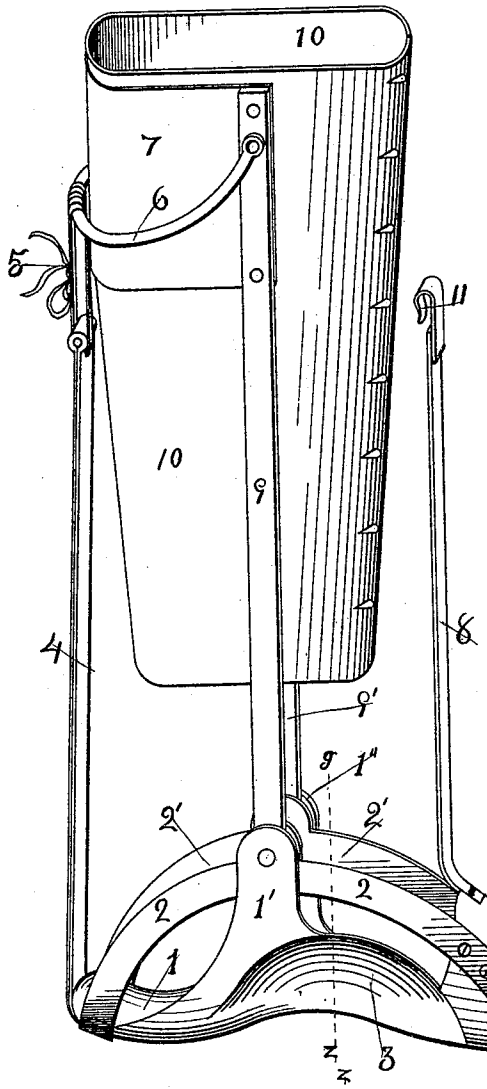
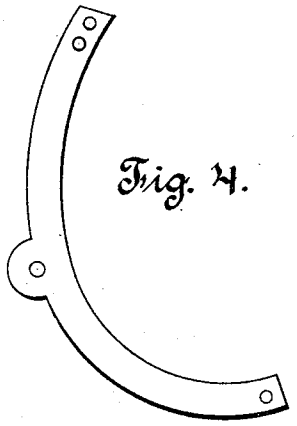
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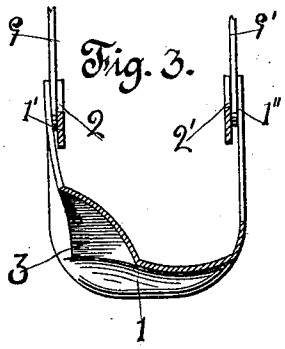
B. F. ROUNDS.

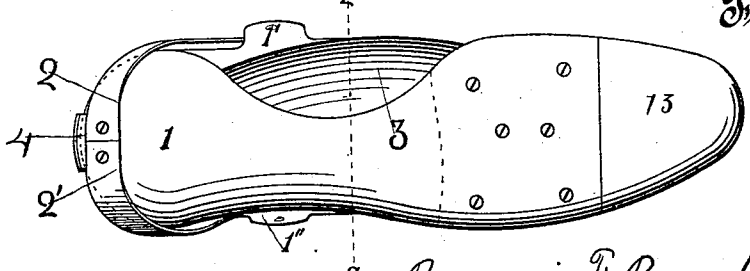
ARTIFICIAL FOOT.

No. 457,823. Patented Aug. 18, 1891.









WITNESSES:

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UNITED STATES PATENT OFFICE.

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ARTIFICIAL FOOT.

SPECIFICATION forming part of Letters Patent No. 457,823, dated August 18, 1891.

Application filed June 16, 1891. Serial No. 396,445. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. ROUNDS, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Artificial Foot, of which the following is a correct specification.

My invention relates to improvements in artificial feet for "Symes'" and "Chopart's" operations, where the amputation occurs between the toes and ankle-joint; and the objects of my improvement are, first, where it is necessary to support part of the weight of the wearer by a lacing-socket around the calf of leg to provide in the appliance an ankle-joint of sufficient strength working in conjunction with the natural ankle; second, to provide a metal sole or plate so shaped and fitted into the arch or hollow of the stump or remaining portion of the foot as to prevent the dropping down of the end of the stump to an unnatural and uncomfortable position; third, to prevent the foot from sliding ahead in the appliance, thus bringing the end of the stump against the toe-piece or supplied portion, with its consequent injury and irritation of the cicatrix; fourth, to provide a system of light metallic bracing to prevent the usual breaking of the metal sole between the heel and the toe-piece; fifth, to prevent the shoe or boot from wrinkling down onto the tender portions of the stump at the tarsus or instep. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the whole appliance fitted for a left-foot Chopart's operation. Fig. 2 is a view of the under side of sole, showing the manner of attaching to the sole at the heel the braces and check-strap, also the connection with the jointed toe-piece at the front end. Fig. 3 is a perpendicular section on the line *g z* in Figs. 1 and 2. Fig. 4 shows a blank for one of the metal braces as cut from the sheet before being laterally bent to the required shape.

Similar numerals refer to similar parts throughout the several views.

The sole 1 has an integral part 3, bent as shown, to present a convex or spheric surface, fitting nicely into the hollow or arch of the foot on the inside in front of the heel. There is also the necessary longitudinal convexity or rise of the whole sole in front of the heel, as shown in Fig. 1, to help raise and support the instep in its natural position. In cross-section at the broken line *g z* the lower part presents a concave surface to the bottom of the foot. (See Fig. 3.)

The above-described form, it will be seen, holds up in a natural and comfortable position the arch or instep, and when properly fitted prevents the foot, when walking down an incline or striking the toe against an obstruction, from sliding forward, thus bringing the end of stump against the jointed toe extension or block 12 13. The sole has, also, at each side of heel portion the upward-extending integral ears 1′ 1″, jointed loosely to the lower ends of the perpendicular side bars 9 9′, forming in connection with the center perforations of the braces 2 2′ an articulation in exact line with the articulation of the natural ankle-joint. The two braces 2 2′, cut from sheet metal to a shape approximating that shown in Fig. 4, are bent laterally, as shown in Figs. 1 and 2, the front ends attached to the articulated toe-piece 12 13, extending backward between the lower ends of the side bars 9 9′, their inner surfaces at all points following the contour of the natural foot and their rear ends meeting under the heel of the sole, to which they are rigidly attached. The lower ends of the side bars 9 9′ are pivoted between the ears 1′ 1″ and the braces 2 2′, as shown in Fig. 3. To the upper ends of these side bars is attached the leather lacing-socket 10, to be laced around the calf of the leg; also at the top there is attached loosely the semicircular loop 6 and a thin metal shield 7 to keep the loop 6 from cutting into the flesh when pulled down by the check-strap 4 when weight of wearer is thrown on the toe. For convenience the lower end of the check-strap 4 is attached by inserting it between the sole and the rear ends of the braces 2 2′, the upper end having a loop by which, with the thong 5, it is adjustably attached to the semicircular loop 6, and by which the required height of the toe-piece may be obtained. An elastic strap 8, attached to the top of the toe-piece 12 13 and provided at its upper end with the hook 11, adapted to engage at any

desired height the lacing-cord of the socket 10, serves to hold up the toe or let it spring down when pressure is brought on the heel, and in connection with the two braces 2 2′ prevents the shoe or boot from wrinkling down onto the stump. The braces 2 2′, attached to the sole 1 at the heel, again attached at the ankle-joint, the forward ends of all attached to the artificial toe or ball piece 12 13, makes a combination of strength which will resist any ordinary usage.

Where a small portion only of the foot is lost and the stump strong, the socket, the side bars with the articulation, the check-strap, and the elastic strap may be omitted, as the braces 2 2′ will permit the shoe to be tightly laced to the foot and ankle without pinching the end of the stump.

I am aware that prior to my invention metallic soles with toe pieces or extensions have been in use, also with side bars connected to a leather socket above. I therefore do not claim such a combination, broadly; but

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

1. In an artificial foot for Chopart's or similar operation, the sole 1, having the convex or spheric portion 3, in combination with a jointed toe-piece, substantially as shown and described.

2. In an artificial foot of the kind described, the combination of the sole 1, having the convex or spheric part 3, the upward-extending ears 1′ 1″, the two braces 2 2′, bent laterally to fit the foot, with the toe-piece 12 13, all substantially as shown and described.

3. In an artificial foot, the combination of the toe-piece 12 13, the sole 1, having the ears 1′ 1″, the braces 2 2′, the side bars 9 9′, the socket 10, the semicircular loop 6, the check-strap 4, and the thong 5, all substantially as shown and described.

4. In an artificial foot, the combination of a check-strap attached to the heel of the sole, with the thong 5, the semicircular loop 6, the side bars 9 9′, and the metallic shield 7, projecting below the loop, substantially as shown and described.

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