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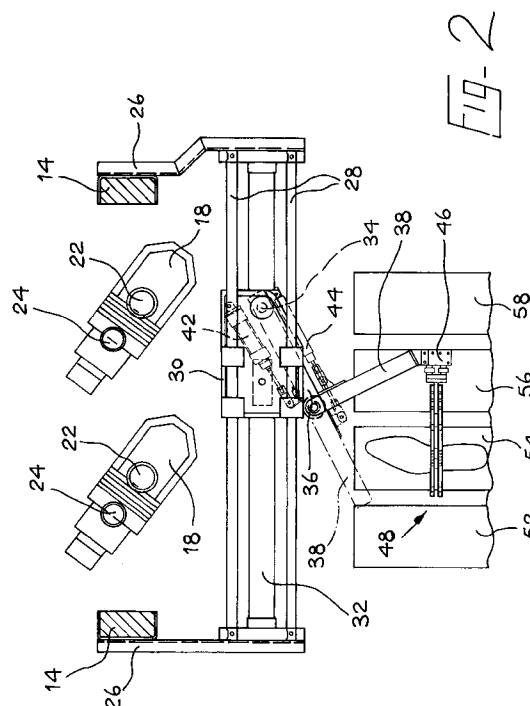
(71) Applicant : **BRITISH UNITED SHOE  
MACHINERY LIMITED**  
**PO Box 88 Ross Walk**  
**Belgrave Leicester LE4 5BX (GB)**

(72) Inventor : **Price, Frank Christopher**  
**15 Southland Road**  
**Leicester LE2 3RJ (GB)**  
Inventor : **El-Toudmeri, Mohammed Jamal**  
**31 Jean Drive**  
**Leicester LE4 0GB (GB)**

(74) Representative : **Atkinson, Eric**  
**c/o British United Shoe Machinery Limited**  
**P.O. Box 88 Ross Walk**  
**Belgrave Leicester LE4 5BX (GB)**

(54) **Shoe sole attaching press.**

(57) The shoe sole attaching press comprises two shoe support arrangements (18) arranged side-by-side, and two jack arrangements (20), one associated with each shoe support arrangement. For firstly engaging a shoe assembly between these two arrangements and for thereafter pressing the assembly therebetween means (not shown) is provided for effecting relevant movement of approach between the arrangements. The press also comprises a gripper arrangement (48) which is mounted so as to be able to engage a shoe assembly being pressed and, after the pressing operation, to remove the pressed assembly from the operating locality, thus enabling the operator to load a further assembly for a further operation. If desired, furthermore, the gripper arrangement is so movable as to enable successive shoe assemblies to be loaded successively into channels (52, 54, 46, 58) of e.g. a shoe chilling apparatus.



This invention is concerned with a shoe sole attaching press comprising a shoe support arrangement providing a support surface conformable to the contour of the bottom of an assembly comprising a lasted shoe and a sole unit to be attached to the bottom of such lasted shoe, and a jack arrangement for engaging the crown of the last of a shoe supported by the shoe support arrangement and also the toe portion of such shoe, and means for effecting relative movement of approach, in a direction heightwise of such shoe, between the shoe support arrangement and the jack arrangement firstly to cause an assembly located between said arrangements to be held therebetween and then to cause such assembly to be pressed therebetween.

Such shoe sole attaching presses are well known and conventional. In one form of press the jack arrangement, which usually comprises two jacks, is adjusted heightwise but otherwise fixed and the shoe support arrangement is mounted for heightwise movement first to hold an assembly against the jack arrangement and thereafter to press it under high pressure thereagainst. Alternatively, however, the shoe support arrangement may remain stationary and the jack arrangement be moved bodily downwards in order to effect such holding and pressing functions. The shoe support arrangement may be made up of a plurality of "leaves" or pads which are moved heightwise under low pressure and conform themselves to the contour of the bottom of the assembly to be operated upon; alternatively the shoe support arrangement may comprise an inflatable bag arrangement.

Whichever type of attaching press is used, the operator must manually load and unload shoe assemblies at the operating locality. It will of course be appreciated that during the loading stage the assembly comprises two separate pieces which require "spotting" together and the operator must therefore ensure that the assembly is correctly spotted at the time of loading the shoe. The unloading is of course relatively simple, in that the assembly is a unitary article, but nevertheless the removal of a shoe requires one hand while the loading of a shoe may require two. The loading and unloading of assemblies by the operator thus affects the productivity which can be achieved using such a press.

It is thus an object of the present invention to provide an improved shoe sole attaching press in which productivity can be enhanced by improving the load/unloading function.

This object is resolved in accordance with the present invention, in a shoe sole attaching press as set out in the first paragraph above, in that there is provided means for gripping such shoe, while the assembly is being pressed as aforesaid, and for thereafter, during relative movement of separation between the two arrangements, moving the thus gripped shoe firstly heightwise to a position intermediate the two ar-

rangements and then sideways, thus to remove the assembly away from the operating locality of the press.

It will thus be appreciated that, using the press in accordance with the invention, the operator need concentrate only upon loading a shoe, with consequent benefits in terms of productivity.

Conventionally shoe sole attaching presses comprise two work stations each comprising a shoe support arrangement, a jack arrangement and means for effecting relative movement of approach and separation therebetween as aforesaid, the arrangement being such that in response to initiation of a pressing operation at one of said stations a pressing operation already taking place at the other station is terminated and relative movement of separation between the two arrangements is initiated. In such a press, furthermore, in accordance with the invention, conveniently prior to termination of such pressing operation the means for gripping and moving the assembly from the operating locality of said other station is actuated to cause the assembly being pressed at said other station to be gripped as aforesaid. In this way, the operation of the gripping and moving means is integrated into the machine operation.

In one construction of a machine in accordance with the invention the gripping and moving means comprises a gripper arrangement mounted on an arm for heightwise movement, said arm being mounted for swinging movement on a carrier therefor. Moreover, in said construction the arm is articulated, a first portion being mounted on the carrier and a second portion, supporting the gripper arrangement, being mounted on the first portion for pivotal movement thereon, the arrangement being such that in the operation of the press the arm is in a straightened condition during the sideways movement of a shoe assembly from the operating locality but the second portion is pivoted on the first when the assembly is clear of said locality, thus to align the shoe with a shoe-receiving device. In this way, a relatively compact arrangement is provided which in general will not extend outside the widthwise dimensions of a conventional shoe sole attaching press. In addition, a degree of versatility and flexibility is provided, allowing a shoe-receiving device to be positioned in any reasonably accessible location.

In the case of a two-station press, preferably the carrier is movable between two "shoe pick-up" positions, one associated with each work station. In any event, however, conveniently the carrier is movable between a plurality of positions for moving shoe assemblies from the (or each) operating locality to one of a plurality of shoe-receiving localities provided by the shoe-receiving device. If desired, furthermore, the shoe-receiving device may be constituted by a loading station of a further machine for operating upon the shoes, e.g. a shoe chilling apparatus. Such apparatus

is usually provided with a plurality of channels, and in such a case preferably shoe assemblies are deposited by the shoe gripping and moving means successively at the various channels of such apparatus.

There now follows a detailed description, to be read with reference to the accompanying drawings, of one shoe sole attaching press in accordance with the invention. It will of course be appreciated that this press has been selected for description merely by way of non-limiting example.

In the accompanying drawings:-

Fig. 1 is a rear view of the sole attaching press in accordance with the invention; and

Fig. 2 is a plan view showing in particular details of shoe assembly gripping and moving means of said press.

The press now to be described is generally conventional, except as hereinafter described; details of the conventional parts of the press will therefore not be given in this specification. The press in accordance with the invention comprises a main frame 10, which comprises a base 12, side columns 14 and a cross-beam 16 supported by the columns. On the base are mounted, side by side, two shoe support arrangements 18 which may be of any conventional type. In addition, mounted on the cross-beam 16 are two jack arrangements generally designated 20, each comprising two jacks 22, 24. The jacks are also of conventional type and can thus be moved towards and away from one another according to the length of the shoe being operated upon, the jack 22 engaging a toe portion of a shoe supported by the shoe support arrangement 18, and the jack 24 engaging a crown of a last of such shoe.

The machine also comprises hydraulic means (not shown) for moving each shoe support arrangement 18 heightwise towards and away from its associated jack arrangement 20, initially under a relatively low pressure, until the shoe supported by the shoe support arrangement is in engagement with the jacks 22, 24, and thereafter under a higher pressure for pressing a sole-and-heel unit against the bottom of the shoe.

As already mentioned, all these features are conventional and well known.

Extending from each column 14, just below the level of the cross-beam 16, are two brackets 26 between which extend two slide rods 28. Mounted for sliding movement on said slide rods is a carrier 30, and between the slide rods 28 is arranged a so-called rodless cylinder 32 which is operatively connected to the carrier 30 to move it along the slide rods. Mounted on the carrier 30 is a pivot shaft 34 on which is mounted an articulated arm comprising a first portion 36 and a second portion 38 pivotally connected together at a pin 40. For effecting swinging movement of the arm 36, 38 about the axis 34, a first piston-and-cylinder arrangement 42 is provided, while for effecting pivotal

movement of the portion 38 about the pivot 40 on the portion 36, a second piston-and-cylinder arrangement 44 is provided.

Mounted on the free end of the arm portion 38, furthermore, is a vertically extending rodless cylinder 46 on which is mounted for sliding movement a gripper arrangement generally designated 48. This gripper arrangement comprises two gripper members movable towards and away from one another whereby to clamp a shoe assembly disposed therebetween.

In the operation of the press in accordance with the invention, usually the operator will load an assembly comprising a lasted shoe and a sole-and-heel unit alternatively in the shoe support arrangements 18. Assuming that a first shoe assembly is loaded at the left-hand shoe support arrangement 18, the operator then effects heightwise movement of the arrangement firstly under relatively low pressure, in order to clamp the shoe assembly against the jacks 22, 24, and thereafter under relatively high pressure to effect a pressing operation whereby the sole-and-heel unit is attached, by previously applied cement, to the shoe bottom. When the relatively high pressure is signalled to commence, the carrier 30 moves to a first "pick-up" position in which, with the arm 36, 38 in a straightened condition, the gripper arrangement 48 can be swung, about the pivot 34, to a position above the shoe assembly; this position of the carrier 30 is determined e.g. by a reed switch (not shown). With the gripper arrangement 48 thus positioned, it is then moved downwardly under the control of the cylinder 46 until the gripper members engage at opposite sides of the shoe, whereupon they are moved to a clamping condition.

Meanwhile, the operator loads a further shoe assembly at the other, right-hand, station and initiates a cycle of operation at that station. When the high pressure application at said other station is initiated, the pressing operation at the first station is discontinued and the shoe support arrangement 18 is moved downwardly away from the jacks 22, 24. During this downward movement the gripper arrangement 48 is moved downwardly also, under the control of the cylinder 46, in order to clear the shoe assembly from contact with the jacks 22, 24. At an intermediate position, however, which may be determined by a reed switch (not shown), the downward movement of the gripper arrangement 48 is discontinued while the downward movement of the shoe support arrangement 18 continues. In this way the shoe assembly is now held clear of both the shoe support arrangement and the jack arrangement. In this condition the arm 36, 38 is then swung about its pivot 34 under the action of the piston-and-cylinder arrangement 42 to an out-of-the-way position. Thus, the operating locality of the left-hand station is made available to the operator for a further shoe assembly to be loaded thereat.

Associated with the press in accordance with the

invention is a suitable shoe-receiving device. Bearing in mind that the next operation following cement sole attaching may often be a shoe chilling operation, this device may be a loading station for a multi-channel shoe chilling apparatus, said loading station being shown diagrammatically in Fig. 2 and generally designated 50. This device thus comprises in the device shown four channels 52, 54, 56, 58. In order to align a shoe assembly removed as aforesaid from the operating locality with its selected channel, firstly the carrier must be correctly positioned and thereafter the arm portion 38 is caused to swing about its axis 40, under the action of piston-and-cylinder arrangement 44, into the desired position of alignment. Thereafter, the gripper arrangement 48 is lowered to its bottom position under the action of cylinder 46 thus to deposit the shoe on the selected channel, whereafter the gripper arrangement 48 releases the shoe and is raised once more to its uppermost position, again under the action of cylinder 46.

In one embodiment furthermore, shoes are loaded successively into each of the channels 52, 54, 56, 58, and in particular channels 52, 54 are associated with the left-hand work station, while channels 56 and 58 are associated with the right-hand work station for this purpose.

Once the shoe assembly has been deposited as aforesaid, and bearing in mind that the shoe unloading process is initiated by initiation of high pressure being applied at the other work station, the carrier 30 moves to a second pick-up position, associated with the right-hand station, and the gripper arrangement 48 is then swung into a position above the shoe assembly which is being pressed and grips it as above described. The procedure as above described is then repeated.

In practice it has been found desirable for the carrier 30 to have four positions, one associated with each channel, 52, 54, 56, 58 for depositing shoes as aforesaid. In each case the positions can be determined by reed switches (not shown).

## Claims

1. A shoe sole attaching press comprising
  - a shoe support arrangement (18) providing a support surface conformable to the contour of the bottom of an assembly comprising a lasted shoe and a sole unit to be attached to the bottom of such lasted shoe,
  - a jack arrangement (20) for engaging the crown of the last of a shoe supported by the shoe support arrangement (18) and also the toe portion of such shoe, and
  - means for effecting relative movement of approach, in a direction heightwise of such shoe, between the shoe support arrangement (18) and

the jack arrangement (20) firstly to cause an assembly located between said arrangements (18,20) to be held therebetween and then to cause such assembly to be pressed therebetween,

characterised by means (48) for gripping such shoe, while the assembly is being pressed as aforesaid, and for thereafter, during relative movement of separation between the two arrangements (18,20), moving the thus gripped shoe firstly heightwise to a position intermediate the two arrangements (18,20) and then sideways, thus to remove the assembly away from the operating locality of the press.

2. A press according to Claim 1 comprising two work stations each comprising a shoe support arrangement (18), a jack arrangement (20) and means for effecting relative movement of approach and separation therebetween as aforesaid, characterised in that in response to initiation of a pressing operation at one of said stations a pressing operation already taking place at the other station is terminated and relative movement of separation between the two arrangements (18,20) is initiated, and in that prior to termination of such pressing operation the means (48) for gripping and moving the assembly from the operating locality of said other station is actuated to cause the assembly being pressed at said other station to be gripped as aforesaid.
3. A press according to Claim 1 or Claim 2 characterised in that the gripping and moving means (48) comprises a gripper arrangement (48) mounted on an arm (36,38) for heightwise movement, said arm (36,38) being mounted for swinging movement on a carrier (30) therefor.
4. A press according to Claim 3 characterised in that the arm (36,38) is articulated, a first portion (36) being mounted on the carrier (30) and a second portion (38), supporting the gripper arrangement (48), being mounted on the first portion (36) for pivotal movement thereon, and in that in the operation of the press the arm (36,38) is in a straightened condition during the sideways movement of a shoe assembly from the operating locality but the second portion (38) is pivoted on the first (36) when the assembly is clear of said locality, thus to align the shoe with a shoe-receiving device (50).
5. A press according to either one of Claims 3 and 4 when tied to Claim 2 characterised in that the carrier (30) is movable between two "shoe pick-up" positions, one associated with each work sta-

tion.

6. A press according to Claim 3 characterised in that the carrier (30) is movable between a plurality of positions for moving shoe assemblies from the (or each) operating locality to one of a plurality of shoe-receiving localities (52 to 58) provided by a shoe-receiving device (50). 5
7. A press according to Claim 3 when tied to Claim 6 characterised in that the arm (36,38) is articulated, a first portion (36) being mounted on the carrier (30) and a second portion (38), supporting the gripper arrangement (48), being mounted on the first portion (36) for pivotal movement thereon, 10  
and in that in the operation of the press the arm (36,38) is in a straightened condition during the sideways movement of a shoe assembly from the operating locality but the second portion (38) is pivoted on the first (36) when the assembly is clear of said locality, thus to align the shoe with a selected shoe receiving locality (52;54;56;58). 15 20
8. A press according to any one of Claims 4, 5 (when tied to Claim 4), 6 and 7 characterised in that the shoe-receiving device (50) is constituted by a loading station (50) of a multi-channel shoe chilling apparatus. 25 30
9. A press according to Claim 8 when tied to either one of Claims 6 and 7 characterised in that shoe assemblies are deposited successively at the channels (52 to 58) of said apparatus. 35

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