J. T. APGAR.

ARTIFICIAL LEG.

APPLICATION FILED DEC. 15, 1914.

1,144,681.

Patented June 29, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

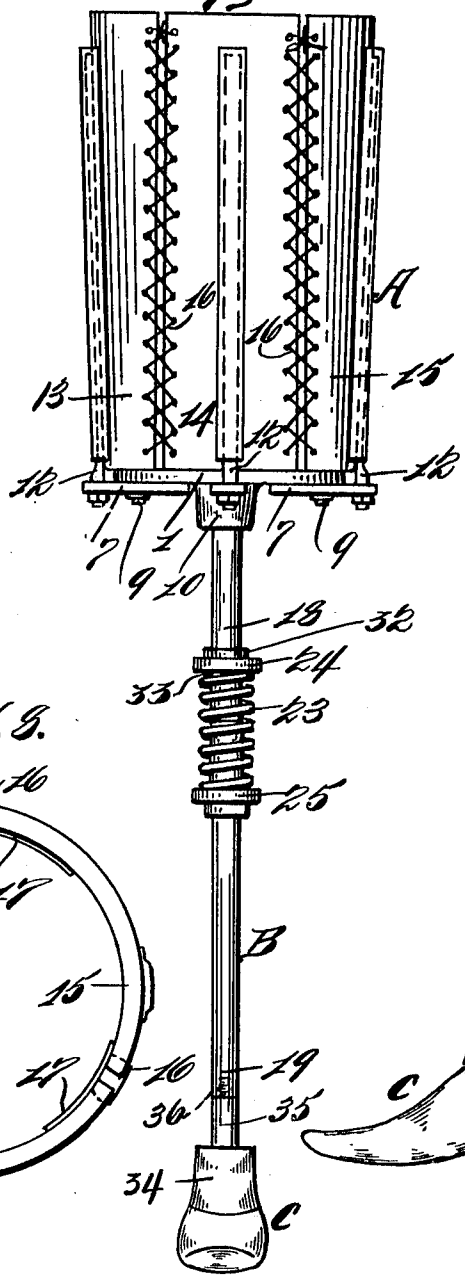


Fig. 2.

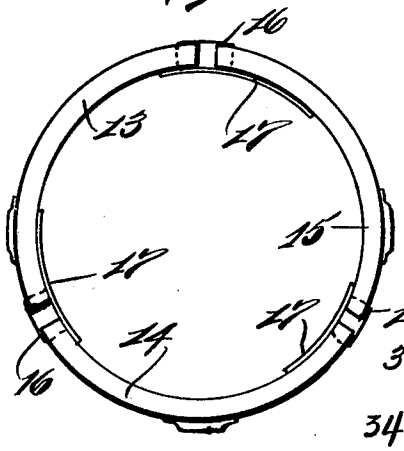
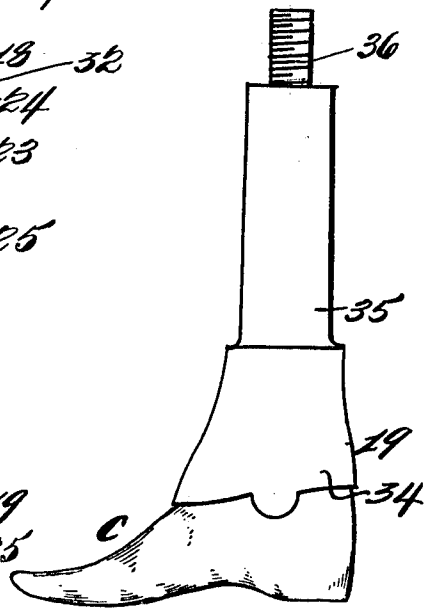


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 2.

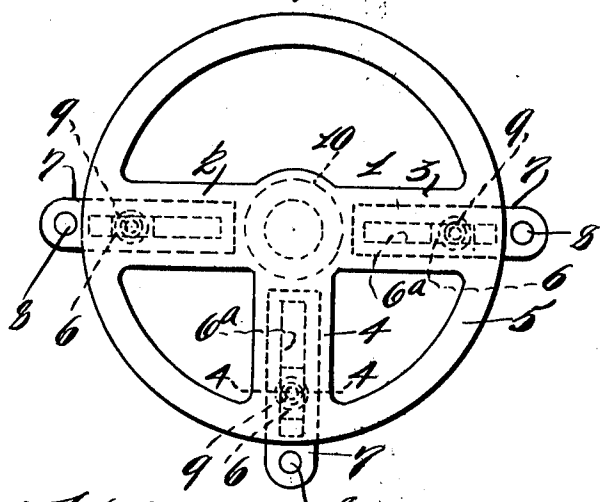


Fig. 3.

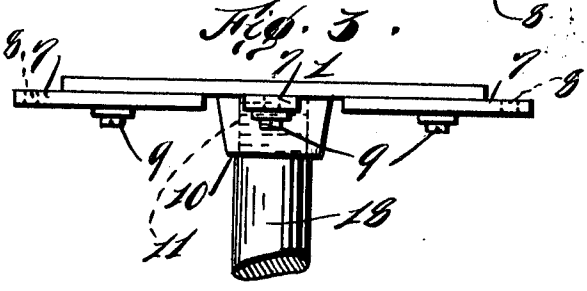


Fig. 4.

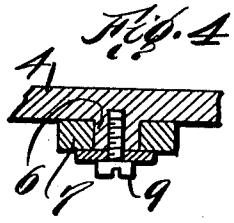


Fig. 5.

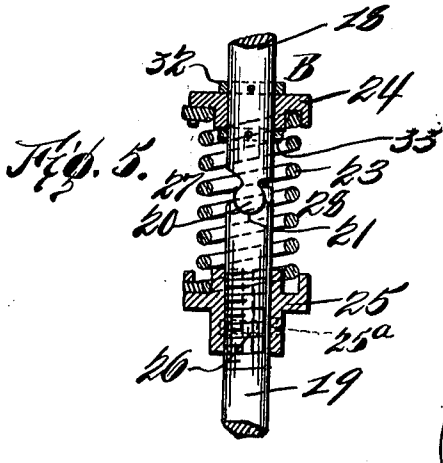


Fig. 6.

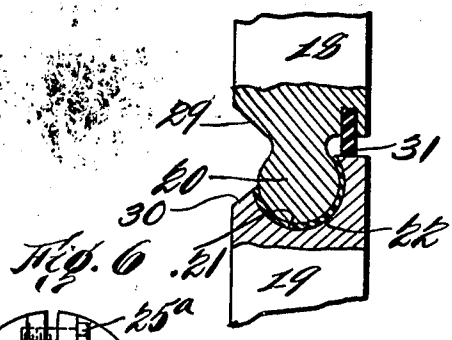
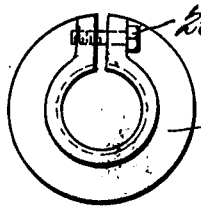


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN T. APGAR, OF NEW YORK, N. Y.

ARTIFICIAL LEG.

1,144,681. Specification of Letters Patent. Patented June 29, 1915.

Application filed December 15, 1914. Serial No. 877,421.

To all whom it may concern:

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

This invention relates to an improvement in artificial legs, but pertains more particularly to that class of artificial legs known as test-legs or legs used by cripples until the stump of the amputated limb has healed sufficiently to have fitted thereto the socket of the permanent artificial leg.

I will now proceed to describe my invention in detail, the novel features of which I will point out in the appended claims, reference being had to the accompanying drawings, forming part hereof, wherein,—

Figure 1 is a front elevation of my improved test-leg; Fig. 2 is an enlarged top plan view of the corset-carrying-plate; Fig. 3 is an end view thereof, a portion of the supporting-post being also shown; Fig. 4 is an enlarged cross-section, the section being taken on a line 4—4 in Fig. 2; Fig. 5 is an enlarged sectional detail view of the yieldable connection for the post-member; Fig. 6 is an enlarged bottom plan view of the lower nut member for the yieldable connection; Fig. 7 is an enlarged detail view, partly in section, of the manner of connecting the post members; Fig. 8 is an enlarged top plan view of the corset member of the test-leg; and Fig. 9 is an enlarged detail view, partly in section, of the foot member of the test leg.

As herein illustrated, my improved test leg consists of a corset member A, a supporting-post portion B, and a foot C, all connected to support the weight of the user. To carry the corset A, I provide the post B, at its upper end, with a plate 1 (see Figs. 2 and 3) having a plurality of radial arms 2, 3 and 4 sliding in a rim 5. Each arm 2, 3 and 4 carries a block 6 (in this instance, integral therewith) designed to engage a slot 6^a in a slidable plate 7 provided with an opening 8 near its outer end. To hold the plates 7 in an adjusted position, I provide set-screws 9 having a threaded engagement with the lugs 6. The plate 1 is also provided with a centrally located hub 10 having a threaded opening 11.

Each opening 8 in the plates 7 carries a vertical post 12 (see Fig. 1), said posts acting to support the corset A. The corset A consists of a plurality of adjustably connected sections 13, 14 and 15 (Fig. 8), each section being suitably secured to a post 12. In this instance the corset members or sections 13, 14 and 15 are connected for adjustment by lacing 16. To prevent the flesh from protruding into the gaps between the corset sections, I provide aprons 17, each of which is secured, at one end, to one corset section but is free from the adjacent corset section. Should I desire to adjust the corset 1, to make it larger or smaller, I unlace the same, loosen the set-screws 9 and move the plates 7 in or out as the case may require. After having adjusted the corset, I tighten or set up the set-screws 9. By dividing the corset into sections it is possible to obtain a larger adjustment than if the corset was simply a one piece structure adjustable at one point only.

To render the post member or portion B yieldable, to enable the user conveniently to sit down, I form the same out of a plurality of members 18 and 19 and pivotally connect said members together. To thus pivotally connect the members, I provide (in this instance) the member 18 with a rounded trunnion member 20 to fit the socket 21 in the post-member 19. While it is not essential, I prefer to line the socket 21 with a pad 22 of rubber, leather or the like.

To keep the post-members 18 and 19 together and also to provide a self-acting element that will automatically throw the post-member 19 forward after a backward step, while walking, I provide a spring 23 having its upper end supported by a spring seat 24 and its lower end by a nut 25 (see Fig. 5). The nut 25 is split (Fig. 6) and engages threads 26 on the post-member 19, the said nut carrying a locking bolt 25^a by which means it is immovably secured to the post-member 19 after adjustment.

The spring 23 is adjusted so as to tend to constantly draw the post members 18 and 19 together or to keep the trunnion 20 seated in the socket 22, the tension of the spring being altered by means of the nut 25 and threads 26 on the post 19. When the nut 25 is rotated and moved downwardly the tension of the spring 23 will be increased. The greater the tension of the spring the more firmly the members 18 and 19 will be drawn together.

During the action of walking the spring 23 will yield or bend; that is to say, the spring-coils at the region 27 will come together, while at 28 they will move apart, thus taking the coils out of their normal position. Hence, when the weight is taken off the leg, the spring-coils will react to their normal position and throw the post-member 19 and foot C ahead to the proper position for another step. The same action will take place when the user sits down, but to a greater extent, the post-members being cut away at 29 and 30 (Fig. 7) to permit of such movement.

To prevent the spring 23 from undue yielding when the user takes a forward step with his natural leg, I provide a yieldable stop 31 carried by the post-member 18 and bearing against the post member 19 as shown in Fig. 7. The spring 23 will yield just about the time that a backward step is completed. It is at about this time, that a natural knee bends a little. The spring 23 will act as an artificial knee joint.

To enable the spring 23 to tend to draw the post-members 18 and 19 together, I cause said spring, at each end thereof, to engage the spring seat 24 and nut 25, respectively, the nut 24 being rotatable upon the post 18 and being retained in place by collars 32 and 33. While the tension of the spring 23 is being adjusted the spring seat 24 will rotate. A further feature of my improvements consists of the application of the foot C to the post-member 19. The foot C is secured to an ankle block 34 having integral therewith a post 35 carrying a threaded stud 36 which engages the post 19. The provision of the foot enables the wearer of the test-leg to use a shoe, which enhances the appearance of the temporary artificial leg. I do not limit myself to any particular style of ankle block, but preferably employ one that pivotally engages the foot portion C.

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

1. An artificial leg, a post comprising a plurality of pivotally connected members, a spring surrounding said members and located at the point of pivotal connection, means to adjust the tension of the spring, and a corset carried by one of said post members.

2. A supporting post for artificial legs consisting of members in alinement, a spring surrounding and arranged to keep said members in alinement and to resist any movement in opposing directions tending to take said members out of alinement.

3. A supporting post for artificial legs consisting of a plurality of pivotally connected post-members, a spring surrounding said members and located at the point of pivotal connection, a seat for said spring carried by one of said members, and a seat carried by the other post-member consisting of an adjustable nut whereby the tension of the spring can be adjusted.

4. A supporting post for artificial legs consisting of a plurality of pivotally connected post-members, a spring surrounding said members and located at the point of pivotal connection, a rotatable seat for said spring carried by one of said members, and a seat carried by the other post-member consisting of an adjustable nut whereby the tension of the spring can be adjusted.

5. A supporting post for artificial legs consisting of a plurality of post-members, a ball and socket connection therefor, and a spring to keep said post-members connected, said spring surrounding said post members at the point of connection.

6. In an artificial test-leg, a corset, a supporting-post therefor, a post provided with an ankle block detachably secured to the supporting-post, and an artificial foot secured to said ankle-block.

7. In an artificial leg, a post comprising a plurality of pivotally connected members, a spring surrounding said members and located at the point of pivotal connection, and means carried by the post for attaching the same to the stump of a leg.

Signed at New York city, N. Y. this 14 day of December, 1914.

JOHN T. APGAR.

Witnesses:
MAURICE BLOCK,
EDWARD A. JARVIS.