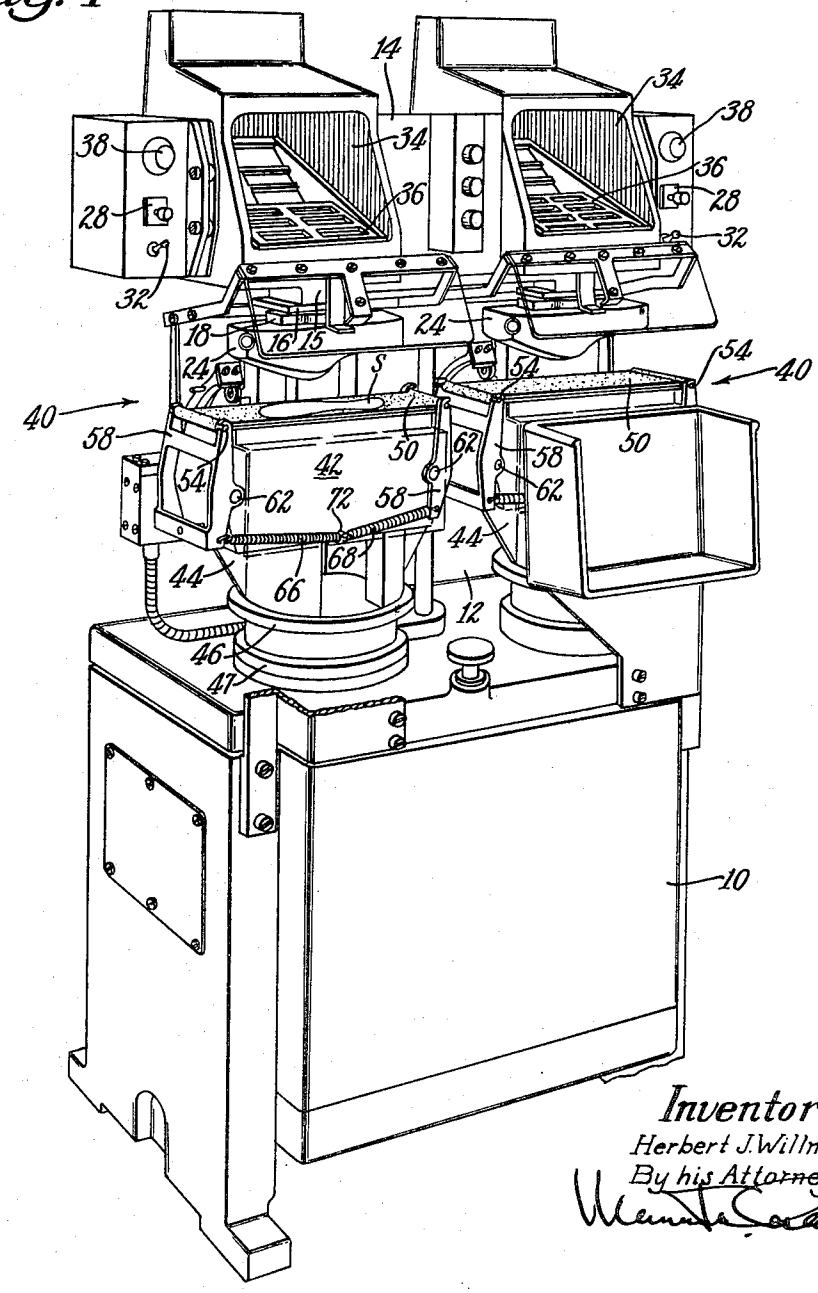
May 3, 1960 H. J. WILLMOTT 2,934,771

PRESSURE APPLYING MACHINES

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Fig. 1



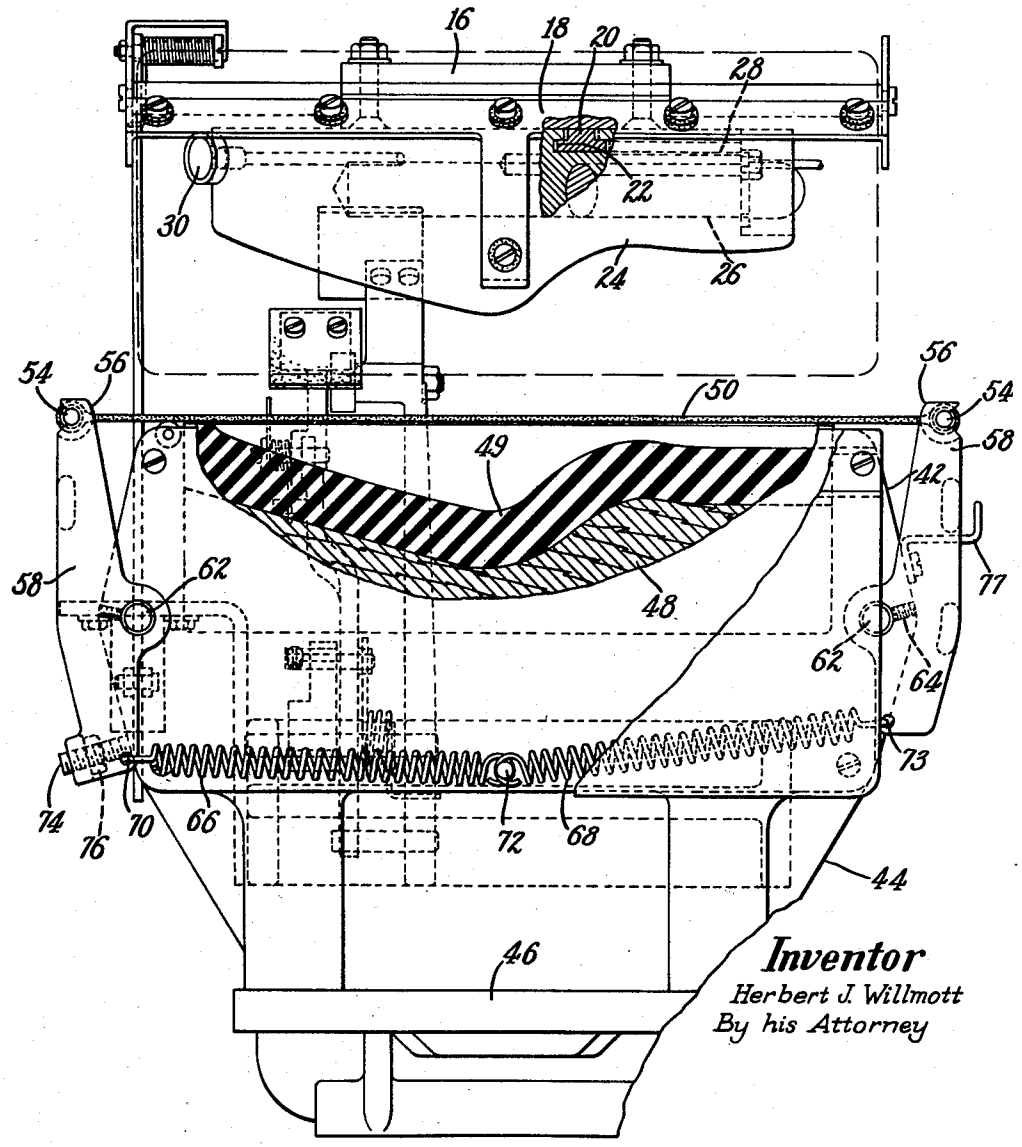
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Fig. 2



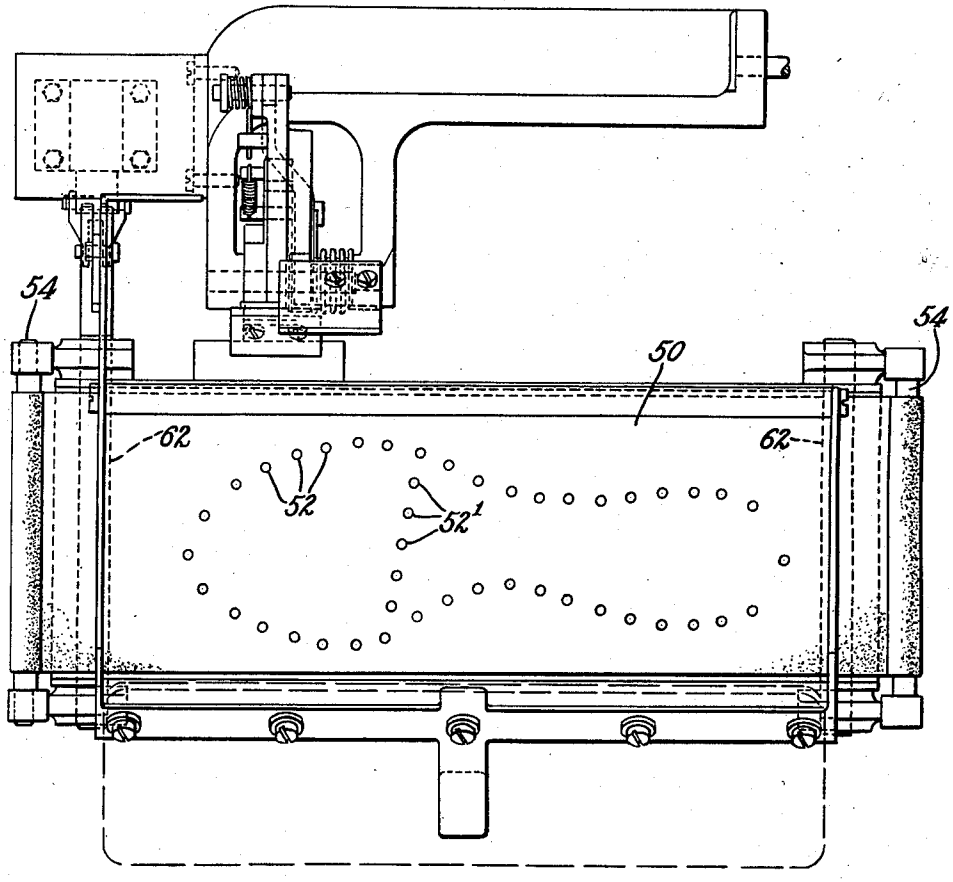
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Fig. 3



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2,934,771

PRESSURE APPLYING MACHINES

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Original application February 16, 1956, Serial No. 566,022, now Patent No. 2,883,685, dated April 28, 1959. Divided and this application October 28, 1958, Serial No. 770,067

5 Claims. (Cl. 12—21)

This invention relates to machines for operating on outsoles to prepare them for cement attachment to shoes, and is herein illustrated as embodied in a machine of the type disclosed in United States Letters Patent No. 2,443,693, granted June 22, 1948, upon an application filed in the name of Hans C. Paulsen, for applying pressure to loose outsoles, the attaching faces of which have been precoated with a thermoplastic cement, to mold them to the desired shape in conformity with the bottoms of shoes to which they are to be attached and simultaneously therewith activating the cement, to permit the immediate attachment of the molded soles to shoe bottoms. The present application is a division of my pending application, Serial No. 566,022, filed February 16, 1956, now Patent No. 2,883,685, granted April 28, 1959.

In operating upon a loose sole to apply molding pressure thereto, it is important that the sole be so positioned on its support with relation to the pressure applying mold member or form that its longitudinal center line will be located approximately in register with the corresponding center line of the form. It is also desirable that the sole to be molded should be so positioned that the so-called "break line" of the sole, namely, the line marking the junction of the ball line and the shank portion, will be substantially in register with the line of maximum bulge on the work-engaging surface of the mold or form. For this purpose prior machines have been provided with mechanical gages movable relatively to the sole support to engage the sole at different localities and position it lengthwise and widthwise of the support. Such sole positioning gages are disclosed, for example, in United States Letters Patent No. 2,607,057, granted August 19, 1952, upon an application filed in the name of L. D. Alderman, wherein the sole to be molded is supported on a flexible blanket extending between the co-operating mold members and is positioned on the blanket by gages which are operated at the beginning of movement of one of the mold members toward the other mold member to position the sole on the blanket relatively to the mold members, and which are retracted during continued movement of said one of the mold members.

With a view to obviating the use of such intricate gage mechanisms, it has been proposed to provide sole-positioning means as an integral part of the blanket itself. Such an arrangement is disclosed in United States Letters Patent No. 2,287,242, granted June 23, 1942, upon application of F. V. Hart, wherein a sole supporting rubber blanket is formed with shoulders adapted to engage the edge face of a sole placed on the blanket at its toe end and at one side respectively to locate the sole lengthwise and laterally of the mold members, the blanket being adjustable to vary the position of the sole-engaging shoulders in accordance with variations in the sizes of soles to be operated on in the machine.

It is an object of the present invention to provide, in a sole molding machine, a sole supporting blanket of the type disclosed in the Hart patent above referred to, having formed integral therewith simplified and improved sole locating means.

As herein illustrated, the blanket has formed integral therewith visual gaging means which enable the operator to locate a sole accurately with relation to the pressure applying mold, the gaging means being, preferably, in the form of a plurality of dots formed in the blanket, as by vulcanization, and disposed in a pattern corresponding to the contour of a sole. The blanket is adjustable longitudinally and transversely of the pad box to vary the location of the pattern in the blanket with respect to the work-engaging surface of the pressure applying mold.

In the drawings,

Fig. 1 is a perspective view of a twin sole molding and cement activating machine in which the invention is embodied;

Fig. 2 is a view in front elevation, partly in section, of the pad box of one station of the machine provided with a flexible sole supporting blanket; and

Fig. 3 is a plan view illustrating means provided on the sole supporting blanket for aiding in accurately positioning a sole thereon.

The invention is illustrated as embodied in a twin station machine for simultaneous molding of a pair of outsoles coated on their attaching faces with a thermoplastic cement and simultaneously activating the cement to prepare the soles for immediate attachment to shoe bottoms, preferably in a twin station sole attaching machine located alongside the molding and activating machine, the two machines being interconnected and synchronized to operate as a unit, in the manner disclosed in my previously mentioned co-pending application.

The machine comprises a base **10** (Fig. 1) in the form of a housing containing fluid pressure mechanism for imparting relative movement between the co-operating mold members. A post **12** extending upwardly from the base **10** supports a casting **14** having at each of its opposite ends a depending boss **15** to which is secured a plate **16** bolted to a second plate **18**. The plate **18** is provided with a downwardly extending T-shaped projection **20** (Fig. 2) adapted to engage in a similarly shaped groove **22** formed in the top of a metal mold or form **24** which is adjustable lengthwise with relation to the plate **18**. The mold **24** is heated by an electric unit **26** controlled by a thermostat **28** (Fig. 1) to heat the mold to the required temperature to activate the thermoplastic cement on an outsole S during the molding operation without risk of damaging the outsole material. A thermometer **30** (Fig. 2) mounted in the mold indicates at all times the temperature of the mold member. To insure that the molded outsole will not adhere to the mold after activation of the cement, the mold is preferably coated with a composition such as polytetrafluorethylene, which is sold commercially under the name of "Teflon" and is a heat and solvent resistant material known to have a low friction coefficient. A switch **32** (Fig. 1) is provided for the heating unit **26**.

In the casting **14** at each station of the machine is formed a cabinet **34** having therein a grid **36** for supporting, right side up, a pair of lasted shoes to which outsoles molded in the machine are to be attached in the sole attaching machine. Each cabinet is heated by an electric heating unit (not shown) provided with a variable duty cycle control **38** which maintains the cabinet heated at a suitable temperature to activate the thermoplastic cement on the bottoms of the shoes to which the molded soles are to be attached.

The heated mold **24** at each station co-operates with a lower mold generally indicated by the reference numeral **40** (Fig. 1). The lower mold comprises a substantially rectangular box **42** formed integral with a casting

44 which is secured to a plate 46 carried by a bracket 47 supported at the upper end of a piston (not shown) forming part of the fluid pressure mechanism housed in the base 10 and by which the lower mold is moved to pressure-applying position relative to the upper mold 24. The fluid pressure system is disclosed in my previously mentioned co-pending application to which reference may be had for a detailed description.

In the box 42 is mounted a block of hard wood 48 (Fig. 2) supporting a mold member consisting of a resilient pad 49 having a molding surface complemental to the work-engaging surface of the mold or form 24.

For supporting a sole between the mold members 24, 49 there is provided a flexible rubber blanket 50 with which is integrally formed, preferably by vulcanization, visual gaging means enabling the operator to locate the sole accurately with relation to the upper mold member 24. As herein illustrated, the visual gaging means is formed by a plurality of spaced dots or inserts 52 (see Fig. 3) arranged in a pattern corresponding to the contour of a sole and of an area large enough to accommodate the largest sole to be molded, a row of similarly spaced dots or inserts 52' being disposed transversely of the pattern for locating the ball line of each sole on the blanket, thereby to aid the operator in positioning soles of different sizes for operation thereon of the mold 24. It will be understood that the gaging means may consist of a continuous design corresponding to the contour of a sole. Preferably, the gaging means should be of a color different from that of the blanket. The blanket 50 is mounted for adjustment longitudinally and transversely of the pad box 42 on pins 54 (Figs. 1 and 2) received in the hooked upper ends 56 of yokes or arms 58, 58 pivotally mounted on shafts 62, 62 extending transversely through the end walls of the pad box and secured against rotation by setscrews 64 threaded through the end walls.

The blanket 50 is maintained in stretched condition by tension springs 66 and 68 (Figs. 1 and 2). The spring 66 has one end hooked through a hole 70 provided in the lower outer end of the left-hand arm 58 and its other end is attached to a pin 72 fixed in the lower mid-portion of the front side wall of the box. The spring 68 has one end hooked through a hole 73 provided in the lower end of the right-hand arm 58 and its other end is attached to the pin 72. The position of the flexible blanket 50 lengthwise of the pad box may be initially adjusted to locate the row of dots or inserts 52' substantially in register with the bulging portion of the work engaging surface of the mold or form 24 so as to apply effective molding pressure along the so-called "break line" or ball line of the sole. For this purpose an adjusting screw 74 (Fig. 2) is threaded through the lower end of the arm 58 at the left end of the pad box and is maintained against the corresponding end wall of the box by the spring 66. The blanket 50 may be shifted bodily to the right or left, with reference to Fig. 2, by turning the screw 74 in one direction or the other, a lock nut 76 being provided for maintaining the screw in the adjusted position. A stop 77 is provided on the inner end wall of the pad box to limit swinging movement of the arm 58 at that end of the pad box in the event the blanket should break.

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 machine for operating on outsoles coated on their attaching faces with a thermoactive cement to shape the soles and activate the cement thereon for immediate attachment to shoe bottoms, the combination of a heated mold arranged to engage the cemented side of a sole to activate the cement, a complementally shaped mold member co-operating with the heated mold to shape the sole, a support for said complementally shaped mold member, arms pivoted at opposite sides of said support, a resilient blanket carried by said arms for supporting a sole between the co-operating molds, visual sole locating means on the sole-engaging surface of said blanket comprising a design having a contour generally corresponding to the contour of a sole to be operated upon to assist in locating the sole with relation to the sole-engaging surface of the heated mold, said design including a transversely extending line corresponding to the ball line of the sole to be molded, and means for varying the angular position of said blanket carrying arms relatively to the support for the complementally shaped mold member, thereby to shift the resilient blanket lengthwise so as to locate said transversely extending line substantially in register with the corresponding line on the work-engaging surface of the heated mold.

2. A sole molding machine having, in combination with a pair of cooperating molds relatively movable to apply molding pressure to a sole, a resilient sole-supporting blanket disposed between said molds and having incorporated therein, in a color different from that of the blanket material, a pattern corresponding generally to the contour of a sole of the largest size and including a transversely extending line with which the ball line of the sole to be molded is registered to locate the sole, irrespective of its size, in position to be operated upon by the molds.

3. A sole molding machine having, in combination with a pair of cooperating molds relatively movable to apply molding pressure to a sole, a resilient sole-supporting blanket disposed between said molds and having incorporated therein, in a color different from that of the blanket material, a pattern corresponding generally to the contour of a sole of the largest size and including a transversely extending line corresponding to the ball line of the sole and with reference to which soles of different sizes may be positioned on the blanket for operation of the molds thereon, and means for shifting the blanket bodily to vary the location of said transversely extending line initially relative to one of said molds.

4. A sole molding machine having, in combination with a pair of complementally shaped molds relatively movable to apply molding pressure to a sole, a resilient sole-supporting blanket disposed between said molds and having incorporated therein, in a color different from that of the blanket material, a plurality of spaced inserts arranged in a pattern corresponding generally to the outline of a sole of the largest size, and additional inserts extending transversely of said pattern in a line corresponding to the ball line of a sole and with reference to which soles of different sizes may be located on the blanket in position to be operated upon by the molds.

5. A sole molding machine having, in combination with a pair of complementally shaped molds relativcly movable to apply molding pressure to a sole, a resilient sole-supporting blanket disposed between said molds and having incorporated therein, in a color different from that of the blanket material, a plurality of spaced inserts arranged in a pattern corresponding generally to the outline of a sole of the largest size and a row of additional inserts disposed transversely of said pattern in a line corresponding to the ball line of the sole and with reference to which soles of different sizes may be located on the blanket in position to be operated upon by the molds, and means for shifting the blanket bodily to vary the location of the row of transversely disposed inserts initially relative to one of said molds.

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