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(54) **Heel seat lasting machine.**

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(73) Proprietor: **BRITISH UNITED SHOE MACHINERY LIMITED, PO Box 88 Ross Walk, Belgrave Leicester LE4 5BX(GB)**
(84) Designated Contracting States: **GB**

(73) Proprietor: **DVSG Patentverwaltungs G.m.b.H., Gailusstrasse 10-14, D-6000 Frankfurt am Main 1(DE)**
(84) Designated Contracting States: **FR IT**

(72) Inventor: **Giebel, Gerhard, Hubertusstrasse 12, D-6232 Bad Soden 2(DE)**

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

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Description

This invention is concerned with heel seat lasting machines comprising a shoe support for supporting bottom uppermost a shoe comprising an upper on a last and an insole on the last bottom, heel seat lasting instrumentalities, including a heel band and a pair of wiper plates together with drive means for moving the wiper plates forwardly and inwardly into an advanced position determined by a stroke limiting arrangement, during which movement lasting marginal portions of the shoe upper in the heel seat region thereof are wiped over and pressed by the wiper plates against corresponding marginal portions of the insole, and fastener-inserting means associated with the wiper plates whereby, with the wiper plates in their advanced position, fasteners can be inserted through the lasting marginal portions of the upper into the insole thus to secure said portions to the insole, wherein setting means is provided whereby both the stroke limiting arrangement is set according to the desired advanced position of the wiper plates and also the position of the heel band, lengthwise of the shoe bottom, is set so as to position the heel seat of a shoe supported by the shoe support in a desired relationship with the wiper plates, and thus with the fastener-inserting means, and further wherein means is provided, including two shoe-engaging members arranged one at each side of the shoe support, for orienting the heel seat region of the shoe bottom in a desired relationship with the longitudinal centre line of the heel seat lasting instrumentalities.

One such machine is described in GB-A 2091535. More particularly, the heel seat lasting machine there described is arranged in combination with apparatus for moving successive shoe supports from a loading station to a plurality of operating stations, including one at which the heel seat lasting machine is disposed. The combination as a whole thus enables shoes to be processed automatically through side lasting and heel seat lasting operations, requiring only a single operator for loading and unloading shoes on the shoe supports.

The heel seat lasting machine forming part of the combination is, as stated in the specification, generally similar to the machine described in GB-A 2052950, in which specification constructional details of the machine are described. Thus, in said machine the setting means comprises first manually operable means for positioning the stroke limiting arrangement and second manually operated means for setting the position of the heel band. Furthermore, because of the particular construction of the machine each time the position of the stroke limiting arrangement is altered, the relationship between the back seam region of the heel seat of the shoe and those parts of the fastener-inserting means which drive in the so-called "back tacks" is varied, so that in general it is also necessary to alter the position of the heel band.

It has been proposed in EP-A 58471 to vary the position of the heel band in consequence of any variation of the setting of the stroke limiting arrangement. However, this still requires the manual setting of the stroke limiting arrangement to accommodate each size of shoe.

It will be appreciated that while manual settings have to be made, the machine does not lend itself to fully automatic operation.

It is the object of the present invention to provide an improved heel seat lasting machine in which the various settings referred to are achieved wholly automatically, so that the operator has merely to load and unload shoes on the shoe support.

In accordance with the present invention this object is resolved, in a machine as set out in the first paragraph above, in that the setting means is operated to effect such setting of the stroke limiting arrangement and of the heel band position in response to a signal generated according to the distance moved by the shoe-engaging members in orienting the heel seat region of the shoe as aforesaid, and thus according to the width of the shoe in the region thereof engaged by said members.

It will thus be appreciated that, in using the machine in accordance with the present invention, the heel band position and the stroke limiting arrangement can be set in accordance with the width of the shoe by the utilisation of the orienting means. Thus, the orienting means ensures that the shoe is located correctly in relation to the heel seat lasting instrumentalities, and at the same time the heel seat lasting instrumentalities are properly set according to the shoe dimensions. In this way the settings of the machine and the positioning of the shoe are achieved without interference from the operator, and indeed without significant additional equipment being required in the machine construction.

Conveniently the setting means comprises a servomotor which is operated to effect such setting in response to said signal. It will thus be appreciated that any suitable means for providing a signal can be utilised, and in particular an electrical or electronic signalling arrangement is favoured.

In the machine disclosed in GB-A 2052950 the drive means comprises a fluid pressure operated motor with which is associated an abutment cooperable with the stroke limiting arrangement thus to determine the advanced position of the wiper plates. In the machine in accordance with the present invention, furthermore, preferably the servomotor is effective to position a stop member serving to limit pivotal movement of a lever which is connected to the stroke limiting arrangement and pivotal movement of which is thus effective to move said arrangement as aforesaid. By this mechanical linkage arrangement, it will be seen that a single servomotor may be utilised for positioning the heel band and for setting the stroke limiting arrangement, since the relationship between the degrees of movement of each can be achieved through the mechanical system by which the one setting, in this case that of the stroke limiting arrangement, is effected.

Furthermore, in a preferred embodiment the stop member is operatively connected to the servomotor by a Bowden cable and a locking arrangement is provided for locking the stop member in its adjusted position. In this way a remote connection can readily be achieved between the heel band and the stroke

limiting arrangement, while preserving a single servomotor for effecting setting of each.

In GB-A 2092430 is described a modificaton of the machine as disclosed in DE-A 2052950, in which modification the wiper plates are positioned, initially in a machine cycle, in an intermediate position. In this intermediate position the wiper plates are so positioned that, as the shoe is moved into engagement with the heel band, the leading edges of the wiper plates just traverse over the margin of the shoe bottom and thus provide an abutment by which the heightwise position of the shoe bottom can be determined. This is seen as advantageous in that firstly it is no longer necessary to provide a presser foot at the operating locality of the machine, and secondly, because the leading edges of the wiper plates engage the shoe bottom in the region over which they will subsequently operate to effect a lasting operation, the shoe bottom is properly oriented both lengthwise and widthwise by the use of the wiper plates in this manner.

In the machine in accordance with the invention, therefore, preferably the setting means comprises a signalling device for generating a signal by which the initial operation of the drive means is controlled to bring the wiper plates to said intermediate position, said signalling device being itself actuated according to the distance moved by the shoe-engaging members in orienting the heel seat region of the shoe as aforesaid, and thus according to the width of the shoe in the region thereof engaged by said members. More particularly, in a preferred embodiment the signalling device comprises a switch-and-actuator arrangement associated with the drive means, and the servomotor, when operated as aforesaid, is effective to cause said arrangement to be moved into a de-actuated condition, thus causing said signal to be generated to operate the drive means to return said arrangement to an actuated condition, and thus to move the wiper plates to their intermediate position. It will thus be appreciated that this further setting is now automatically achieved, and indeed by the use of the single servomotor acting through a linkage arrangement which affords the necessary proportionality of movement of the signalling device in relation to that of the stroke limiting arrangement.

Conveniently, the signal in response to which the setting means is operated as aforesaid is also generated by a signalling device comprising a switch-and-actuator arrangement operatively connected to the shoe-engaging members of the orienting means, the movement of said members in orienting the heel seat of the shoe as aforesaid being effective to cause said arrangement to be moved into a de-actuated condition, thus causing said signal to be generated to operate the setting means to return said arrangement to an actuated condition, and thus to set the stroke limiting arrangement and the heel band position as aforesaid. It will of course be appreciated that, instead of such an arrangement, it would be possible to utilise e.g. a linear potentiometer by which the distance moved by the shoe-engaging members could be monitored, such potentiometer feeding a signal to the servomotor.

In the machine described in GB-A 2052950 the shoe support is movable into and out of an operative position, in which the heel end of a shoe supported thereby is engagable with the heel band. In the machine of GB-A 2091535, on the other hand, the shoe support is fixed and the whole of the operating parts of the heel seat lasting machine is movable bodily towards and away from the shoe support. Whichever system is utilised, from the teaching of GB-A 2091535 it is clear that the shoe is oriented only after it has been received in the heel band, that is to say after it has reached the operating locality of the machine. It will of course be clear that such an arrangement would be disadvantageous in the context of the present invention, in accordance with which, therefore, preferably, the orienting means and the setting means are operable as aforesaid prior to movement of the shoe support into its operative position. In particular by this arrangement the setting of the various integers of the machine can take place before the shoe is moved into the heel band, such prior setting being of course only achievable if the shoe is previously oriented and its width measured.

Conventionally in heel seat lasting machines a holddown is provided engagable with the heel seat of a shoe supported by the support for clamping the shoe on the latter. In accordance with the present invention, furthermore, preferably the holddown, which comprises three contact points for engagement with the shoe bottom thus to orient the plane of the heel seat of the shoe in a desired plane, engages the shoe bottom in the heel seat region thereof prior to operation of the orienting means. It will be appreciated that, by virtue of a holddown of the aforementioned construction engaging the shoe prior to the operation of the orienting means, the plane of the heel seat is oriented prior to the engagement of the shoe by the shoe-engaging members of the orienting means, so that the setting means is caused to operate as aforesaid only after the shoe has been positioned, so far as concerns the plane of its heel seat, appropriately for the heel seat lasting operation.

In the machine disclosed in GB-A 2091535 the shoe support comprises a toe rest which is moveable in a direction heightwise of the shoe, the arrangement being such that in the operation of the machine it is first moved in said lengthwise direction beneath the shoe toe, until arrested by the engagement of an upstanding abutment portion thereof with the toe, and is then moved heightwise into a position of contact with the shoe toe thus to support the toe end of the shoe. In accordance with the present invention, furthermore, preferably the toe rest is rockable about an axis extending lengthwise of the shoe in one or other direction according to whether the shoe supported thereby is a left or a right, and in that a signalling device is associated with the toe rest and is actuated in response to rocking movement of the toe rest, generating a signal indicating the presence of a left or a right shoe. This signal may have a variety of uses, one of which is to cause heightwise movement of the toe rest to be discontinued and, if desired, to cause the toe rest to

be locked in the position to which it has been so moved.

There now follows a detailed description, to be read with reference to the accompanying drawings, of one machine in accordance with the invention. This machine, it will be appreciated, has been selected for description merely by way of non-limiting example of the invention.

In the accompanying drawings:-

Figs. 1 to 3 show, in diagrammatic form, a side view of a shoe support of the machine in its loading position, indicating various stages in the movement of a toe rest of the support to engage the toe end of the shoe;

Fig. 4 is a fragmentary view showing details of the toe rest;

Fig. 5 is fragmentary view indicating the action of orienting means in relation to a shoe supported by the shoe support; and

Fig. 6 is a fragmentary plan view of the machine, showing details of heel seat lasting instrumentalities and setting means thereof.

The machine now to be described is generally similar, accepted as hereinafter described, to the machine described in GB-A 2052950, but modified as set out in GB-A 2092430, and comprises a shoe support generally designated 110 for supporting, bottom up, a shoe 2 on a last 1, with an insole on the last bottom. In general, it will be expected that the toe region of the shoe will already have been lasted. The shoe support 110 comprises a heel end support comprising a last pin 27 carried on a last post 3 which is mounted for heightwise movement in a casting 4. The casting 4 is mounted for pivotal movement about a transverse axis (not shown) to move the shoe support bodily into and out of an operative position in which the heel seat of the shoe is located at an operating locality of the machine.

For setting the heightwise position of the heel end of the shoe, while the shoe support 110 remains in a loading position spaced from the operative position, a holddown 5 is arranged in opposed relationship with the last post 3, said holddown being mounted, by means (not shown), for movement with the shoe support 110 between loading and operative positions. The holddown is secured at the end of a piston rod 6 of a piston-and-cylinder arrangement 7 for movement between advanced and retracted conditions. When the last 1 is placed on the pin 27, the piston rod 6 is in its retracted condition to facilitate loading. It is thereafter moved to its advanced condition (see Fig. 1) and is locked in that condition, thereby setting a height datum for the heel end of the shoe. With the holddown 5 thus locked, the last post 3 is then moved heightwise to bring the heel seat 28 of the shoe 2 into engagement with the holddown 5, thereby positioning it at the height datum.

The holddown 5 comprises three projections 8, 9 and 10 (Fig. 5), which are arranged in a triangle in relation to one another and thus define a plane 11 (shown in chain-dot line in Fig. 1). By pressing the shoe 2 against the holddown 5 the heel seat 28 is thus oriented according to the plane 11. This plane 11 corresponds to a plane in which a lasting wiper assembly of the heel seat lasting machine (to be referred to hereinafter) moves; this plane is shown by the chain-dot line 12 in Fig. 1. The lasted shoe is thus disposed in a defined position, not only at its heel end but also at its toe end 13.

The shoe support 110 also comprises a toe support 14 for supporting the shoe toe 13. In order to bring the toe support 14 automatically into the correct position beneath the shoe toe 13, in a first step the toe support is advanced in a direction towards the last post 3, until an abutment plate 15 associated with the toe support abuts against the forward end of the shoe toe 13. This position is shown in Fig. 2. The toe support 14 is mounted on a support bracket 111 on which a holder 22 for the abutment plate 15 is also mounted for limited pivotal movement about an axis 21. The support bracket 111 is carried by a piston rod 16 of a piston-and-cylinder arrangement 17 which is mounted on an arm 18 for sliding movement lengthwise thereof, i.e. towards and away from the last post 3. The arm 18 is secured to the last post 3, and the piston-and-cylinder arrangement 17 together with the toe support 14 thus also effects swinging movement with the last post 3 into and out of the operative position. For effecting sliding movement of the toe support 14 into the position shown in Fig. 2, a piston-and-cylinder arrangement 19 is provided, which is secured to the arm 18 and, through its piston rod 20, is connected to the piston-and-cylinder arrangement 17.

When the abutment plate 15 abuts the forward end of the shoe toe 13, there arises a turning moment which is applied to the abutment plate 15 and slightly pivots the latter about the axis 21. The holder 22 for the abutment plate 15 thus engages a switch 23. Operation of this switch terminates the advancing movement of the piston rod 20 and thus of the toe support 14; this position of the toe support is shown in Fig. 2. By a sequence control (not shown, but of conventional type) the piston-and-cylinder arrangement 17 is then actuated whereby the toe support 14 is advanced until it engages with the shoe toe 13. This position is shown in Fig. 3. The toe support 14 is journalled at its centre on an axis 24 which extends lengthwise of the shoe 2: see especially Fig. 4. Thus, the toe support 14 can be pivoted into two end positions, of which the one is shown by unbroken line and the other chain-dot line in Fig. 4. The toe support 14 is pivoted into one or other of these positions by pressing it against the shoe toe 13, the position reached being determined according to whether a right or a left shoe is placed on the last post 3. It will of course be appreciated that, when a shoe is placed on the last pin 27 in generally the correct orientation for the heel seat lasting operation to be performed, and bearing in mind that the toe end of the shoe will be offset from the longitudinal centre line of the heel end of the shoe, according to whether the shoe is a left or a right, the toe end will be likely to be disposed in relation to the toe rest 14 at one or other side of the axis 24, according to whether the shoe is a left or a right. Such offset relationship about the axis 24 will of

course cause the toe rest 14 to be tilted in one or other direction accordingly.

Whichever the direction of pivot of the toe support 14, and thus whichever end position it assumes, a switch 25 or 26 (constituting a signalling device) is appropriately actuated which supplies a signal indicating the presence either of a left or a right shoe, and also causing the advancing movement of the toe support 14 towards the shoe to be arrested. The toe support is now in the position shown in Fig. 3 and is locked in said position. It will be appreciated that this end position has been reached automatically, accommodating to the position of the shoe toe 13.

The machine in accordance with the invention also comprises orienting means for closely orienting the heel end of the shoe to bring the longitudinal centre line thereof into alignment with the longitudinal centre line of the operating locality of the machine, more especially with a longitudinal centre line 101 of the lasting wiper assembly. The orienting means 112 comprises two shoe-engaging members 29, 30 (Figs. 2 and 5, but omitted in Figs. 1 and 3 for reasons of clarity), arranged one at each side of the last post 3, which members are supported by bell crank levers 31, 32 pivotally mounted on a rail 102 which is fixedly connected with the holddown 5, the arrangement being such that, upon moving an actuator block 33 heightwise relative to the rail 102, the members 29, 30 are moved transversely of the shoe towards or away from the heel seat region thereof. For maintaining the members 29, 30 horizontal, two additional links 34, 35 are provided which are pivotally connected at one end (by axes 103, 104) to the members and at the other to the rail 102, such that together with the appropriate parts of the bell crank levers 31, 32 they form a parallelogram. The actuator block 33 is provided with an annular groove 36 into which appropriate ends of the bell crank levers 31, 32 project, these ends carrying rolls 37, 38 for easy mobility in the groove 36. The actuator block 33 is secured to a piston rod 39 of a piston-and-cylinder arrangement 40 secured to the rail 102. Upon retraction of the piston rod 39 the actuator block 33 is moved upwardly towards the piston-and-cylinder arrangement 40, whereby the two shoe-engaging members 29, 30 are urged against the sides of the shoe (see Fig. 5).

The illustration in Fig. 2 shows a position of the rolls 37, 38 and the bell crank levers 31, 32, which position relates to a relatively small shoe 2 and in which the rolls 37, 38 lie higher than shown in Fig. 5. The rail 102 secures the presser member 5 and thus also the shoe-engaging members 29, 30, against rotation. The end of the rail 102 remote from the presser member 5 is also secured against rotation.

It will be appreciated that, by virtue of the above-described arrangement, the two shoe-engaging members 29, 30 are moved equidistantly towards or away from the shoe. Furthermore, it will be apparent from Fig. 5 that the members 29, 30 are also spaced equidistantly from the longitudinal centre line of the shoe support 110. In this way, therefore, the heel end portion of the shoe engaged by said members is brought to a position of symmetry about the longitudinal centre line of the shoe support (bearing in mind that in general it is to be expected that the heel end portion of the bottom of a shoe will be symmetrical about a longitudinal centre line of such portion). In this way, therefore, the heel end of the shoe is oriented appropriately for the operating locality of the machine, to which it will subsequently be moved by the swinging movement of the shoe support.

The orienting means 112 also serves to measure the width of the shoe bottom in the region of engagement thereof by the shoe-engaging members 29, 30, and more particularly by sensing the amount of movement of one (30) of such members in engaging the shoe. For transferring this measurement information, furthermore, said one member 30 has associated therewith a lever arm 41, which is formed integral with the lever 35, said lever arm 41 having connected thereto a connector 44 carried by the core 43 of a Bowden cable 42. The use of this arrangement will now be described with reference to Fig. 6, in which are shown details of the side lasting assembly of the machine.

The machine in accordance with the invention comprises heel seat lasting instrumentalities including a heel band 45 together with a lasting wiper assembly comprising two wiper plates 46. The heel band and lasting wiper assembly are basically conventional. It will be appreciated that, as is conventional in tack seat lasting machines, the end position, i.e. the position after inwiping, of the wiper plates 46 and also the position of the heel band 45 lengthwise of the shoe have to be varied in order that the pattern in which the nails are inserted can be controlled and also positioned in relation to the shoe bottom. This is disclosed in detail in GB-A 2052950.

In the machine in accordance with the present invention, the positions of the heel band 45 and wiper plates 46 are controlled automatically by setting means in response to a signal generated according to the widthwise measurement effected by the shoe-engaging members 29, 30. To this end, there is secured to the end of the core 43 of the Bowden cable 42 an actuator 47 which is journalled for lengthwise shifting movement along a longitudinal guide 48. The actuator 47 has at both its ends inclined surfaces 49, 50 which are sensed by switch contacts 51, 52. The contacts 51, 52 actuate switches 53, 54. The actuator 47 and switches 53, 54 constitute a signalling device of the machine. The switches 53, 54, when actuated serve to supply a signal to operate a servomotor 55 forming part of setting means generally designated 113 of the machine. The direction of rotation of the servomotor 55 depends upon which of the switches has been actuated. This actuation of the switches 53, 54 is effected through the contacts 51, 52 by the actuator 47 being moved under the action of the core 43 along its guide 48 relative to the switches to move them out of their normal, de-actuated condition.

When the servomotor 55 is switched on it rotates a threaded spindle 56 which projects into a nut member 57. Thus, according to the particular direction of rotation of the threaded spindle 56, the nut mem-

ber moves either towards the servomotor 55 or away therefrom. The nut member 57 is integral with an arm 58 which is connected to a slide 59 journalled at its opposite sides in slide guides 60, 61. On the slide 59 is secured the heel band 45 which is thus moved in a direction towards or away from the shoe support 110 correspondingly upon movement of the slide 59 taking place as aforesaid. For positioning the heel band, furthermore, there is secured to the slide 59 a connector piece 62 which, upon movement of the slide 59, serves to move both a rod 63 (about whose function details are set out included below) therewith and also a carrier 64 on which the two switches 53, 54 are mounted. Thus, upon actuation of the servomotor 55, the slide 59, and thus the carrier 64, are moved relative to the actuator 47, in a direction determined according to which switch has been operated, until the two contacts 51, 52 assume again their normal position shown in Fig. 6, in which the servo-motor 55 is switched off. In this way, the slide 59, and thus the heel band 45, assume a position which corresponds to the position of the actuator 47, which is itself determined according to the width of the shoe as measured by the shoe-engaging members 29, 30, whereby the position of the heel band 45 is matched to such measured width.

For determining the "end of inwipe" or advanced position of the wiper plates 46 a stroke limiting arrangement generally designated 114 is provided (this arrangement being generally as described in GB-A 2052950). For setting the arrangement 114 according to shoe width as measured by the members 29, 30 the setting means 113 comprises a U-shaped slide 81 supporting at the ends of its arms two stroke limiters 82, 83 (described in detail in GB-A 2052950). For setting the position of the slide in dependence upon the measured shoe width, a Bowden cable 84 is provided which is connected by its core 85 to the slide 59 and thus effects therewith the shifting movement of the latter. The Bowden cable 85 terminates in a smooth round bolt 86 which is guided in a bore 99 formed in a stationary support 95 of the machine. The bolt provides an abutment surface 87 for engagement by a pin 88 which is secured to a lever 89 pivotally mounted on stationary support 90. One, bifurcated, end 91 of the lever engages a pin 92 secured in the slide 81, while the other end is connected to a piston rod 93 of a piston-and-cylinder arrangement 94 which is secured on a stationary support 95.

In operation of this stroke limiting arrangement, if for example a change is made from a larger to a smaller shoe, then the slide 59 effects an advancing movement (downward, viewing Fig. 6) whereby through the Bowden cable 84 the bolt 86 is moved upwards. When such movement is terminated as aforesaid, then, by a known sequence control, the bolt 86 is clamped in position by a bar lock arrangement 96 operated by a piston-and-cylinder arrangement 98 through its piston 97. After the bolt 86 is thus locked, the piston rod 93 of the piston-and-cylinder arrangement 94 is retracted to pivot the lever 89 until the pin 88 abuts against the abutment face 87 of the bolt 86. During this movement of the lever 89 the pin 92 and thus the slide 81 are shifted forwardly to assume a position which is matched to the measured shoe width.

For moving the wiper plates 46 into and out of their advanced position, the heel seat lasting instrumentalities also comprises a piston-and-cylinder arrangement 79 having a forwardly extending piston rod 80 which is operatively connected to the wiper plates, and also having a rearwardly extending piston rod 78 for cooperating with the stroke limiting arrangement 114, as described in detail in GB-A 2052950. The "end of inwipe" position of the wiper plates 46 is thus accordingly set, more particularly by the engagement of an abutment 100 carried by the piston rod 78 with the stroke limiter 83, as explained in detail in GB-A 2052950.

Thus the shoe-engaging members 29, 30, in addition to orienting the longitudinal axis of the heel portion as aforesaid, have not only the function of setting the position lengthwise of the shoe 2, of the heel band 45 but also serve to position the stroke limiting arrangement 114.

As described in detail in GB-A 2092430, the wiper plates 46 have also an intermediate position in which, when the shoe is positioned at the operating locality of the machine, leading edge portions of the wiper plates 46 have just traversed the edge of the insole, thereby affording a further "holddown effect" for ensuring the correct orientation of the plane of the heel seat to the inwiping plane of the wiper plates. For setting this intermediate position, the setting means 113 also comprises the aforementioned rod 63 which serves to transfer to the wiper assembly the setting of the carrier 64 as controlled by the servomotor 55. To this end, the rod 63 through a pivotal connection 65 engages a lever 66 which at its one end is pivotably mounted at 67 on a bracket 68 fixed to a frame portion of the machine. The other, bifurcated, end 69 of the lever 66 engages a pin 71 secured in a plate 70 on which are mounted two switches 72, 73 cooperating with an actuator 74. The actuator 74 has two inclined surfaces 75, 76 by which the two switches 72, 73 are actuated. The actuator 74 and switches 72, 73 also constitute a signalling device of the machine. The actuator 74 is fixedly connected by an arm 77 to the rearwardly extending piston rod 78 of the piston-and-cylinder arrangement 79. The actuator 77 is thus moved with the wiper plates 46 correspondingly upon movement of the piston rod 78.

In the operation of this arrangement, when the rod 63 is moved, the plate 70 is correspondingly moved via the lever 66, whereby one of the two switches 72, 73 is actuated as it is moved relative to the actuator 74. Depending upon which switch is actuated, pressure fluid is admitted to the appropriate side of the piston-and-cylinder arrangement 79, whereupon the piston, and thus also the piston rod 78, is moved, such movement continuing until actuator 74 is moved back to a position in which the two switches 72, 73 assume their normal, de-actuated, position as shown in Fig. 6. In this way the lasting wiper assembly assumes an intermediate position corresponding to the width of the shoe as measured by the shoe-engaging members 29, 30.

It will be appreciated that in the machine de-

scribed above the positioning of the heel end of the shoe at the correct height datum and also the orienting of the shoe by the orienting means 113, and indeed the consequent setting of the heel seat lasting instrumentalities of the machine as aforesaid all take place while the shoe support 110 is in the loading position. This, the setting of the various instrumentalities can take place without interference by the shoe and similarly the orienting of the shoe can be effected without interference from the instrumentalities. In the operation of the machine, when the orienting and setting has taken place, the operator initiates a cycle of operation whereupon the shoe support is swung into the operating position, the heel seat of the shoe passing just beneath the wiper plates 46 in their intermediate position so that the control of the height datum is readily transferred from the holddown 5 to the wiper plates without loss of orientation or height setting of the shoe. For avoiding any collision between the holddown and the wiper plates, furthermore, the projections 8, 9 and 10 on the holddown 5 should be positioned so as to avoid contact with the wiper plates during the inswinging movement. Similarly, the shoe-engaging members 29, 30 should be so dimensioned as not to collide with the leading edge of the heel band 45 during such inswinging movement; alternatively, provided the clamping of the shoe to the last post 3 by the holddown 5 is sufficiently secure, the orienting means 112 may be returned to an out-of-the-way position after setting and prior to the inswinging movement.

Claims

1. Heel seat lasting machine comprising
a shoe support (110) for supporting bottom uppermost a shoe comprising an upper on a last and an insole on the last bottom,
heel seat lasting instrumentalities, including a heel band (45) and a pair of wiper plates (46) together with drive means (79) for moving the wiper plates (46) forwardly and inwardly into an advanced position determined by a stroke limiting arrangement (114), during which movement lasting marginal portions of the shoe upper in the heel seat region thereof are wiped over and pressed by the wiper plates (46) against corresponding marginal portions of the insole, and
fastener-inserting means associated with the wiper plates (46) whereby, with the wiper plates (46) in their advanced position, fasteners can be inserted through the lasting marginal portions of the upper into the insole thus to secure said portions to the insole,
wherein setting means (113) is provided whereby both the stroke limiting arrangement (114) is set according to the desired advanced position of the wiper plates (46) and also the position of the heel band (45), lengthwise of the shoe bottom, is set so as to position the heel seat of a shoe supported by the shoe support (110) in a desired relationship with the wiper plates (46), and thus with the fastener-inserting means,
and further wherein orienting means (112) is provided, including two shoe-engaging members (29, 30) arranged one at each side of the shoe support (110), for orienting the heel seat region of the shoe bottom in a desired relationship with the longitudinal centre line of the heel seat lasting instrumentalities,
characterised in that the setting means (113) is operated to effect such setting of the stroke limiting arrangement (114) and of the position of the heel band (45) in response to a signal generated according to the distance moved by the shoe-engaging members (29, 30) in orienting the heel seat region of the shoe as aforesaid, and thus according to the width of the shoe in the region thereof engaged by said members (29, 30).

2. Machine according to Claim 1 characterised in that the setting means (113) comprises a servomotor (55) which is operated to effect such setting in response to said signal.

3. Machine according to Claim 2 wherein the drive means (79) comprises a fluid pressure operated motor (78-80) with which is associated an abutment (77) cooperable with the stroke limiting arrangement (114) thus to determine the advanced position of the wiper plates (46), the machine being characterised in that the servomotor (55) is effective to position a stop member (86) serving to limit pivotal movement of a lever (89) which is connected to the stroke limiting arrangement (114) and pivotal movement of which is thus effective to move said arrangement (114) as aforesaid.

4. Machine according to Claim 3 characterised in that the stop member (86) is operatively connected to the servomotor (55) by a Bowden cable (84) and in that a locking arrangement (96-98) is provided for locking the stop member (86) in its adjusted position.

5. Machine according to any one of the preceding Claims wherein the wiper plates (46) are positioned, initially in a machine cycle, in an intermediate position, characterised in that the setting means (113) comprises a signalling device (72-74) for generating a signal by which the initial operation of the drive means (79) is controlled to bring the wiper plates (46) to said intermediate position, said signalling device (72-74) being itself actuated according to the distance moved by the shoe-engaging members (29, 30) in orienting the heel seat region of the shoe as aforesaid, and thus according to the width of the shoe in the region thereof engaged by said members (29, 30).

6. Machine according to Claim 5 when tied to any one of Claims 2 to 4 characterised in that the signalling device (72-74) comprises a switch-and-actuator arrangement (72-74) associated with the drive means (79), and in that the servomotor (55), when operated as aforesaid, is effective to cause said arrangement (72-74) to be moved into an actuated condition, thus causing said signal to be generated to operate the drive means (79) to return said arrangement to a de-actuated condition, and thus to move the wiper plates (46) to their intermediate position.

7. Machine according to any one of the preceding Claims characterised in that the signal in re-

sponse to which the setting means (113) is operated as aforesaid is generated by a signalling device (47, 53, 54) comprising a switch-and-actuator arrangement (47, 53, 54) operatively connected to the shoe-engaging members (29, 30) of the orienting means (112),
and in that the movement of said members (29, 30) in orienting the heel seat of the shoe as aforesaid is effective to cause said arrangement (47, 53, 54) to be moved into an actuated condition, thus causing said signal to be generated to operate the setting means (113) to return said arrangement (47, 53, 54) to a de-actuated condition, and thus to set the stroke limiting arrangement (114) and the position of the heel band (45) as aforesaid.

8. Machine according to any one of the preceding Claims wherein the shoe support (110) is movable into and out of an operative position, in which the heel end of a shoe supported thereby is engagable with the heel band (45), characterised in that the oriented means (113) and the setting means (112) are operable as aforesaid prior to movement of the shoe support (110) into its operative position.

9. Machine according to Claim 8 wherein a holddown (5) is provided engagable with the heel seat of a shoe supported by the shoe support (110) for clamping the shoe on the latter (110), characterised in that the holddown (5), which comprises three contact points (8, 9, 10) for engagement with the shoe bottom thus to orient the plane of the heel seat of the shoe in a desired plane, engages the shoe bottom in the heel seat region thereof prior to operation of the orienting means (113).

10. Machine according to any one of the preceding Claims wherein the shoe support (110) comprises a toe rest (14) which is moveable in a direction heightwise of the shoe, the arrangement being such that in the operation of the machine (14) it is first moved in said lengthwise direction beneath the shoe toe, until arrested by the engagement of an upstanding abutment portion (15) thereof with the toe, and is then moved heightwise into a position of contact with the shoe toe thus to support tlhe toe end of the shoe,
characterised in that the toe rest (14) is rockable about an axis (24) extending lengthwise of the shoe in one or other direction according to whether the shoe supported thereby is a left or a right,
and in that a signalling device (25, 26) is associated with the toe rest (14) and is actuated in response to rocking movement of the toe rest (14), generating a signal indicating the presence of a left or a right shoe.

Patentansprüche

1. Fersenzwickmaschine mit einer Schuhstütze (110) zum Abstützen eines mit dem Boden nach oben weisenden Schuhs, der ein Oberteil an einem Leisten und eine Brandsohle am Leistenboden aufweist, mit Fersenzwickwerkzeugen einschließlich eines Fersenbandes (45) und eines Paares Walkplatten (46) zusammen mit einer Antriebseinrichtung (79), um die Walkplatten (46) vorwärts und einwärts in eine vordere Lage zu bewegen, die von einer Hubbegrenzungsanordnung (114) bestimmt ist, wobei während dieser Bewegung Randabschnitte des Schuhoberteils im Fersenbereich von den Walkplatten (46) gegen entsprechende Randabschnitte der Brandsohle gewalkt und gepreßt werden,
mit einer Befestiger-Einsetzeinrichtung, die den Walkplatten (46) zugeordnet ist so daß, wenn sich die Walkplatten (46) in der vorderen Lage befinden, Befestiger durch die zu zwickenden Randabschnitte des Oberteils in die Brandsohle eingesetzt werden können, um somit diese Abschnitte an der Brandsohle zu fixieren,
wobei eine Einstelleinrichtung (113) vorgesehen ist, so daß die Hubbegrenzungsanordnung (114) gemäß der gewünschten vorderen Lage der Walkplatten (46) und auch die Lage des Fersenbandes (45) längs des Schuhbodens eingestellt werden, um somit das Fersenband eines von der Schuhstütze (110) abgestützten Schuhs in eine gewünschte Beziehung mit den Walkplatten (46) und somit mit der Befestiger-Einsetzeinrichtung zu positionieren,
mit einer Ausrichteinrichtung (112), welche zwei den Schuh ergreifende Teile (29, 30) einschließt, von denen einer an jeder Seite der Schuhstütze (110) angeordnet ist, um den Fersenabschnitt des Schuhbodens in eine gewünschte Beziehung zu der Längsmittellinie der Fersenzwickwerkzeuge auszurichten, dadurch gekennzeichnet, daß die Einstelleinrichtung (113) betätigbar ist, um das Einstellen der Hubbegrenzungsanordnung (114) und der Lage des Fersenbandes (45) in Ansprechen auf ein Signal zu bewirken, welches entsprechend dem von den den Schuh ergreifenden Teilen (29, 30) zurückgelegten Abstand zum Ausrichten des Fersenabschnittes des Schuhs und somit entsprechend der Breite des Schuhs in dem Bereich erzeugt ist, welcher von den Teilen (29, 30) ergriffen ist.

2. Maschine nach Anspruch 1, dadurch gekennzeichnet, daß die Einstelleinrichtung (113) einen Servomotor (55) umfaßt, welcher betätigbar ist, um in Ansprechen auf das Signal dieses Einstellen zu bewirken.

3. Maschine nach Anspruch 2, wobei die Antriebseinrichtung (79) einen durch Fluiddruck betätigten Motor (78–80) umfaßt, welchem ein Anschlag (77) zugeordnet ist, der mit der Hubbegrenzungsanordnung (114) zusammenarbeitet, um somit die vorgeeilte Lage der Walkplatten (46) zu bestimmen, dadurch gekennzeichnet, daß der Servomotor (55) wirksam ist, um ein Anschlagglied (86) zu positionieren, welches der Begrenzung der Schwenkbewegung eines Hebels (89) dient, der mit der Hubbegrenzungsanordnung (114) verbunden ist, und dessen Schwenkbewegung wirksam ist, um die Anordnung (114) zu bewegen.

4. Maschine nach Anspruch 3, dadurch gekennzeichnet, daß das Anschlagglied (86) mit dem Servomotor (55) über einen Bowden-Zug (84) verbunden ist und daß eine Sperranordnung (96–98) zum Verriegeln des Anschlaggliedes (86) in seiner eingestellten Lage vorgesehen ist.

5. Maschine nach einem der vorhergehenden Ansprüche, wobei die Walkplatten (46) zu Beginn eines Maschinenzyklus in einer Zwischenlage angeordnet sind, dadurch gekennzeichnet, daß die Ein-

stelleinrichtung (113) eine Signalvorrichtung (72–74) umfaßt, um ein Signal zu erzeugen, mit welchem der anfängliche Betrieb der Antriebseinrichtung (79) gesteuert ist, um die Walkplatten (46) in die Zwischenlage zu bringen, daß die Signalvorrichtung (72–74) selbst gemäß dem von den den Schuh ergreifenden Teilen (29, 30) zurückgelegten Weg beim Ausrichten des Fersenabschnittes des Schuhs und somit gemäß der Breite des Schuhs im Bereich betätigbar ist, welcher von den Teilen (29, 30) ergriffen sind.

6. Maschine nach Anspruch 5 in Verbindung mit einem der Ansprüche 2 bis 4, dadurch gekennzeichnet, daß die Signalvorrichtung (72–74) eine Schalter-Betätigungsanordnung (72–74) umfaßt, welche der Antriebseinrichtung (79) zugeordnet ist, und daß der Servomotor (55) im Betrieb wirksam ist, um zu verursachen, daß die Anordnung (72–74) in eine aktive Lage bewegt wird, so daß das Signal erzeugt wird, um die Antriebseinrichtung (79) zu betreiben und die Anordnung in eine passive Lage zurückzuführen, so daß die Walkplatten (46) in ihre Zwischenlage bewegbar sind.

7. Maschine nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß das Signal, auf dessen Ansprechen die Einstelleinrichtung (113) betätigbar ist, von einer Signalvorrichtung (47, 53, 54) erzeugt wird, welche eine Schalter-Betätigungsanordnung (47, 53, 54) umfaßt, welche im Betrieb mit den den Schuh ergreifenden Teilen (29, 30) der Ausrichteinrichtung (112) verbunden ist und daß die Bewegung der Teile (29, 30) beim Ausrichten des Fersenabschnittes des Schuhs wirksam ist, um zu verursachen, daß die Anordnung (47, 53, 54) in einen aktiven Zustand bewegt wird, um somit das Signal zu erzeugen und die Einstelleinrichtung (113) zu betätigen, um die Anordnung (47, 53, 54) in einen passiven Zustand zurückzuführen und somit die Hubbegrenzungsanordnung (114) und die Lage des Fersenbandes (45) einzustellen.

8. Maschine nach einem der vorhergehenden Ansprüche, wobei die Schuhstütze (110) in eine und aus einer Betriebslage bewegbar ist, in welcher der Fersenabschnitt eines davon abgestützten Schuhs mit dem Fersenband (45) in Eingriff bringbar ist, dadurch gekennzeichnet, daß die Ausrichteinrichtung (113) und die Einstelleinrichtung (112) vor Bewegung der Schuhstütze (110) in ihre Arbeitslage betätigbar sind.

9. Maschine nach Anspruch 8, wobei ein Niederhalter (5) vorgesehen ist, der mit dem Fersenbereich des Schuhs in Eingriff bringbar ist, welcher von der Schuhstütze (110) getragen ist, um den Schuh an der Schuhstütze festzulegen, dadurch gekennzeichnet, daß der Niederhalter (5), welcher drei Berührungspunkte (8, 9, 10) zwecks Eingriffes mit dem Schuhboden aufweist, um somit die Ebene der Ferse des Schuhs in einer gewünschten Ebene ausrichten, den Schuhboden im Fersenbereich vor Betätigung der Ausrichtseinrichtung (113) ergreift.

10. Maschine nach einem der vorhergehenden Ansprüche, wobei die Schuhstütze (110) eine Spitzenauflage (14) einschließt, die in Richtung der Schuhhöhe bewegbar ist, wobei die Anordnung derart getroffen ist, daß im Betrieb der Maschine (14) sie zunächst in Längsrichtung unterhalb der Schuhspitze bewegt wird, bis sie durch Eingriff eines aufrechten Anschlagabschnitts (15) mit der Spitze angehalten wird, und dann in der Höhe in eine Kontaktlage mit der Schuhspitze bewegbar ist, um somit die Spitze des Schuhs abzustützen, dadurch gekennzeichnet, daß die Spitzenauflage (14) oben eine Achse (24) schwenkbar ist, die sich längs des Schuhs in der einen oder anderen Richtung in Abhängigkeit davon erstreckt, ob der abgestützte Schuh ein linker oder rechter Schuh ist und daß eine Signalvorrichtung (25, 26) der Spitzenauflage (14) zugeordnet und in Ansprechen auf die Schwenkbewegung der Spitzenauflage (14) betätigbar ist, um ein Signal zu erzeugen, welches das Vorhandensein eines linken oder rechten Schuhs anzeigt.

Revendications

1. Machine de montage de sièges de talons, comprenant
un support (110) de chaussure destiné à supporter une chaussure avec la semelle vers le haut, la chaussure comprenant une empeigne placée sur une forme et une première placée sur la dernière semelle,
des accessoires de montage de sièges de talons comprenant une bande de talon (45) et deux plaques (46) formant frotteurs avec un dispositif d'entraînement (79) destiné à déplacer ces plaques (46) vers l'avant et vers l'intérieur en position avancée déterminée par un ensemble (114) de limitation de course, les parties marginales de montage de l'empeigne de la chaussure, dans la région du siège de talon, étant frottées et repoussées pendant ce mouvement par les plaques (46) formant frotteurs contre des parties marginales correspondantes de la première, et
un dispositif d'introduction d'organes de fixation associé aux plaques (46) formant frotteurs de manière que, lorsque ces plaques (46) sont dans leur position avancée, des organes de fixation puissent être introduits à travers les parties marginales de l'empeigne dans la première et afin que ces parties de la première soient fixées,
dans laquelle le dispositif de réglage (113) est disposé afin que l'ensemble (114) de limitation de course ait un réglage qui dépend de la position d'avance voulue des plaques (46), et en outre la position dans la bande de talon (45), suivant la longueur de la semelle de la chaussure, est déterminée afin que le siège de talon d'une chaussure supportée par le support (110) soit mis en position relative voulue par rapport aux plaques (46) formant frotteurs et ainsi par rapport au dispositif d'introduction d'organes de fixation, et
un dispositif d'orientation (112) est présent et comprend deux organes (29, 30) de contact avec la chaussure placés chacun d'un côté du support (110) de chaussure et destinés à orienter la région du siège de talon de la semelle de la chaussure en position relative voulue par rapport à l'axe central longitudinal des accessoires de montage de sièges de talons, caractérisée en ce que le dispositif de réglage (113) est commandé afin qu'il assure le réglage de l'en-

semble (114) de limitation de course et de la position de la bande de talon (45) en fonction d'un signal créé d'après la distance parcourue par les organes (29, 30) de contact avec la chaussure, lors de l'orientation de la région du siège de talon de la chaussure comme indiqué précédemment, et ainsi en fonction de la largeur de la chaussure dans sa partie qui coopère avec lesdits organes (29, 30).

2. Machine selon la revendication 1, caractérisée en ce que le dispositif de réglage (113) comporte un servomoteur (55) qui est commandé afin qu'il effectue ce réglage à la suite dudit signal.

3. Machine selon la revendication 2, dans laquelle le dispositif d'entraînement (79) comporte un moteur (78-80) commandé par un fluide sous pression et auquel est associée une butée (77) destinée à coopérer avec l'ensemble (114) de limitation de course afin que la position avancée des plaques (46) formant frotteurs soit déterminée, la machine étant caractérisée en ce que le servomoteur (55) assure le positionnement de l'organe d'arrêt (86) destiné à limiter le mouvement de pivotement d'un levier (89) qui est connecté à l'ensemble (114) de limitation de course et dont le pivotement assure ainsi le déplacement de l'ensemble (114) de la manière indiquée.

4. Machine selon la revendication 3, caractérisée en ce que l'organe d'arrêt (86) est raccordé lors du fonctionnement au servomoteur (55) par une transmission à câble et gaine souple (84), et en ce qu'un ensemble de blocage (96-98) est destiné à bloquer l'organe d'arrêt (86) dans sa position réglée.

5. Machine selon l'une quelconque des revendications précédentes, dans laquelle les plaques (46) formant frotteurs sont positionnées, initialement dans un cycle de la machine, à une position intermédiaire, caractérisée en ce que le dispositif de réglage (113) comporte un dispositif (72-74) de signalisation destiné à créer un signal grâce auquel le fonctionnement initial du dispositif d'entraînement (79) est commandé de manière que les plaques (46) formant frotteurs soient mises en position intermédiaire, le dispositif de signalisation (72-74) étant lui-même commandé en fonction de la distance parcourue par les organes (29, 30) de coopération avec la chaussure lors de l'orientation de la région du siège de talon de la chaussure comme indiqué précédemment, et ainsi en fonction de la largeur de la chaussure dans sa région qui est au contact desdits organes (29, 30).

6. Machine selon la revendication 5 lorsqu'elle dépend de l'une quelconque des revendications 2 à 4, caractérisée en ce que le dispositif de signalisation (72-74) comprend un ensemble (72-74) à interrupteur et organe de manœuvre, associé au dispositif d'entraînement (79), et en ce que le servomoteur (55), lorsqu'il est commandé comme indiqué précédemment, assure le déplacement dudit ensemble (72-74) en position commandée et provoque ainsi la création d'un signal de commande du dispositif d'entraînement (79) de manière que l'ensemble revienne à l'état désexcité, et de manière que les plaques (46) formant frotteurs soient ainsi déplacées vers leur position intermédiaire.

7. Machine selon l'une quelconque des revendications précédentes, caractérisée en ce que le signal à la suite duquel le dispositif de réglage (113) est commandé comme indiqué précédemment est créé par un dispositif de signalisation (47, 53, 54) qui comprend un ensemble à interrupteur et organe de manœuvre (47, 53, 54) raccordé lors du fonctionnement aux organes (29, 30) de contact avec la chaussure du dispositif d'orientation (112), et en ce que le déplacement desdits organes (29, 30) lors de l'orientation du siège de talon de la chaussure comme indiqué précédemment provoque le déplacement dudit, ensemble (47, 53, 54) en position excitée, si bien que le signal est créé de manière qu'il commande le dispositif de réglage (113) qui fait revenir l'ensemble (47, 53, 54) en position désexcitée et règle ainsi l'ensemble (114) de limitation de course et la position de la bande de talon (45) de la manière précitée.

8. Machine selon l'une quelconque des revendications précédentes, dans laquelle le support (110) de chaussure est mobile vers une position de travail et à partir de celle-ci, et dans laquelle l'extrémité du talon d'une chaussure supportée est destinée à venir au contact de la bande de talon (45), caractérisée en ce que le dispositif d'orientation (113) et le dispositif de réglage (112) sont destinés à fonctionner comme indiqué précédemment avant le déplacement du support (110) de chaussure vers sa position de travail.

9. Machine selon la revendication 8, dans lequel un organe de retenue (5) est disposé afin qu'il soit au contact du siège de talon d'une chaussure supportée par le support (110) de chaussure et afin que la chaussure soit serrée sur celui-ci (110), caractérisée en ce que l'organe de retenue (5), qui comprend quatre points de contact (8, 9, 10) destinés à être au contact de la semelle de la chaussure afin que le plan du siège de talon de la chaussure soit orienté dans un plan voulu, est au contact de la semelle de la chaussure dans la région du siège de talon avant le fonctionnement du dispositif d'orientation (113).

10. Machine selon l'une quelconque des revendications précédentes, dans laquelle le support (110) de pointe comporte un organe (14) d'appui de pointe qui est mobile suivant la hauteur par rapport à la chaussure, la disposition étant telle que, lors du fonctionnement de la machine, l'organe (14) est d'abord déplacé dans la direction longitudinale au-dessous de la pointe de la chaussure, jusqu'à ce qu'il soit arrêté par le contact d'une partie verticale (15) de butée avec la pointe, et est alors déplacé en hauteur vers une position de contact avec la pointe de la chaussure, si bien que l'extrémité de pointe de la chaussure est supportée, caractérisée en ce que l'organe (14) d'appui de pointe peut basculer autour d'un axe (24) disposé suivant la longueur de la chaussure dans un sens ou un autre selon que la chaussure supportée est une chaussure gauche ou une chaussure droite, et en ce qu'un dispositif de signalisation (25, 26) est associé à l'organe (14) d'appui de pointe et est commandé à la suite du basculement de l'organe (14) d'appui de pointe, avec création d'un signal indiquant la présence d'une chaussure gauche ou d'une chaussure droite.

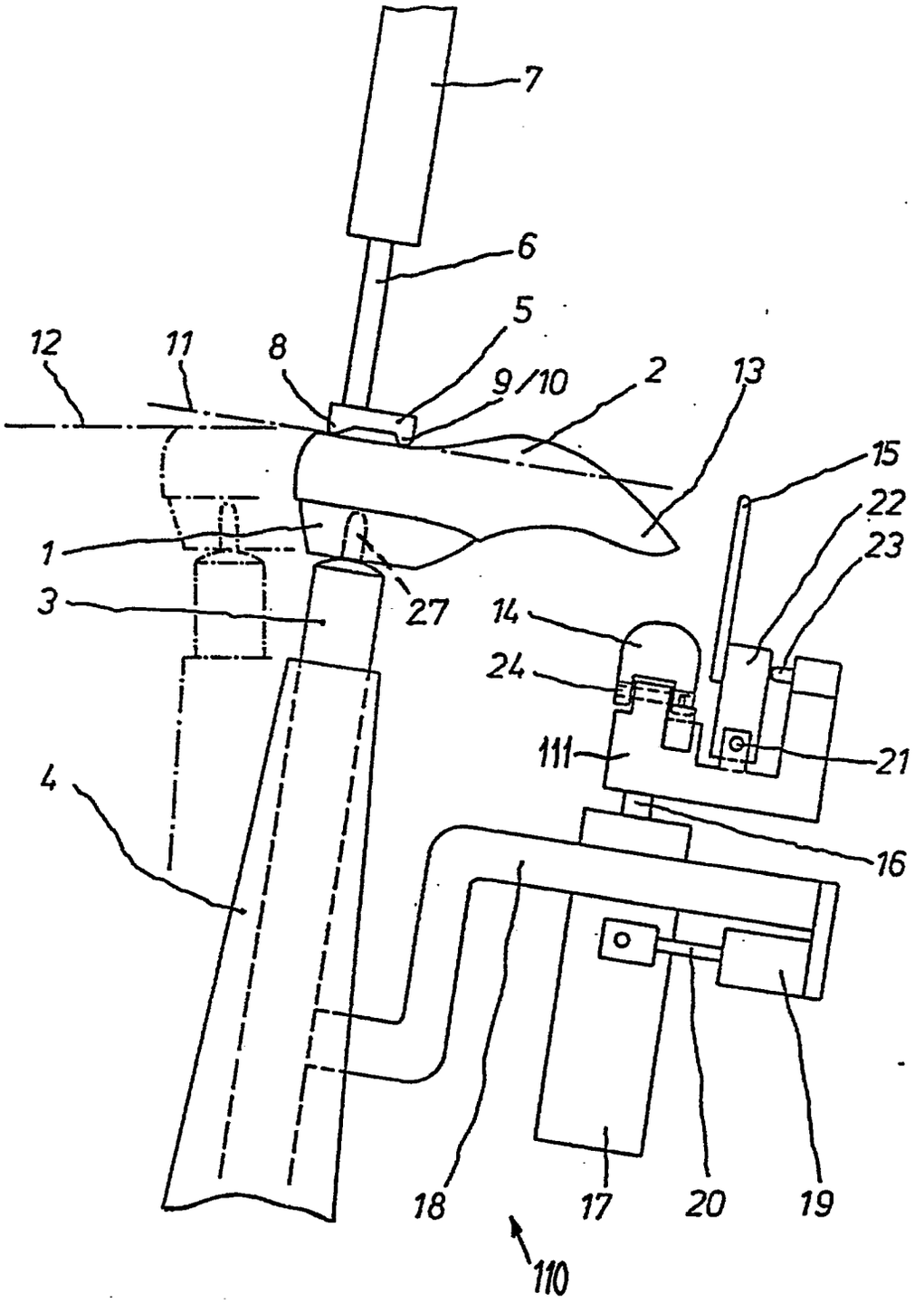

Fig. 1

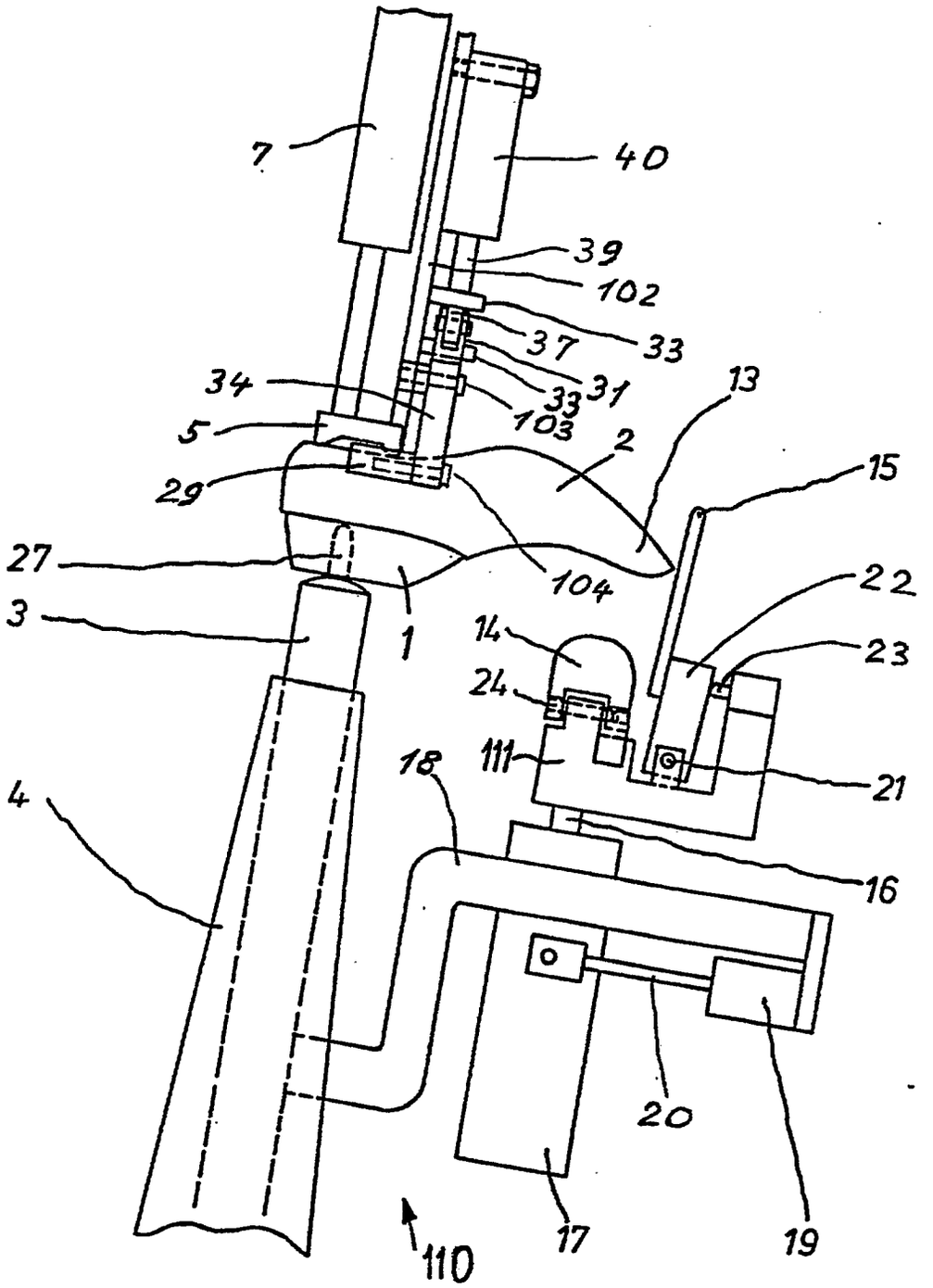
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Fig. 2

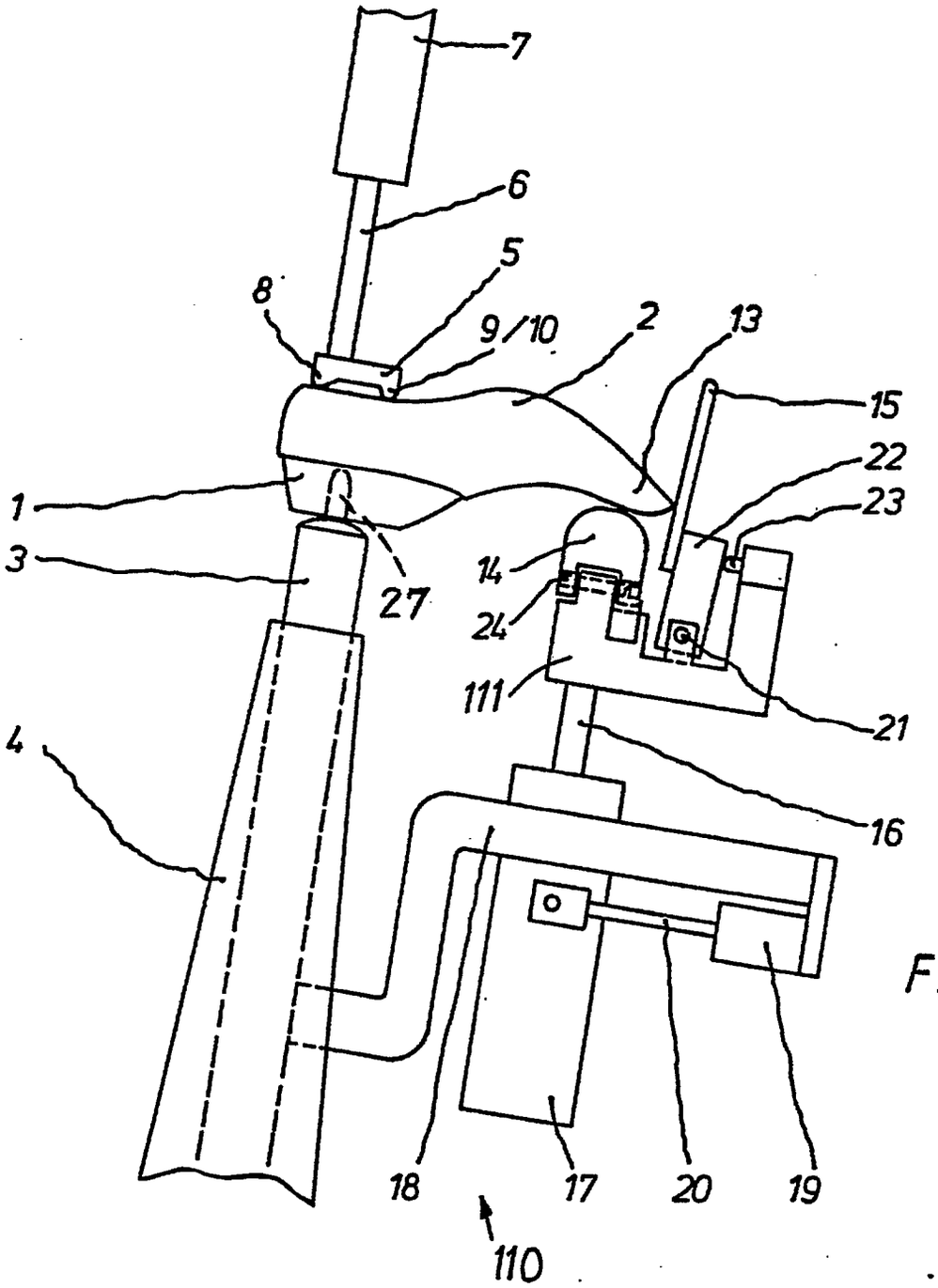
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Fig. 3

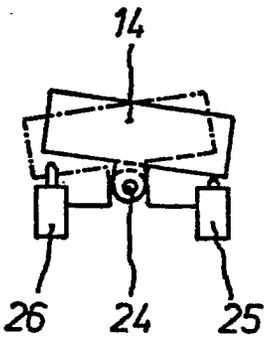
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Fig. 4

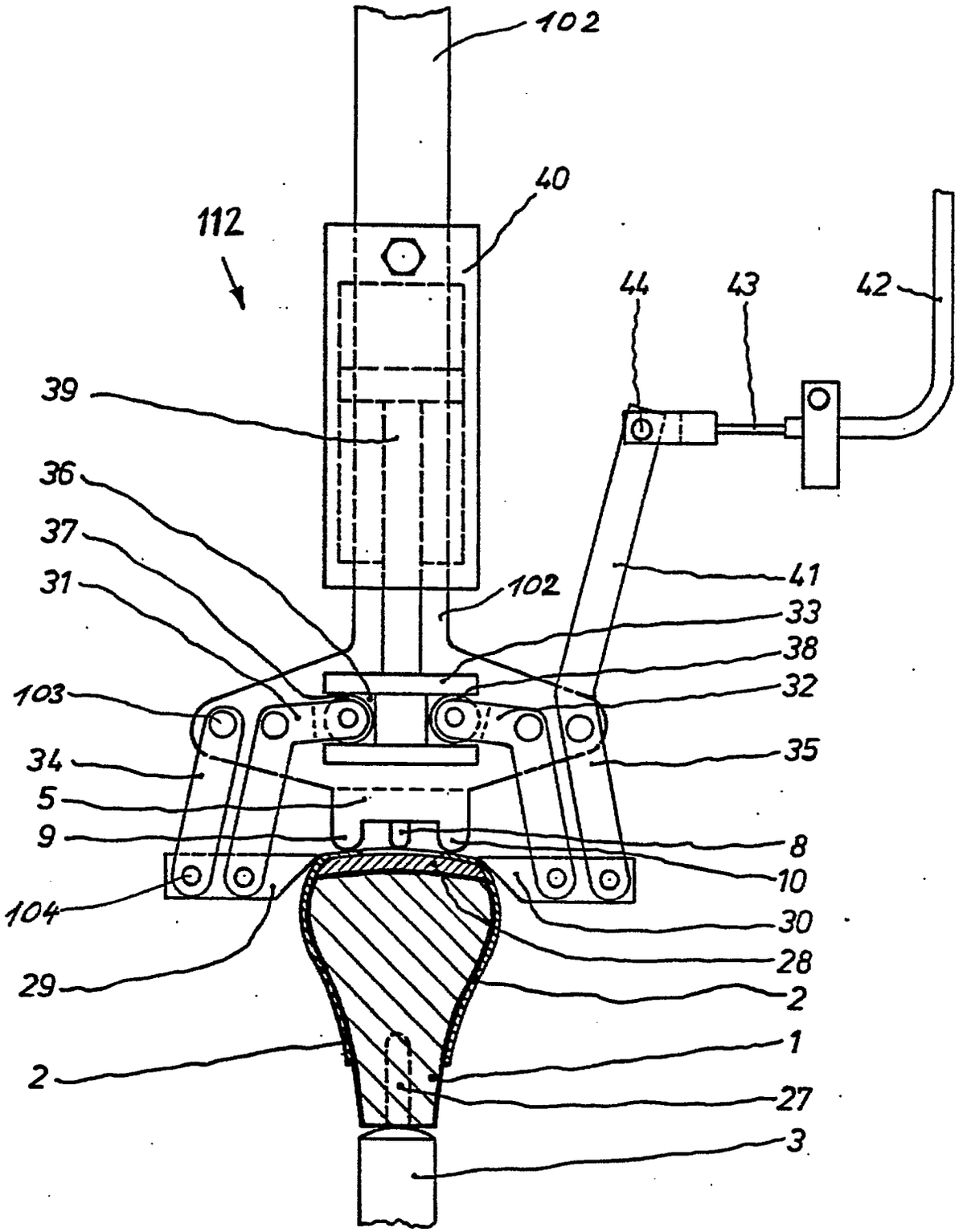
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Fig. 5

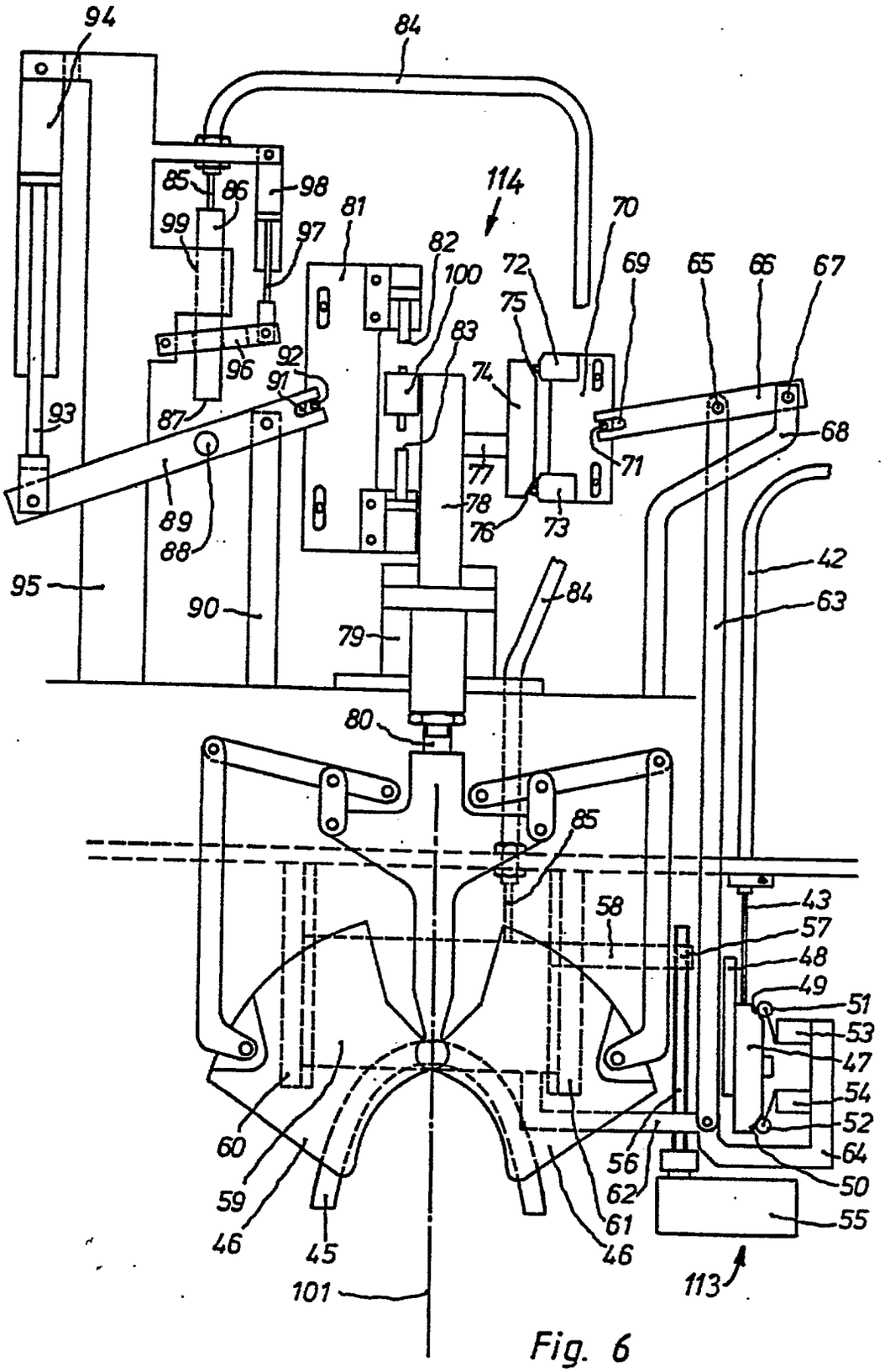
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Fig. 6