycle.

11. A conditioning apparatus comprising a cabinet, a plurality of three or more trays located side by side and arranged for movement in and out of said cabinet, means for urging the trays outwardly from the cabinet, sequentially operated latches for holding the trays in the cabinet, means on each of said trays for releasing the latch associated with the next tray in series, said last-named means including a link connecting the latch associated with the last tray in the series with the latch associated with the first tray in the series, and means for transferring the control of said link to the latch associated with an intermediate tray whereby that tray is made the last tray in the series.

12. A conditioning apparatus comprising a cabinet, a plurality of sole supporting trays arranged side by side for movement in and out of said cabinet, means for urging said trays outwardly from the cabinet, a latch for retaining each tray within the cabinet, means for releasing one latch by operating another latch, and means for simultaneously releasing all of said latches.

13. A conditioning apparatus comprising a cabinet, a plurality of sole supporting trays arranged side by side for movement in and out of said cabi-

8

net, means controlled by movement of the trays for sequentially ejecting successive trays from the cabinet in the order of their relative length of time within the cabinet, and means for simultaneously ejecting all of said trays from the cabinet.

14. A conditioning apparatus comprising a cabinet, a plurality of restricted openings in said cabinet, a row of trays slidable through said openings and arranged to support shoe parts within said cabinet, one of said trays always projecting from the cabinet, and manually controlled spring-actuated means for ejecting the other trays successively from the cabinet, said means being arranged to eject each tray in turn from the cabinet when the projecting tray preceding such tray is moved into the cabinet.

WILLIAM D. THOMAS.

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