June 14, 1938. F. C. PHILLIPS 2,120,711

APPARATUS FOR SECURING CALKS TO ATHLETIC SHOE SOLES

Filed Sept. 22, 1936

Fig.1.

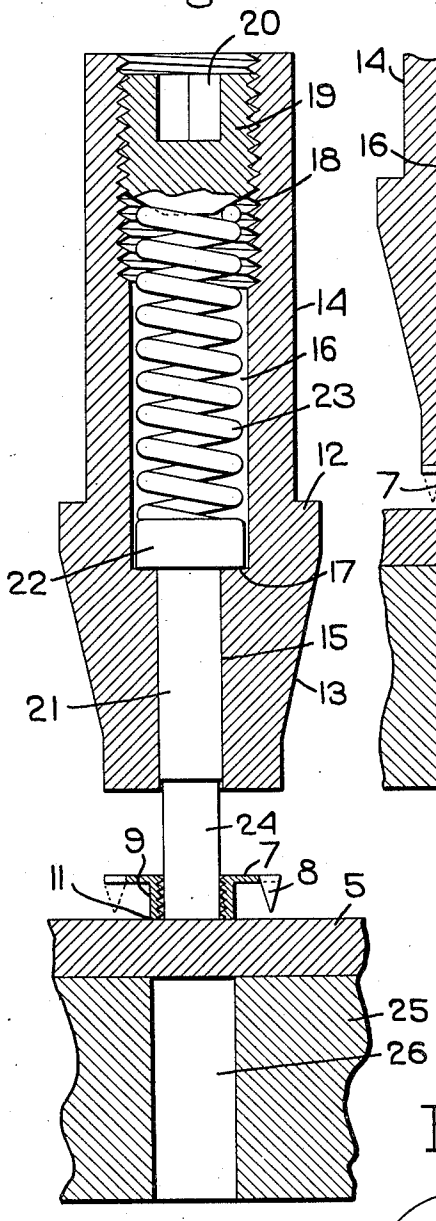


Fig.2.

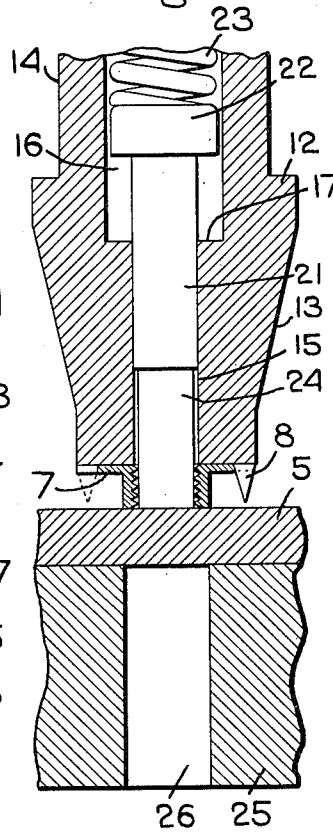


Fig.3.

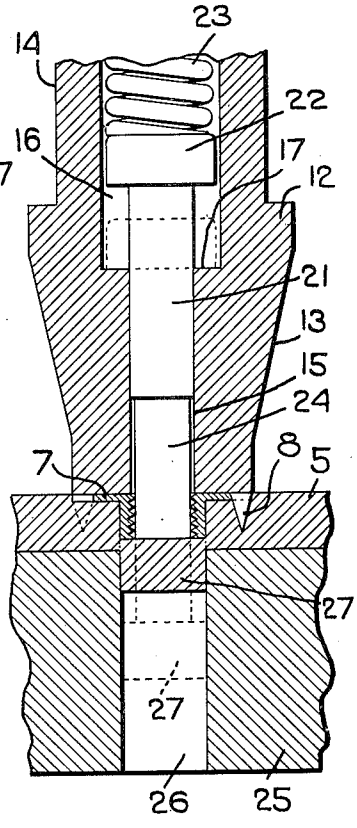


Fig.4.

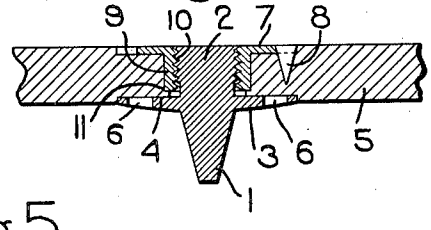
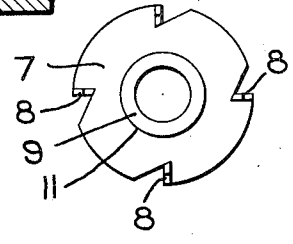


Fig.5.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR SECURING CALKS TO ATHLETIC SHOE SOLES

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3 Claims. (Cl. 1—1)

This invention relates to improvements in apparatus for securing detachable calks to shoe soles.

One of the objects of the invention is to provide a calk for an athletic shoe sole having an anchoring member provided with a tubular sleeve of such character that it can be forced into the sole and of such length that when the calk is screwed into the anchoring member the flange upon the calk, having a flat face, will engage the under face of the sole with sufficient force to prevent lateral movement and consequent looseness of the attachment to the sole.

The present invention, in so far as the calk is concerned, comprises an improvement upon the construction disclosed in Letters Patent No. 1,827,514 to Daniel J. Golden, granted October 13, 1931. In that construction, as illustrated particularly in Figs. 3 and 6 of the patent, the anchoring member comprises the base for a tubular internally threaded sleeve of such length as to extend completely through the shoe sole or the superimposed shoe soles and a calk having a central screw threaded stem to engage the internal threads of said stud and provided at a distance from said stem with a narrow upstanding rim portion for indenting the shoe sole for the purpose of preventing lateral movement of the calk, which would prevent tipping or rocking of the calk and accidental unscrewing of the calk.

It has heretofore been customary to assemble a calk of the Golden type upon the shoe sole by boring in the sole a hole of sufficient diameter to receive the tubular sleeve and then inserting the sleeve of the anchoring member through the sole until its end extends approximately through the shoe sole and thereupon screwing the stem of the calk into the stud until the narrow upstanding rim portion of the flange of the contact is indented into the sole.

The construction of the calk requires a special operation to provide the upstanding rim portion and in the application of the calk to the sole the further operation of boring the sole is necessary. By the present invention, these operations are avoided as the calk may be provided with a flange having a flat face to engage the under face of the sole and the sleeve of the anchoring portion is so constructed as to provide an end having a sharply angular peripheral edge which, when sufficient pressure is applied to the base of the anchoring portion, will cut its own way into the sole to a predetermined depth close to but at a distance from the under surface of the sole so that when the stem of the calk is screwed in it will clamp upon the sole with sufficient force positively to prevent any lateral movement of the calk during the use of the shoe. Furthermore, by thus providing a sleeve which acts as a self-cutting instrument, there will be no looseness between the sleeve and the surrounding wall of the hole, which is inherent in the constructions in the Golden assembly.

A further object is to provide suitable apparatus for assembling the calk-anchoring member in the sole.

A preferred embodiment of the invention and the apparatus for performing the method of assembling the same upon the shoe sole is illustrated in the accompanying drawing, in which:

Fig. 1 is a view mainly in vertical section of an apparatus for applying the anchoring member to a shoe sole, illustrating the first position of the apparatus with an anchoring member of the present invention ready to be assembled upon the sole;

Fig. 2 is a similar view partly broken away, illustrating the pressing device engaging the anchoring member prior to the insertion of the anchoring member into the shoe sole;

Fig. 3 is a similar view partly broken away, showing the anchoring member after sufficient force has been applied to insert the tubular stud thereof into the sole and showing in full lines the plunger exerting an increasing force upon the portion of the sole circumscribed by the tubular member to cause detachment of the remaining portion of the plug from the sole, and illustrating in dotted lines the position of the plunger and plug after the latter has been detached from the sole;

Fig. 4 is a vertical sectional view showing the calk and anchoring member embodying the present invention assembled in a shoe sole; and

Fig. 5 is an under side plan view of the anchoring member of the present invention.

The calk and anchoring member of the present invention, which is more particularly illustrated in Figs. 4 and 5, comprises a metallic calk having a ground gripping portion 1, which may be of any desired shape or length, having a screw threaded stem 2 and intermediate of the ground gripping portion and the sleeve a laterally extending preferably circular flange 3 having a flat face 4 to engage the under face of a shoe sole 5, and preferably provided with apertures 6 to receive a socket wrench.

The anchoring member, which likewise is of metal, comprises a flat base 7 preferably provided

with a plurality of downwardly extending prongs 8 adapted to be imbedded in the sole and to prevent lateral or rotative movement of the anchoring member, and a central preferably cylindrical tubular sleeve 9 having an internally screw threaded wall 10 complementary to the threads of the stem 2. The sleeve 9 is of sufficiently shorter length than the thickness of the sole or the combined thickness of the superimposed soles so that the end of the sleeve will not extend through the sole but will be separated a sufficient distance from the under face of the sole to enable the flange 3 of the calk, when the calk is screwed up, to clamp the sole firmly between it and the base 7 of the anchoring member with such firmness as to prevent any lateral movement between the calk or the anchoring member and the sole.

The end of the sleeve may be flat but in any event is so constructed as to provide a sharply angular peripheral edge 11 forming in effect a cutting edge which will sever the portions of the sole circumscribed thereby from the body of the sole when the anchoring member is forced into the sole.

The method of assembling the anchoring member and the calk upon the sole comprises applying a sufficient force to the base of the anchoring member as to cause the sleeve to cut and penetrate into the sole until the base of the anchoring member is seated upon, or preferably pressed into the sole, and also applying a force through the tubular sleeve to the portion of the sole which is circumscribed by the sleeve so that when the anchoring member is firmly seated upon the sole, as above described, the force which is applied through the tubular sleeve will detach the plug which has been partially severed from the sole and thereby provide an opening in the sole through which the stem 2 of the calk may be inserted and screwed into the socket member until the flange 3 of the calk firmly engages and preferably becomes imbedded in the under face of the sole.

The apparatus for performing the method above described, which is illustrated in Figs. 1, 2, and 3, comprises a pressing member 12 preferably having a head 13 of general conoidal form and a cylindrical shank 14 to which a suitable force may be applied. The head 13 of the pressing member is provided with an axial bore 15 and the shank 14 having a countersink providing a somewhat larger bore 16 coaxial with the bore 15 and extending into the head a short distance and having at its lower end a shoulder 17. The upper portion of the bore 16 is provided with an internal screw thread 18 adapted to be engaged by a suitable plug 19 having a central angular socket 20 to receive a suitable wrench. A plunger 21, which is slidably mounted in the bore 15 of the head 13, is provided with an enlarged upper end portion 22 adapted to engage the shoulder 17 and a spring 23, which is interposed between the upper end 22 of the plunger and the plug 19, normally holds the upper end 22 of the plunger in engagement with the shoulder 17. The lower end of the plunger 23 preferably has a portion 24 of reduced diameter adapted slidably to fit within the bore of the cylindrical tubular sleeve 9, as illustrated in Fig. 1.

In the operation of the device the shoe sole 5 is placed upon a bed 25 having an aperture 26 in axial alinement with the plunger 21. The anchoring member is then placed upon the reduced portion 24 of the plunger and the plunger axially alined with the aperture 26 in the bed, as illustrated in Fig. 1. Upon initial depression of the pressing member 12, the spring 23 will yield sufficiently to enable the lower face of the head 13 to engage the base 7 of the anchoring member, as shown in Fig. 2.

When sufficiently increased force is applied to the pressing member the tubular sleeve 9 will be caused to penetrate the sole until the base of the anchoring member is seated upon and embedded in the upper face of the sole, as illustrated in Fig. 3. The plug thus nearly severed from the sole will be forced downwardly into the aperture in the bed and when the anchoring member is fully seated the force of the compressed spring 23 will cause the plunger 24 to discharge the severed plug from the sole, as illustrated in dotted lines in Fig. 3.

When the plug 27 has thus been detached and discharged from the sole, the sole can be removed from the bed, the stem 2 of the calk inserted and the calk screwed up until the flat face 4 thereof engages and preferably becomes so embedded in the face of the sole as to prevent any likelihood of relative movement between the calk and its anchoring member and the sole.

By reason of the present invention, a very considerable saving in the manufacture of the calk and its application to the sole is accomplished. Furthermore, the calk assembly is more securely fastened to the sole than in previous constructions, and a more efficient athletic shoe provided.

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

1. An apparatus for applying to the sole of an athletic shoe a calk-anchoring member, having a flat base and a central tubular internally screw threaded sleeve of shorter length than the total thickness of the sole in which the sleeve is to be embedded comprising a bed having an aperture of substantially the same diameter as that of said sleeve, a pressing member having a head presenting a face to engage the base of the anchoring member, an axial bore in said pressing member extending perpendicularly from said face, a plunger slidably mounted in said bore having an end portion normally projecting beyond the face of said head adapted to fit within the sleeve of the anchoring member to facilitate the positioning of said sleeve in axial alinement with the aperture in said bed, and plunger-actuating means in said pressing member yieldable to the resistance to penetration of said sole during the application of sufficient force to cause said sleeve to penetrate the sole and acting when the sleeve is substantially seated to discharge from the sole the plug severed therefrom by the penetration of said sleeve.

2. An apparatus for applying to the sole of an athletic shoe a calk-anchoring member, having a flat base and a central tubular internally screw threaded sleeve of shorter length than the total thickness of the sole in which the sleeve is to be embedded comprising a bed having an aperture of substantially the same diameter as that of said sleeve, a pressing member having a head presenting a face to engage the base of the anchoring member, an axial bore in said pressing member extending perpendicularly from said face, and having a portion of said bore enlarged to form a shoulder, a spring-actuated plunger slidably fitting said bore having means to engage said shoulder, and having a lower end portion normally projecting beyond the face of said head adapted to fit within the sleeve of said anchor-

ing member and to enable said sleeve to be accurately positioned in axial alinement with the aperture in said bed, whereby upon application of force to said pressing member the sleeve of the anchoring member will be caused to penetrate the sole and the plug severed from the sole and then be completely discharged therefrom by the force of the compressed spring acting upon the plunger.

3. An apparatus for applying to the sole of an athletic shoe a calk-anchoring member, having a flat base and a central tubular internally screw threaded sleeve of shorter length than the total thickness of the sole in which the sleeve is to be embedded comprising a bed having an aperture of substantially the same diameter as that of said sleeve, a pressing member having a head presenting a face to engage the base of the anchoring member, an axial bore in said pressing member extending perpendicularly from said face having a portion of said bore enlarged to form a shoulder, a plunger slidably fitting said bore having means to engage said shoulder, and having a lower end portion normally projecting beyond the face of said head adapted to fit within the sleeve of said anchoring member and to enable said sleeve to be accurately positioned in axial alinement with the aperture in said bed, a coiled spring in said enlarged bore engaging the upper end of said plunger, whereby upon application of force to said pressing member the plunger will be retracted and the sleeve of the anchoring member caused to penetrate the sole until the flat base of the anchoring member is seated on said sole, said anchoring member severing a plug from the sole, the force of said spring acting upon the plunger to separate the plug from the sole, and means for adjusting the effective force of the spring.

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