No. 842,608. PATENTED JAN. 29, 1907.

J. T. APGAR.

ARTIFICIAL LEG.

APPLICATION FILED MAY 29, 1906.

Fig. 3.

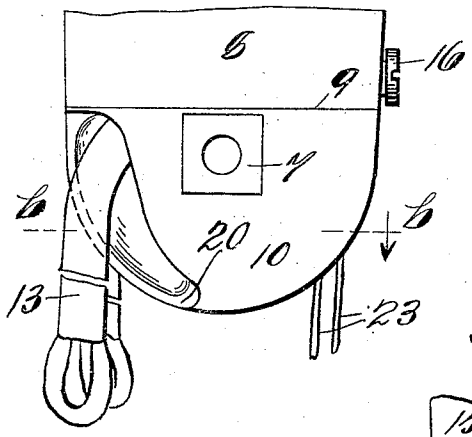


Fig. 4.

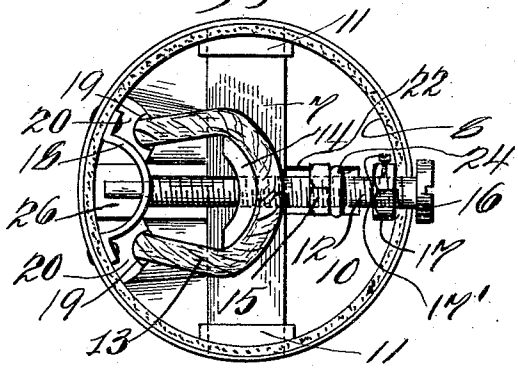


Fig. 1.

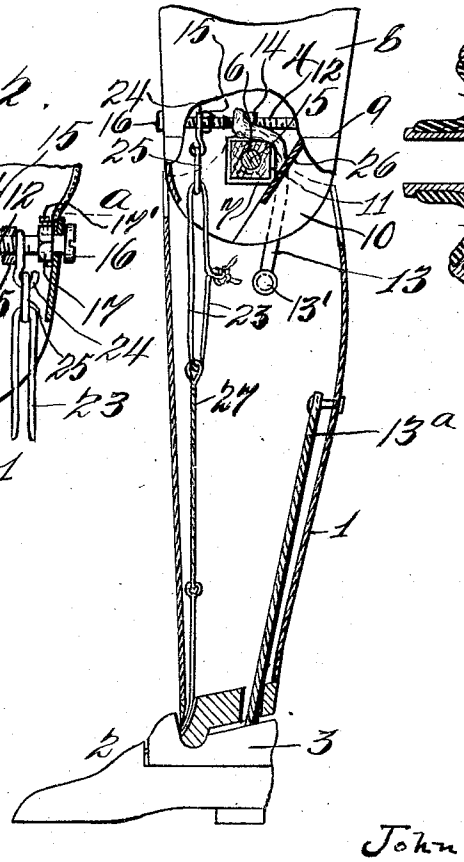


Fig. 5.

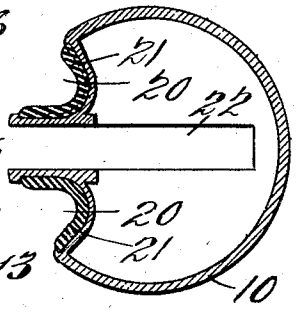
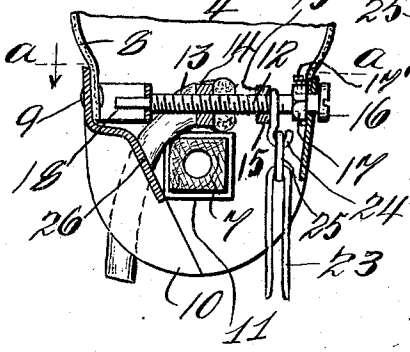


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ARTIFICIAL LEG.

No. 842,608. Specification of Letters Patent Patented Jan. 29, 1907.

Application filed May 29, 1906. Serial No. 319,286.

To all whom it may concern:

Be it known that I, JOHN T. APGAR, a citizen of the United States, residing at the city of New York, borough of Manhattan, county and State of New York, have invented certain new and useful Improvements in Artificial Legs, of which the following is a clear, full, and exact description.

This invention relates to artificial legs, and pertains more particularly to the means for adjusting the tension of connecting-cords, such as the knee-cord, as well as the ankle-cord.

To these and other ends, which will hereinafter appear, the invention comprises the novel features of improvement and combination and arrangement of parts which I will now proceed to describe and hereinafter claim in connection with the accompanying drawings, forming part hereof, wherein—

Figure 1 is a side elevation of a lower leg-section and a portion of an upper leg-section, partly in section. Fig. 2 is an enlarged reversed detail view of the lower or joint portion of the upper leg-section, the view being a central vertical section, the cord-adjusting screw being shown in elevation. Fig. 3 is an enlarged reversed side elevation of the joint or lower end of the upper leg-section. Fig. 4 is an enlarged cross-section, the section being taken on a line *a a* in Fig. 2 and looking in the direction of the arrow; and Fig. 5 is an enlarged cross-section, the section being taken on a line *b b* in Fig. 3.

Similar characters of reference are intended to indicate corresponding parts in the several views.

Referring to the accompanying drawings, the numeral 1 indicates the lower leg portion having attached thereto the foot portion 2 and the ankle-block 3. To the portion 1 the upper leg portion 4, which receives the stump, is pivotally attached, as at 5, the pivot 6 being retained in a block 7 of resilient material—such as wood, fiber, rubber, or the like—which tends to relieve the shock upon the stump when walking. The upper leg portion comprises a socket 8, of leather, and has riveted or otherwise fastened to the lower end a hemispherical metallic knee-joint portion 10 at about a point 9. The block 7 is retained by the joint 10 within sockets 11 11, and centrally within the joint 10 and at about the point at which the said joint and socket 8 join my improved adjusting-screw 12 is placed. In this instance said screw supports and controls the knee-cord 13, which is attached to the lower leg-section at 13′ and is looped around a traveling nut 14, carried by the said screw 12, the said knee-cord performing the usual function. As will be seen from Figs. 2 and 4, the screw 12 is provided with a slotted head 16, which protrudes through the walls of the socket 8 and is operable from the exterior of the upper leg portion. A nut 17 is employed to prevent the screw 12 from working longitudinally and is held by a set-screw 17′. The inner end of the screw 12 is reduced and is supported in a bracket 18, carried by the joint 10, the bracket being riveted or otherwise attached thereto. The nut 14 is sufficiently wide to contact the block 7 when the screw 12 is revolved, thereby preventing its rotation and compelling it to travel longitudinally.

A heel-cord 13ª connects the leg portion 1 in the usual manner with the heel of the foot-section 2. The passage of the cord 13 from the screw 12 to the interior of the lower leg-section is through openings 19 19, Fig. 4, formed in the channeled portions 20 20 of the joint 10. In order that the cord 13 shall not be subjected to any undue wear or abrasion, I cushion the said channels with rubber, felt, or the like, as at 21 21, Figs. 3 and 5, in such manner as to have the said cord rest upon said cushions. Transversely of the joint 10 and centrally located therein is an opening or slot 22, through which an adjustable ankle-cord 23 can pass, said cord 23 being suspended from a hook 24 by means of the eye 25 and held in place by the nut 15, the hook 24 being hung upon the screw 12. In order to compensate for the loss of metal due to the slot 22, I form a bridge 26. The ankle-cord 23 connects with a resilient extension 27, which may be a spring or a rubber cable, said extension passing through the ankle-block 3 and connects with the foot portion 2, the function of said resilient extension being to draw the foot portion up when the leg is lifted after having been thrown backward in the act of walking.

When it is desired to tighten or adjust the tension of the cord 13, the screw 12 is revolved by a screw-driver or otherwise and the nut 14 caused to travel rearwardly, thereby drawing the said cord tighter, or the screw may be reversed and the cord loosened. The ankle-cord 23 may be adjusted or the tension of the resilient extension increased or de-

creased by adjusting the length of the cord 23 by untying it and shortening or lengthening the same.

It will of course be understood that I may use my improved tension-adjusting device not only for knee-cords, but same may with advantage be utilized for adjusting the tension of other connecting-cords in artificial-limb constructions.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an artificial leg, the combination of upper and lower leg members pivotally connected, a rotatable horizontal screw passing through the knee-joint portion of said members, said screw being provided with a traveling nut, and a knee-cord connecting said members and adapted for adjustment by said traveling nut.

2. In an artificial leg, the combination of an upper leg portion and a lower leg portion pivotally connected, an adjusting-screw carried by the upper leg portion, a cord supported by the adjusting-screw and connected to the lower leg portion, and an ankle-cord also carried by said adjusting-screw, the adjusting-screw being adapted for operation exteriorly of the leg portions.

3. In an artificial leg, the combination of a lower leg portion and an upper leg portion pivotally connected, said upper leg portion comprising a leather socket having a metallic knee-joint portion attached thereto, said knee-joint portion being provided with a block of resilient material adapted to receive the pivot of said leg portions, and a cord adjustably mounted at one end within said knee-joint and secured at its other end to the lower leg portion.

4. In an artificial leg, the combination of a lower leg portion and an upper leg portion, the latter being provided with a knee-joint portion, a knee-cord adjustably supported at one end by said knee-joint portion, and at the other end by the lower leg portion, said knee-joint portion being provided with openings or channels through which the cord may pass, and cushioning-pads adjacent to said openings, substantially as and for the purpose described.

Signed at New York city, New York, this 25th day of May, 1906.

JOHN T. APGAR.

Witnesses:
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