

March 18, 1941.

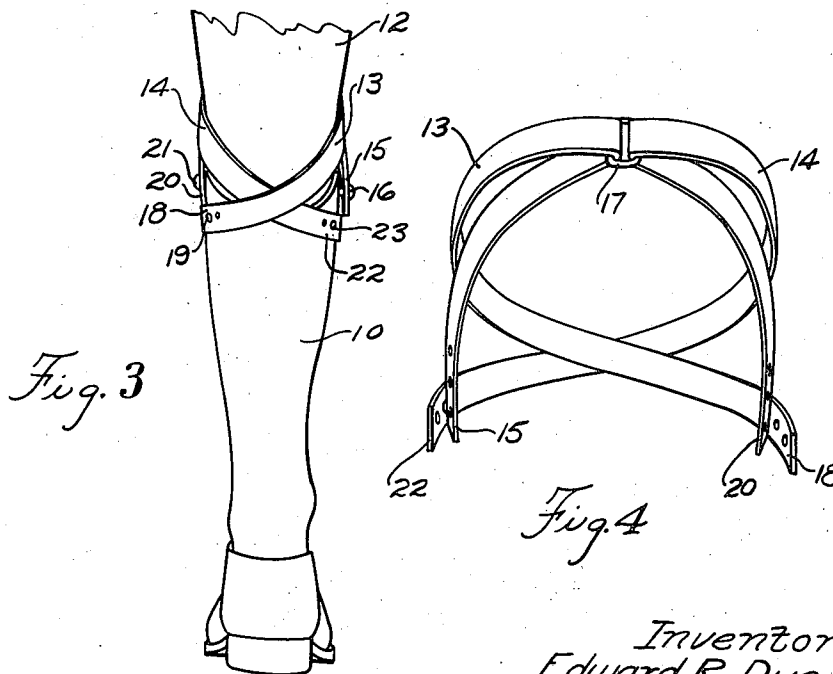
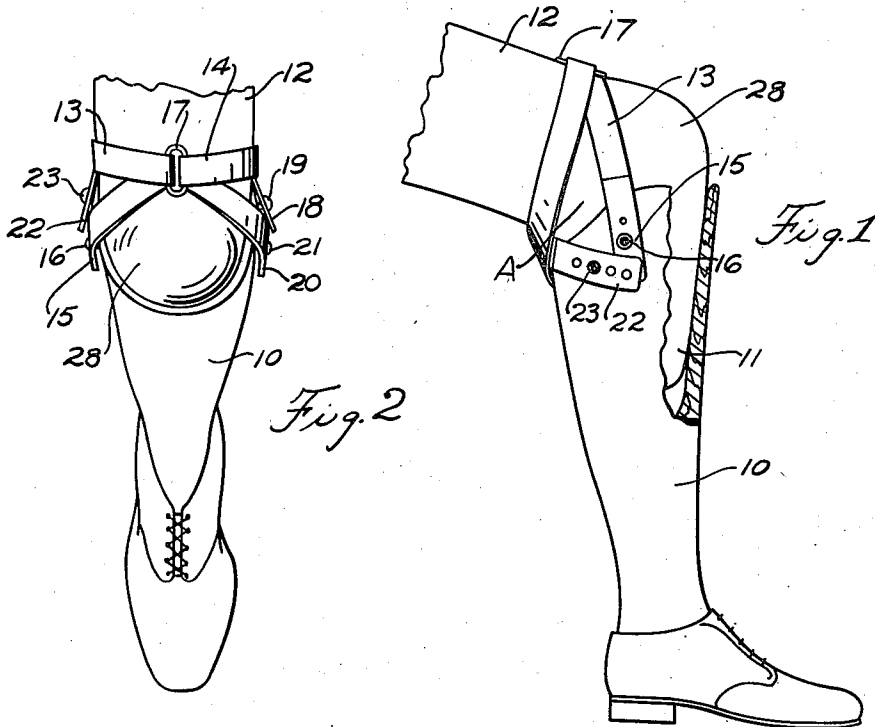
E. R. DYE

2,235,142

ARTIFICIAL LEG ATTACHING MEANS

Filed Nov. 16, 1938

2 Sheets-Sheet 1



Inventor
Edward R. Dye,
By Minton Dye,
Attorneys

March 18, 1941.

E. R. DYE

2,235,142

ARTIFICIAL LEG ATTACHING MEANS

Filed Nov. 16, 1938

2 Sheets-Sheet 2

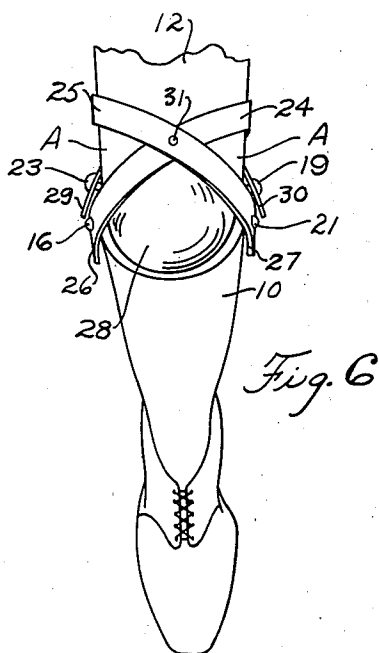


Fig. 6

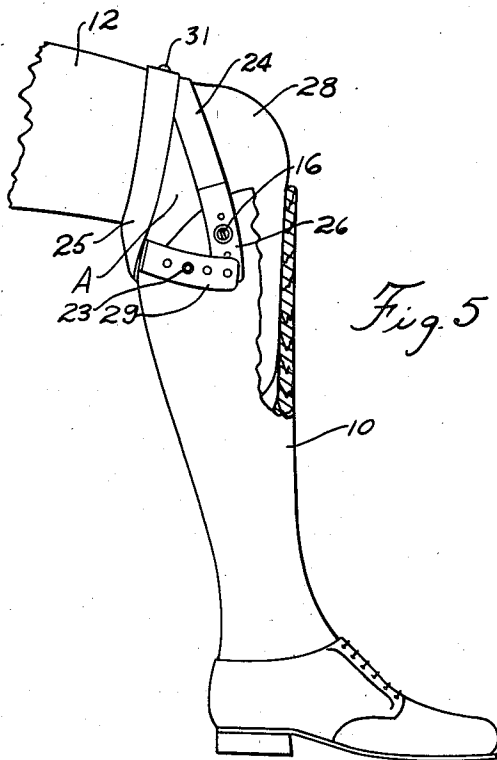


Fig. 5

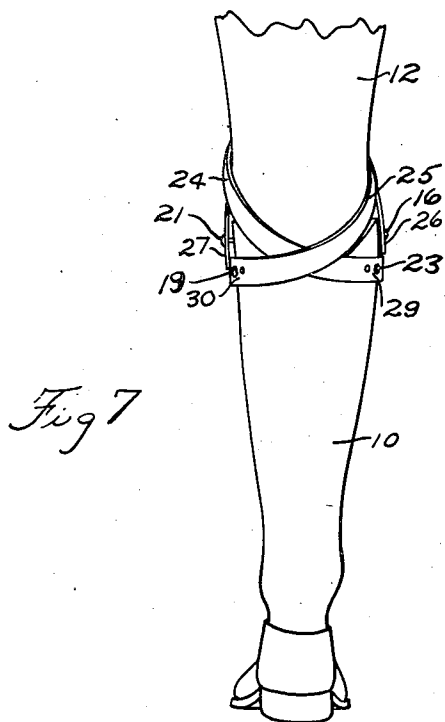


Fig. 7

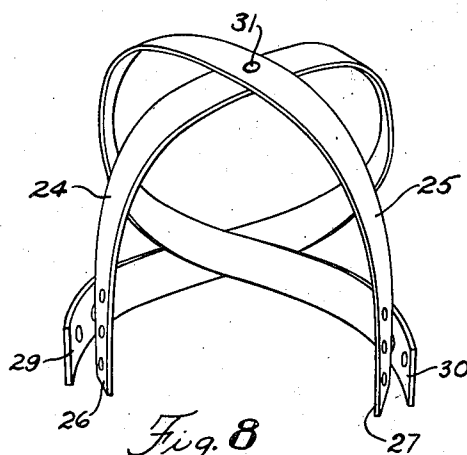


Fig. 8

Inventor
Edward R. Dye,
By *Winters & Winters*,
Attorneys

UNITED STATES PATENT OFFICE

2,235,142

ARTIFICIAL LEG ATTACHING MEANS

Edward R. Dye, Monticello, Ind.; Edith F. Dye
executrix of Edward R. Dye, deceased

Application November 16, 1938, Serial No. 240,627

3 Claims. (Cl. 3—11)

This invention relates to means for attaching and retaining in position artificial legs for below-the-knee amputations and has for a primary object the provision of attaching means in such form that there will be no gripping thereby such as would cause a restriction or cutting off of the blood circulation and further, that will permit a perfect relaxation when the knee is flexed such as in the sitting position.

Other important objects of the invention are to provide a light and durable attaching means which may be readily engaged and disengaged and be confined entirely about the knee.

These and other objects and advantages of the invention will become apparent to those versed in the art in the following description of the invention as illustrated more or less diagrammatically in the accompanying drawings, in which

Fig. 1 is a side elevation of a structure embodying the invention;

Fig. 2, a top plan view;

Fig. 3, a rear elevation;

Fig. 4, a front view on an enlarged scale of the attaching means disengaged from the artificial member;

Fig. 5, a side elevation of a slightly modified form;

Fig. 6, a top plan view of the modified form;

Fig. 7, a rear elevation of that modified form;

Fig. 8, a front view on an enlarged scale of the modified form of attaching means disengaged from the artificial member.

Like characters of reference indicate like parts throughout the several views in the drawings.

Referring to the drawings, to that form as shown in Figs. 1-4, the usual artificial member 10 is formed to be open from its upper end and provided with a cavity formed to receive snugly the stump 11 of the leg of the user. The artificial member 10 per se does not constitute the invention which resides instead in the peculiar means for attaching this member 10 to the leg 12.

In the form shown in Figs. 1-4, I employ two separate straps generally designated by the numerals 13 and 14. The strap 13 has an end 15 which is permanently secured preferably to the side of the member 10 by any suitable means such as a screw 16. The end 15 is preferably provided with a plurality of holes through which the screw 16 may be passed in order to secure proper adjustment in conformity with the shape and size of the leg 12. From the point of adjustment as designated by the screw 16, the strap 13 is carried upwardly and over to the center of the leg

immediately behind the kneecap to pass freely through a loop 17 from the under side thereof and then is turned backwardly to come back down on the same side of the leg and around under the leg to terminate by an end 18 on the opposite side of the leg to engage over a button 19 fixed to the member 10. The end 18 is preferably provided with a plurality of holes in spaced apart relation so that this end may be adjustably engaged with the button 19 to secure the desired degree of pressure about the leg 12.

In similar fashion the strap 14 is secured by an end 20 on the side of the artificial member 10 by any suitable means such as a screw 21 which is substantially diametrically opposite the screw 16 on the other side. This strap preferably is made to be adjustable in that there are a plurality of holes through the end portion 20 through which the screw 21 may be passed. From the end portion 20, the strap 14 is carried upwardly and over the leg to come up through the loop 17 and then is carried over and back down around the same side of the leg 12 and around thereunder to come out on the other side by the end 22 adjacent the end 15 of the strap 13. Here this end portion 22 is adjustably secured to a button 23 by engaging the button through any one of a plurality of holes provided in that portion.

The lengths of the two straps 13 and 14 are substantially equal so as to bring the loop 17 in a central position over the forward side of the leg 12 immediately behind or above the kneecap portion. By the arrangement above described, the two straps 13 and 14 cross each other centrally of the leg immediately above or at the upper end of the artificial member 10. In addition to the positioning of the loop 17 above the kneecap as indicated, the crossing arrangement of the straps permits a side engagement with the leg behind the knee joint by the portion of the respective straps which turn around back and downwardly from that top loop so that the normally bulging part on the side of the knee as designated by the character A, Fig. 1, is below or forwardly of those strap portions.

Upon standing erect, the user in straightening out the knee joint will draw the straps into a rather taut condition, the degree of which depends upon the adjustments above indicated in reference to the buttons 19 and 23 as well as the initial attaching screws 16 and 21. The artificial limb 10 is thus held securely in position on the stump 11 and cannot slide off by reason of the peculiar engagement about the leg immediately

above the knee. This is of particular significance not only from the point of comfort but also to prevent an ultimate shrinking of the stump 11. When the knee is completely flexed to the sitting position, the straps 13 and 14 are quite free so that there is no pressure whatsoever exerted thereby, and yet in the ordinary flexing of the knee, such as in walking, there is sufficient gripping of the leg as will prevent any tendency of the artificial member 10 to work or slip off the stump 11.

In the modified form of the invention as illustrated in the drawings in Figs. 5-8, the same features are preserved. In this form, two straps 24 and 25 are employed to have respective ends 26 and 27 engaged to opposite sides of the artificial member 10. The straps 24 and 25 are carried from those side engagements upwardly and over the leg 12 immediately behind the kneecap 28 to cross one over the other and to continue on around and down under the leg to again cross each other behind the leg substantially at the top of the artificial member 10 and have their respective end portions 29 and 30 come around forwardly to engage over buttons secured on the sides of the member 10. It is to be noted that in this form, the ends of the same strap are in juxtaposition one with the other on the same side of the member 10. Preferably the two straps 24 and 25 are secured permanently one to the other at their crossing over the top side of the leg by any suitable means such as a rivet 31. In this form, all of the attachment is made through selective engagement of the end portions of the respective straps with the screws and buttons provided by the member 10. In the first form described, the effective meeting place of the straps as defined by the loop 17 may be changed somewhat by varying the pull of one strap in relation to the other. The first form is a trifle more flexible in use although both forms give ideal service and particularly give freedom to the leg to which the artificial member is applied.

The straps above referred to in each instance are preferably made out of textile fabric such as cotton or linen webbing so as to be substantially non-stretchable. However, it is permissible to employ material that is slightly yielding but not to such an extent that will require binding of the leg to such degree that blood circulation will be retarded. Leather, of course, may be substituted for the webbing although the webbing is superior in that it is initially somewhat more flexible.

While I have herein shown and described my

invention in the best form as now known to me, it is obvious that structural variations may be employed without departing from the spirit of the invention, and I, therefore, do not desire to be limited to that precise form beyond the limitations as may be imposed by the following claims.

I claim:

1. For securing an artificial leg for a below-the-knee amputation to the stump of a natural leg wherein the stump is received within a socket of the artificial leg, a pair of straps each extending from a central front zone to diverge outwardly and downwardly to terminate in an end each for attachment on opposing sides of the artificial leg, and also extending from that zone rearwardly and diverging laterally and thence around inwardly to cross freely one over the other substantially centrally behind said strap ends and extending forwardly in spaced apart relation to terminate each by an end for attachment on said opposing sides of the artificial leg.

2. For securing an artificial leg for a below-the-knee amputation to the stump of a natural leg wherein the stump is received within a socket of the artificial leg, a pair of straps each extending from a central front zone to diverge outwardly and downwardly to terminate in an end each for attachment on opposing sides of the artificial leg, and also extending from that zone rearwardly and diverging laterally and thence around inwardly to cross freely one over the other substantially centrally behind said strap ends and extending forwardly in spaced apart relation to terminate each by an end for attachment on said opposing sides of the artificial leg, and a loop through which said straps slidingly pass, said loop defining said zone.

3. For securing an artificial leg for a below-the-knee amputation to the stump of a natural leg wherein the stump is received within a socket of the artificial leg, a pair of straps each extending from a central front zone to diverge outwardly and downwardly to terminate in an end each for attachment on opposing sides of the artificial leg, and also extending from that zone rearwardly and diverging laterally and thence around inwardly to cross freely one over the other substantially centrally behind said strap ends and extending forwardly in spaced apart relation to terminate each by an end for attachment on said opposing sides of the artificial leg, said straps being secured one to the other at said zone.

EDWARD R. DYE.