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E. L. STRICKLAND
PNEUMATIC ARTIFICIAL FOOT

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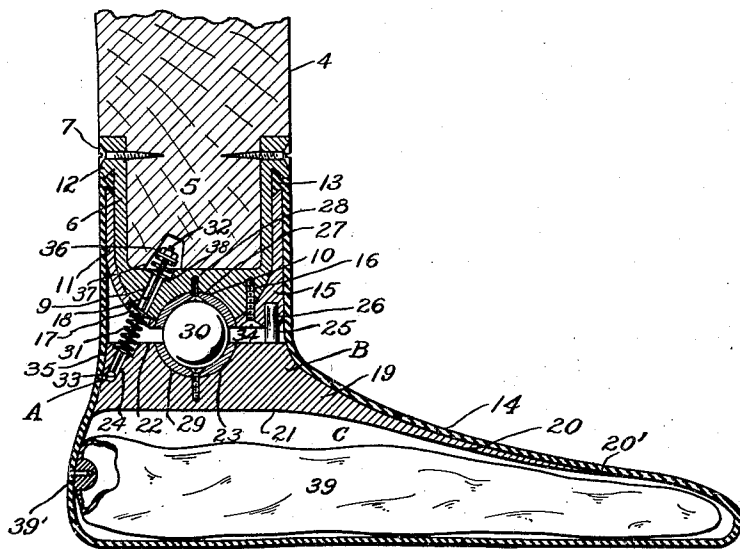


Fig. 1

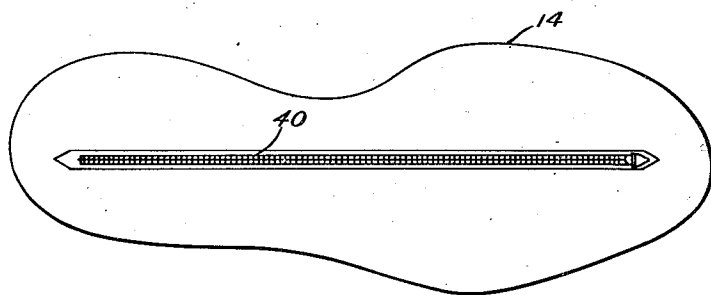


Fig. 2

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PNEUMATIC ARTIFICIAL FOOT

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2 Claims. (Cl. 3—6)

1

This invention relates to improvements in an artificial member constructed to serve as a walking medium and has particular reference to a pneumatic artificial foot wherein the ankle construction is not only provided with full lateral movement, but can be absolutely and positively adjusted to ground level and will simulate in movement the action of the human ankle.

The principal object of the invention is the provision of a foot of the character described that will relieve strain and fatigue in walking by utilizing an air cushion that eliminates jar to the body, and wherein by virtue of the construction employed will result in a perfect adjustment of the height to the heel that relieves strain and effects a proper balance.

A further object of the invention is the provision of a foot of the character described that is strong, durable, neat in appearance, affords positive protection to the working parts against the entrance of dirt and water in inclement weather, is readily interchangeable, and yet is most economical to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawing wherein for the purpose of illustration is shown the preferred embodiment of the invention,

Fig. 1 is a view partly in section and partly in elevation illustrating the appliance as secured to a wooden shin portion, illustrating the inflatable bag in the foot portion and the mechanism permitting movement of the foot portion relative to the ankle portion, and

Fig. 2 is a bottom plan view of the foot section showing the zipper arrangement whereby the parts may be readily removed for replacement or adjustment.

Referring to the drawing, the numeral 4 indicates the wooden portion of an artificial leg member herein referred to as the shin portion provided with a reduced recessed extremity 5 receivable in a top casting 6 that is detachably secured by wood screws or other fastening elements 7 to said reduced extremity. It will be noted, as disclosed to advantage in Fig. 1, that said casting is equipped with an enlarged bore 9 and a central recess 10.

A cap casting or shell 11 is fitted about the top casting 6, the side of the cap casting being spaced from the undercut top wall or upper end 12 of the top casting 6 to permit the positioning therein of an annular wedge-shaped bead 13 provided in the upper end of a foot covering 14, the construction and purpose of which will be later described. It

2

will be noted that said shell or casting 11 is of a greater thickness at the front thereof as at 15 to thus provide a means or base for the reception of a machine screw 16 that serves to secure the shell 11 to the cap casting 6. The said shell is provided with an opening 17 in communication and in alignment with the bore 9 to thus permit the passing therethrough of a heel and toe adjusting cable 18.

The numeral 19 indicates as a whole, an instep casting so termed because it conforms to the shape of the instep. This main body portion of the casting is of substantial thickness and includes a tapered front portion 20, a curved bottom portion 21, and a substantially flat top wall 22. The said casting has provided in its top wall a central recess 23 and an angular slot 24 and carries on its top wall a rubber bumper 25 that is receivable in a slot 26 provided in the front thickened portion 15 of the shell 11. The means for obtaining a full lateral ankle movement between the upper casting construction and the instep casting, to thus eliminate and obtain the ankle movement of the human foot, comprises a ball and socket joint that comprises a top insert bearing 27 positioned in the recess 10 of the base 8 of the top casting and secured thereto by a machine screw 28; a lower insert bearing 29 that is positioned in the central recess 23 of the main body portion of an instep casting 19, and a bronze ball 30 free to rotate in the upper and lower bearings 27 and 29, and thus affording free lateral ankle movement and a positive adjustment of the ankle to ground levels.

To prevent the heel from flopping up and down I have provided the following construction: A cable or wire 18 has brazed to its upper end a threaded extension 32. The lower end of the cable is connected to an anchor screw 33 that extends transverse of the body of the instep casting. The said wire is encircled by a main spring that is positioned in the space 34 provided between the respective castings, the lower end of said spring being seated against a shoulder 35 provided by recessing the upper surface of the instep casting. Since the upper end of the spring contacts the base of the top casting the spring will readily contract and expand in the movement of the foot. To complete the assembly and to provide means for adjusting the heel portion a nut 36 is threaded on the threaded extension 32 while an auxiliary spring 37 encircles the upper end of the wire and is interposed between the base of the nut and a shoulder 38 formed by recessing the

top surface of the base casting 11 adjacent the bore 9.

The foot portion 14, previously referred to, consists of a resilient member that conforms to the shape of a foot, which covering is adhesively secured to the instep casting as at A and B, and has its upper wedge-shaped beaded extremity detachably secured between the upper casting and the shell 11.

It will be noted that an inflatable inner tube 39 as illustrated to advantage in Fig. 1 in a partly deflated condition, is positioned within said foot covering, and when inflated through the medium of a valve 39' will completely fill the space C of the foot covering, thus presenting a resilient pneumatic foot base on which a standard shoe can readily be placed.

A zipper element is indicated by the numeral 40 and is provided in the base of the foot covering. It serves as a medium for withdrawing therethrough the mechanism above described when any of the parts of the construction require repairing or necessitate adjustment.

If desired, a liner may be employed in the foot covering to prevent any undue pinching of the inflatable member. It is obvious that the employment of the bumper will absorb any undue shock in walking and that the present construction presents an artificial pneumatic foot that affords the maximum degree of ease and comfort and the absence of fatigue in walking.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the shape, size, material and arrangement of parts may be readily resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. An artificial foot comprising a top casting secured to the shin portion of an artificial leg, an instep casting, a pneumatic tube retaining foot member secured to said instep casting, means interposed between said casting and secured thereto and permitting lateral movement

of said foot member relative to the shin portion to simulate the ankle movement of the human foot, a wedge shaped bead positioned on the upper end of said foot member for detachably securing the latter to said top casting, and a closure means in the form of a zipper provided in the base of said foot member, whereby access is obtained to the interior of said foot member and said castings.

2. An artificial foot comprising a top casting secured to the shin portion of an artificial leg, the lower surface of said casting being recessed, an instep casting, a pneumatic tube retaining foot member secured to said instep casting, means interposed between said castings and secured thereto and permitting lateral movement of said foot member relative to the shin portion to simulate the ankle movement of the human foot, said means comprising a ball and socket joint, a bumper mounted on the upper surface of the front portion of said instep casting and receivable in the recess on the lower surface of said top casting, and adjusting means positioned between said castings to adjust height to the heel, said adjusting means comprising a wire connecting said castings and being interposed between the rear portions of said castings, and a main spring and an auxiliary spring encircling said wire, the main spring being positioned between the upper and lower castings, the auxiliary spring being housed in the recess of the shin portion of the artificial leg.

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