

April 2, 1963

J. M. CHAFIN ETAL

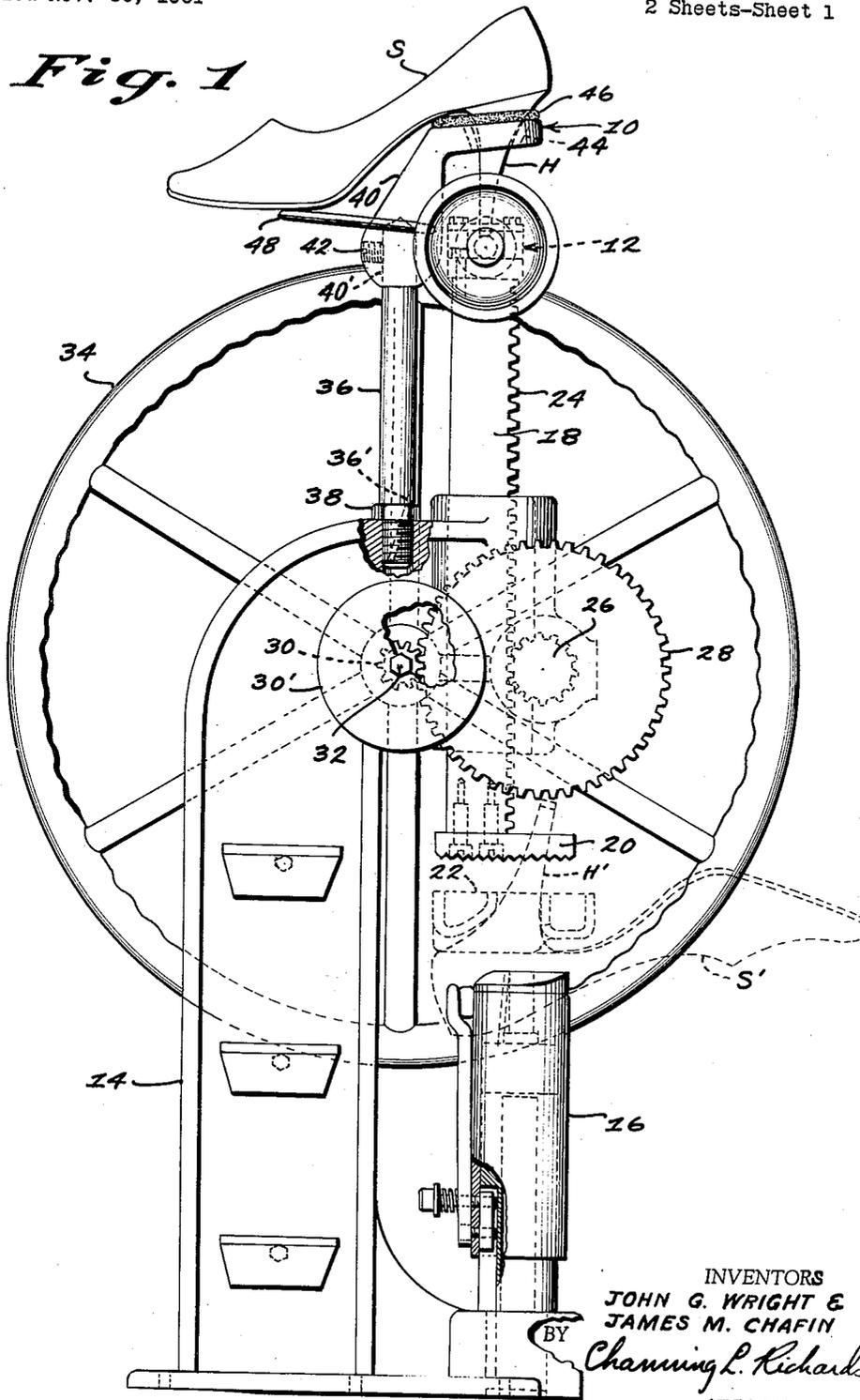
3,083,385

HEEL PIN EXTRACTING MEANS

Filed Nov. 30, 1961

2 Sheets-Sheet 1

Fig. 1



INVENTORS
JOHN G. WRIGHT &
JAMES M. CHAFIN
BY *Channing L. Richards*
ATTORNEY

April 2, 1963

J. M. CHAFIN ETAL
HEEL PIN EXTRACTING MEANS

3,083,385

Filed Nov. 30, 1961

2 Sheets-Sheet 2

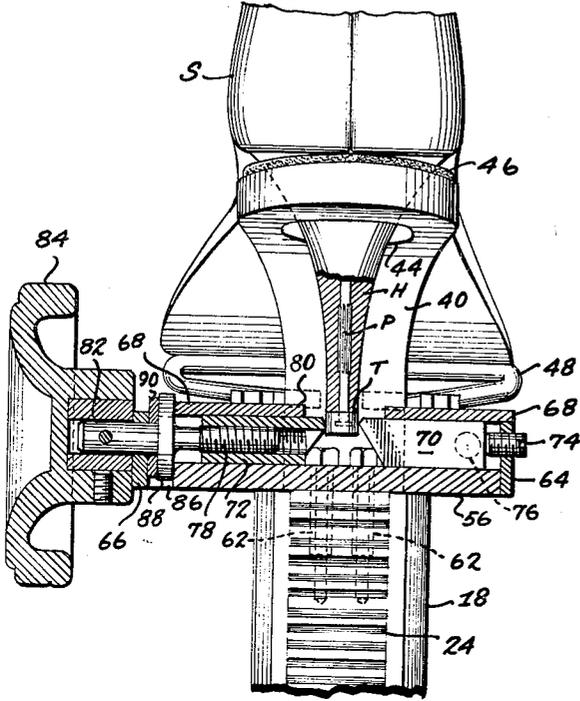


Fig. 2

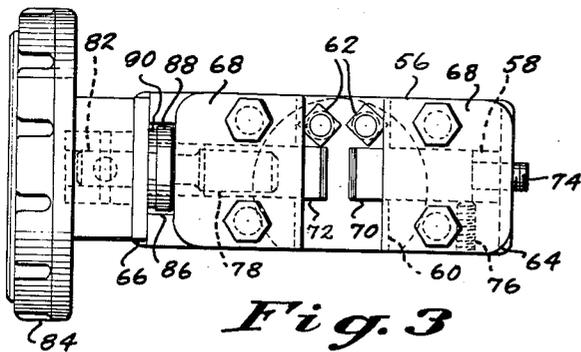


Fig. 3

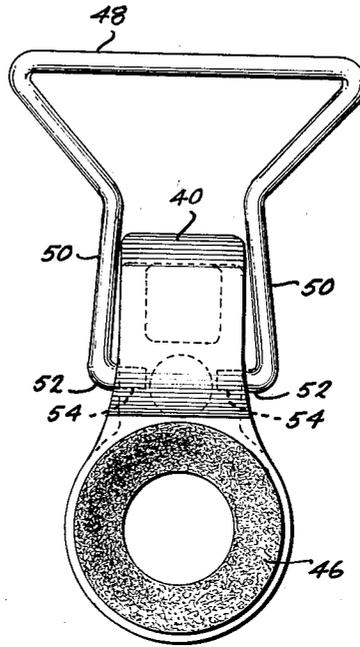


Fig. 4

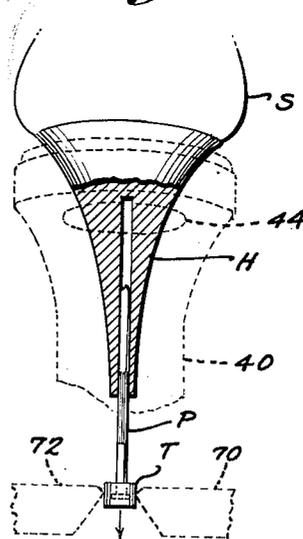


Fig. 5

INVENTORS
JOHN G. WRIGHT &
BY JAMES M. CHAFIN

Channing L. Richards
ATTORNEY

1

3,083,385

HEEL PIN EXTRACTING MEANS

James M. Chafin and John G. Wright, Atlanta, Ga.,
assignors to The Auto-Soler Company, Atlanta, Ga., a
corporation of Georgia

Filed Nov. 30, 1961, Ser. No. 155,987

6 Claims. (Cl. 12-50.5)

This invention relates to the repair of ladies' shoes, and more particularly to a device that may be employed to unique advantage for preparing the heels of ladies' shoes to have top lifts replaced thereon in cases where the original top lifts were secured in place as a fitting on a heel pin that was in turn inserted in the heel block to serve also as a reinforcing dowel therefor.

The trend in recent years toward the use of extremely slender heel blocks in ladies' shoes has made it necessary to adopt special measures for strengthening the heel blocks, and this has commonly been done with so-called "heel-pins," which are usually provided in a form generally similar to that of a fairly heavy nail, with suitable longitudinal ribbing or the like added along the shank of the heel pin to enhance its holding power, and with a top lift fitted at the nail-like head of the pin. For installation in the course of original manufacture, the heel blocks are bored for a press fit with the heel pins, which are then driven into place as a reinforcing dowel, and as a means for securing the top lifts at the lower ends of the heel blocks.

Such heel pin arrangements have substantially complicated the replacement of worn top lifts, because the heel pins tend to be so firmly inserted in the heel blocks as to render their extraction by any normal means quite difficult, without at the same time objectionably damaging the heel block or the shoe structure. The heel pins must be removed, however, in order to replace the top lifts properly, and as an increasing number of ladies' shoes are being manufactured with heel pin reinforcements, there has been an increasingly troublesome problem raised in dealing with such shoes at the repair stage.

The device of the present invention provides means for eliminating this problem by making it possible to extract the heel pins readily and with exceptional facility. Briefly described, this device comprises a shoe rest incorporating a seat for supporting the heel block with its lower end extending therethrough, and a plunger slidable in substantial alignment with the extending disposition of a heel block supported by the heel rest seat and carrying a gripping mechanism to engage the top lift fitted end of a heel pin in the supported heel block, so that the plunger may be drawn away through actuation at a rack portion thereof to pull the pin from the heel block with ease; as described at further length below in connection with the accompanying drawings, in which:

FIG. 1 is a side elevation illustrating a heel pin extracting device embodying the present invention as arranged for operation in association with a heel attaching apparatus;

FIG. 2 is an enlarged and fragmentary front elevation, partly in section, that illustrates further the structural details of the heel pin extracting device shown in FIG. 1;

FIG. 3 is a plan view of the adjustable jaw mechanism seen in FIG. 2;

FIG. 4 is a plan view of the shoe rest seen in FIG. 2;

FIG. 5 is a more or less schematic illustration of the manner in which a heel pin is extracted by the device of the present invention.

While a heel pin extracting device may be readily constructed in accordance with the present invention as a separately constituted unit for independent installation

2

and use, there is substantial advantage in arranging it as an adjunct of heel attaching apparatus such as is disclosed and claimed in copending application Serial No. 34,530, filed June 7, 1960, by John G. Wright, and the invention is accordingly illustrated and described in detail, as a matter of convenience, in terms of an embodiment arranged for use and operation in association with such apparatus.

As shown in the drawings, the illustrated embodiment of the present invention comprises a shoe rest that is designated generally by the reference numeral 10, and a jaw mechanism that is indicated generally at 12; the shoe rest 10 being arranged to form a fixed support for a shoe S incorporating a heel block H from which a heel pin P fitted with a worn top lift T is to be removed (see FIG. 5), and the jaw mechanism 12 being provided for manipulation with respect to the supported shoe S to grip the worn top lift T (and adjacent end of the heel pin P if need be) and exert the necessary pulling force to extract the heel pin P in the manner illustrated schematically by FIG. 5.

The heel attaching apparatus of the above noted copending application Serial No. 34,530, with which the shoe rest 10 and jaw mechanism 12 are associated in the illustrated embodiment, is arranged in general, as shown in FIG. 1, with a suitable supporting frame structure 14 carrying at its base portion an upwardly extending nailing head 16 from which heel attaching fasteners may be driven in a heel block H' of a shoe S' inverted over the upper nailing head end; the driving force being obtained from downward pressure of a plunger 18 having a foot piece 20 arranged at its lower end to bear on a heel collar 22 through which the pressure is transferred to the heel block H' and then in turn to the nailing head 16. For exerting this downward driving pressure, the plunger 18 is slidably mounted at the upper portion of the frame structure 14, and has rack teeth 24 formed at one side thereof that are engaged by a pinion shaft 26 journaled adjacently in the frame structure 14 and arranged to carry a gear 28, while a meshing pinion 30 (together with a retaining and shrouding washer 30') is mounted on a countershaft 32 that is also journaled in the frame structure 14 and that has a hand wheel 34 of substantial diameter fixed thereon, from which the plunger 18 may be operated uniquely and at the exceptional mechanical advantage explained at length in the previously noted copending application Serial No. 34,530.

The previously noted shoe rest 10 is associated with the above described heel attaching apparatus by means of a support stud 36 that is threaded at one end and fitted with a lock nut 38 for securing on the frame structure 14 with an upright disposition as shown in FIG. 1. As the support stud 36 is aligned directly above the countershaft 32 in the illustrated embodiment, its threaded end may also be obliquely drilled, as seen in dotted lines at 36', to provide an oil channel through which the countershaft 32 may be lubricated.

At the upper end of the support stud 36, a body member 40 is fixed in place by a set screw 42, the body member 40 being formed with a mounting recess at 40' in which the upper end of stud 36 is received for engagement by the set screw 42. The shape of the body member 40 is such as to reach upwardly from the support stud 36 to an angled portion that is apertured at 44 to form an annular seat in which a heel block H may be supported with its lower end depending therethrough, while its upper portion is advantageously held and positioned by the surrounding support of the seat 44. The seat aperture 44 is fitted with a suitable protective covering 46 of felt or the like to cushion the supported heel

block H against damage, and the body member 40 is fixed in place by the set screw 42 so that the heel seat 44 is aligned above the upper end of the slidable plunger 18, as noted at greater length further below.

To complete the shoe rest 10, the body member 40 is additionally arranged to carry a bail member 48 that is adapted to act as a support for the sole portion of a shoe S when the heel block H thereof is held in the aperture seat 44. This sole supporting bail member 48, as seen in FIG. 4, is formed with a pair of pivot legs 50 that have inwardly turned trunnion portions 52 disposed in bearing bores 54 provided in the body member 40, and the spacing of the bail member pivot legs 50 is proportioned in an extent that is less than the width of the body member 40, so that the pivot legs 50 must assume an outwardly spread disposition when the bail member 48 is installed on the body member 40, which induces a frictional gripping action by the pivot legs 50, adjacent the edges of the body member 40 across which these legs 50 project, that is adequate to hold the bail member 48 at a selected sole supporting position while allowing it to be shifted readily for any necessary adjustments to suit the particular forms of different shoe styles.

The related pin pulling jaw mechanism 12 provided according to the present invention, as previously noted, for manipulation in relation to the shoe rest 10, comprises a base block 56 that is centrally slotted both longitudinally, as at 58, and transversely, as at 60, and that is secured at the top end face of the plunger 18 by suitable machine screws 62 or like arranged in the transverse slotting 60 to one side of the longitudinal slotting 58. At each end, the jaw block 56 has respective back-up and thrust plates 64 and 66 fixed thereon across the longitudinal slotting 58, and is additionally fitted with cover plates 68 by which the longitudinal slotting adapted to contain oppositely arranged fixed and movable jaw members 70 and 72.

The position of the fixed jaw member 70 is located against a set screw 74 arranged in the adjacent back-up plate 64, and is held in place by a second set screw 76 that extends laterally through the base block 56; while the movable jaw member 72 is slidably disposed for positioning by an operating screw 78 that acts within a threaded bore 80 of the jaw member 72. The operating screw 78 is formed with a shank portion 82 that extends through the thrust plate 66 to have a manipulating knob 84 fixed thereon, and the base block 56 is notched at 86 to provide clearance for a flange 88 formed on the shank portion 80 by which the operating screw 78 is positioned in the base block 56 adjacent the thrust plate 66, an interposed thrust washer 90 being provided to avoid binding of the flange 88 against the thrust plate 66 under the load imposed thereat when the movable jaw member 72 is closed for gripping action in opposition to the fixed jaw member 70.

A heel pin extracting device arranged according to the present invention in the foregoing manner is employed to extract heel pins P as follows. Having fixed the shoe rest body member 40 in place so that the heel block seat 44 is aligned above the plunger 18, and having set the sole supporting bail member 48 so that a shoe S placed on the shoe rest 10 is supported with the heel block H depending at a substantially vertical disposition through the heel block seat 44, the related jaw mechanism 12 is raised to the level of the top lift fitted end of the heel pin P and the fixed jaw member 70 thereof is located to assume a close position sidewise of the top lift T without disturbing appreciably the vertically depending disposition of the supported heel block H. Such initial location of the fixed jaw member 70 in relation to a representative heel block H of the type that is usually fitted with a heel pin P will arrange the jaw mechanism 12 for effective use in most instances that are apt normally to be encountered, although this jaw member 70 may always be relocated in any particular instance in which the

heel block H being dealt with makes its relocation necessary or desirable.

Assuming then that the shoe rest 10 has been arranged as indicated above to support a shoe S with the heel block H thereof depending through the seat 44 for extraction of a top lift fitted heel P therefrom, and that the fixed jaw member 70 has been located properly in relation to the particular heel block H being handled, the extraction operation is commenced by raising the jaw mechanism 12 through manipulation of the hand wheel 34 until the fixed and movable jaws 70 and 72 are disposed at opposite sides of the top lift T carried on the heel pin P that is to be removed. As this is done, the movable jaw member 72 will have previously been opened in relation to the fixed jaw member 70 so that the top lift T is at first received freely therebetween, and then the manipulating knob 84 is used to rotate the operating screw 78 in the direction that closes the movable jaw 72 in relation to the fixed jaw 70 for a gripping bite on the top lift T.

With the jaw mechanism 12 gripping the top lift T in this manner, it is only necessary then to operate the hand wheel 34 again in the opposite direction for lowering the jaw mechanism 12 to exert the pulling force required to extract the heel pin H in the manner indicated in FIG. 5. The previously described gearing of the hand wheel 34 for operating the slidable plunger 18 makes it possible to apply the extracting force by an exceptionally easy and practically effortless manipulation of this hand wheel 34, and the aligned disposition of the shoe rest seat 44 above the plunger 18 provides for a similar alignment with the jaw mechanism 12, so that the extracting force is directed in substantial alignment with the depending disposition of the heel block H from its cushioned support in the seat 44, to allow removal of the heel pin P readily without subjecting the heel block H to undue strain or to gripping damage of any sort in holding it while the heel pin removal is effected.

Once the heel pin P has been pulled loose, the shoe S will be ready for removal from the shoe rest 10 to have the further repair work done that is necessary to replace the worn top lift T thereon, while the extracted heel pin P will be released from the lowered jaw mechanism 12 by opening the movable jaw 72 and thereby the device is ready to commence a subsequent heel pin extraction whenever the occasion arises.

The present invention has been described above for purposes of illustration only, and is not intended to be limited by this description or otherwise except as defined in the appended claims.

We claim:

1. Means of the character described for extracting a heel pin from the heel block of a ladies' shoe, said means comprising a shoe rest incorporating an annular seat for supporting said heel block with its lower end extending therethrough, a plunger slidable in substantial alignment with the extending disposition of a heel block supported by said shoe rest seat, means carried by the end of said plunger adjacent said heel block for gripping a heel pin at the lower end of the supported heel block, a rack formed lengthwise of said plunger at one side thereof, and means engaging said rack for drawing said plunger away from said shoe rest.

2. Means of the character described for extracting a heel pin from the heel block of a ladies' shoe having a top lift secured at the lower heel block end as a fitting on a heel pin inserted in said heel block to serve also as a reinforcing dowel therefor, said means comprising a shoe rest incorporating an annular seat for supporting said heel block with its lower end depending therethrough, a plunger slidable in substantial alignment with the depending disposition of a heel block supported by said shoe rest seat, a jaw mechanism carried by the adjacent end of said plunger for gripping the top lift fitted end of said heel pin, a rack formed lengthwise of said plunger at one side

5

thereof, and means operable on said rack for drawing said plunger away from said shoe rest.

3. Means of the character described for extracting a heel pin from the heel block of a ladies' shoe having a top lift secured at the lower heel block end as a fitting on a heel pin inserted in said heel block to serve also as a reinforcing dowel therefor, said means comprising a frame structure, a shoe rest fixed on said frame structure and incorporating an annular seat for supporting said heel block with its lower end depending therethrough, a plunger carried by said frame structure for longitudinal sliding movement in substantial alignment with the depending disposition of a heel block supported by said shoe rest seat, an adjustable jaw mechanism carried by the adjacent end of said plunger for lateral gripping engagement with the top lift fitted end of a heel pin inserted in a supported heel block depending from said shoe rest seat, a rack formed lengthwise of said plunger at one side thereof, and means disposed on said frame structure for operably engaging said rack to cause sliding movement of said plunger alternatively to dispose said jaw mechanism for gripping engagement with said heel pin end and to draw said plunger away from said shoe rest for extracting said heel pin.

4. Means of the character described as defined in claim 3 and further characterized in that said last mentioned means includes a gear element rotatably mounted on said frame structure in engagement with said rack, and means for rotating said gear element at substantial mechanical advantage.

5

10

15

20

25

30

6

5. Means of the character described as defined in claim 4 and further characterized in that said gear element is a pinion, and said rotating means is formed by a countershaft geared to rotate said pinion and carrying a hand-wheel of substantial diameter for operating rotation thereof.

6. Means of the character described as defined in claim 3 and further characterized in that said shoe rest additionally incorporates means for supporting the sole portion of a ladies' shoe when the heel block thereof is placed in said annular seat, said sole supporting means comprising a bail member formed with a pair of pivot legs that have inwardly turned trunnion portions engaging said shoe rest, the initial spacing of said pivot legs being less than the width of said shoe rest so that they must assume an outwardly spread disposition when said trunnion portions are engaged with said shoe rest, whereby a frictional gripping action by said pivot legs is induced at said shoe rest to maintain said bail member at a selected sole supporting position while leaving it free to be shifted readily to another.

References Cited in the file of this patent

UNITED STATES PATENTS

1,368,311	Williams -----	Feb. 15, 1921
1,765,885	Scherm -----	June 24, 1930
2,992,445	Nelson -----	July 18, 1961