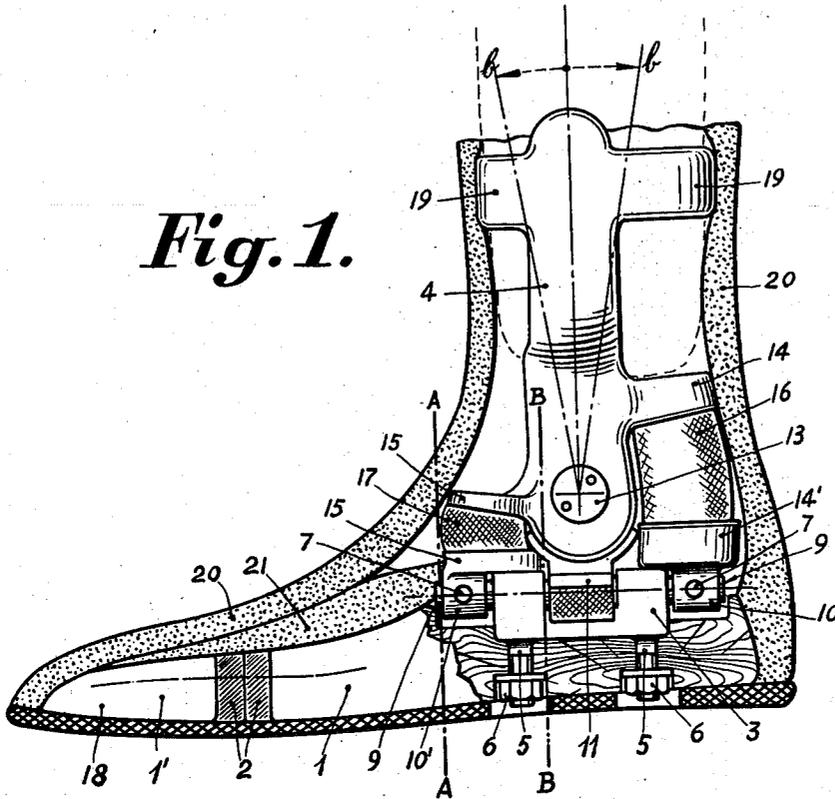


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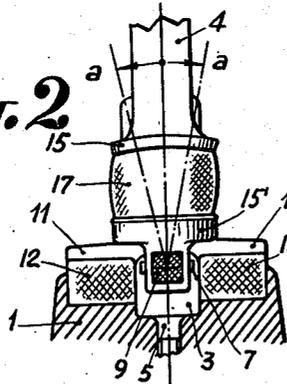
A. GRISONI  
ARTIFICIAL FOOT  
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2,644,165

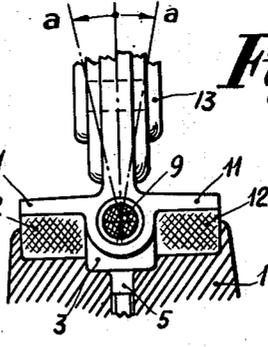
*Fig. 1.*



*Fig. 2*



*Fig. 3*



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# UNITED STATES PATENT OFFICE

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## ARTIFICIAL FOOT

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6 Claims. (Cl. 3-6)

**1**  
The present invention refers to an artificial foot structure articulated, so as to perfectly duplicate movements of a natural limb. According to the invention the rigid foot body made of any suitable material is fixed on a metallic support having two articulations whose axes are perpendicular to each other so as to allow both the longitudinal articulation and the transverse articulation of the leg relative to the foot body, there being also provided an articulation between the toe and the remainder of the foot body.

It is therefore an object of the invention to provide means facilitating easy and secure assembly of the few parts of which the artificial foot structure consists.

It is a further object of the invention to provide means affording a sturdy artificial foot structure which is extremely light in weight, has great elasticity and flexibility and to a high degree approaches the function and movements of the human foot.

These and other objects will ensue from the following description and the appended drawing which illustrates diagrammatically by way of an example an embodiment of the invention:

Fig. 1 is sectional view of the foot embodying the invention.

Figs. 2 and 3 represent two sectional views respectively taken along lines A—A and B—B of Fig. 1.

The artificial foot body may be made of any suitable rigid material such as wood, synthetic resins or metal. Between the front end or toe 1' of the foot and the rear portion 1 thereof there is interposed a cushion 2 made of rubber or similar elastic material, free between the two (front and rear) portions of the foot, since the rigid part of same, as well as said rubber cushion 2, are fixed by means of rivets, screws, or cement on a foot-sole 18 of rubberized cambric or the like. There is thus obtained an articulation which allows the artificial foot to bend in a way similar to the foot toes of a human foot, while the foot-sole ensures an elastic or flexed walk.

The inner foot support comprises a lower portion 3 and an upper portion 4. Said support is fixed to the body of the foot consisting of wood or the like, by means of bolts 5 which are threaded through the foot and are tightened by means of two nuts 6 recessed within respective cavities of the foot body, so as not to project beyond the foot sole. The lower portion 3 is adapted to swing about a longitudinal axis 9 passing through said support 3 and two end bushings 10, 10' through which extend pins 7. Said bushings 10,

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10' have lateral extensions 11, pivotally joined to the upper portion 4, while between said extensions and the wooden foot body 1 cushions 12 are let in the very wood body, as it is shown in Figs. 2 and 3. The artificial foot is thus capable of swinging about the longitudinal axis in an angle represented in Figs. 2 and 3 by arrows a—a.

The upper portion 4 of the support is articulated about an axis 13 which passes through the lower portion 3 adjacent the already mentioned extensions 11.

The upper portion 4 includes two lateral extensions 14, 15 at different heights, which, together with extensions 15' and 14' of the lower portion, constitute the lateral shoulders for the longitudinal swinging motion of the foot. Between said shoulders 14—14' and 15—15' there are inserted rubber cushions 16—17 to allow for an elastic movement.

In this way, the artificial foot actually possesses three articulations. The first one is established at rubber cushion 2; a second one is established about axis 9, to allow for the movements from inward and outward bending, and elastically limited by lateral cushions 12, and the third one is achieved about the transverse axis 13, the longitudinal movements being elastically limited by cushions 16 and 17.

At its upper end the support 3, 4 terminates in the conventional manner in a collar 19 for the connection to the leg, while the whole foot is lined with a layer of foam rubber 20, cemented to the rubberized fabric foot sole and provided with a stuffing 21, also of foam rubber, for the protection of the foot.

Of course the constructive details of the artificial foot, the elasticity of the cushions that allow the articulated movements etc. may vary according to the foot size and the weight it has to bear, without departing from the spirit and scope of the present invention.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. An artificial foot structure comprising a rigid foot portion, a support for said foot portion, said support being provided with a lower portion and with an upper portion articulated to said lower portion, said lower portion including a first axis extending in longitudinal direction of said foot portion, said upper portion being arranged for swinging movement about a second axis extending perpendicular to said first axis, respective lateral extensions projecting from said lower support portion and from said upper support por-

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tion, said lower support portion including bushings connected with said lateral extensions of said lower support portion, and a plurality of elastic cushioning means in contact with said bushings, with said lateral extensions of said lower support portion, and with said lateral extensions of said upper support portion, whereby the extent of swinging movements of said upper support portion about said axes is defined.

2. An artificial foot structure comprising a rigid foot portion, a support for said foot portion, said support being provided with a lower portion and with an upper portion articulated to said lower portion, said lower portion including a first axis extending in longitudinal direction of said foot portion, said upper portion being arranged for swinging movement about a second axis extending perpendicular to said first axis, respective lateral extensions projecting from said lower support portion and from said upper support portion, said lower support portion including bushings connected with said lateral extensions of said lower support portion, and respective elastic cushioning means in contact with said lateral extensions of said upper and lower support portions whereby the extent of swinging movements of said upper support portion about said axes is defined.

3. An artificial foot structure comprising a rigid foot portion, a support for said foot portion, said support being provided with a lower portion and with an upper portion articulated to said lower portion, said lower portion including a first axis extending in longitudinal direction of said foot portion, said upper portion being arranged for swinging movement about a second axis extending perpendicular to said first axis, respective lateral extensions projecting from said lower support portion and from said upper support portion, said lower support portion including bushings connected with said lateral extensions of said lower support portion, and respective elastic cushioning means interpositioned between said lateral extensions of said upper and said lower support portions.

4. An artificial foot structure comprising a rigid foot portion, a support for said foot portion, said support being provided with a lower portion and with an upper portion articulated to said lower portion, said lower portion including a first axis extending in longitudinal direction of said foot portion, said upper portion being ar-

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ranged for swinging movement about a second axis extending perpendicular to said first axis, respective lateral extensions projecting from said lower support portion and from said upper support portion, respective elastic cushioning means interpositioned between said lateral extensions of said upper and said lower support portions, a rubberized base layer on which said foot portion rests, and a foam rubber lining surrounding said foot portion and extending from said rubberized base layer for contact with and surrounding said upper support portion, said foam rubber lining being affixed to said base layer.

5. An artificial foot structure comprising a rigid foot portion including a toe portion, a support for said foot portion, said support being provided with a lower portion and with an upper portion articulated to said lower portion, said lower portion including a first axis extending in longitudinal direction of said foot portion, said upper portion being arranged for swinging movement about a second axis extending perpendicular to said first axis, respective lateral extensions projecting from said lower support portion and from said upper support portion, respective elastic cushioning means interpositioned between said lateral extensions of said upper and said lower support portions, further cushioning means interpositioned between said toe portion and the remainder of said foot portion, and a rubberized layer forming the base of said foot structure, said further cushioning means being secured to said rubberized base, said toe portion and the remainder of said foot portion freely abutting against said further cushioning means.

6. An artificial foot structure according to claim 4, wherein said base layer is provided with openings, and fastening means recessed in said openings to affix said lower support portion to said foot portion.

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