Jan. 2, 1923.

1,440,573

E. E. WINKLEY.
HEEL COMPRESSING MACHINE.
FILED JAN. 31, 1920.

4 SHEETS-SHEET 1

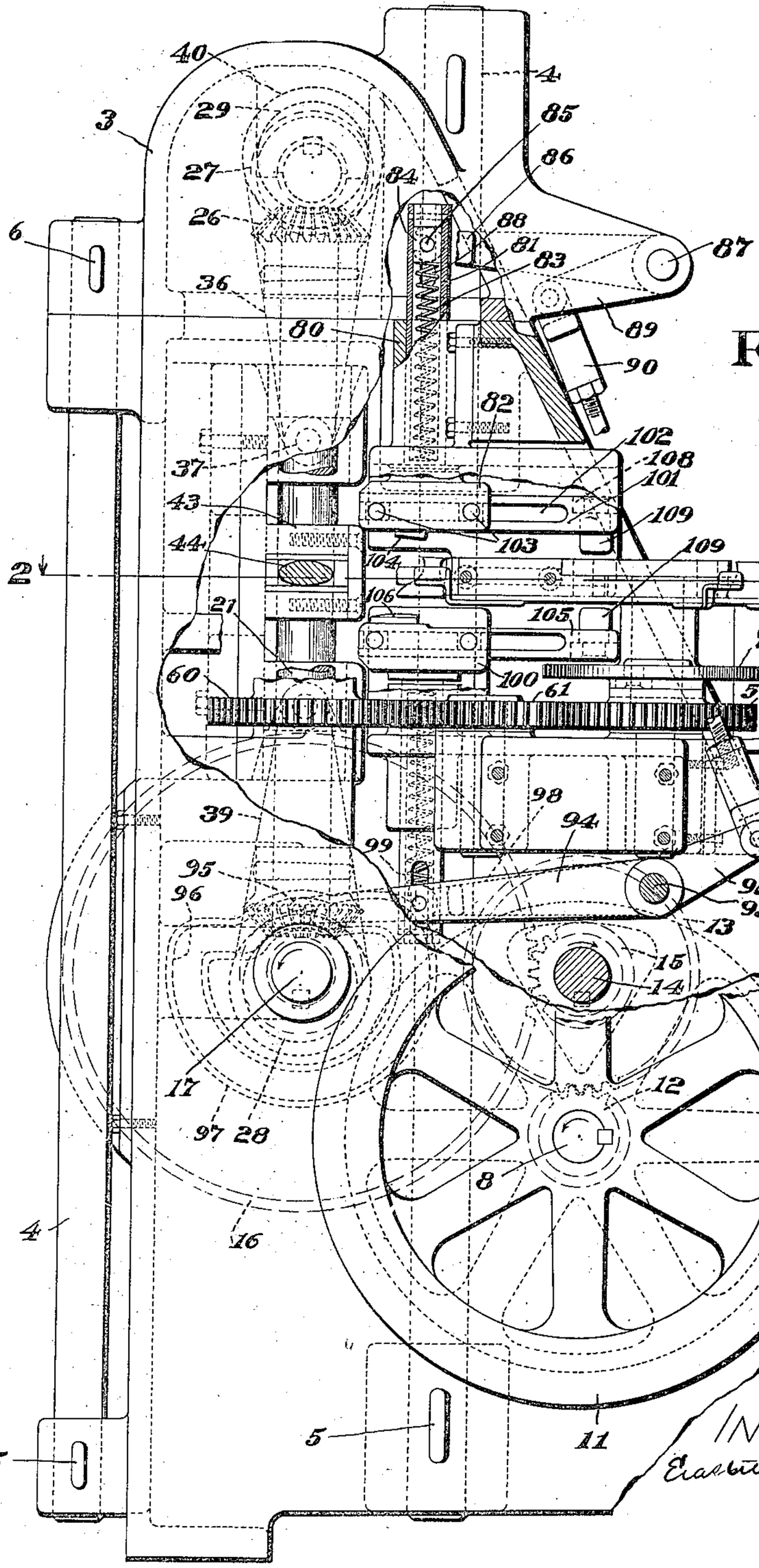

Fig. 1

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4 SHEETS-SHEET 2

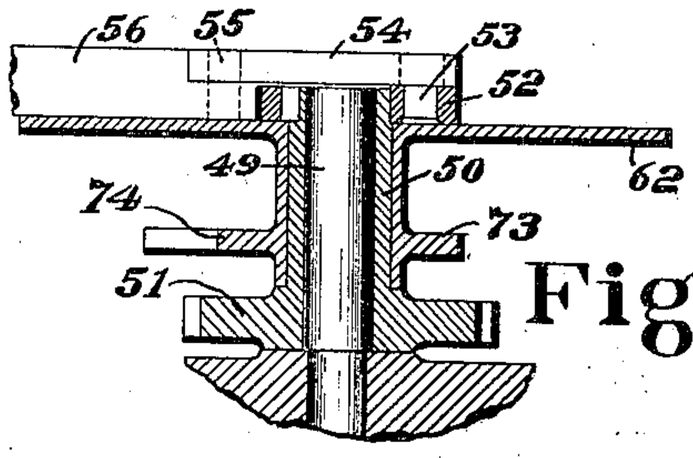
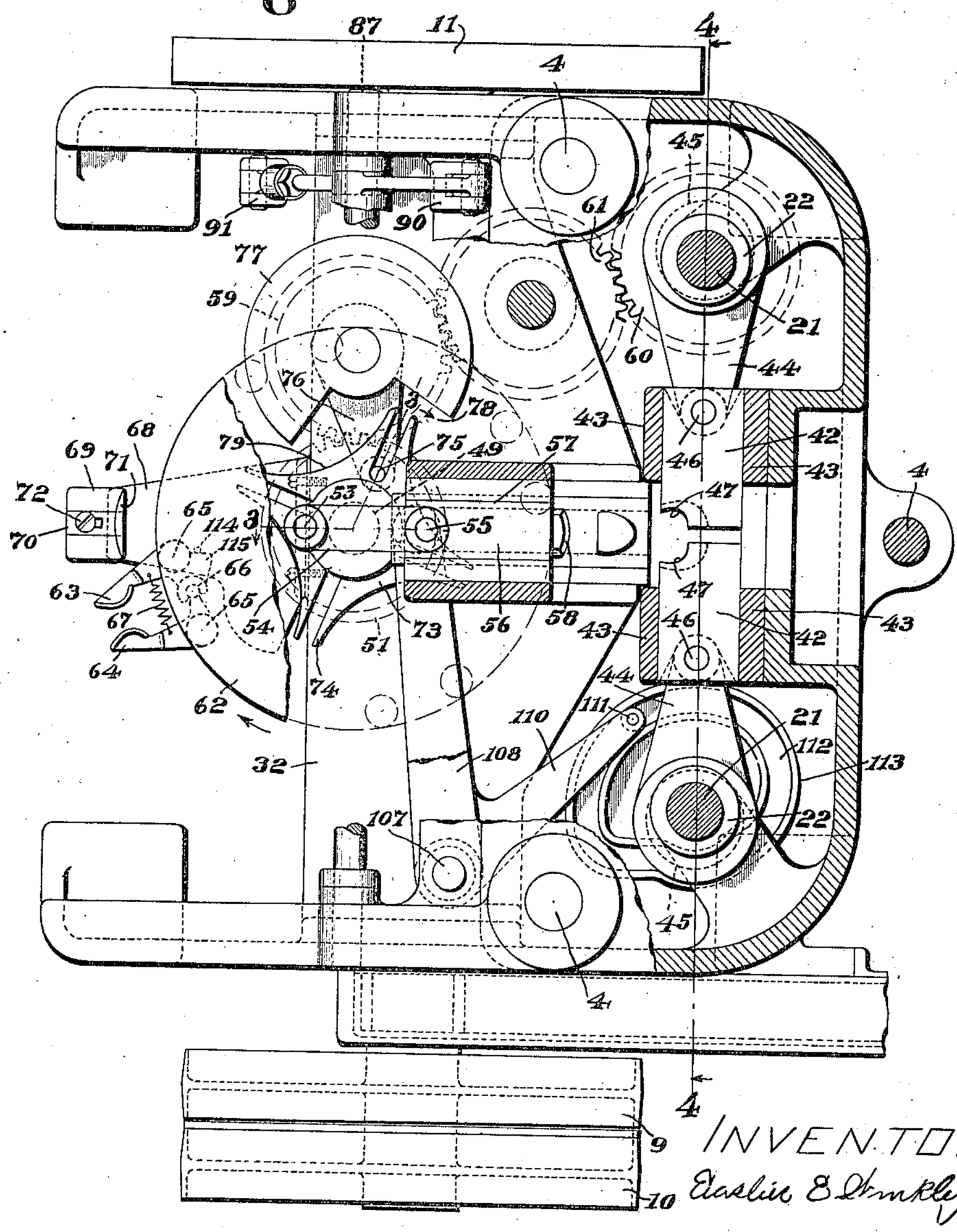


Fig. 3

Fig. 2



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Elsie E. Winkley

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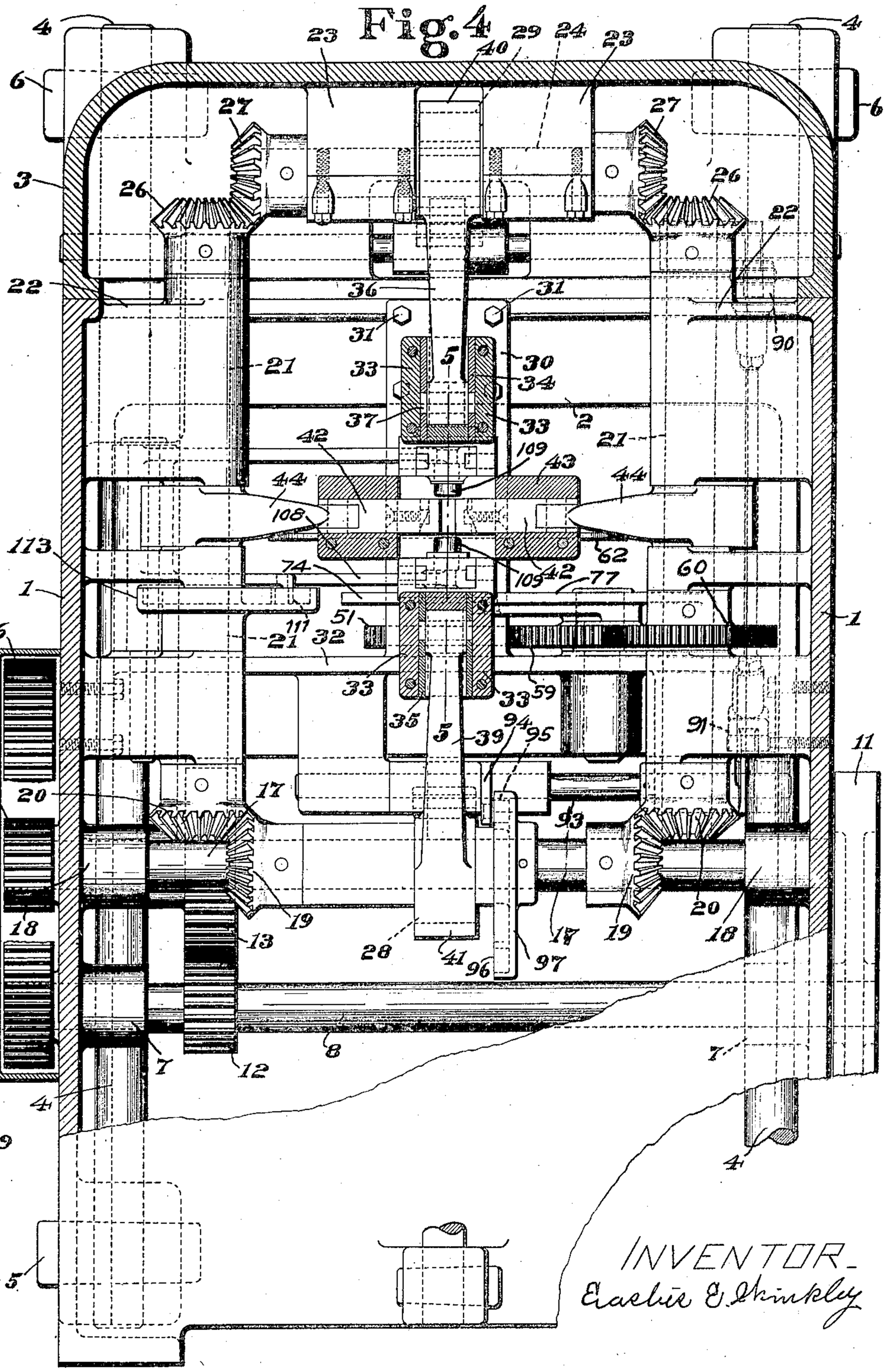
4 SHEETS-SHEET 3

Fig. 4



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4 SHEETS-SHEET 4

Fig. 6

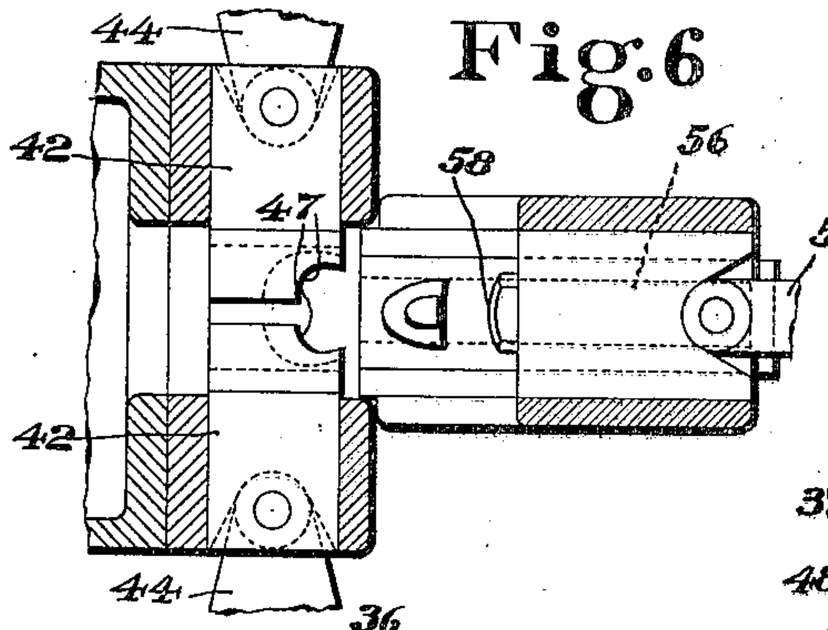


Fig. 7

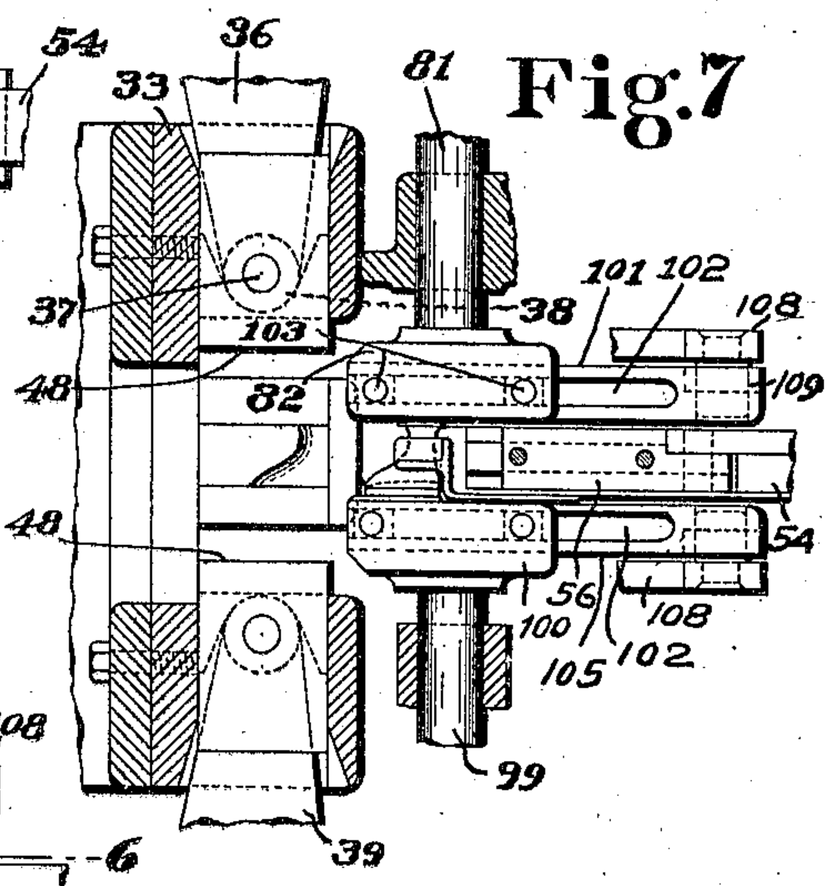


Fig. 5

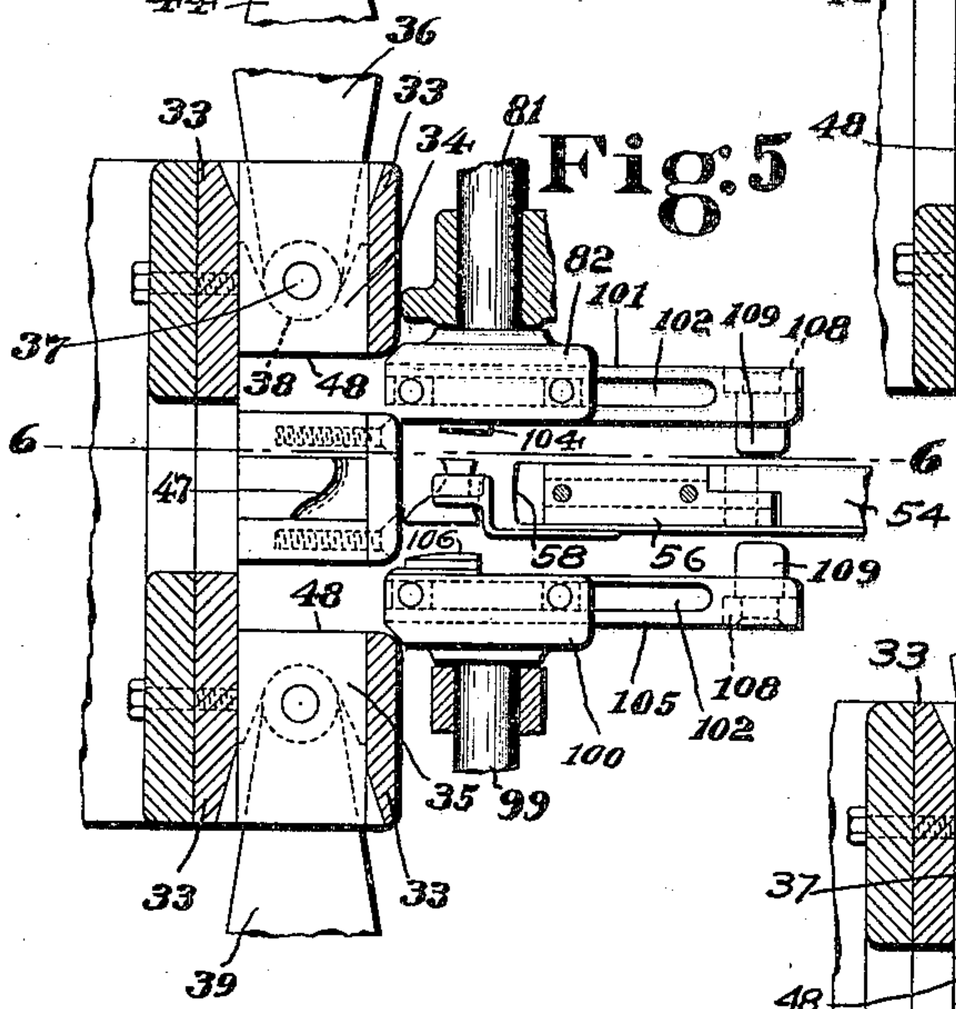


Fig. 8

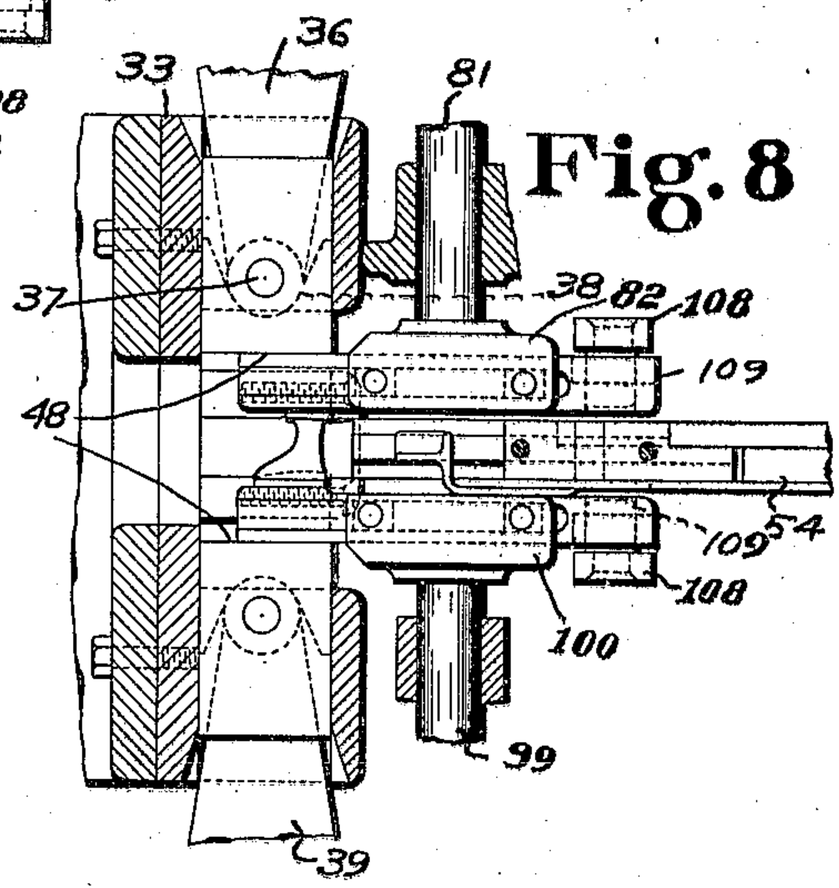
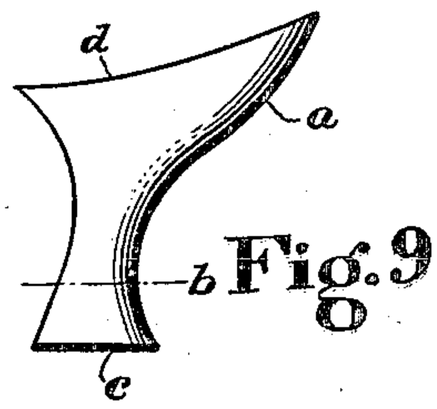


Fig. 9



INVENTOR.

Eastus E. Winkley

Patented Jan. 2, 1923. 1,440,573

UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

HEEL-COMPRESSING MACHINE.

Application filed January 31, 1920. Serial No. 355,330.

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain Improvements in Heel-Compressing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for treating the heels of boots and shoes, and more particularly to machines for compressing the heels prior to their application to the boot or shoe.

It is now the common practice to compress the heels of boots and shoes by subjecting them to a heavy condensing pressure between a set of dies or forms which act against the sides and around the contour surface of the heels, and other opposing compression members which act upon the heel seat and tread surfaces of the heels. A machine of this general character is shown and described in the United States patent to Charles L. Allen No. 776,823, and such machines have gone into extensive use and have been commercially successful. In machines of this general type it has been the common practice to provide opposed compression members to act heightwise of the heel and to support one of these members in a fixed position, the other member being movable towards and from the fixed member. Likewise in this general character of heel compressing machines, the side dies or compression members have been caused to move inward towards the heel and engage the sides and contour portions of the heel due to the movement of approach of the compression members which act heightwise of the heel. The effect of this has been that the side dies or compression members would engage the heel as they move in a direction of approach before the heel was placed under heightwise compression, and this mode of operation has been highly successful in machines for compressing heels of ordinary types.

In treating certain forms of what may be termed "freak heels" such, for instance as "Louis heels" or those having a very pronounced wedge shape or formation, such as commonly seen on ladies' shoes, it is not sufficient alone to change the shape of the compression members in order to subject the heel to the desired condensing pressure. In Louis heels, for instance, the smallest dimension of the heel is at a point between the tread and heel seat surface; that is, the smallest cross sectional area of the heel is at a point between the top and bottom of the heel, and the heel expands both upwardly and downwardly from this point which may be regarded as the datum plane of the heel. To effect proper compression of such form of heel, the heel seat and tread surfaces should be compressed towards the datum plane and the compression movement of the portion of the heel at opposite sides of the datum plane should be proportional to the distance of the surface of the heel from the datum plane.

An important feature of the present invention, therefore, consists of opposed compression members for acting upon the heel seat and tread surfaces which are given compressing movements of different amounts towards each other or the datum plane of the heel. In carrying this feature of the invention into practical effect the opposed compression members for acting upon the heel seat and tread surfaces are preferably given compressing movements towards the datum plane of the heel in amounts proportional to the distance of the heel seat and tread surfaces from the datum plane, the effect being that the datum plane of the heel itself remains substantially immovable while the top and bottom portions of the heel are condensed towards the datum plane.

Where the heels to be compressed are of pronounced wedge shape, such, for instance, as are observable on ladies' shoes, if the side compression members should act upon the side contour portion of the heel prior to the action of the opposed heel seat and tread surface compression members, the heel itself is liable to be misplaced or disturbed as the side members come together and bear upon its side contour surfaces. Should this occur, the opposed compression members for acting upon the heel seat and tread surfaces are called upon to return the heel to its proper position between the dies or forms during the compressing action, with the result that the heel is liable to be injured, especially

along the edge portions of the heel lifts. In the case of "Louis heels" where the datum plane or narrowest part of the heel is between the top and bottom of the heel, should the side dies engage and bear upon the side contour portions of the heel prior to the engagement of the heightwise compression members with the heel seat and tread surfaces of the heel, the lifts of the heel in the zone adjacent the datum surface are liable to be separated or opened up to some extent with resultant unsatisfactory product.

A further important feature of the present invention, therefore, consists in giving to the opposed compression members which act upon the top and bottom of the heel and the opposed compression members which act on the sides of the heel, simultaneous rectilinear compressing movement, so that the heel will be acted upon both vertically and horizontally during the same period of time or coincidentally. In carrying this feature of the invention into practical effect, the opposed compression members for acting upon the top and bottom of the heel and the opposed compression members for acting upon the sides of the heel, may all be given their compression movements to simultaneously engage and compress the heel, so that the heel will not be disturbed in its position as the compression members act upon it, and the lifts of the heel at opposite sides of the datum plane of a Louis heel will not be opened up or separated.

A further important feature of the invention consists in compression members having the above described characteristics in combination with a breast plate which acts to compress the heel in a longitudinal direction simultaneously with its heightwise and sidewise compression.

Inasmuch as the opposed compression members which act upon the heel seat and tread surfaces of the heel are each given compressing movements, the heel to be compressed must be presented in position between the compression members and held there independently of the compression members until they take charge of the heel.

Another important feature of the present invention therefore consists of a heel seat die and an opposed tread plate mounted upon separate heads independent of the compression members and moved towards each other to engage the heel seat and tread surface of a heel between them and then movable to present themselves and the heel between the compression members. This feature of the invention is embodied in opposed heads adjacent to the compression members and slides mounted on the respective heads and carrying the heel seat die and tread plate respectively. To enable the heel seat die and tread plate to move towards each other during the action of the compression members upon the top and bottom of the heel, the heads which carry the heel seat die and tread plate, are yieldingly mounted.

The present invention further contemplates the automatic presentation of the uncompressed heels to the compression members and the return of the compressed heels to a carrier which transports the compressed heels to a discharging station. An important feature of the present invention in this respect, therefore, consists of a carrier for presenting uncompressed heels between the heel seat die and tread plate and means for actuating the latter to place themselves and the heel between the compression members and return the compressed heel to the carrier.

Other features of the invention and novel combination of parts in addition to the above will be hereinafter described in connection with the accompanying drawings which illustrate one good practical form thereof.

In the drawings:

Fig. 1 is a side elevation of a machine embodying the present invention, some of the parts being broken away;

Fig. 2 is a transverse section on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged section partly broken away on the line 3—3 of Fig. 2;

Fig. 4 is a vertical section substantially on the line 4—4 of Fig. 2;

Fig. 5 is a detailed sectional view substantially on the line 5—5 of Fig. 4, some of the parts being omitted for clearness of illustration;

Fig. 6 is a horizontal section on the line 6—6 of Fig. 5;

Fig. 7 is a vertical section similar to that of Fig. 5 showing the parts in another position;

Fig. 8 is a section similar to that of Fig. 7 showing the parts and heel in compressing position;

Fig. 9 is a view showing approximately the general form of a "Louis heel".

The machine frame for supporting the various parts may be of appropriate character and in present instance it comprises the side frames 1 suitably held in associated relation by tie members 2, which might be formed either separately from or integral with the side members. The main supporting frame is surmounted by a removable casing 3 which is tied to the main frame and held in rigid association therewith by a series of tie bolts 4, three of which are shown in the present instance but of which there may be any suitable number. The tie bolts 4 are anchored to the main frame at their lower end portions by pins or wedges 5, Figs. 1 and 4, and serve to hold the frame 3 in rigid association with the main frame by means of the pins or wedges 6, Figs. 1 and 4. The tie bolts pass through suitable lugs on the main

frame and casing 3, the frame construction being such that the main portions of the operating parts may be properly encased or covered.

Mounted in suitable bearings 7 formed in the side frame is the main drive shaft 8 carrying the fast and loose pulleys 9 and 10. The drive shaft 8 may be driven from any suitable source of power, as by belting from a line shaft in connection with the pulleys 9 and 10, and if desired, means may be provided for shifting the belt from the fast to the loose pulleys, or vice versa. The drive shaft 8 at its end opposite the fast and loose pulleys 9 and 10, is provided with a fly wheel 11 by which smooth running of the machine is effected.

The drive shaft 8 has mounted thereon the gear 12, Figs. 1 and 4, which, through a train of mechanism, as will presently be described, transmits operating motion to the various machine parts. This train of mechanism may be variously contrived, but in the present instance consists of a pinion 13 mounted on a shaft 14, Fig. 1, which is supported in suitable bearings in the machine frame and has on its outer end a toothed wheel or gear 15. Figs. 1 and 4, which is in operative engagement with a large pinion 16 mounted upon the end of the cam shaft 17, the construction being such that upon rotation of the drive shaft 8, proper rotative movement will be imparted or transmitted to the cam shaft 17. The cam shaft 17 is mounted in suitable bearings 18 on the machine frame and has fastened thereto the bevel gears 19 which engage correspondingly beveled gears 20 secured to the vertical shafts 21. The vertical shafts 21 are substantially alike in all respects and are mounted in suitable bearings 22, Figs. 2 and 4. Mounted in the hangers 23 carried by the casing 3, is the shaft 24. The upper end portions of the shafts 21 carry bevel gears 26 which engage correspondingly beveled gears 27 secured to the shaft 24, the construction being such that upon rotation of the drive shaft rotary movement will be imparted to the shaft 17 and also to the shaft 24. The bevel gears 19, 20, 26 and 27 may be secured to their respective shafts in any appropriate manner, but as indicated in the drawings they are preferably pinned to their shafts.

Each of the shafts 17 and 24 is utilized to give compressing movements to the compressing members which act upon the top and the bottom of the heel. These compressing movements of the compressing members are simultaneous, but when treating freak heels such. for instance, as the Louis heel, the compressing movements of these compressing members will be differential, that is, the compressing movement of one will be greater or less than the compressing movement of the other.

In the present instance of the invention, the shaft 17 has secured thereto the eccentric 28, the eccentricity of which is in conformity with the compressing movement desired to be given to the connected compression member. The shaft 24 has likewise secured thereto the eccentric 29, the eccentricity of which is proportional to the extent of compressing movement desired to be imparted to the associated compression member. When compressing Louis heels, such, for instance, as that indicated in Fig. 9, differential movements are given to the compression members actuated by the eccentrics 28 and 29, in order to impart proportional compression to the upper and lower portion of the heel on opposite sides of the datum plane. The Louis heel *a*, Fig. 9, it will be noted, has its smallest dimension at a point between the heel seat and tread surfaces which, in the present instance, is indicated by the line *b*, and which for the purpose of illustration may be assumed to be one-third of the height of the heel from the tread surface *c* and two-thirds of the height of the heel from the heel seat surface *d*. Under these assumed conditions the compressing movements of the upper and lower compression members should be directly proportional to the distance of the heel seat *d* and tread surface *c* from the datum plane *b*, that is, the compressing action of the lower compression member would be one-third and that of the upper compression member would be two-thirds, each directed towards the datum line *b*. This differential or proportional movement of the upper and lower compression members may be readily effected by appropriate change in the eccentricity of the eccentrics 28 and 29 which give movement to the compression members, as will now be pointed out.

Suitably secured to the machine frame is the plate or bracket 30. In the present instance this is indicated as secured to the machine frame by a series of bolts 31 at its upper end and its lower end is formed integral with or secured to the cross plate 32, Fig. 4. Mounted on the face of the plate 30 are the guide-ways 33 for the upper and lower compression members 34 and 35, respectively. The guide-ways 33 for the upper and lower compression members may be variously contrived but, as indicated in the enlarged view, Figs. 5, 7 and 8, the guides 33 are of general box formation to receive the sliding compression members 34 and 35 which act upon the top and bottom of the heel. The upper compression member 34 is connected to a link or rod 36 by a pin 37, and the enlarged boss 38 on the lower end of the rod or link 36 bears in a corresponding recess in the compression member 34, the construction being such that while the compression member 34 is pinned to the link or rod 36, as at 37, the enlarged bearing portion 38 between the rod

or link and the compression member, serves to support the parts firmly during the extreme condensing pressure that is applied to the heel. The lower compression member 35 is similarly connected to the link or rod 39 which operates it, but as the construction is substantially the same as that described for the upper compression members, further description appears unnecessary. The links or rods 36 and 39 for the upper and lower compression members, respectively, are connected to the eccentrics 29 and 28 by suitable straps 40 and 41, the construction being such that as the eccentrics are rotated with their respective shafts, the upper and lower compression members will be moved towards and from each other and the extent of this movement will be determined by the eccentricity of their respective operating eccentrics.

The side compression members for acting upon the sides and contour surfaces of the heel, are best illustrated in Figs. 2 and 4 and comprise the slides 42, each of which is mounted for reciprocating movements in suitable guides 43 supported by the machine frame substantially as indicated in Figs. 2 and 4. The horizontal guides 43 for the side compression members may be appropriately associated with the vertical guides 33 for the vertically reciprocating compression members, the construction being such that the horizontally and vertically reciprocating compression members may act simultaneously to compress the heel between them.

The side compression members 43 are connected to the arms 44, Figs. 2 and 4, which are themselves connected to the eccentrics 45, respectively, upon the shafts 21, and, since the movements of the side compression members 42 are to be of like extent, the eccentricity of the cams 45, which actuate the side compression members, is the same. The arms 44 may be connected to the side compression members by a pin 46 and the enlarged hub portion of the arm adjacent the pin may bear upon a correspondingly socketed portion of the slide to afford an abutment against which the hub portion may bear during the extreme compression imparted by the side members.

The side compression members 42 are provided with heel engaging die surfaces or forms 47 which conform substantially to the contour surface at the sides and around the back of the heel. The compression members which act upon the top and bottom of the heel, however, as indicated in Fig. 5, have plain surfaces 48 for a purpose that will be presently explained.

Extending upwardly from the cross plate 32, best shown by Figs. 2 and 3, is the stud shaft 49 on which is loosely mounted the sleeve 50 carrying a gear 51. The sleeve 50 has secured thereto at its upper end, Fig. 3, a crank 52, the pin 53 of which engages one end of a link 54 which is connected at its opposite end at 55 with a slide 56, guided for movement towards and from the heel compressing position, Fig. 2, by suitable guides 57. The slide 56 carries the breast plate 58, Figs. 2, 5, 6, 7 and 8, which, through the means described, is caused to bear upon and press against the breast of the heel when the latter is under the compressing action of the compression members hereinbefore described. The gear 51, Figs. 2 and 3, is connected to a gear or pinion 59 which derives its rotary movement to actuate the breast plate through a train of gearing connected with one of the shafts 21. In the present instance, as indicated in Fig. 2, the shaft 21 is provided with a gear 60 which, through an idler 61, transmits rotary movement to the gear 59.

The present invention contemplates that the uncompressed heels shall be automatically presented to the compression members and that the compressed heels shall be automatically removed from the compression members and finally discharged from the machine. A novel character of feeding means for the above purposes will now be explained.

Loosely mounted on the sleeve 50, Fig. 3, is the carrier or feed table 62 which is provided at intervals with pairs of clamps 63 and 64 pivotally connected to the table at 65 and caused to move in unison upon their pivots by a suitable connection, such as the pin and socket 66, Fig. 2. A spring 67 normally acts to hold the clamping end jaw portions 63 and 64 of the clamps towards each other and in position to hold a heel.

Extending upwardly from the machine frame is an arm 68 the top portion of which affords a rest 69 for a heel which the workman is to place between the clamps 63 and 64 when they reach receiving position.

The rest 69 is preferably provided with a slide plate 70 the inner end portion 71 of which is formed as a heel breast gage. The slide plate 70 may be secured to the support 69 adjustably by means of the slot and pin connections 72, Fig. 2.

When the clamping members 63 and 64 are over the support 69, the workman shoves a heel, breast first, between the clamps until it reaches the breast gage 71 and thereby locates a heel properly within the clamps.

The carrier or feed table 62 is given intermittent movement and this is preferably effected by a Geneva escapement mechanism or any other preferred form of intermittently acting devices. In the present instance of the invention, the carrier 62 has a hub portion on which is mounted the plate 73, Figs. 2 and 3, having a series of slotted arms 74 which are adapted to be engaged at times by a pin 75 carried by an arm 76 se-

cured for rotative movement with the gear or pinion 59. Also associated with the arm 76 and, perforce, with the gear or pinion 59, is the disk 77 having a cut-away portion 78, Fig. 2, the construction being such that as the arm 76 carrying the pin 75 is rotated it will engage one of the slotted arms 74 and turn the carrier or table 62 a part of a rotation, whereupon the peripheral portion of the disk 77 will engage the curved part 79 of the plate 73 and lock the carrier or table from accidental rotary movement.

Intermittent movement of the carrier or table 62 successively presents an uncompressed heel into position for transfer to the compression members, and the present invention contemplates that when in such position the uncompressed heel shall be engaged by its heel seat and tread surfaces and transported to position for the action of the compression members. To these ends the present invention provides a heel seat die and a tread plate mounted on opposite sides of the plane of movement of the carrier or table 62, and means are provided for causing the heel seat die and tread plate to move towards each other and grasp the heel by its heel seat and tread surfaces while under control of the carrier. Means are further provided to cause the heel seat die and tread plate to detach the heel from the carrier and present themselves and the heel between the compression members and then return the compressed heel to the carrier. The means for giving to the heel seat die and tread plate the described movements to effect the purposes stated, are substantially alike and therefore a description of one will suffice for both.

Mounted on the machine frame or supported by a bracket secured thereto is the guide-way 80, Fig. 1, in which is mounted for reciprocating movement the hollow plunger 81 carrying at its lower end the head 82. In the hollow plunger 81 is a spring 83, the lower end portion of which bears upon the lower wall of the hollow plunger and the upper end portion of which bears against a block 84 connected by a pin 85 with an operating arm 86 secured to the rock shaft 87 mounted on the machine frame. The hollow plunger 81 is also provided with a slot 88 whereby the plunger and its operating arm 86 may have limited independent movement. The rock shaft 87 is actuated by an arm 89 connected to a link 90, the lower end of which is connected at 91 to the arm 92 secured to the rock shaft 93. Extending from the rock shaft 93 is the arm 94, the end of which carries a roll 95 which travels in the cam groove 96 of a cam 97, Fig. 1, secured to the cam shaft 17, the construction being such that upon rotation of the shaft 17 the plunger 81 will be reciprocated in its bearings. In order to reciprocate the corresponding lower plunger which, in the present instance, carries the heel seat die, the rock shaft 93 has secured thereto the arm 98, Fig. 1, which is connected to the lower plunger 99 and its head 100 in substantially the same manner as the arm 86 is connected to the upper plunger and head.

The upper head 82 carries a slide 101, Figs. 1, 5, 7, and 8, having a slot 102 which engages the pins or blocks 103 projecting from the head 82 so that the slide 101 may move longitudinally to the right and left, Fig. 1, relative to the head and yet be movable up and down with said head. The slide 101 carries the tread plate 104. The lower head 100 is similar to the upper head 82 and has connected to it the slide 105 which is slotted at 102 like the slide 101 and carries the heel seat die 106. From the construction described it will be apparent that upon movement of the upper and lower plungers towards each other, the heel seat die and tread plate will be caused to engage the top and bottom of a heel presented by the carrier 62.

In order to move the heel seat die, the tread plate, and heel into position between the compression members, the slides 101 and 105 are operatively connected to suitable actuating mechanism. The actuating mechanisms for each of these slides is or may be the same, and a description of one will suffice for both.

Pivotally mounted on the machine frame at 107, Fig. 2, is a lever, the arm 108 of which carries at its end a pin 109 which extends through an opening in the slide 101. The pin 109 is elongated so that while the slide 101 may move up and down with the head 82, the pin 109 carried by the lever will remain in operative engagement with the slide. The lever is actuated by an arm 110, Fig. 2, which carries a roll 111 traveling in the cam path 112 of a cam 113 mounted on one of the upright shafts 21, the construction being such that upon rotation of the upright shaft the lever arm 108 will be given appropriate movement to cause the slide 101 and the tread plate 104 to be moved relatively to the head 82. Since the slide 105 is similarly associated with another lever arm of the same character, it follows that the two slides 101 and 105 will be moved together after they have grasped the heel seat and tread surfaces of a heel and will present themselves and the heel between the compression members. Thus the opposed compression members act upon the heel seat and tread surfaces to compress the heel through the independently mounted heel seat die and tread plate. After the heel is compressed, the heel seat die and tread plate are returned to their initial position to thereby return the compressed heel to the carrier. Inasmuch as the heel is clamped between the yielding members 63 and 64, the

outer end portions of which are outwardly inclined, the heel seat die and tread plate are enabled to remove an uncompressed heel from the carrier and return a compressed heel to the carrier.

The carrier is given its intermittent movement in the direction indicated by the arrow, Fig. 2, and as the compressed heel approaches the loading position for another heel, the clamps are automatically opened to release the compressed heel. This is effected, as indicated in Fig. 2, by means of a pin 114 against which a wing portion 115, extending from one of the clamping members 63 and 64, impinges as the carrier or table 62 moves the clamps into position for receiving another heel. The pin 114 is preferably carried by the machine frame and in the present instance may be conveniently supported by the bracket arm 68, so that as the carrier 62 moves the clamps past the pin, the wing portion 115 will click over the pin and the spring 67 will return them to their initial position for grasping another heel inserted by the attendant at the receiving station.

While the advantages of the heel compressing machine herein described are more conspicuously apparent with respect to the treatment of freak heels, such as those having extreme wedge shape, and those of the "Louis" type, certain features of the invention may be advantageously employed in connection with the compression of other forms of heels and shoe parts.

Having described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a heel compressing machine, the combination of opposed compression members each movable towards the other for compressing a heel placed between them, means for giving to one of said compression members a compressing movement of predetermined amount, and means for giving to the other compression member a compressing movement of a different predetermined amount for compressing the top and bottom portions of a heel different amounts towards a datum plane between the top and bottom of the heel.

2. In a heel compressing machine, the combination of opposed compression members each movable towards the other for compressing a heel placed between them, means for giving to one of said compression members a compressing movement of predetermined amount, and means for giving to the other compression member a simultaneous compressing movement of a different predetermined amount for compressing the top and bottom portions of a heel different amounts towards a datum plane between the top and bottom of the heel.

3. In a heel compressing machine, the combination of opposed compression members for acting on the top and bottom of a heel, means for giving to one of the compression members a compressing movement of predetermined amount, means for giving to the opposed compression member a simultaneous compressing movement of a different amount, side compression members, and means for giving them equal compressing movements.

4. In a heel compressing machine, the combination of compression members for acting upon the top and bottom surfaces of a heel whose narrowest part is between said surfaces, and means for simultaneously imparting compressing movements to the compression members proportional to the distance of the engaged surface from the narrowest part of the heel.

5. In a heel compressing machine the combination of a heel seat die and a tread plate for engaging the heel seat and tread surfaces, respectively, of a heel whose least cross-sectional dimension is between the heel seat and tread surfaces, and means for imparting simultaneous compressing movements to the heel seat die and tread plate directly proportional to the distances of the heel seat and tread surfaces, respectively, from the least cross-sectional dimension of the heel.

6. In a heel compressing machine the combination of a heel seat die and a tread plate for engaging the heel seat and tread surfaces, respectively, of a heel whose least cross-sectional dimension is between the heel seat and tread surfaces, means for imparting simultaneous compressing movements to the heel seat die and tread plate directly proportional to the distances of the heel seat and tread surfaces respectively from the least cross-sectional dimension of the heel, and side compression members for acting on the sides of the heel.

7. In a heel compressing machine the combination of a heel seat die and a tread plate for engaging the heel seat and tread surfaces respectively of a heel whose least cross-sectional dimension is between the heel seat and tread surfaces, means for imparting simultaneous compressing movements to the heel seat die and tread plate directly proportional to the distances of the heel seat and tread surfaces, respectively, from the least cross-sectional dimension of the heel, side compression members, and means for giving them side compressing movements.

8. In a heel compressing machine, the combination of opposed compression members for acting on the top and bottom of a heel placed between them, opposed compression members for acting on the sides of the heel, and means for simultaneously imparting rectilinear compressing movements to all of the compression members.

9. In a heel compressing machine, the combination of opposed compression members for acting on the top and bottom of a heel placed between them, means for simultaneously giving heel compressing movements of different amounts to said members, opposed side compressing members, and means for giving them side compressing movements during the differental compressing movements of the other compression members.

10. In a heel compressing machine, the combination of opposed compression members for acting on the top and bottom of a heel placed between them, opposed side compression members for acting on the sides of the heel, an independently movable heel breast compression member, and means for simultaneously giving compressing movements to all of said members.

11. In a machine for compressing "Louis" heels, the combination of two compression members, one for acting upon the top and the other upon the bottom of the heel, and means for giving the compression members differential and simultaneous compressing movements in the same interval of time proportional to the distance of the top and bottom of the heel from the neck of the heel.

12. In a machine for compressing "Louis" heels, the combination of two compression members, one for acting upon the top and the other upon the bottom of the heel, means for giving the compression members differential and simultaneous compressing movements in the same interval of time proportional to the distance of the top and bottom of the heel from the neck of the heel, and means for subjecting the heel to sidewise compression simultaneously with the longitudinal compression.

13. In a heel compressing machine, the combination of a carrier for heels to be compressed, a heel seat die and an opposed tread plate, opposed compression members, and means for causing the heel seat die and tread plate to grasp a heel on the carrier and present it between the compression members and return the compressed heel to the carrier.

14. In a heel compressing machine, the combination of opposed compression members, a carrier having clamps for holding a heel, a heel seat die and tread plate, and means for causing the die and plate to grasp the top and bottom of a heel held by the clamps and present it to the compression members and return the compressed heel to the clamps.

15. In a heel compressing machine, the combination of opposed compression members movable towards each other for compressing a heel placed between them, an independently mounted heel seat die and tread plate, a carrier for feeding heels, and means for causing the die and plate to engage a heel on the carrier and present themselves and the heel between the compression members and for returning the compressed heel to the carrier.

16. In a heel compressing machine, the combination of opposed compression members movable towards each other for compressing a heel placed between them, an independently mounted heel seat die and tread plate, a carrier for feeding heels, means for causing the die and plate to engage a heel on the carrier and present themselves and the heel between the compression members and for returning the compressed heel to the carrier, and means for discharging the compressed heel from the carrier.

17. In a heel compressing machine, the combination of opposed compression members, a heel seat die and tread plate that are mounted independent of the compression members, a carrier for presenting uncompressed heels between the die and plate and transporting compressed heels to a point of discharge, means for simultaneously moving the die and plate towards each other to engage a heel on the carrier, means for moving the die and plate to present themselves and the heel between the compression members and for returning the compressed heel to the carrier, and means for operating the carrier.

18. In a heel compressing machine, the combination of heel compressing members, a heel seat die and a tread plate, a head carrying the die and a separate head carrying the plate, means for moving the die and plate in a direction of approach for engaging a heel between them, and means for moving the die and plate to carry a heel between the compression members.

19. In a heel compressing machine, the combination of opposed compression members, a heel seat die and a tread plate, opposed heads independent of the compression members, one for the die and one for the plate, means for moving the die and plate towards each other to grasp a heel between them, and means for simultaneously moving the die and plate relative to the heads to place a heel between the compression members.

20. In a heel compressing machine, the combination of opposed heel compressing members for acting on the top and bottom of a heel, means for simultaneously moving the two members in a direction of approach to compress a heel between them in the direction of its height, a heel seat die and a tread plate mounted independent of the compression members, means for moving them towards each other to grasp the top and bottom of a heel, and means for moving the die, plate, and heel into compressing position between the compression members.

21. In a heel compressing machine, the

combination of vertically reciprocating compressing members, eccentrics of unequal eccentricity for reciprocating said compression members, horizontally reciprocating compression members, eccentrics of equal eccentricity for reciprocating the horizontally reciprocating compression members, and means for operating the eccentrics.

22. In a heel compressing machine, the combination of vertically reciprocating compressing members, eccentrics of unequal eccentricity for reciprocating said compression members, horizontally reciprocating compression members, eccentrics of equal eccentricity for reciprocating the horizontally reciprocating compression members, and a heel breast compression member.

23. In a heel compressing machine, the combination of vertically reciprocating compressing members, eccentrics of unequal eccentricity for reciprocating said compression members, horizontally reciprocating compression members, eccentrics of equal eccentricity for reciprocating the horizontally reciprocating compression members, and means for simultaneously operating the eccentrics to compress a heel heightwise coincident with sidewise compression.

24. In a heel compressing machine, the combination of opposed compression members for acting on the top and bottom of a heel, an intermittently movable carrier, clamps mounted on the carrier for clamping a heel between them and having outwardly flaring end portions to permit a heel to be placed between and removed from the clamps, and means for grasping a heel while in the clamps and presenting the uncompressed heel to the compression members and returning the heel to the clamps after it has been compressed.

25. In a heel compressing machine, the combination of opposed compression members for acting on the top and bottom of a heel, an intermittently movable carrier, clamps mounted on the carrier for clamping a heel between them and having outwardly flaring end portions to permit a heel to be placed between and removed from the clamps, means for grasping a heel while in the clamps and presenting the uncompressed heel to the compression members and returning the heel to the clamps after it has been compressed, and means acting to open the clamps and discharge a compressed heel at a point remote from the compression members.

26. In a heel compressing machine, the combination of opposed compression members for acting on the top and bottom of a heel placed between them, two opposed heads each carrying a slide, a heel seat die on one of the slides and a tread plate on the other slide, means for moving the heads and slides towards each other for grasping a heel between them, a carrier for presenting a heel between the die and plate, and means for moving the slides to place a heel between the opposed compression members.

27. In a heel compressing machine, the combination of heel compression members a carrier for carrying heels for treatment by the compression members, yielding heel clamps mounted on the carrier, a heel loading support over which the clamps are moved by the carrier to enable the workman to insert a heel between the clamps, and means for opening the clamps to discharge a compressed heel while the clamps are in motion, as they approach the heel loading support.

28. In a heel compressing machine, the combination of heel compression members, a carrier for carrying heels for treatment by the compression members, yielding heel clamps mounted on the carrier, a heel loading support over which the clamps are moved by the carrier to enable the workman to insert a heel between the clamps, a heel gage mounted on the support for determining the position of the heel when placed between the clamps, and means for opening the clamps to discharge a compressed heel as the clamps approach the heel loading support.

In testimony whereof I have signed my name to this specification.

ERASTUS E. WINKLEY.