Semiautomatic Mechanism for EVENTUALLY HOLDING HEEL-BLANKS

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The present invention relates to a heel structure which has incorporated therein a mechanism for releasably securing to the bottom of the heel a replaceable heel lift. The recent trend toward the so-called "spike" heels for women's high heel shoes has increased the difficulties in replacing worn heel lifts and retaining such replaced lifts in place. The wear on the lifts is increased due to the greater pressure per unit area resulting from the reduced cross section of the heel, thus increasing the wear on the lift as well as the stresses tending to break it off the heel.

It is an object of the present invention to provide a heel structure which includes a mechanism for retaining removable heel lifts in place in position on the high heel of a woman's shoe, which mechanism can be operated to release the lift so that it can be replaced with a new lift.

It is a further object of the invention to provide in combination with a heel for a woman's shoe and a heel lift member, a mechanism which comprises a rod slidably through the heel toward and away from the bottom thereof, the rod having means on the end toward the bottom for engaging the heel lift, the heel having a recess extending into it from a surface thereof other than the bottom surface, in which recess is provided a blocking means engageable with the rod and extending adjacent the surface of the heel so that it can be actuated from outside the heel for blocking the movement of the rod in the heel and releasing the rod for movement out of the heel.

Other and further objects of the present invention will become apparent from the following specification and claims, taken together with the accompanying drawings, in which:

FIGURES 1a, 1b and 1c show a first embodiment of the invention in three stages of the replacement of the heel lift;

FIGURE 2 is a perspective of the heel lift and supporting member;

FIGURE 3 is a longitudinal elevational section view of a second embodiment of the mechanism according to the invention in closed condition, holding the heel lift;

FIGURE 4 shows the embodiment of FIG. 3 in position for mounting the heel lift;

FIGURE 5 shows the embodiment of FIG. 3 at the instant in which the heel lift ejection operation begins;

FIGURE 6 is a longitudinal elevational section view of a third embodiment of the invention;

FIGURE 7 is a detail in plan view of the embodiment of FIGURE 6; and

FIGURES 8 and 8e are elevation views of the detail of FIGURE 7.

The heel structure comprises a shoe heel having a mechanism therein which consists of a rod 10 ending in a hook 11 which is engaged with the supporting member 12 of the heel lift 13. The support 12 is held in position on the shoe 14 because pins 15a and 15b are fitted into a hollow in the point 14 of the heel-piece. The rod 10 can be displaced in the direction of its length, the limits of movement being governed by a shoulder 16 formed in the recess R in the heel itself and a stop 15 on the rod 10. The rod is urged downwardly under the action of resilient means, here shown as spring 17 which acts simultaneously upon a pushbutton 18. The pushbutton 18 is one arm of a bell crank member, the other arm of which terminates in a fork 19 which engages the pegs 20 on the rod 10. The movement of rod 10 is thus blocked by the fork, thereby preventing the rod 10 from moving under the action of spring 17.

For replacing the heel lift 13, the pushbutton, which may be concealed in the recess R beneath a sockliner S, is depressed and rocks about the pivot 21 at which the bell crank is pivoted, thereby withdrawing the fork from the rod sufficiently to allow the pegs 20 to release themselves from the holding action of the fork. The spring 17 then moves the rod 10 downwardly until stop 15 strikes shoulder 16. The hook 11 then protrudes from the hollow in the point 14 of the heel-piece, and the supporting member 12 carrying therewith the heel lift 13 can be easily withdrawn and replaced by a new one.

To fit the new heel lift to the heel, the supporting member is engaged with the hook and thereafter it is pushed upwardly by hand. The pegs 20 act upon the fork and push it out of the way of the rod 10 sufficiently for them to pass by the fork which, under the action of the spring 17 is pushed around the rod under pegs 20, thereby preventing downward movement of the pivots when the upward force upon the heel lift ceases and the pivots, together with the said rod are urged downwardly under the action of the spring.

The supporting member 12 for the replaceable heel lift has a vertical channel 23 therein and an aperture 24 extending through it from side to side in order to receive the hook on the rod. The heel lift 13 can be integrally with the supporting member 12, or it can be separate, and it can be made of the same or different material.

In the embodiment of FIGURES 3 to 5 there is provided in the body 26, which comprises part of the heel-piece, two parallel conduits 27 and 28, the first of which is blind and the second of which extends through the end of the body 26.

A bore 29 is formed transversely to conduit 27 for the purpose of permitting positioning of the ball 30 constituting the holding means for the various parts of the device.

Rods 31 and 32 are fitted in the respective conduits, the rod 31 having a spring 33 thereunder in blind conduit 27, while the rod 22 has resilient means bearing thereon, here shown as a spring 34 around the upper portion thereof and bearing on cross bar 32a. Spring 34 urges rod 32 downwardly.

The rod 31 has on the upper end thereof, i.e., the end protruding from conduit 27, shoulder 35 on which pressure can be exerted and which abuts end 36 on rod 32. Shoulder 35 and end 36 are positioned in recess R in the heel and are concealed by sockliner S.

Both rods have peripheral grooves 37 and 38, respectively, therein of rounded cross section, which grooves are placed at different levels when the rods are in the tripped position as shown in FIG. 3.

The operation of this embodiment is as follows:

In FIGURE 3 the heel-piece 26 has been shown with the heel lift 13 locked in position thereon, the mechanism being in such condition that the surface of rod 31 bears against the ball 30 and urges it into the groove 38 in the rod 32, thereby blocking the latter, so that the heel lift is secured in the end of heel-piece by hook 32a.

FIGURE 4 shows the mechanism in the open position, in readiness for having the heel lift replaced by means of a hook, pliers or the like. In this case the rod 31 has moved downwardly under the action of spring 34, the ball 30 having been urged into the groove 37 on rod 31, the rod 32 being held in the extended position by spring 34 while the heel lift is mounted.

FIGURE 5 shows the intermediate position between...

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FIGURES 3 and 4 in which the rod 31 has been moved downwardly until the ball 30 can move into the groove 37 thereof. However, ball 30 is still opposite the groove 35 in rod 32 and therefore the space wherein it plays is wide enough to permit the spring 34 to push the rod 32 5 and urge this rod to slide and move to the position of FIGURE 4.

Pushing the heel lift 13 upwardly by hand causes the reverse action, the ball 30 moving into groove 38 on rod 32 when groove 38 arrives at the point opposite groove 37. The spring 33 then urges rod 31 upwardly to the initial position, whereupon the condition of FIG. 3 is reached.

In the embodiment of FIGURES 6 to 9, a core 39 forms the terminal portion of the heel-piece, and a conduit 40 is formed therethrough and has therein the tripping rod 41. Another conduit 42 is disposed transversely to the conduit 40 and intersects the conduit 40. In the conduit 42 is slidably positioned a fork 43 which extends on both sides of the rod and protrudes slightly from the heel-piece at 44.

Two springs are placed in the above conduits, spring 45 in conduit 40 and forming resilient means acting upon the end of the rod 41 to urge it downwardly, and spring 46, acting upon the fork 43 urging it out of conduit 42 and urging the fork into engagement with rod 41.

The engagement between rod 41 and fork 43 is accomplished by providing the rod 41 with teeth 47 while the fork is formed with a beveled tooth 48 on the inner side of the junction thereof, which, upon the action in the direction of arrow 49 of the spring 46, maintains the fork against the rod 41, whereby the latter is held against the action of spring 45.

FIGURE 7 shows this position in detail.

When the force of spring 46 in the direction of arrow 49 is overcome by an outside force in the direction of arrow 50, FIGURES 6 and 8, the fork 43 is displaced the holding tooth 48 is withdrawn from teeth 47 and the rod 41 is released, moving downwardly in the direction of arrow 51 under the action of the spring 45 on the end thereof.

As in the previous embodiments, the heel lift is hooked to the end of the rod by means of either a hook, clamp or any suitable means, and when the force in the direction of arrow 50 is released, the rod is pushed upwardly by hand in the axial direction thereof. The teeth 47 will move over the beveled tooth 48 until the heel lift is in position against the heel, and then tooth 48 will hold the rod 41 in position.

Other and further variations, such as in the shape and suitable materials for the various parts, may be introduced in the present invention without restricting the scope thereof as defined by the appended claims.

I claim:

1. In combination, a heel for a shoe, a heel lift member for covering the bottom surface of the heel, a rod slideable through said heel toward and away from the bottom thereof, said rod having means on the end toward the bottom for engaging said heel lift member, resilient means in said heel bearing on said rod and urging said rod toward the bottom of said heel, said heel having a recess extending into said heel from a surface thereof other than the bottom surface, and blocking means in said recess engaged with said rod in said heel extending to adjacent the surface of said heel other than said bottom surface for actuation from outside the heel for blocking the movement of said rod in said heel under the action of said resilient means.

2. The combination as claimed in claim 1 in which said means on the end of said rod is a hook, and said heel lift member comprises a heel lift and a supporting member on said heel lift and having an aperture therethrough and a channel therein extending from said aperture along the surface of the supporting member away from said heel lift, said aperture and channel receiving said hook and the end of said rod.

3. The combination as claimed in claim 2 in which said heel has a further recess therein in the bottom surface thereof from which said rod protrudes, said supporting member and said recess, whereby said hook is retained in said supporting member by the fit of said supporting member and said hook into said recess.

4. The combination as claimed in claim 1 in which said blocking means comprises a pin on said heel and having one arm over the end of said rod, said resilient means comprising a spring acting between said rod and said one arm, the other arm of said bell crank engaging said rod below said spring for retaining said rod against the action of said spring.

5. The combination as claimed in claim 1 in which the other arm of said bell crank has a fork thereon extending toward said one arm at an angle to the direction of movement of said rod, and said rod has a peg thereon protruding laterally thereof for engagement by said fork.

6. The combination as claimed in claim 1 in which said rod is a first rod and said heel has a blind conduit therein parallel to said first rod and a transverse bore when said rod is in the position in which said heel lift is against the bottom of said heel.

7. The combination as claimed in claim 1 in which said fork has a bevel thereon at the portion thereof engageable with said rod, and said at least one recess is in the form of a notch, said bevel and said notch cooperating to permit movement of said rod relative to said fork away from the bottom of said heel.

References Cited in the file of this patent

UNITED STATES PATENTS

1,466,407 Maloney Aug. 28, 1923
1,854,057 Norris Apr. 12, 1932
1,959,721 Kohler et al. May 22, 1934
2,912,773 Baldt Nov. 17, 1959