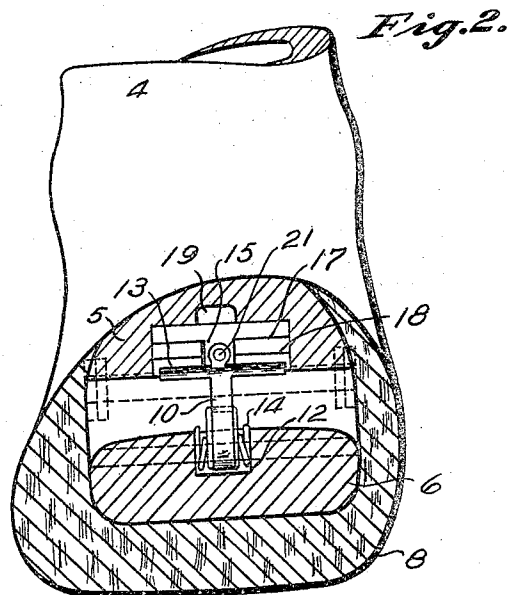
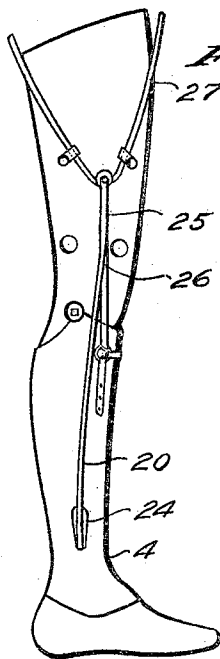
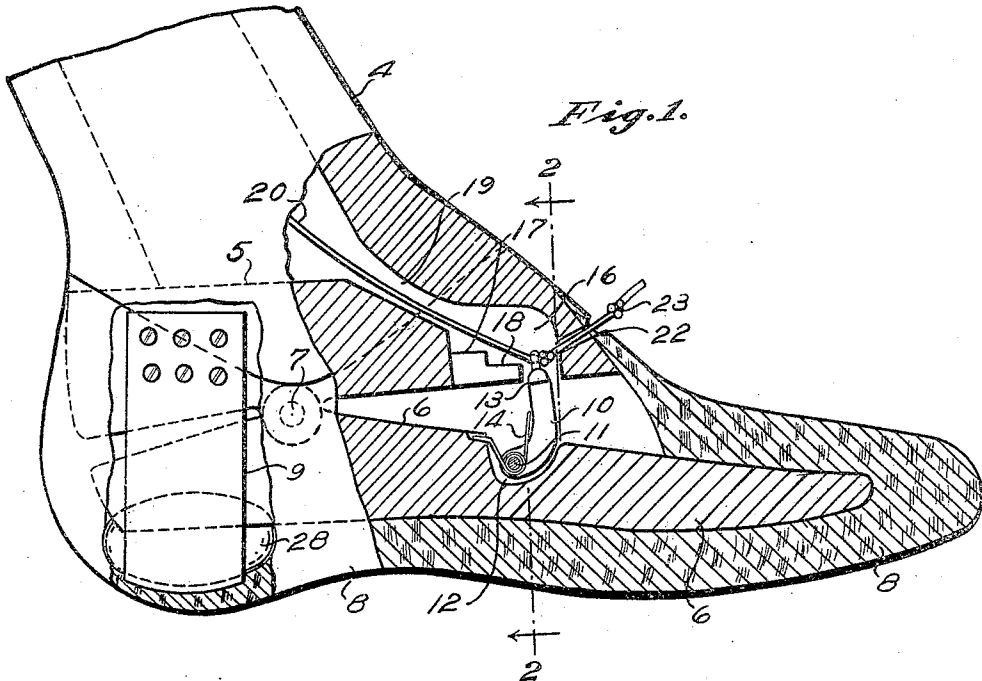


J. F. ROWLEY.
ARTIFICIAL FOOT.
APPLICATION FILED APR. 1, 1907.

Patented Dec. 7, 1909.

942,521.



Witnesses:
E. Jackson
R. P. Merrill.

Inventor,
James F. Rowley,
by *Sumner & Sumner*
Attorneys.

UNITED STATES PATENT OFFICE.

JAMES F. ROWLEY, OF CHICAGO, ILLINOIS.

ARTIFICIAL FOOT.

942,521.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed April 1, 1907. Serial No. 365,841.

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 Artificial Feet, of which the following is a specification.

The main objects of this invention are to provide an improved form of mechanism for controlling the ankle movements of artificial feet; to provide improved means for limiting the downward movement of the toe of the foot with respect to the shin section and to automatically control the same so that when the wearer stands erect, the movement of the foot will be confined between the limits which are proper for a correct walking action, and so that when the wearer of the limb is seated, the relaxation of the tension on the suspender will automatically release the foot and permit it to lie flat upon the floor, even when the leg is inclined backward at a considerable angle; and to provide an improved form of resilient cushion for yieldingly resisting the upward swinging of the foot during the act of walking. These objects are accomplished by the device shown in the accompanying drawings, in which:

Figure 1 is a side elevation, partly broken away, of a portion of the shin section and foot of an artificial limb constructed according to this invention, the foot being shown in the downwardly extended position which it may assume when the tension on the suspender is relaxed. Fig. 2 is a transverse section on the line 2—2 of Fig. 1. Fig. 3 is a side elevation of the complete limb showing the connections between the suspender which supports the limb and the cord which controls the automatic action of the foot.

In the construction shown in the drawings, the shin section is hollow and is capped at its lower end by the ankle block 5, which forms a part of the shin section. A foot member or core 6 is fulcrumed at 7 to the lower face of the ankle block 5 at about the middle thereof. The foot member extends both toward the toe and heel of the foot and is surrounded by a padding of sponge rubber 8 which gives the form to the foot.

A resilient rubber cushion 28 is located in the heel of the foot below the rearwardly extending part of the foot member. A strap or loop 9 of strong flexible material extends around the heel cushion and is securely fastened to the ankle block or shin section at

each side. The cushion 28 acting between the strap 9 and the foot core serves to yieldingly resist the upward swinging of the foot on its fulcrum during the act of walking. The strap 9 is embedded in, or surrounded by the sponge rubber 8.

A stop arm 10 is pivotally mounted at 11 in a slot 12 in the upper surface of the foot member 6. This stop arm is T-shaped, being provided with laterally extending arms 13 at its upper end, forming a head thereon. A spring 14 normally urges the arm 10 into the position shown in Fig. 1. The ankle block 5 has a slot or recess 15 adapted to receive the shank of the stop arm 10. The forward end of this slot is of increased width so as to permit the passage of the arms 13 into the enlarged space 16 in the interior of the ankle block above the slot 15. Shoulders 17 and 18 are formed at the sides of the slot 15 in different angular positions with respect to the fulcrum 7, so that when they are engaged by the arms 13 of the stop arm 10, they will provide different limits for the downward swinging of the foot on its fulcrum. The movable stop acting between the shin section and foot member and having connection with one of them is described and broadly claimed in my co-pending application of February 8th, 1906, Serial No. 300,135.

The space 16 communicates with the interior of the hollow shin section 4 by means of a passage 19. A cord 20 is fastened to the upper end of the arm 10, being passed through the eye 21 and knotted on the front side. This cord, when pulled upwardly, draws the stop arm rearwardly into position for engaging the shoulders 17 when the foot is in its normal position with respect to the shin section, as when the wearer stands erect. The cord 20 is preferably extended forward beyond the stop arm 10 and threaded through an aperture 22 in the front of the ankle block and may be there fastened by a knot 23 or otherwise, so as to limit the rearward movement of the stop arm 10 to a position for bringing the arms 13 into engagement with the shoulder 18. This provides an adjustment to the normal range of movement of the foot in the act of walking.

The cord 20 extends upwardly within the shin member 4 and then passes outward through an aperture 24 in the side of said member. The cord 20 is secured to the strap 25 of the suspender which controls the ac-

tion of the leg, the point of attachment 26 being a considerable distance above the point at which the strap 25 is connected with the shin section. The strap 25 has sliding connection with a supporting loop 27 which passes over the shoulder of the wearer. The suspender is so adjusted that the strap 25 and the cord 20 are about taut when the wearer stands erect. This pulls the stop arm 13 into engagement with the shoulders 17.

By fastening the end of the cord 20, an increased range of movement of the foot for walking is obtained since the stop arms 13 are then pulled only into engagement with the shoulders 18 through a strain on the cord 20. During the act of walking when the weight of the wearer acts upon the toe of the foot, the foot tends to swing upward on its fulcrum and this upward swinging is resisted by the resilient heel cushion 28 acting on the strap 9. The heel cushion 28 tends to return the foot to its normal position as soon as the pressure thereon is released.

When the wearer is seated, the tension on his suspender is relaxed and the cord 20 becomes slack. The spring 14 then throws the stop arm 10 into the position shown in Fig. 1 and the foot is free to rest flat upon the floor when the shin member is inclined rearwardly at a considerable angle. As soon as the wearer stands erect, the tension on the cord 20 automatically throws the stop arms 13 into engagement with the shoulders 17 and the foot is again confined in its movement to the limits which give it the proper walking action.

What I claim as my invention and desire to secure by Letters Patent is:

1. In an artificial limb, the combination of a shin section, a foot member fulcrumed thereon, a stop movably secured to said foot member and adapted to engage the shin section to limit the movement of said foot member on its fulcrum, and means operative from above the fulcrum for shifting said stop.

2. In an artificial limb, the combination of a shin section, a foot member fulcrumed thereon, a stop secured to said foot member and movable into and out of position for engaging said shin section to limit the movement of said foot member on its fulcrum, yielding means normally urging said stop out of such position, and means adapted to be operated from above for shifting said stop into position for engaging said shin section.

3. In an artificial limb, the combination of a shin section, a foot member fulcrumed thereon, a horizontally disposed shoulder on said shin section, a stop movably mounted on said foot member and adapted to extend upward to engage said shoulder for preventing a certain movement of said foot

member on its fulcrum, yielding means normally urging said stop out of position for engaging said shoulder, and means adapted to be operated from above the fulcrum for shifting said stop into engagement with said shoulder.

4. In an artificial limb, the combination of a shin section, a foot member fulcrumed thereon, a stop arm pivotally mounted on said foot member, said shin section being slotted to receive said stop arm and having at one side of the slot a shoulder adapted to be engaged by said arm for limiting the movement of said foot member on its fulcrum, means normally urging said stop arm out of engagement with said shoulder, and means operative from above for shifting said stop arm into such engagement.

5. In an artificial limb, the combination of a shin section, a foot member fulcrumed thereon, a stop arm pivotally mounted on said foot member, said shin section being slotted to receive said stop arm and having adjacent to said stop a plurality of shoulders corresponding to different relative angular positions of the foot member on its fulcrum, said stop being movable into and out of position for engaging either of said shoulders to provide different limits of movement for said foot member on its fulcrum, yielding means normally urging said stop out of engagement with said shoulders, means operative from above for shifting said stop into engagement with said shoulders, and adjustable means for limiting the movement of said stop so as to cause the same to shift into engagement with a certain shoulder at each operation of said shifting means.

6. In an artificial limb, the combination of a shin section, a foot member fulcrumed thereon, said foot member being extended rearward of its fulcrum, a cushion located below said rearward extension and bearing thereon, and a loop having its ends secured to said shin section and extending around said cushion, all arranged to cause said cushion to yieldingly resist the upward swinging of the toe end of said foot member.

7. In an artificial limb, the combination of a shin member, a foot member fulcrumed thereon at a point intermediate of its ends, a stop acting between said members at one side of the fulcrum and movable into and out of position for preventing a certain relative movement thereof, a loop rigidly secured to one of said members at the other side of the fulcrum and extending around the other member and a resilient cushion interposed between said other member and said loop for yieldingly resisting a certain angular movement of said members.

8. In an artificial limb, the combination of a shin member, a foot member fulcrumed thereon, one of said members having a plu-

rality of shoulders corresponding to different relative angular positions of said members, and a stop pivoted to the other member and arranged to be moved into contact with
5 different shoulders to limit the relative movement of said members on their fulcrum.

Signed at Chicago this 30th day of March 1907.

JAMES F. ROWLEY.

Witnesses:

GERTRUDE L. YORKE,
WM. R. RUMMLER.