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P. W. SENFLEBEN
HEEL ATTACHING MACHINES

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2 Sheets-Sheet 1

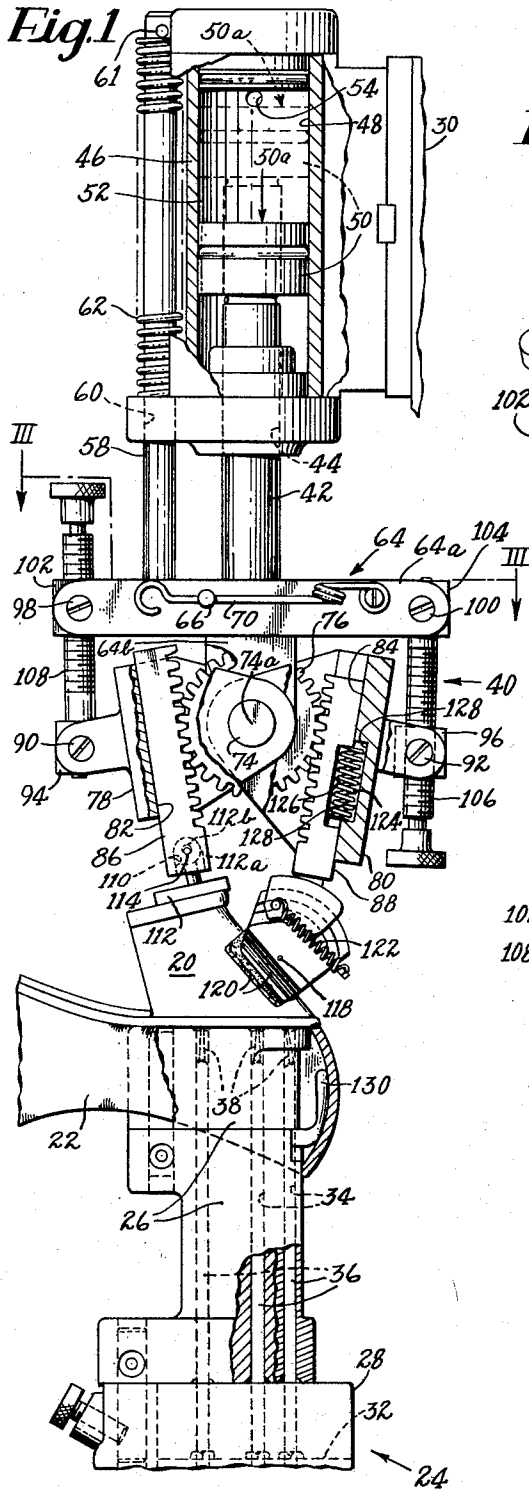


Fig. 2

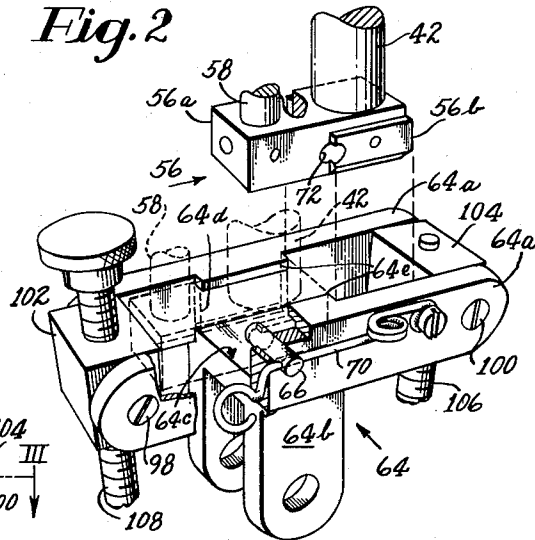
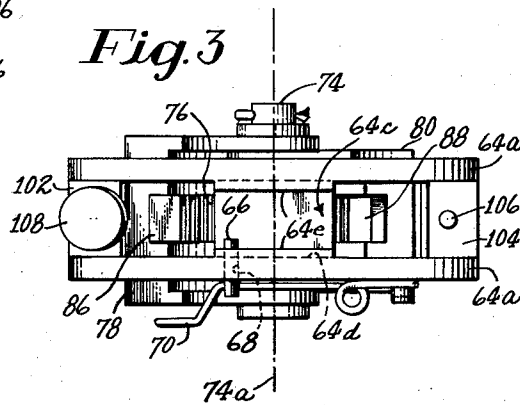


Fig. 3



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Fig. 4

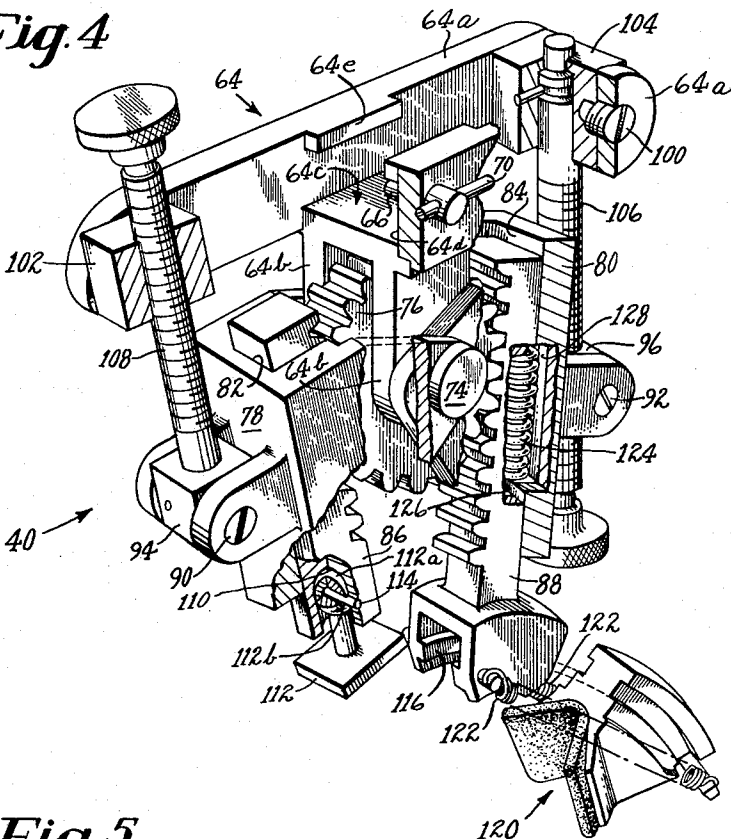
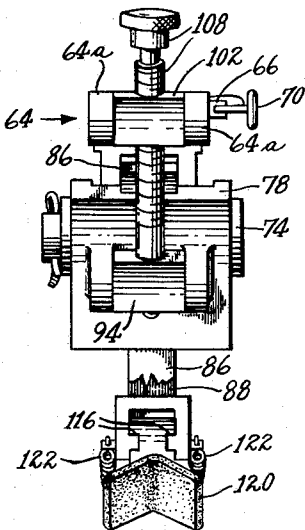


Fig. 5



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3,003,152

HEEL ATTACHING MACHINES

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5 Claims. (Cl. 1—335)

This invention relates to heel attaching machines and more specifically to compensating heel holddowns or presser heads of said machines. Machines adapted to attach heels to shoes by "inside" nailing have heretofore been provided with heel holddowns or presser heads comprising tread and rear face abutments which are geared together for equal movements in opposite directions. These prior holddowns or presser heads, which include a great number of relatively adjustable parts provided for the purpose of accommodating heels of different styles, are commonly large and of complicated construction and initially to adjust them for operation upon different styles of heels consumes considerable time. Moreover prior presser heads have a tendency to displace the heel, which is positioned and held on the heel seat of the shoe by the operator, forwardly of the shoe from its desired position.

It is an object of the present invention to provide a heel attaching machine provided with a heel holddown or presser head which is simple in construction, effective in its operation and which may be quickly and effectively adjusted to accommodate different styles of work. The illustrative heel attaching machine comprises a support for a shoe, a carrier, a pair of guide members each of which has a guideway and is journaled on the carrier for initial adjustment about an axis, slides movable along the guideways, tread and rear clamps which are adjustably mounted respectively on the slides, means for operatively connecting the slides for simultaneous movement in opposite directions, means for effecting relative translatable movement between the carrier and the support to cause the tread and rear clamps and the tread and rear faces of a heel positioned on the shoe to be brought into forced engagement respectively whereby to force the heel and the heel seat of the shoe together, and in accordance with a feature of the invention, means for initially moving on the carrier each of said guide members into different initially adjusted positions about its axis.

The guideways of the guide members and accordingly the paths of movement of the slides converge as they approach the shoe support, the angle of convergence between said paths being varied by initially adjusting each of the guide members about its axis. The illustrated presser head is simple and effective in its operation and can be quickly adjusted to accommodate shoes of different styles and/or sizes. Furthermore, because of the above-mentioned converging relation of the paths of movement of the tread and rear abutments, the presser head does not have to be initially adjusted as much as presser heads now in use to accommodate the different styles and sizes of work. It has also been found that with the use of the present presser head the tendency for the heel to be displaced forwardly against the grip of the operator has been substantially eliminated.

The present invention consists in the above features and in novel features hereinafter described, reference being had to the accompanying drawings which illustrate one embodiment of the invention selected for purposes of illustration, said invention being fully disclosed in the following description and claims.

FIG. 1 is a side elevation, partly broken away, of a portion of the illustrative heel attaching machine in the process of attaching a heel to a shoe;

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FIG. 2 shows in perspective the lower end of a powered plunger of the machine and the upper portion of a presser head which may be interchangeably secured to the plunger;

FIG. 3 is a view of the presser head on the line III—III of FIG. 1;

FIG. 4 is a perspective view, partly broken away and partly in section, showing details of the presser head; and

FIG. 5 is a front view partly broken away of the presser head.

The illustrative machine is described with reference to the attachment of a heel 20 (FIG. 1) to a heel seat of a shoe 22 mounted upon a jack 24 comprising a multipart nailing die 26 secured to an upright column 28 which is fixed to a main frame 30 of the machine and houses nail driving mechanism 32.

The nailing die 26 has formed in it a plurality of nail passages 34 in which reciprocate drivers 36 serving to drive in toed-in relation nails 38 through the heel seat of the shoe and into the heel 20 forced against said heel seat by a presser head 40 whereby to attach the heel permanently to the shoe.

The presser head 40 is interchangeably secured, as will be hereinafter explained, to a piston rod 42 which is reciprocable in a cylindrical bore 44 of a cylindrical housing 46 fixed to the main frame 30 of the machine. Secured to the upper end of the rod 42 and reciprocable in a bore 48 of the housing 46 is a piston 50 having an upper face 50a which forms with the housing a chamber 52 which is alternately open to oil under high and low pressures admitted through a port 54. The piston 50 is depressed from its dash-line position shown in FIG. 1 to force the presser head 40 against the heel 20, which is manually positioned upon the heel seat of the shoe 22 mounted on the jack, by the action of high pressure oil operating against the face 50a of the piston and is retracted to its raised starting or idle position by spring action as will be hereinafter explained. Secured to the lower end of the piston rod 42 is an adapter 56 having screwed to it a rod 58 passing through a bore 60 in a flange of the cylinder housing 46 and carrying at its upper end a spring retaining pin 61, a spring 62 encircling the rod being interposed between said flange and the pin and thus serving constantly to urge the piston rod to its raised or retracted position.

The presser head 40 comprises a carrier 64 which has a pair of spaced cross arms 64a and a bifurcated depending portion 64b provided with a flat upper face 64c (FIGS. 3 and 4) which forms a retaining slot 64d with opposing or inner sides of the cross arms and the bottom faces of inwardly extending lips 64e of said arms.

The adapter 56 comprises a block 56a (FIG. 2) provided with front and rear projections 56b (only the front projection shown) having flat upper faces. In the mounting of the carrier 64 of the presser head 40 on the adapter 56 the carrier is raised vertically along dash lines (FIG. 2), the inner faces of the cross arms 64a sliding along the projections 56b until the face 64c of the carrier engages the bottom of the adapter. The carrier 64 and accordingly the presser head 40 is then slid to the right with relation to the adapter 56 until the upper faces of the projections 56b register with the lower faces of the inwardly extending lips 64e of the cross arms 64a as indicated in dash line lines (FIG. 2). During this time a spring-pressed plunger 66, slidable in a bore 68 (FIG. 3) of the front cross arm 64a and normally urged to its position shown in FIG. 2 by a spring 70, is held in a retracted position in the bore. The carrier 64 and accord-

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ingly the presser head 40 are slid to the right (FIG. 2), as above explained, until a bore 72 in the adapter is in register with plunger 66, the plunger then being released and moving slidably into the bore to secure the carrier against movement on the adapter 56 which fits snugly against the face 64c, the opposing inner faces of the cross arms 64a and the lower faces of the inwardly extending flanges 64e of the carrier. The depending bifurcated portion 64b of the carrier 64 has aligned bores formed in its spaced flanges and registering in said bores is a bearing pin 74 having an axis 74a, a pinion 76 being mounted on the pin between said flanges. Also mounted on the bearing pin 74 outside of the depending portion 64b of the carrier 64 are front and rear guides or guide members 78, 80 having guideways 82, 84 respectively adapted slidably to receive racks or slides 86, 88 provided with teeth which mesh with the teeth of the pinion 76.

The guide members 78, 80 have bifurcated lug portions carrying trunnions 90, 92 respectively upon which are journaled connector blocks 94, 96. Also mounted on trunnions 98, 100 threaded into the forward and rearward end portions of the arms 64a of the carrier are connector blocks 102, 104. Journaled in and threaded into the connector blocks 104, 96 respectively is an adjusting rod 106 which may be rotated to swing the rear guide member 80 into different operating positions about the bearing pin 74 and accordingly about the axis 74a of the pin and journaled in and threaded into the connector blocks 94, 102 respectively is an adjusting rod 108 which may be rotated about its axis initially to swing the front guide member into different operating positions about the bearing pin and its axis.

Formed in the lower end of the rack 86 is a recess 110 for receiving a spherical portion 112a of an abutment 112 which is adapted to engage the tread end of the heel 20 and may be defined as a tread abutment, said spherical portion having formed in it a bore 112b through which passes a pin 114 which is secured to the rack. It will be noted that the diameter of the bore 112b in the tread abutment 112 is slightly greater than the diameter of the pin 114 in order that a spherical upper end of the recess 110 will be engaged by the spherical portion 112a of the abutment to relieve pressure against the pin 114 during the heel clamping operation.

The lower end of the rack 88 is forked and is provided with a pair of opposing arcuate flanges 116 on which is mounted for pivotal movement about an axis 118 a V-shaped rear abutment 120 adapted to engage the rear face of the heel 20. The rear abutment 120 is constantly urged counterclockwise, as viewed in FIG. 1, on the flanges 116 of the forked lower end of the rack 88 by springs 122, the forward ends of which are attached to studs secured to the rack and the lower ends of which are secured to a lug fixed to and forming part of the rear abutment, the construction and arrangement being such that the rear abutment when it is brought into engagement with the rear face of the heel 20 of the shoe will tilt about the axis 118 and will swing on the rack into effective clamping engagement with the rear face of the heel. When the machine is idle the racks 86, 88 are held in their lowered and raised positions respectively by a spring 124 housed in opposing recesses 126, 128 of the rack 88 and the rear guide member 80.

In the operation of the machine the operator positions the shoe 22 on the nailing die 26 with the rear end of the interior of the shoe in engagement with a back gage 130 attached to said die and then manually positions the heel 20 upon the heel seat of the shoe. A control lever (not shown) is then depressed with the result that high pressure oil is admitted to the chamber 52 causing the presser head 40 to be lowered. As this occurs the tread abutment 112 first engages the tread end of the heel 20 and as the presser head 40 continues to be depressed the tread abutment slides forward slightly over the heel and the downward movement of the pinion 76 as an entirety

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with the presser head causes said pinion to rotate clockwise (FIGS. 1 and 4) about the pin 74 and thus to move the rack 88 downward along its guideway 84 until the V-shaped rear abutment 120 engages the rear face of the heel, the rear abutment rotating clockwise (FIG. 1) with relation to its associated rack about the axis 118 to allow the rear abutment to accommodate itself to the rear end of the heel.

After the machine has completed its cycle during which the nails 38 are driven through the heel seat of the shoe 22 and into the heel 20, the port 54 is open to exhaust pressures and the presser head 40 is raised by the spring 62 to its raised starting position.

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 heel attaching machine, a support for a shoe, a carrier, a pair of guide members each of which has a guideway and is journaled on the carrier for initial adjustment about an axis, slides movable along said guideways, tread and rear clamps which are adjustably mounted respectively on said slides, means for operatively connecting the slides for simultaneous movement in opposite directions, means for effecting relative movement of translation between the carrier and the support to cause the tread and rear clamps and the tread and rear faces of a heel positioned on the shoe to be brought into forced engagement respectively whereby to force the heel and the heel seat of the shoe together, and means for initially moving on the carrier each of the guide members into different adjusted positions about its axis.

2. In a heel attaching machine, a presser head comprising a carrier, a pinion which is journaled on the carrier for rotation about an axis, members which have guideways respectively and are journaled on the carrier for movement about said axis, racks movable respectively in said guideways and operatively connected to the pinion, heel engaging abutments carried by the racks, and means for initially moving the members and accordingly the heel engaging abutments into different angular positions about said axis.

3. In a heel attaching machine, a presser head comprising a carrier, a pinion journaled upon the carrier for rotation about an axis, guide members journaled upon the carrier for initial adjustment about said axis, racks which are slidable in said guide members and are operatively connected to the pinion and are arranged at opposite sides of said axis, tread and rear abutments journaled respectively on the racks, and means for moving the guide members into different initially adjusted positions about said axis.

4. In a heel attaching machine, a presser head comprising a carrier, a pinion journaled upon the carrier for rotation about an axis, guide members journaled upon the carrier for initial adjustment about said axis, racks which are slidable in said guide members and are operatively connected to the pinion, tread and rear abutments journaled respectively on the racks, means for biasing the racks to predetermined idle positions on said guide members, and rods operatively connected to the carrier and to the respective guide members for moving said guide members into different initially adjusted positions about said axis.

5. In a heel attaching machine, a support for a shoe, a plunger movable toward and away from said support, a carrier, means for releasably securing the carrier to the plunger, a pinion mounted on the carrier for rotation about an axis, a pair of guide members which have guideways and are mounted upon the carrier for initial adjustment about said axis and which have their guideways arranged at opposite sides of the axis, racks slidable respectively in the guideways of the guide members and meshing with opposite peripheral portions of the pinion, a pair of blocks pivoted to the carrier, a block pivoted

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to each of the guide members, a rod which is rotatable in the block pivoted to one of the guide members and is threaded into one of the blocks pivoted to the carrier, a rod which is threaded into the block pivoted on the other of said guide members and is journaled in the other block mounted on the carrier, and heel engaging abutments journaled respectively on the racks and adapted

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to apply pressure against the tread and rear faces respectively of the heel mounted on the heel seat of the shoe on the support when the plunger and accordingly the carrier are moved toward said support.

No references cited.