April 27, 1948. G. E. JOHANSSON 2,440,404

SHOE HEEL WITH EXCHANGEABLE HEELPIECE

Filed Jan. 29, 1945

Fig. 1.

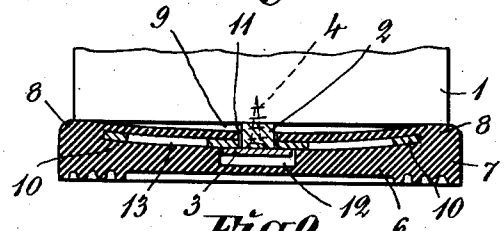


Fig. 2.

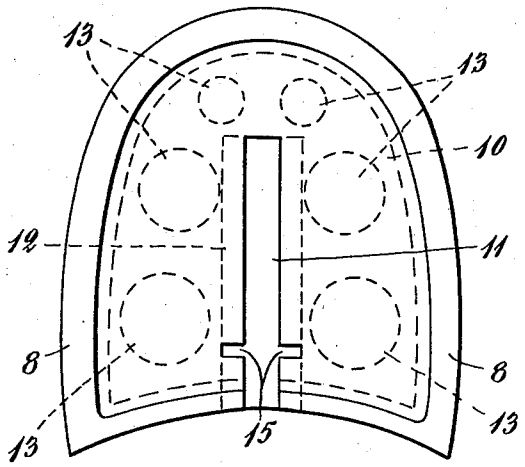


Fig. 3.

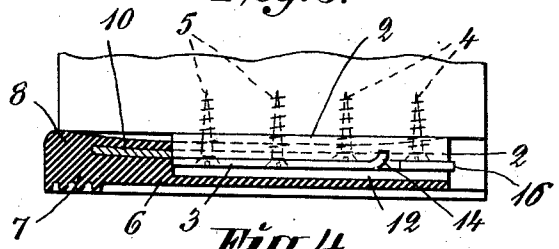


Fig. 4.



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SHOE HEEL WITH EXCHANGEABLE HEELPIECE

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1

The present invention refers to shoe heels with exchangeable heel-pieces of the type wherein the heel-piece, which preferably consists of rubber, is provided with a reinforcing inset in the form of a concave-convex metal plate, which is resilient in a manner to permit of being pressed by a powerful pressure on the arcuate portion inwardly toward the heel and of being moved over a longitudinally extending guide rail rigidly secured to the heel, so as to become rigidly connected to the heel. In the means of this type as hitherto known, the heel piece would be rigidly connected to said guide rail by the reinforcing inset, in such manner that the heel-piece would be caused to abut against the lower side of the heel, a soft transfer of the treading pressure to the heel being obtained only through the elasticity of the rubber material of the heel piece. The present invention has for its object to increase the shock-absorbing capacity of the heel-piece by utilizing the resiliency of the reinforcing inset. The invention consists substantially in the provision of a play between the heel-piece and the lower side of the heel and between the heel-piece and the guide rail rigidly connected to the heel in a manner such that the central portion of the heel-piece may perform, under the influence of the treading pressure, a movement at right angles to the heel surface against the action of the resiliency of the reinforcing inset.

The invention is illustrated in the accompanying drawing, which illustrates a form of embodiment of an arrangement according to the invention. Figure 1 shows the lower portion of a heel with the heel-piece arranged thereon in vertical cross-section. Figure 2 shows a plan view of the heel-piece. Figure 3 shows the heel in elevation with the heel-piece in section on the vertical central plane of the heel. Figure 4 shows the locking device secured to the heel as viewed from above.

Arranged in known manner on the lower side of the leather heel 1 is a longitudinally extending locking member consisting of a parallelepipedic guide bar 2 located adjacent to the heel and of a locking plate 3 secured to said guide bar, said locking plate being broader than the bar 2 and having its longitudinally extending lateral edges projecting outside the bar 2. The guide bar 2 is secured to the heel by means of screws 4, which are countersunk with their heads in the bearing surface against the plate 3, as well as by means of screws 5, which are countersunk with their heads in the plate 3 and consequently serve at the same time for the retaining of the latter at

2

the bar 2. The heel-piece, which preferably consists of rubber, has an inner thinned portion 6 and an outer thicker portion 7 channelled on the lower side thereof, said portion 7 bearing against the lower side of the heel by means of an elevated abutment 8. On the side facing the heel, the central portion 6 is of a concave shape, so that the same will not bear against the lower side of the heel, when the latter is unloaded, there being thus provided a free play 9 between this portion of the heel-piece and the lower side of the heel. The heel-piece is provided with a reinforcing plate 10 from resilient steel-plate vulcanized into the same, the shape of said steel-plate corresponding to the outline of the heel and covering the greater portion of the heel area. The reinforcing plate is provided with a longitudinally extending rectangular recess 11 of about the same width as that of the bar 2, but narrower than the plate 3. The heel-piece is provided with a corresponding recess coinciding with the recess 11, and with a broader recess 12 provided inside said first-mentioned recess 11, the recess 12 being intended to receive the plate 3. The reinforcing plate is provided with recesses 13 for the reduction of the weight thereof.

The heel-piece is arranged on the heel by being pushed over the locking members 2, 3, a powerful pressure being then exerted on the lower side of the heel-piece, so that the reinforcing plate 10 is caused to bear on the upper side of the edges of the plate 3 projecting laterally of the bar 2. The upper abutments 8 of the heel-piece will thus be set against the lower side of the heel with a pressure corresponding to the resiliency of the reinforcing plate, the latter being thus caused in turn, to bear on the edges of the plate 3. In the fully applied position of the heel-piece, two upwardly bent flaps 14 of the plate 3 are brought into engagement with two corresponding recesses 15 in the edges of the recess 11 of the reinforcing plate, so that the heel is locked in its applied position. The flaps 14 are located on the outer portion of the plate 3, which portion is not screwed fast to the member 2 and may thus perform a certain resilient movement relatively to the latter, so that the flaps 14 snap into the recess 15. At the exchange of heel-pieces, the heel-piece may be loosened by a downwardly directed pressure on the outer end 16 of the plate 3, the flaps 14 being then brought out of engagement with the recesses 15, so that the heel-piece may be moved from the locking device.

On account of the plate 3 and the free space 12 in the heel-piece underneath the plate 3, the

central portion of the heel-piece may perform a limited vertical movement at right angles to the lower side of the heel under the influence of the treading pressure, the upper side of the heel-piece being thus caused to bear against the lower side of the heel against the action of the resiliency of the reinforcing plate 10. By this means an augmented shock-absorbing capacity is imparted to the heel-piece. Through the resiliency, the outer abutments 8 of the heel-piece will have an inconsiderable lateral movement imparted thereto along the lower side of the heel, which movement aids toward keeping the heel-piece bearing tightly against the heel, so that dirt and moisture are prevented from penetrating in between the heel-piece and the heel. By reason of the fact that the heel-piece extends somewhat outside the lateral surfaces of the heel, the heel-piece will at the same time actuate and release dirt particles through said lateral movement, which particles would otherwise tend to stick to the outer edges of the leather heel.

I claim:

1. In a heel construction, in combination a rigid heel part having a flat bottom surface; a guide bar fixed longitudinally to said rigid heel part extending from a point spaced from the rear edge of said rigid heel part to a point near the inner edge thereof; a locking plate having its inner end fixed to said guide bar and being wider and longer than the same so as to have two lateral edge portions and an outer end portion projecting over the corresponding edges of said guide bar; inwardly extending locking projections arranged in said lateral edge portions of said locking plate spaced from said outer end portion of the same; a flat detachable heel part having an outline corresponding substantially to the outline of said rigid heel part and provided with an elevated abutment along its outer edges for contacting the flat lower surface of said rigid heel part; a concave inner surface on said rubber heel part arranged so that it is normally spaced from said rigid heel part providing free play between said rubber heel part and said rigid heel part when subjected to treading pressure; a concave cavity in said rubber heel part arranged parallel to said concave inner surface of said rubber heel part and shaped so that the distance of its bottom from said concave inner surface of said rubber heel part is smaller than the height of said guide bar; a resilient metallic concave reinforcing plate entirely enclosed in said concave cavity substantially parallel to said concave inner surface of said rubber heel part; a longitudinal recess in said resilient metallic concave reinforcing plate corresponding in width and length substantially to said guide bar; opposed notches along the longitudinal edges of said recess near the outer end thereof corresponding to said inwardly extending locking projections of said locking plate so that the same are adapted to enter said notches and hold said flat detachable rubber heel part in proper position; a longitudinal slot in said flat detachable rubber heel part between said inner surface and said concave cavity in the same corresponding in width substantially to said guide bar; and an additional longitudinal cavity in said rubber heel part extending under said concave cavity from a point spaced from the rear edge of said flat detachable rubber heel part to the inner edge thereof and corresponding in width substantially to said locking plate but being deeper than the thickness of the same so as to leave under said locking plate a free space providing for play between said locking plate and the bottom of said additional longitudinal cavity.

2. In a heel construction, in combination a rigid heel part having a flat bottom surface; a guide bar fixed longitudinally to said rigid heel part extending from a point spaced from the rear edge of said rigid heel part to a point near the inner edge thereof; a locking plate having its inner end fixed to said guide bar and being wider and longer than the same so as to have projecting plate portions projecting over the corresponding edges of said guide bar; inwardly extending locking means on said projecting plate portions; a detachable rubber heel part having an outline corresponding substantially to the outline of said rigid heel part and having a concave inner surface; a concave cavity in said rubber heel part arranged substantially parallel to said concave inner surface of said rubber heel part at a slight distance therefrom; a resilient metallic concave reinforcing plate entirely enclosed in said concave cavity substantially parallel to said concave inner surface of said rubber heel part; a longitudinal recess in said metallic concave reinforcing plate corresponding in width and length substantially to said guide bar; opposed notches along the longitudinal edges of said longitudinal recess near the outer end thereof corresponding to said inwardly extending locking means of said locking plate so that the same are adapted to enter said notches and hold said rubber heel part in proper position; a longitudinal slot in said detachable rubber heel part between said concave inner surface and said concave cavity in the same corresponding in width substantially to said guide bar; and an additional longitudinal cavity in said rubber heel part arranged under said concave cavity within the same and corresponding in width and length substantially to said locking plate.

3. In a heel construction, in combination a rigid heel part having a flat bottom surface; a guide bar secured longitudinally to said rigid heel part; a locking plate having its inner end fixed to said guide bar and being larger than the same so as to have projecting plate portions projecting over the corresponding edges of said guide bar; inwardly extending locking means on said projecting plate portions; a detachable rubber heel part having an outline corresponding substantially to the outline of said rigid heel part and having a concave inner surface; a resilient metallic concave reinforcing plate entirely embedded in said detachable rubber heel part substantially parallel to said concave inner surface of the same at a slight distance therefrom; a longitudinal recess in said metallic concave reinforcing plate corresponding in width substantially to said guide bar; notches along the longitudinal edges of said longitudinal recess in said metallic concave reinforcing plate corresponding to said inwardly extending locking means of said locking plate so that the same are adapted to enter said notches and hold said detachable rubber heel part in proper operative position; a longitudinal slot in said detachable rubber heel part arranged between said concave inner surface and said longitudinal recess in said resilient metallic concave reinforcing plate in such a manner as to permit passage of said guide bar when said detachable rubber heel part is in proper operative position; and a longitudinal cavity in said detachable rubber heel part arranged under said longitudinal recess in said resilient metallic concave reinforcing plate and shaped so as to be adapted to en-

close said locking plate when said detachable rubber heel part is in proper operative position.

4. In a heel construction, in combination a rigid heel part having a flat bottom surface; a guide bar secured longitudinally to said rigid heel part; a locking plate having its inner end fixed to said guide bar and being larger than the same so as to have projecting plate portions projecting over the corresponding edges of said guide bar; inwardly extending locking means on said projecting plate portions; a detachable rubber heel part having an outline corresponding substantially to the outline of said rigid heel part and having a concave inner surface; a resilient metallic concave reinforcing plate entirely embedded in said detachable rubber heel part at a slight distance from the inner surface thereof substantially parallel thereto; a longitudinal recess in said metallic concave reinforcing plate corresponding in width substantially to said guide bar so that the same might enter said recess when said detachable rubber heel part is in proper operative position; notches along the longitudinal edges of said longitudinal recess in said metallic concave reinforcing plate corresponding to said inwardly extending locking means of said locking plate so that the same are adapted to enter said notches and hold said detachable rubber heel part in proper operative position; a longitudinal slot in said detachable rubber heel part arranged between said concave inner surface and said longitudinal recess in said resilient metallic concave reinforcing plate in such a manner as to permit passage of said guide bar when said detachable rubber heel part is in proper operative position; and a longitudinal cavity in said detachable rubber heel part arranged under said longitudinal recess in said resilient metallic concave reinforcing plate and shaped so as to be adapted to enclose said locking plate when said detachable rubber heel part is in proper operative position.

GUSTAF EINAR JOHANSSON.

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