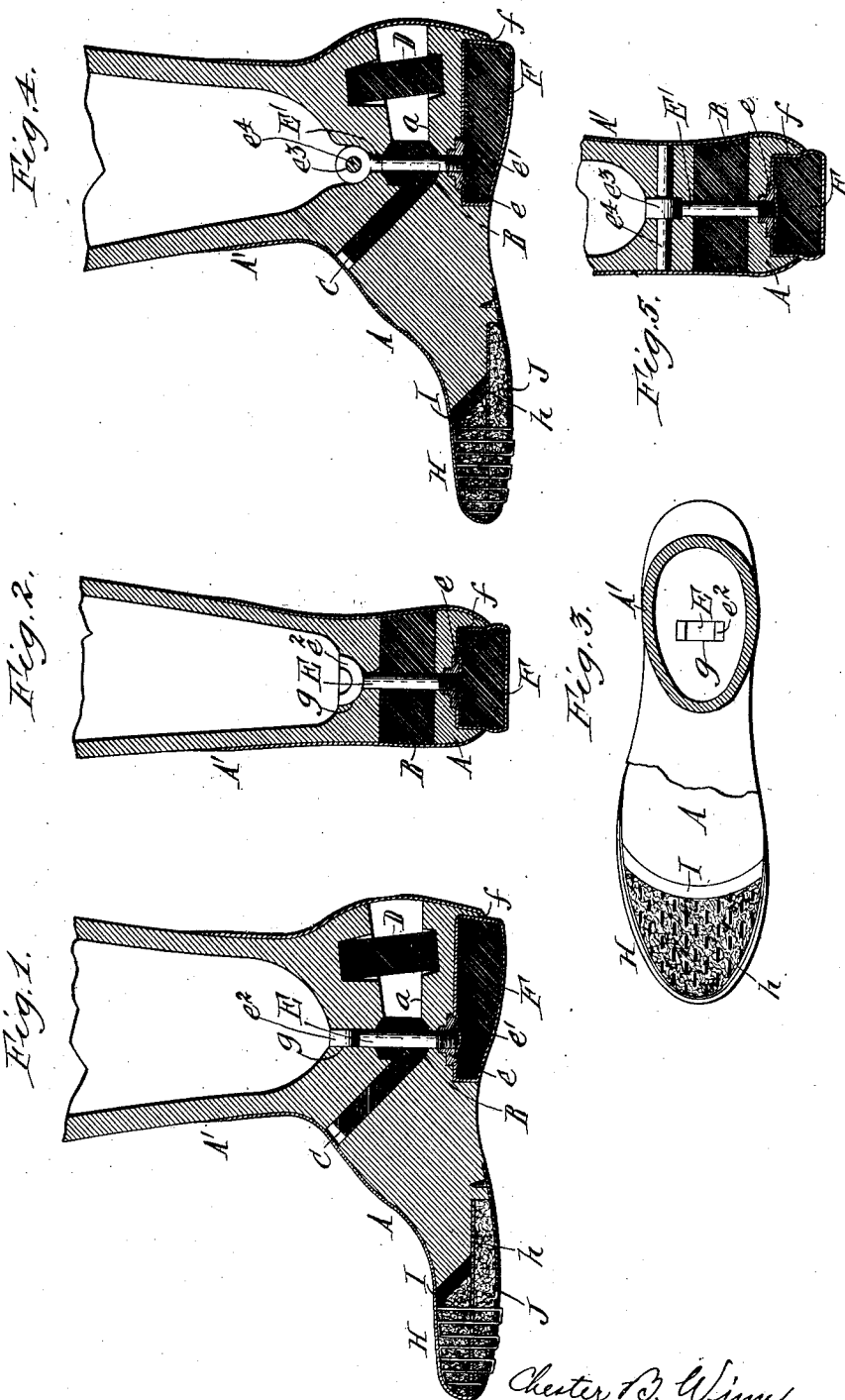


No. 826,813.

PATENTED JULY 24, 1906.

C. B. WINN.
ARTIFICIAL LEG.
APPLICATION FILED NOV. 6, 1905.



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UNITED STATES PATENT OFFICE

CHESTER B. WINN, OF BUFFALO, NEW YORK.

ARTIFICIAL LEG.

No. 826,813.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed November 6, 1905. Serial No. 285,952.

To all whom it may concern:

Be it known that I, CHESTER B. WINN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Artificial Legs, of which the following is a specification.

The principal object of my invention is to provide the foot and ankle-piece of the artificial leg with a cushioned joint of improved construction which permits anterior, posterior, and lateral motion of the foot, which requires no lubrication, and which is noiseless in action.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of the improved leg. Fig. 2 is a transverse section in line 2 2, Fig. 1. Fig. 3 is a top plan view of the same. Fig. 4 is a vertical longitudinal section showing a modified construction of the connecting-bolt. Fig. 5 is a transverse section in line 5 5, Fig. 4.

Similar letters of reference indicate corresponding parts throughout the several views.

A indicates the foot, and A' the shin or ankle-piece. The rear portion of the foot is preferably recessed or depressed below the level of the instep, as shown at *a*.

B indicates an elastic cushion interposed between the solid lower end of the ankle-piece and the depressed rear portion of the foot and serving to absorb the jar or impact of walking. This cushion is arranged centrally under the ankle-piece and consists of a block or journal of soft rubber extending from side to side of the foot, as shown in Fig. 2. This block may be cylindrical or oval in cross-section; but it is preferably rectangular, with its upper and lower faces rounded or convex, the contiguous faces of the ankle-piece and foot having corresponding recesses or cavities in which the block is fitted, as shown in Fig. 1.

CD are front and rear cushions of soft rubber or other suitable material interposed between the opposing faces of the ankle-piece and foot on the front and rear sides of the central cushioning-block B for resisting the anterior and posterior movements of the parts. The rear cushion consists of a nearly-upright block seated in sockets of the ankle-piece and foot, while the front cushion consists of a somewhat thinner block preferably arranged at an angle of about forty-five degrees, the contiguous faces of the wooden

parts being cut to about that angle, as shown in Fig. 1.

E indicates a tie-bolt connecting the ankle-piece and the foot. This bolt passes vertically and centrally through the solid lower portion of the ankle-piece, the central cushioning-block B, and the foot A. In the preferred construction (shown in Figs. 1 and 2) the nut *e* is at the lower end of the bolt and countersunk in the bottom of the foot. The nut is locked on the bolt by a soft-rubber heel F, inserted in a socket *f* in the bottom of the foot and engaging with spurs *e'* on the under side of the nut, which become embedded in the block upon forcing the latter into place.

The portion of the ankle-piece above the tie-bolt is hollow and may be provided in its bottom with a recess or seat *g*, which receives the head *e*² of the bolt. The bolt preferably has a T-head of semicircular form, the bottom of the recess *g* being concave to fit the convex under side of the head, as shown in Fig. 2. This construction permits sufficient lateral motion of the foot to relieve the stump of the leg from jars or strains when stepping on any uneven surface. The recess *g* is oblong or rectangular to prevent turning of the bolt and unscrewing of its nut.

It will be understood from the foregoing that the central cushioning-block B forms a kind of elastic journal on which the ankle-piece and foot are free to rock both forward and backward and laterally. As this journal-block extends from side to side of the joint, it forms a comparatively large bearing-surface for the ankle-piece and prevents excessive lateral motion of the parts. The tie-bolt E is fitted in its openings with sufficient looseness to permit of the above movements of the foot and ankle-piece. The journal-block is comparatively narrow—say seven-eighths of an inch to one inch from front to rear. By this construction the block while forming a jar-absorbing cushion between the foot and the ankle-piece, permits the requisite anterior and posterior movements of the parts, the front and rear cushions CD properly limiting these motions.

In this improved construction the wooden parts are wholly separated by the interposed soft-rubber cushions B, C, and D, and the joint is therefore absolutely noiseless. The joint affords the further advantage of not requiring any lubrication. It furthermore

forms a strong and reliable connection between the parts without the use of cords or tendons for holding them together.

H indicates the pliable toe of the foot, preferably made of hard felt and connected with the wooden portion of the foot by a strip or plate *h* of leather. Between the rear edge of the felt toe and the adjacent front edge of the foot is interposed an elastic strip or cushion I, preferably of sponge-rubber. This strip is curved and extends from side to side of the foot, as shown in Fig. 3. This construction increases the flexibility or elasticity of the toe at its junction with the wooden portion of the foot and permits the same to bend or "break" more easily than a toe in which the felt abuts directly against the foot.

A strip J of elastic webbing is preferably applied to the under side of the toe and secured at its rear end to the foot. This webbing may cover the entire bottom of the toe and is stitched or otherwise secured to the same and fastened to the foot by screws or other means. This strip reinforces the connection between the toe and the foot and prevents the parts from being pulled apart, and it also aids the strip of sponge-rubber I in resisting upward flexion of the toe when stepping on the same and in returning it to its proper position.

In the modified construction shown in Figs. 4 and 5 the tie-bolt E' is provided at its upper end with an eye *e*³, and a transverse pin *e*⁴ is passed through this eye and the lower portion of the ankle-piece for holding the bolt from turning.

I claim as my invention—

1. In an artificial leg, the combination of a foot, an ankle-piece, a comparatively narrow, soft-rubber journal-block arranged centrally between the ankle and the foot and permitting free anterior, posterior and lat-

eral motions of the foot, an internal tie member connecting the foot and the ankle-piece, and stop-cushions arranged between the foot and the ankle-piece on the front and rear sides of said central cushion, substantially as set forth.

2. In an artificial leg, the combination of a foot, an ankle-piece, a comparatively narrow, soft-rubber journal-block arranged centrally between the ankle and the foot and extending from side to side of the foot, a central tie-bolt connecting the foot and the ankle-piece and passing through said journal-block, and stop-cushions arranged between the foot and the ankle-piece on the front and rear sides of said central cushion, substantially as set forth.

3. In an artificial leg, the combination of a foot, an ankle-piece, a soft-rubber journal-block interposed between the ankle and the foot, and a tie-bolt for said parts passing through the journal-block and having a convex head which bears against a concave seat in the ankle-piece, substantially as set forth.

4. In an artificial leg, the combination of an ankle-piece, a foot provided in the bottom of its rear portion with a socket, an elastic journal-block interposed between the foot and the ankle-piece, a tie-bolt passing through the foot, the journal-block and the solid lower portion of the ankle-piece, a nut applied to the lower end of the bolt and countersunk in said socket, and a heel or plug inserted in said socket and interlocking with the nut, substantially as set forth.

Witness my hand this 28th day of October, 1905.

CHESTER B. WINN.

Witnesses:

C. F. GEYER,
LOUIS W. GRATZ.