Feb. 9, 1932. T. M. LAWRENCE 1,843,983

ARTIFICIAL LIMB CAST FRAME

Filed Aug. 7, 1928 2 Sheets-Sheet 1

FIG. 1

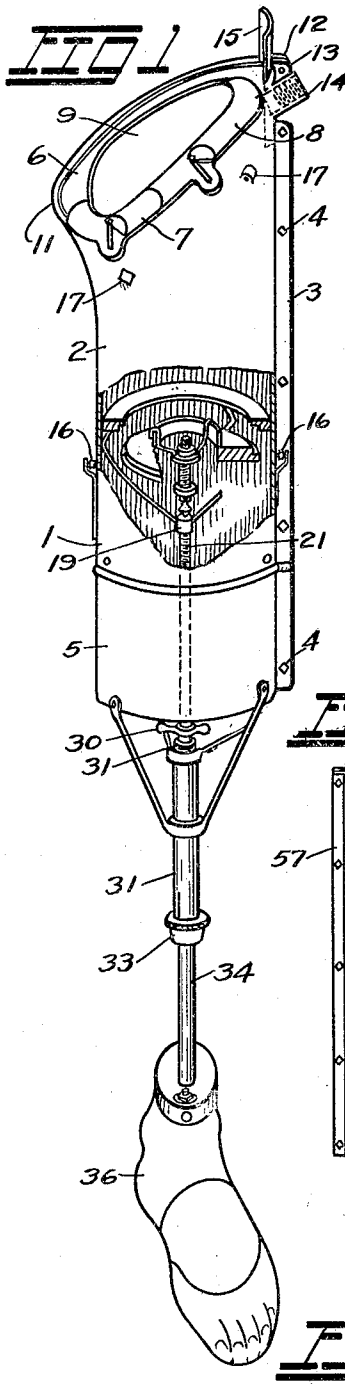


FIG. 2

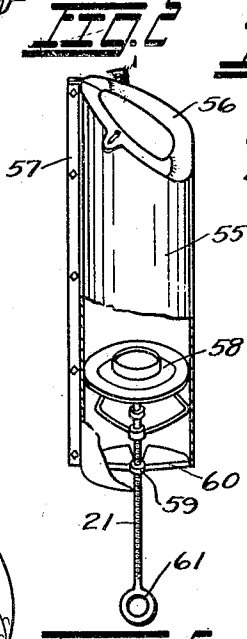


FIG. 3

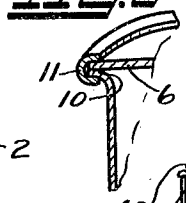


FIG. 4

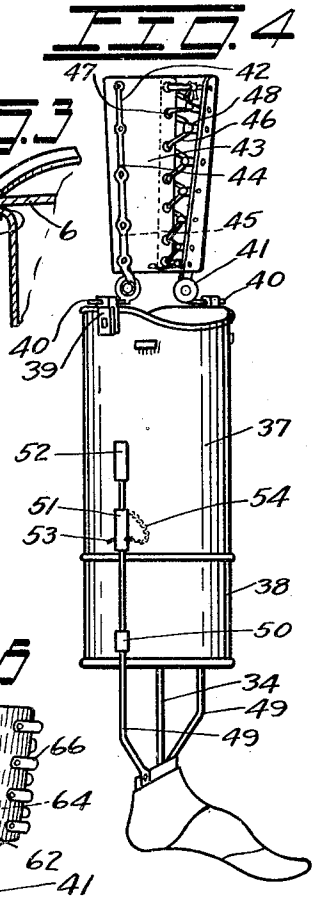


FIG. 5

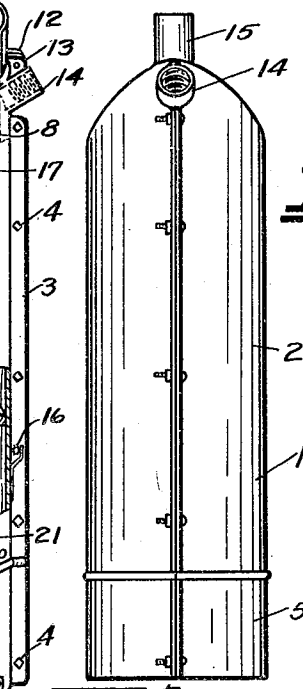


FIG. 6

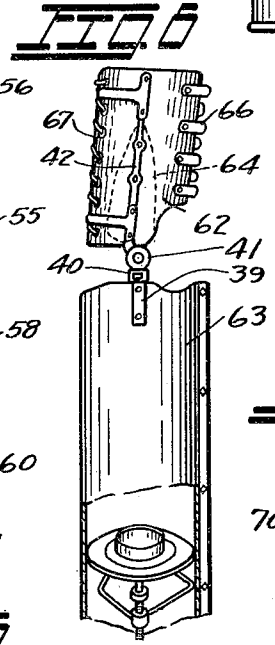
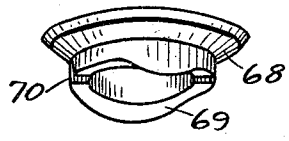


FIG. 7



Inventor

Theodore M. Lawrence

By Harry Bowen

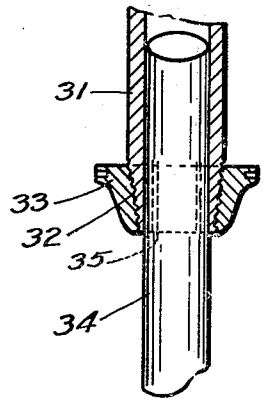
Attorney

Feb. 9, 1932. T. M. LAWRENCE 1,843,983

ARTIFICIAL LIMB CAST FRAME

Filed Aug. 7, 1928 2 Sheets-Sheet 2

FIG. 8



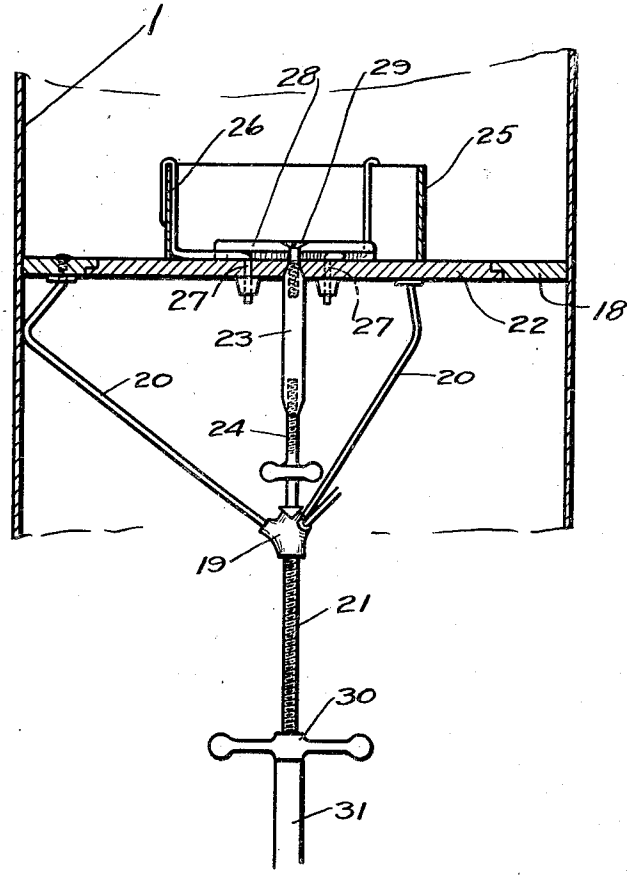


FIG. 9

Inventor

Theodore M. Lawrence

By Harry Bowen

Attorney

Patented Feb. 9, 1932 1,843,983

UNITED STATES PATENT OFFICE

THEODORE M. LAWRENCE, OF SEATTLE, WASHINGTON

ARTIFICIAL LIMB CAST FRAME

Application filed August 7, 1926. Serial No. 297,933.

The invention is a cast frame for artificial limbs by which it is possible to adjust the frame efficiently before the cast is made.

The object of the invention is to provide a frame for making a cast for an artificial limb in which the frame may readily be adjusted in position.

Another object of the invention is to provide a frame for making a cast for an artificial limb by which the exact measurements for the artificial limb may be obtained.

Another object of the invention is to provide a cylindrical form in which the size and shape of the stump of a limb may be cast, which has a readily adjustable base.

And a still further object of the invention is to provide a readily adjustable cast frame which is of a simple and economical construction.

With these ends in view the invention embodies, a cylindrical casing with an adjustable false bottom, an adjustable rod upon which the casing is mounted, a foot at the lower end of the rod, an adjustable opening at the upper end of the said casing, a leather casing that may readily be attached to the stump and a cast frame for the lower portion of the leg.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings, wherein:

Figure 1 is a view showing a frame with part broken away in which a cast is made for a limb amputated above the knee.

Figure 2 is a side view of the casing at the upper end of Figure 1.

Figure 3 is a detail showing the means for attaching the cover plate to the upper end of the casing.

Figure 4 is a view of the casing somewhat similar to that shown in Figure 1 which is particularly adaptable for making the cast of a leg in which the amputation is made below the knee joint.

Figure 5 is a view showing a casing similar to that shown in Figure 1 that is particularly adaptable for making the cast of an arm that is amputated above the elbow.

Figure 6 is a similar device that is particularly adaptable for an arm amputated below the elbow.

Figure 7 is a view showing a special funnel that is adaptable for filling the casing.

Figure 8 is a detail showing an adjusting nut of the frame shown in Figure 1.

Figure 9 is a vertical section of a part of the cylindrical casing showing the adjustable false bottom.

In the drawings the apparatus is shown as it would be made, wherein numeral 1 indicates the apparatus for making a cast of a limb amputated above the knee, as shown in Figures 1 and 2. This device is formed with a cylindrical shaped casing 2 having flanges 3 adjoining the edges at one side which are held together by bolts 4. In the design shown the casing is provided with an extension with a bead adaptable to fit over the lower end of the casing 2 that may be used to lengthen the casing if desired. At the upper end of the casing is a collar 6 having adjustable plates 7 and 8 which may readily be adjusted to alter the sides of the opening 9 to fit snugly around the thigh. The collar 6 forms a cover plate which is held to a flange 10 at the upper end of the casing by a U shaped ring 11. The ends of this ring are bent outward forming flanges as indicated by the numeral 12 and are clamped together by the bolt 13. At the upper end of the casing is also a threaded spout 14 through which plaster of Paris, or the like, may be injected into the casing and at the inner end of this spout is a slidable baffle 15 which extends upward through the collar 6 and which may slide downward to close the inner end of the spout. The exterior of the casing 1 is provided with small pulleys 16 and eyes 17 through which straps or the like may pass to hold the casing from the shoulders or any suitable part of the body.

The movable false bottom on the interior of the casing which is shown in the broken away portion of Figure 1 is more clearly shown in Figure 9. This device is formed with an outer ring 18 which is held to an adjustable nut 19 by rods 20 and the nut 19 is held on the upper end of a screw 21, as shown. Inside of the ring 18 is a disc 22, the outer edge of which is provided with a

step joint to correspond with a similar joint in the ring 18 and this disc is mounted on a rod 23 which is screwed upon a vertical screw 24 at the upper end of the nut 19. It will be observed that by rotating the screw 24 the disc 22 may be raised or lowered as may be desired. On top of the disc 22 is a circular plate 25 which is adjustably held by fingers 26. The fingers 26 are pivotally held in the plate 22 as shown at the points 27 and clamped in any suitable position by another disc 28, which is held to the rod 23 by a screw 29. It will be observed that by loosening the screw 29 the fingers 26 may be readily adjusted to change the diameter of the circular plate 25.

At the lower end of the screw 21 is a nut 30 which rests on the upper end of a tube 31 and it will be observed that by screwing the nut 30 in one direction, the screw 21 may slide downwardly into the tube and by turning it in the opposite direction the screw may be moved upward. At the lower end of the tube 31 is a threaded portion 32, as shown in Figure 8, and on this portion is a nut 33 which may be tightened or loosened to hold or release the tube on the rod 34. At the lower end of the tube 21 are slots 35 as indicated by the dotted lines in Figure 8 which will permit the tube to bind around the rod. The rod 34 extends into a foot as indicated by the numeral 36, and as shown in Figure 1. This foot may be of any suitable type or design and may be attached to the rod in any suitable manner.

In the design shown in Figure 4 the device is provided with a casing 37 having an extension 38 similar to that shown in Figure 1 and at the upper end of the casing are sockets 39 into which outwardly extending bars 40 from the knee joints 41 may be placed as shown. The knee joints 41 are provided with upwardly extending bars 42 which may be continuous to the upper end of a leather casing 43 as shown, or may stop at the point 44 and be spliced with an upper section which will extend downward to a point 45 so that its length may be adjustable. The casing 43 may be held together by a strap 46 through eyes 47 and hooks 48, as shown, or in any other suitable manner. In this design the foot is provided with side rods 49 which extend upward through sockets 50, 51 and 52 and which are held by a pin 53 on a chain 54. The upper end of the rod 34 is similar to that shown in Figures 1 and 9.

In the design shown in Figure 5 which is adaptable for an arm amputated above the elbow the casing 55 is provided with a ring 56 at the upper end which is similar to the ring 6 in the design shown in Figure 1 and flanges 57 which are similar to the flanges 3. On the interior of the casing is a false bottom which is indicated by the numeral 58 and which is similar to the device shown in Figure 9. In this design the screw 21 is held in a nut 59 in a spider 60 at the lower end of the casing and at the lower end of the screw is a ring 61 by which it may be turned.

The design shown in Figure 6 is particularly adaptable for an arm in which the stump extends beyond the elbow as the leather casing 62 may be strapped around the upper arm with the stump extending into the casing 63 so that the cast may be made in the casing 63. The interior of this casing is practically the same as that of the casing 2 shown in Figure 1. On the interior of the casing 62 are felt pads 64 as shown in dotted lines in Figure 6. These pads are attached through the casing to the straps 42 to the elbow joint 41 which is similar to that shown in Figure 4, and it will be observed that they extend into the hollow places above the elbow to assure a firm grip. The casing 62 may be provided with buckles 66 by which it may be fastened on one side and may also be provided with eyelets 67 on the opposite side by which it may be laced.

The special funnel shown in Figure 7 is made with an outwardly flaring flange 68 and a cylindrical section 69 which is provided with slots 70 to permit clearance for the sockets 39 on the casing 37, as shown in Figure 4. The lower end of the portion 69 may be curved as shown to fit the upper end of the casing 37.

It is understood that changes may be made in the construction without departing from the spirit of the invention, one of which changes may be in the use of other means for attaching the casings shown in Figures 1 and 4 to the foot, another may be in the use of any other foot than that shown in combination with the casing, and still another may be in the use of any other combination of the cast frames or casings than those shown.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a cast forming device of the class described, a cylindrical casing having an opening at one side with outwardly extending flanges at the sides thereof, means for holding the flanges together, adjustable means for partially closing the opening at the upper end, a horizontal partition midway of the said casing, said partition being made in sections, means for adjusting the position of the sections in relation to each other, means for adjusting the position of the said horizontal partition, a stem extending downward from the lower end of the casing attached to the lower end thereof and also to the said horizontal partition, a foot at the lower end of the stem and means for readily adjusting the length of the said stem.

2. In a casting device of the class de-

scribed, a cylindrical casing having a flanged opening at one side, means for holding the flanges together, an adjustable closure at the upper end of the casing, a horizontal partition in the said casing, means for adjusting the position of the said partition, said partition being made in sections and means for adjusting the position of the said sections in relation to each other.

3. In a cast frame for artificial limbs, a cylindrical shell with a vertical opening in one side thereof, means for holding the edges of the shell together at the opening, a horizontal partition in said shell, said partition comprising a plurality of sections, means for adjusting the positions of the different sections independently to fit the lower end of a stump placed therein, an expanding band on the upper side of the said partition, and means for adjusting the position of the said band.

In testimony whereof I affix my signature.

THEODORE M. LAWRENCE.