

D. Bly,
Artificial Leg.

N^o 38,549.

Patented May 19, 1863.

Fig. 1.

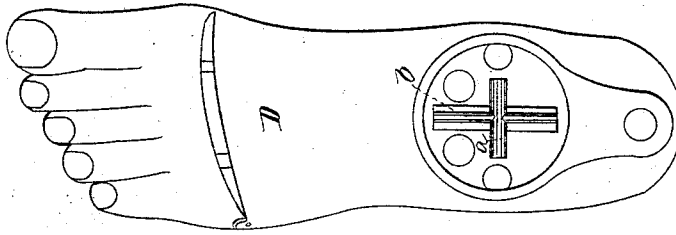


Fig. 2.

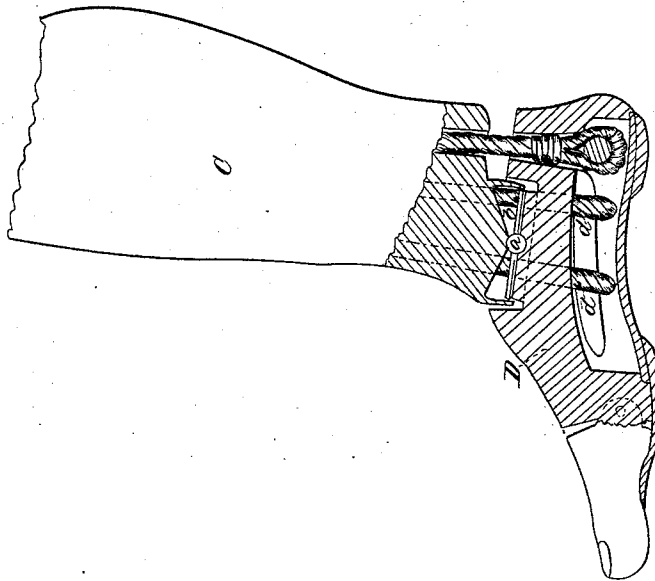
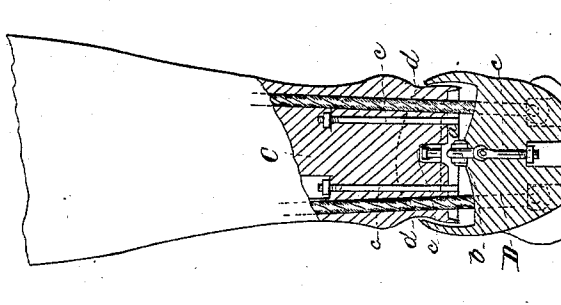


Fig. 3.



Witnesses.
J. Fraser.
D. C. Johnson

Inventor.
Douglas Bly

UNITED STATES PATENT OFFICE.

DOUGLAS BLY, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN ARTIFICIAL LEGS.

Specification forming part of Letters Patent No. **38,549**, dated May 19, 1863; antedated July 20, 1862.

To all whom it may concern:

Be it known that I, DOUGLAS BLY, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in the Construction of Artificial Legs; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan view of the foot with the leg removed. Fig. 2 is a longitudinal elevation of the foot and leg combined, the ankle portion being shown in section. Fig. 3 is a posterior elevation, the foot and ankle being represented in transverse section.

Like letters designate corresponding parts in all of the figures.

My invention is an improvement in the mode of constructing the ankle-joint described and claimed in my patent for improvements in artificial legs, reissued July 3, 1860; and it consists in an improved arrangement of the transverse bearings in the ankle-joint for producing the freedom of motion necessary to imitate the functions of the natural limb.

As shown in the drawings, *a* represents the transverse, and *b* the longitudinal, members of the cross-bearings between the leg and foot C D, the axes of which are on the same horizontal plane. The longitudinal one rests on a solid block of wood or other suitable material inserted in that portion of the foot. It is slightly embedded below the surface to prevent its becoming misplaced, while it rolls freely when required. The transverse part *a* has its bearing in a corresponding bed or recess in the end of the ankle-portion of the leg. It therefore supports the weight of the wearer upon it, and being as free to roll in its bearing as is the member *b* in the opposite direction, the united motion of both constitutes a diagonal flexion of the foot relative to the leg. In other words, the bearing *a* allows antero-posterior motion, *b* admits of direct lateral flexion, and any degree of intermediate diagonal flexion results from the combined

motion of both, thus insuring flexion in every required direction. Rods *c c*, Fig. 3, having eyes in which the ends of the parts *a b* are inserted, the same passing through the solid portions of the foot and leg, with nuts screwed on their ends, may be employed to tighten the connection between the parts by turning up the nuts, if required.

One of the advantages of my present improvement is, that by having the bearings *a b* placed on the same plane the motion described by the leg portion of the joint as it is flexed in every direction is that of a true circle, while if the axes are on different planes the motion is eccentric, thereby necessitating a more open joint to prevent the contact of the parts in their movements, and allowing the spherical termination of the leg to be fully inserted in the socket within the foot, thereby concealing the mechanism of the joint, and giving a more comely appearance to that part. The construction, by placing the bearing in the center of the leg on a solid portion of the material, admits of making the transverse piece *a* so short as to allow the lateral cords *d d* to be placed directly in line at each end thereof. This permits the lateral cords to remain quiescent and not interfere with antero-posterior motion, as they would if placed back of the center, as was necessarily done in my former device.

In my former method of construction the block employed to imitate the *os astragalus* from its size necessitated the passing of the cords through orifices in it. This was liable to the objection that in use the cords were subjected to constant friction and strain from the rolling motion of the block, which in its extreme motion tended to shorten them by the double flexion thus produced and rendered the action rigid when it should be the freest, as well as chafing and cutting off these cords by the constant wear thus induced.

The closeness of the joint between the termination of the leg and the socket of the foot prevents the occurrence of accidents like that of the stocking being caught in the crev-

ice between the parts, and stopping their motion, which might occasion the fall of the wearer. It also serves to exclude dirt or any substance which might accidentally intrude and derange the operation of the joint.

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

The improved transverse bearing *a b*, constructed, arranged, and combined with the

foot and leg, substantially in the manner and for the purposes shown and described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

DOUGLAS BLY.

Witnesses:

J. FRASER,

D. C. JOHNSON.