(No Model.)

H. HEINECKE.

ARTIFICIAL LEG.

No. 572,989. Patented Dec. 15, 1896.

Fig. 1

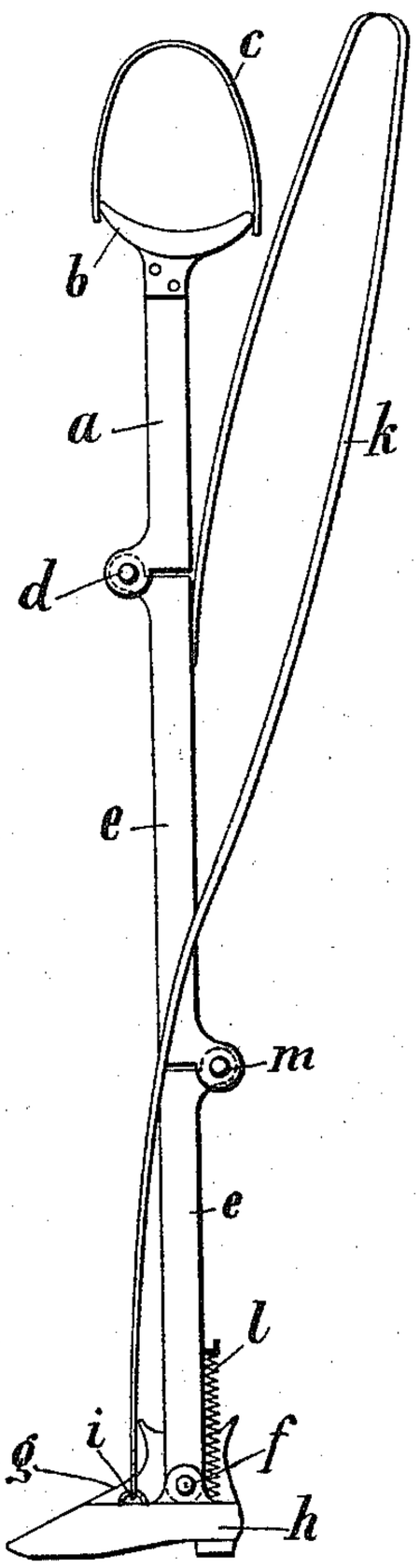
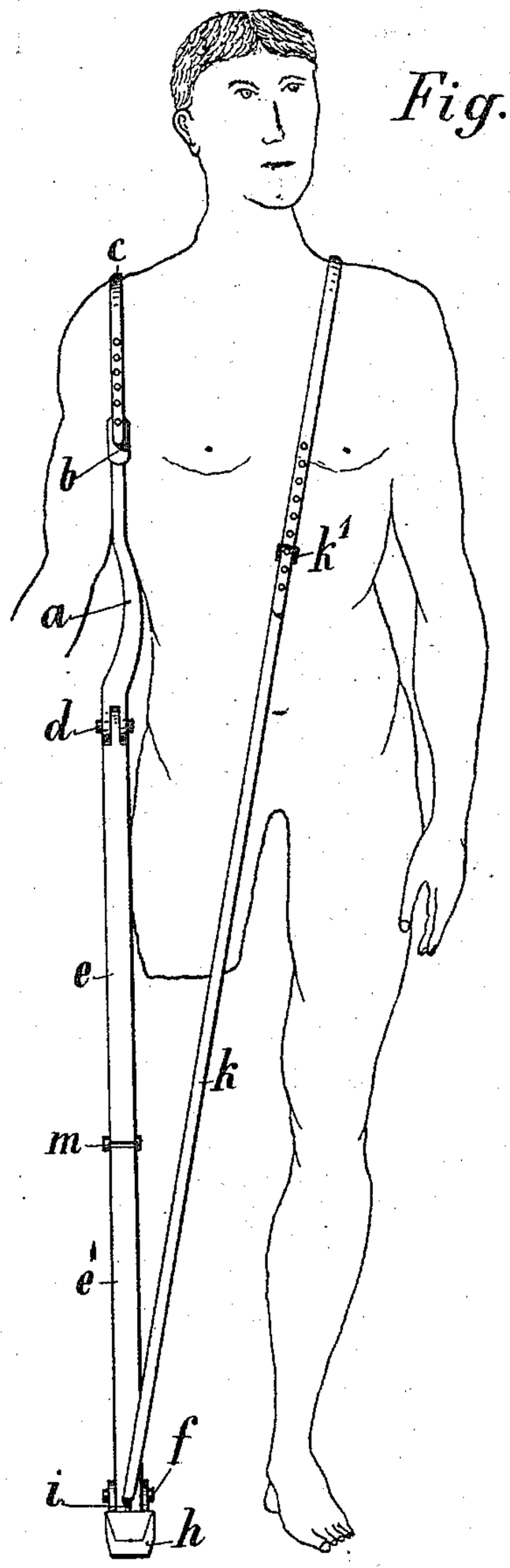


Fig. 2



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UNITED STATES PATENT OFFICE.

HERMANN HEINECKE, OF REINICKENDORF, GERMANY, ASSIGNOR OF ONE-HALF TO BERTHA HERTING, OF SAME PLACE.

ARTIFICIAL LEG.

SPECIFICATION forming part of Letters Patent No. 572,989, dated December 15, 1896.

Application filed April 18, 1896. Serial No. 588,063. (No model.)

To all whom it may concern:

Be it known that I, HERMANN HEINECKE, a citizen of the Kingdom of Prussia, and a resident of Reinickendorf, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Artificial Legs, of which the following is a specification.

The artificial legs hitherto used to replace the under part or upper part of the thigh have various inconveniences. They are generally buckled on the stump remaining after the amputation of the leg, and cause considerable pain to the person and at times cause bleeding of incompletely-cicatrized wounds. They do not give the body its varied stability, as the union of the artificial leg with the stump can never be very solid. When walking, the inflexibility of the foot is disturbing, as the sole of the foot remains always in the same position, and therefore the passing of small obstacles lying in the way, as, for instance, stones, can only be effected by laterally avoiding them and never by walking over them.

The object of this application avoids these inconveniences. The artificial leg is not fixed in the leg-stump, but reaches, bridge-like, up to and under the shoulder and amply supports the whole body. It is not in close contact with the sensitive stump and will pass over small obstacles by the automatic movement of the foot corresponding to the natural movement.

In the annexed drawings, Figure 1 is a side elevation of the artificial leg detached, and Fig. 2 a front view of the artificial leg applied to a body.

The leg is essentially of the form of a crutch consisting of several parts, the upper part of which consists of a flat iron bar *a*, bent to correspond to the form of the side of the body. This flat iron bar carries a stuffed arm-support *b*, which is held by a strap *c*, to be buttoned over the shoulder. The lower end of the side bar *a* is joined to the upper section *e* of the leg-bar by means of a butt-hinge joint *d*, which allows the said leg-section to move in a forward direction only. The leg-sections consist of strong wooden bars *e e'*, connected by a hinge-joint *m*, and the lower end of the section *e'* is joined to the foot *h* by a hinge *f*, covered by a shoe *g*, which allows the leg and foot to be moved in a natural manner.

The automatic movement of the foot corresponding to the natural movement forms the chief characteristic of the leg. It is effected by means of the strap *k*, attached on the hook *i* and reaching over the other shoulder, and by the spring *l*, fitted to the back part of the leg-bar *e* and connecting the latter with the foot *h*. The remote end of the strap *k* is attached upon the back part and at the upper end of the bar *e* at about the level of the haunch, and is regulated by the buckle *k'*, (shown in Fig. 2,) in order that it may be stretched during the upright position of the body and vertical position of the leg. The strap *k* pulls the foot *h* and causes it to turn at the joint *f* against the effect of the spring *l*, with the top of the foot upward in the position which a normal foot takes. When the leg is moved forward, the tension of the strap *k* diminishes as it is brought into an obtuse angle to the body, and the foot moves downward by the effect of the spring *l*, and when the leg is again in vertical position it returns by the pull of the strap to its previous position. As these movements are not jerky, but pass gently from one to the other, the manner of walking is quite natural and not limping. The front of the foot may be lifted as far as wanted by pulling up the other shoulder in order that obstacles lying in the way, as, for instance, stones, can be passed over without any trouble; also, when sitting the artificial leg is not observable, as then the strap *k* is completely loose. The leg-bar *e* is turned forward around the hinge-joint *d* and the leg is given a natural appearance. Where there is a sufficient stump, the bar *e* may be provided also with a butt-hinge joint *m* at the knee, which must only turn backward.

The leg thus described, on account of its light weight, having only a few parts in iron, is especially adapted for weak persons, and it surpasses in easy flexibility the complicated legs hitherto used.

This apparatus may also be used very well for crippled legs without the latter being am-

putated. It replaces the shin-bone and is used like a healthy leg.

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

1. An artificial leg or crutch comprising a side bar and shoulder-strap, a jointed leg-bar hinged to the side bar and to the foot, and a strap fitted to the upper end of the leg-bar to pass over the shoulder and secured at its lower end to the forward part of the hinged foot, substantially as described.

2. In an artificial leg or crutch the combination with a side bar *a*, fitted with an arm support and strap, a jointed leg-bar *e*, hinged to the lower end thereof, hinged foot *h* shoe *g* pivoted to the leg-strap *k*, and spring *l*, connecting the lower end of the leg and the heel of the shoe, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HERMANN HEINECKE.

Witnesses:
W. HAUPT,
HERMANN GERNHARD.