

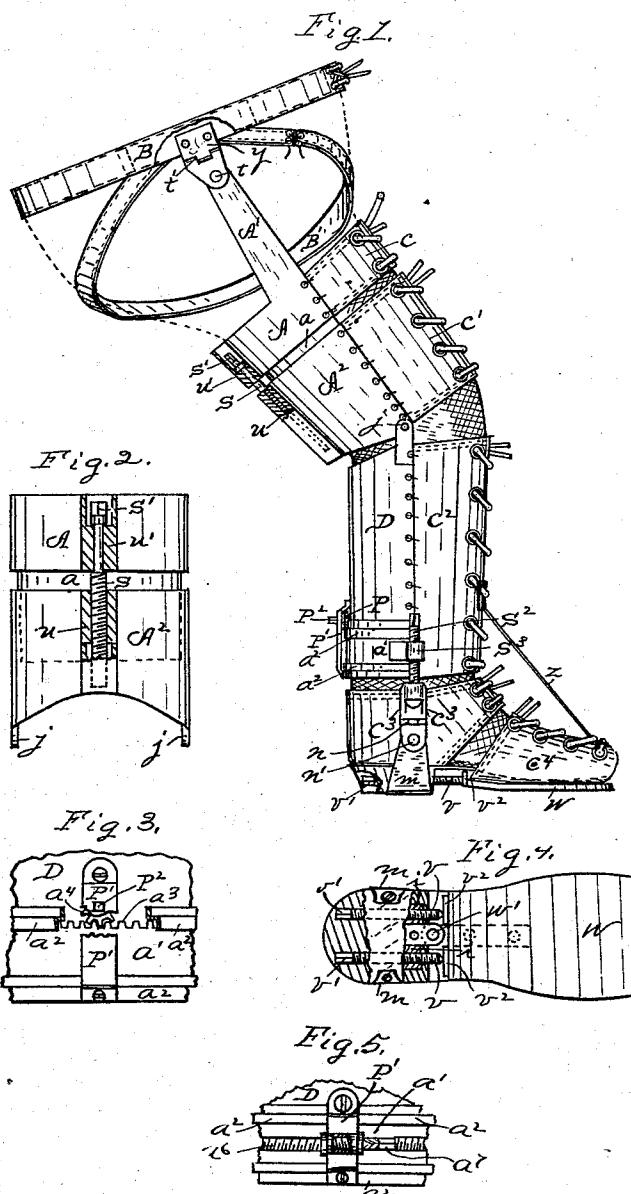
(Model.)

J. BURNS.

CLUB FOOT APPARATUS.

No. 282,491.

Patented Aug. 7, 1883.



Witnesses.

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CLUB-FOOT APPARATUS.

SPECIFICATION forming part of Letters Patent No. 282,491, dated August 7, 1883.

Application filed March 20, 1883. (Model.)

To all whom it may concern:

Be it known that I, JAMES BURNS, of the city of Chicago, in Cook county, and State of Illinois, have invented certain new and useful Improvements in a Club-Foot Apparatus, the construction and operation of which I will proceed to explain, reference being had to the annexed drawings and the letters and figures thereon, in which—

10 Figure 1 is a side elevation; Fig. 2, a rear elevation of the curved plates A and A²; Figs. 3 and 5, rear views of the plate D and a', showing the mechanism for rotating the foot; and Fig. 4, a view on the bottom of the shoe.

15 This invention relates to certain improvements on the club-foot apparatus for which Letters Patent were granted by the United States on the 17th day of October, 1882, No. 265,942, which I will proceed to enumerate 20 and explain in their order.

The first improvement in order consists in the use of the auxiliary band or strap B', and is intended to pass around the thigh between the legs of the patient to assist in holding the band B, to which it attaches, as shown in Fig. 1, from rotating on the body or moving upward, and hold the joints t and t' firmly in place.

25 The second improvement is in the curved plates A and A². These plates sleeve together 30 telescopically, so they may be lengthened or shortened to accommodate them to the size of the patient, and so the limb may be stretched between the knee and the body in case of fracture of the femur, and to distend the 35 hip-joint, when desired. This lengthening and shortening is accomplished by means of the screw u' and nut u. By applying a key to the square end S' of the screw u' it may be turned in either direction, by means of which 40 the plates A and A² may be telescopically made longer or shorter for the purposes stated. Only one screw is shown for this purpose, but more than one may be used, if desired.

45 The third improvement is in the means of rotating the plate a' on the limb. This is accomplished by means of the pinion a⁴ and toothed rack a⁵, the teeth being formed on the upper edge of the plate a', as shown more particularly in Fig. 2. By applying a key to the 50 shank P² of said pinion it may be rotated either way, so the plate a' may be rotated either way

and carry with it the shoe w, which attaches to plate a' by means of the screws S⁸, standard m, stirrup c³, and nut S⁹ integral with plate a'. Pinion a⁴ is journaled in plate D and in the strap P' to hold it firm. The overlapping flanges a² of plate D cover the teeth on the upper end of the plate a', as shown in Fig. 3, except at the point where the pinion a⁴ is, and by their frictional contact with plate D assist in holding plate a' firm and prevent the pinion a⁴ from turning backward.

The fourth improvement consists in the use of the screws S² and nuts S³ on plate a', connecting the shoe by means of the standards m, stirrup c³, and screw S² to the plate a'. Such a screw is used on either side of the ankle, so as to operate the foot at either side. These screws S² are for the purpose of tilting the foot sidewise and hold it in the position desired, and are also used for the purpose of stretching the limb between the knee and foot and to adjust the instrument to the size of the patient. The employment of screws S² is much better than a rack and pinion, as employed in the patent referred to, as the screw will not turn backward when turned up, and thus permit the foot to regain its former position.

The fifth improvement is in the means of turning the toe of the shoe laterally either way, and maintaining it in that position. In Fig. 4 the sole of the shoe is shown in two parts hinged together by the hinge w' in such manner that the toe may be turned sidewise or laterally either way by means of the screws v v' in the heel. It is obvious that by turning the screws in opposite directions one will advance against a plate, v², in the sole, and the other will recede, thus turning the toe in either direction and holding it firmly in the position in which it may be placed. The brace-rod z is for elevating or depressing the toe and holding it in such position as may be desired, so it cannot move either way. The said brace-rod may be attached in any way or at any place desired to accomplish said purpose; but in this instance the ends are shown as fastened by the lacings. The hinge n' on the side of the ankle in the stirrup c³ permits the elevation and depression of the toe, and the hinge or joint n permits the foot to be tilted sidewise when the screws S² are turned to bring

the foot into natural shape. The plate a' may be operated by means of a spur-wheel, a^6 , and worm a^7 , as shown in Fig. 5, when desired, which is in some respects the best, but is only 5 a mechanical equivalent for the device shown in Fig. 3.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows, to wit:

- 10 1. The combination of the plates D and a' , having the toothed rack on its upper end, and pinion a^4 , as and for the purpose set forth.
2. The combination of the plate a' , screw S^2 , nut S^3 , and shoe w , as and for the purpose set forth.
- 15 3. The combination of the screws v' v' and hinge w' , with the shoe w , as and for the purpose set forth.
4. The rod z , having eyes at either end for

the reception of the lacings of the shoe and 20 leg, for the purpose set forth.

5. The combination of the plate a' , screws S^2 , nut S^3 , shoe w , standard m , and stirrup c^3 , having the joint or hinge n , as and for the purpose set forth.

25 6. The combination of the plate y , having the joint or hinge t' , belts B and B', and plate A', being a continuation and an integral part of plate A, as and for the purpose set forth.

7. The combination of the shoe w , standard 30 m , hinged to the stirrup or shaft c^3 at n' , and stirrup or shaft c^3 , having the joint n , all adapted to operate as and for the purpose set forth.

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Witnesses:

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