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SOCKET FOR ARTIFICIAL LIMBS

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By Attorney
The present invention relates to new and useful improvements in sockets for artificial limbs, particularly those of the type widely known as "below the knee" or "short limbs", and has for some of its objects to provide a device of this character which will be comparatively simple in construction, strong, durable, compact, light in weight, comfortable and which may be manufactured at low cost.

Another important object of the invention is to provide a stump socket of the aforementioned character embodying a novel construction whereby said socket may be expeditiously and securely mounted in position on or in the limb.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in side elevation of a stump socket constructed in accordance with the present invention.

Figure 2 is a view in front elevation thereof.

Figure 3 is a top plan view.

Figure 4 is a vertical sectional view, taken substantially on the line 4-4 of Figure 3.

Figure 5 is a fragmentary view in vertical section, showing the socket before it is completed.

Figure 6 is a fragmentary detail view in vertical section, showing the rubber layers constituting a part of the socket.

Figure 7 is a detail view in perspective of portions of the leather and rawhide strips which are incorporated in the supporting flange of the socket.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a pair of intermediate layers of rubber 1 and 2, the upper and lower portions only of which are secured together through the medium of a rubber cement, as at 3 and 4. In this manner a chamber 5 is provided which, if desired, may be inflated. The cemented upper portions 3 of the layers 1 and 2 are then folded outwardly and downwardly and cemented by a rubber cement to the layer 2, as at 6. This is illustrated to advantage in Figure 6 of the drawings.

The rubber layer 1 is then secured through the medium of a suitable rubber cement to a leather layer 7 which extends above the fold line 8 (see Figure 6) of the layers 1 and 2. A leather strip 9 is then secured by a rubber cement on the downturned fold 6 of the layers 1 and 2 and a strip 10 of rawhide is secured by any suitable adhesive on the strip 9. The upwardly extending portion of the leather layer 7 is then folded outwardly and downwardly over the strip 10 and secured, as at 11. Then, an outer layer 12 of leather is secured by a rubber cement to the outer rubber layer 2 and the upper portion thereof is pressed over the downturned portion 11 of the layer 1 and cemented thereto, as at 13. The upper edge of the outer layer 12 is skived, as at 14.

A comparatively soft lining 15, preferably of horse hide, is then cemented to the layer 1 and the upper portion thereof is folded outwardly, downwardly and inwardly, as at 15, to the upper portion 13 of the outer layer 12 and cemented as indicated at 17, the lower portion of the lining 15 depends below the rest of the socket for a purpose which will be presently set forth.

The reference numeral 18 designates the upper portion of an artificial leg of the usual hollow construction. The upper portion of the interior of the limb 18 is recessed, as at 19. The recess 19 is for the reception of the socket with the exception of the resilient supporting flange which is designated generally by the reference numeral 20 and which constitutes an important feature of the invention. It will thus be seen that a socket has been provided which, because of its resiliency, will assure maximum comfort. When in use, the weight is borne by the resilient flange 20 which rests on the upper end of the limb 18. This is clearly shown in Figure 4 of the drawings. The depending skirt portion 17 of the lining 15 extends below the recess 19 for assuring comfort at this point. In actual use it has been found that a socket constructed in accordance with the present invention permits the highly successful use of artificial limbs below the knee without the necessity of using knee joints, thigh corsets, etc. Of course, the upper or flange portion 20 of the socket conforms to the upper end of the limb 18, as illustrated to advantage in Figures 1 and 2 of the drawings, and the body portion of the socket, which is designated generally by the reference numeral 21, conforms in shape to the upper interior portion of said limb 18.

It is believed that the many advantages of a stump socket for artificial limbs constructed in accordance with the present invention will be readily understood, and although a preferred embodiment of the invention is as illustrated and described, it is to be understood that changes in the details of construction and in the com-
A combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. A socket for artificial limbs comprising inner and outer layers of rubber having their upper and lower portions secured together, the secured upper portions of the rubber layers being folded upon themselves and secured to the outer layer, an inner layer of leather secured to the inner rubber layer and having its upper portion folded downwardly over the rubber fold and secured thereto, an outer layer of leather secured to the outer rubber layer and having its upper portion extending over the downwardly folded portion of the inner leather layer and secured thereto, and a lining of comparatively soft leather secured to the inner leather layer and having its upper portion folded downwardly over the upper portion of the outer leather layer and secured thereto.

2. A socket for artificial limbs comprising inner and outer layers of rubber having their upper and lower portions secured together, the secured upper portions of the rubber layers being folded upon themselves and secured to the outer layer, an inner layer of leather secured to the inner rubber layer and having its upper portion folded downwardly over the rubber fold and secured thereto, an outer layer of leather secured to the outer rubber layer and having its upper portion extending over the downwardly folded portion of the inner leather layer and secured thereto, and a lining of comparatively soft leather secured to the inner leather layer and having its upper portion folded downwardly over the upper portion of the outer leather layer and secured thereto, said lining extending below the lower ends of the leather and rubber layers.

3. A socket for artificial limbs comprising an inner leather layer, a rubber layer secured to said inner leather layer, the upper portion of the rubber layer being free of the inner layer, a second rubber layer secured, at its upper and lower portions, to the inner rubber layer, the free upper portions of the rubber layers being folded upon themselves and secured to the second named rubber layer, filler strips secured to the folded portions of the rubber layers, the free upper portion of the inner leather layer being folded downwardly over the strips and secured thereto, an outer leather layer secured to the second named rubber layer, the upper portion of the outer leather layer extending over the folded portion of the inner leather layer and secured thereto, and a lining secured to the inner leather layer.

4. An artificial limb socket comprising rubber layers including folded upper portions, a leather covering mounted on the rubber layers and extending substantially over the folds thereof, a filler between said covering and the rubber folds, and a lining mounted on the rubber layers and having its upper portions folded over the leather covering and secured thereto, the folded portions of the lining and the rubber layers, and the upper portion of the covering, together with the filler, constituting a flange for supporting the socket in an artificial limb.

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