J. F. ROWLEY.

METHOD OF FITTING ARTIFICIAL LIMBS.

APPLICATION FILED JAN. 27, 1919.

1,351,789. Patented Sept. 7, 1920.

Fig. 1.

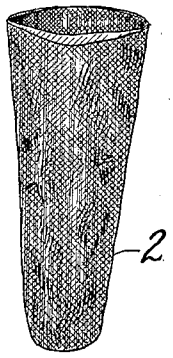


Fig. 2.

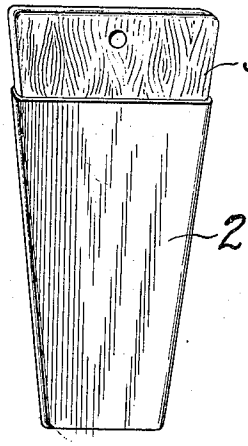


Fig. 3.

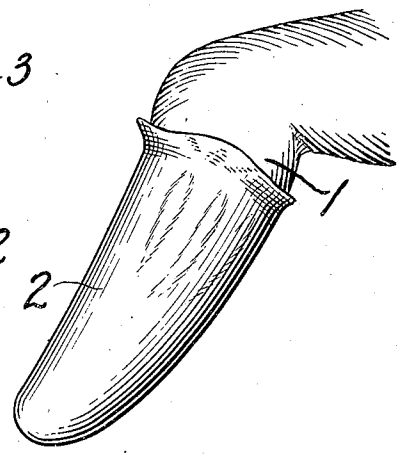


Fig. 4.

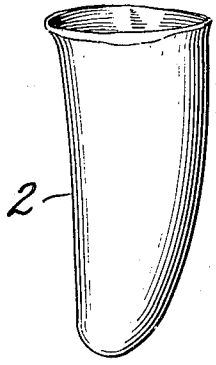


Fig. 5.

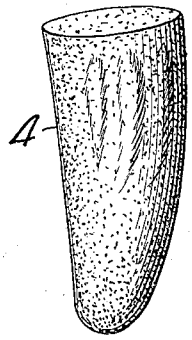
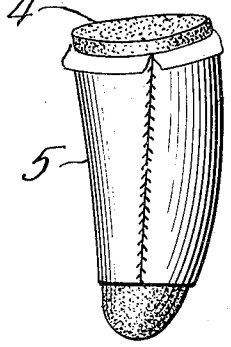


Fig. 6.



Witness:
Harry S. Gaither

Inventor:
James F. Rowley,
by Lummus & Lummus
Atty's

UNITED STATES PATENT OFFICE.

JAMES F. ROWLEY, OF CHICAGO, ILLINOIS.

METHOD OF FITTING ARTIFICIAL LIMBS.

1,351,789. Specification of Letters Patent. Patented Sept. 7, 1920.

Application filed January 27, 1919. Serial No. 273,397.

To all whom it may concern:

Be it known that I, JAMES F. ROWLEY, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Methods of Fitting Artificial Limbs, of which the following is a specification.

The main objects of this invention are to provide an improved method of making a cast of the stump of an amputated limb for the purpose of fitting to it the socket of the artificial limb.

Heretofore it has been customary in fitting artificial limbs, to make a plaster cast of the stump by allowing the stump of the limb to rest upon a mass of plaster of Paris on a board, packing around it a quantity of plaster so as to build up a mold matrix which can be used for casting a replica of the stump. Such method usually results in a cast which differs from the normal shape of the stump of the limb in that the cast is flat at the back due to the fact that the muscles of the stump yield under the weight of the limb resting on the board.

In the herein-described improved process, however, the aim is to provide a cast which is identical in form with the stump of the limb when subjected to equal pressure on all sides as it should be when the artificial limb is mounted thereon.

Figure 1 is a detail view of the unwaxed matrix base used for purposes of this invention.

Fig. 2 shows the matrix base in position on a stretcher board where said matrix is placed after being waxed.

Fig. 3 shows the waxed matrix base in position on the stump leg.

Fig. 4 shows the waxed matrix base after its removal from the stump leg.

Fig. 5 is the cast from the matrix shown in Fig. 4.

Fig. 6 shows the limb socket as it is formed around the cast.

In carrying out my improved process, I first cover the stump of the amputated limb with a suitable stocking 1 and powder this thickly with talc. I then take a second stocking 2, which might be designated a matrix base, illustrated in Fig. 1, preferably made of coarsely knitted wool, and coat or impregnate this with wax such as paraffin. This may be accomplished by first dipping the matrix base into molten wax, withdrawing it and inserting therein a stretcher board 3 of suitable shape such as is used for stretching woolen stockings while drying the same, and, while the matrix base is on the stretcher board, pouring upon its outside surface an additional quantity of the wax. The surface of the matrix base 2 is then scraped to spread the wax uniformly over it, and while the wax is at proper temperature to prevent it from cracking, the matrix base is removed from the stretcher and drawn over the stocking-covered and powdered stump and shaped to fit the stump. This is preferably done while the wax is about as hot as the patient can bear it.

In shaping the matrix two things are essential, one, a pulling of the matrix by the patient usually, and the other, the manipulation of the fleshy parts of the stump by the fitter. The patient takes hold of each side of the stocking at the knee and draws it up tightly on the stump leg and continues to hold the same in place. The fitter then encircles the waxed stocking with his hands proceeding to work the stump stocking with its wax embodiment upward over the bearing surface immediately below the knee, thereby displacing the soft parts of the stump leg sufficiently to obtain a correct cast of the stump leg under pressure so that the matrix will obtain an impression which is practically the same contour as the fleshy parts of the stump leg when the weight of the patient is imposed in a socket of the artificial leg.

During this pulling and shaping of the matrix the wax is allowed to cool and harden, while the matrix is in place on the stump of the limb, whereupon it becomes rigid but may be withdrawn from the stump because the powder prevents it from adhering thereto. It is then filled with plaster and when the plaster has set, the paraffin-impregnated stocking is heated to soften the paraffin and is peeled off from the cast 4.

The cast is then dressed to remove any roughness and sized to render it water-proof. A piece of cordovan leather of suitable size (permeated with wax of a melting point above 140°) is formed and fitted on the caps.

It will be understood that some of the details of the herein-described method may be

altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. The method of obtaining a cast of the stump of an amputated limb, which consists in providing a matrix base formed of stretchable fabric, coating the same with wax, and while the wax is soft, pulling on said base longitudinally of the stump of the limb, manipulating the stump with the hands so as to displace the fleshy parts of the leg and to cause said base to be shaped substantially as said stump would be normally when in place in a stump socket, allowing the wax to harden, then removing said base and filling the same with plastic material to form the cast.

2. The method of fitting an artificial limb to the stump of an amputated limb, which consists in providing a matrix base formed of stretchable fabric, coating the same with wax, and, while the wax is soft, stretching said base upon the stump of the limb, by subjecting it to a pulling strain directed upwardly along the limb, manipulating the stump with the hands so as to displace the fleshy parts of the leg and cause said base to be shaped substantially as said stump would be normally when in place in a stump socket, and while the stocking is thus subjected to strain and manipulation, allowing the wax to harden, then removing said base and filling the same with plastic material to form the cast, then shaping the socket of the artificial limb to exactly fit said cast.

3. The method of fitting an artificial limb to the stump of an amputated limb, which consists in providing a matrix base of stretchable fabric of stocking form woven so as to contract transversely when subjected to a longitudinal pull, stretching said base upon the stump of the artificial limb and exerting a pull thereon at its upper edge upwardly along the limb, manipulating the stump with the hands so as to displace the fleshy parts of the leg and cause said base to be shaped substantially as said stump would be normally when in place in a stump socket, simultaneously therewith, rendering the stocking rigid by means of a wax substance which is allowed to set while the matrix base is under strain and manipulation, then removing said matrix base and making a cast of the interior thereof, and then shaping the socket of an artificial limb to fit said cast.

Signed at Chicago this 18th day of Jan. 1919.

JAMES F. ROWLEY.