(No Model.) 2 Sheets—Sheet 1.

J. BURNS.

CLUB FOOT APPARATUS.

No. 265,942. Patented Oct. 17, 1882.

Fig. 1.

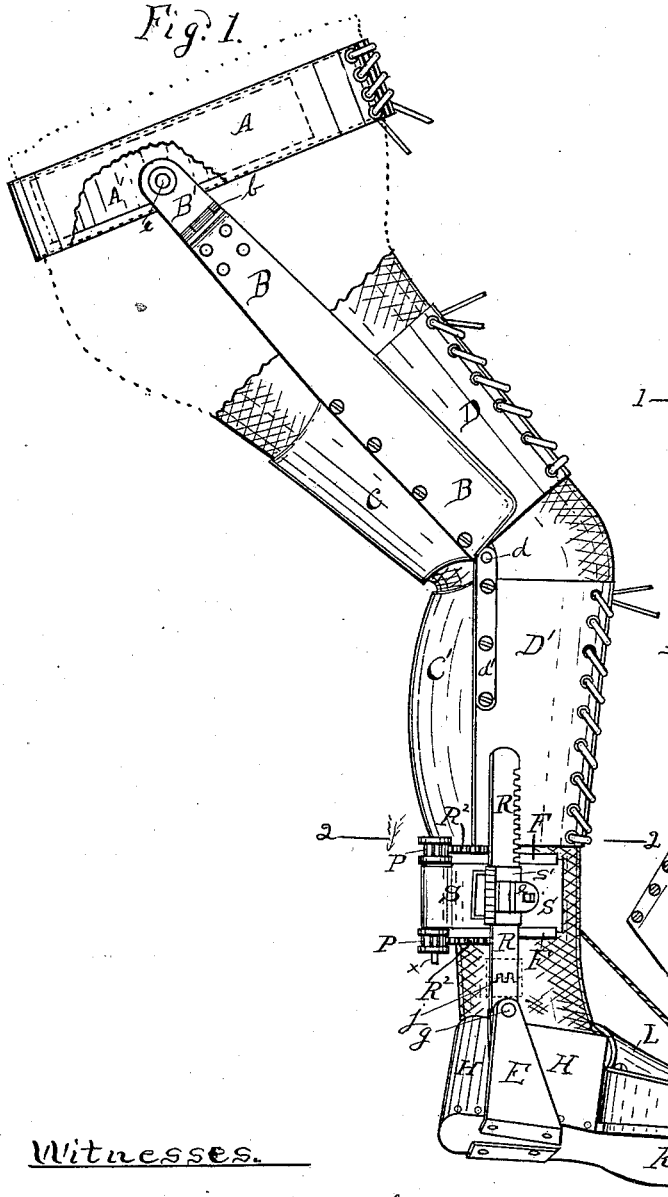


Fig. 2.

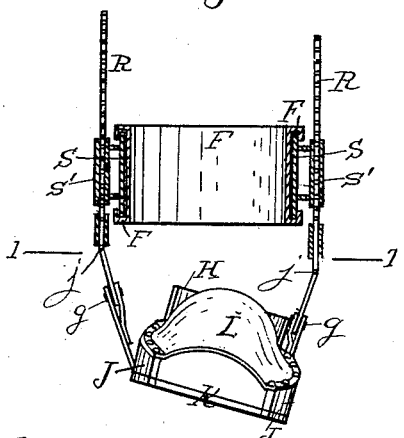
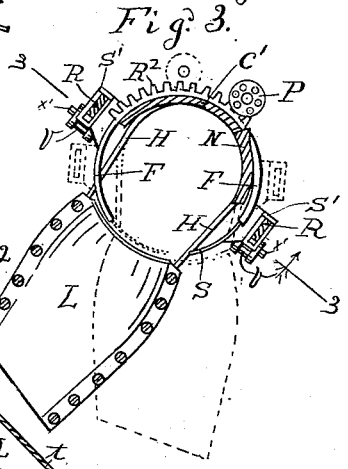


Fig. 3.



Witnesses.

Thos H Hutchins

Wm J Hutchins

Inventor.

James Burns.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

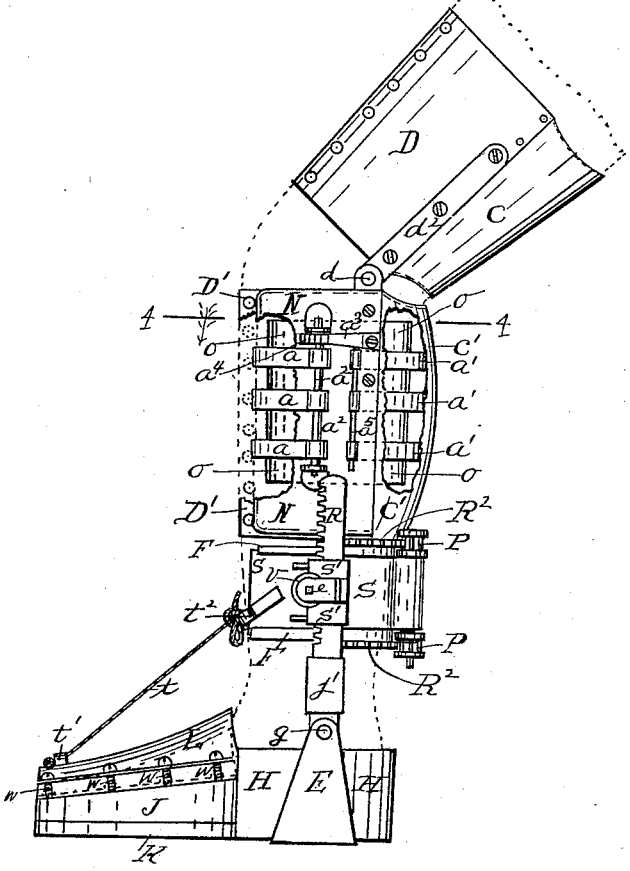
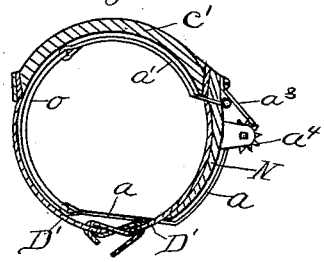


Fig. 5.



Witnesses.

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Inventor.

James Burns.

UNITED STATES PATENT OFFICE.

JAMES BURNS, OF JOLIET, ILLINOIS.

CLUB-FOOT APPARATUS.

SPECIFICATION forming part of Letters Patent No. 265,942, dated October 17, 1882.

Application filed July 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES BURNS, of the city of Joliet, in Will county, and State of Illinois, have invented certain new and useful Improvements in an Apparatus for the Treatment and Cure of Club-Feet and Crooked or Bow Legs, the construction and operation of which I will proceed to explain, reference being had to the annexed drawings and the letters and figures thereon, making a part of this specification, in which—

Figure 1 is a perspective view; Fig. 2, a front view of the foot below the line 1 and a vertical sectional view on line 3, Fig. 3, looking in the direction of the arrow; Fig. 3, a cross-section on line 2, Fig. 1, looking down; Fig. 4, a side elevation; and Fig. 5, a cross-section on line 4 of Fig. 4, looking down.

This invention is an apparatus for the purpose of the treatment and cure of *talipes varus*, or any variety of deformity commonly called "club-foot," without cutting the tendons or cords or causing pain by producing a constant tension against the contraction of the muscles, in the manner more particularly hereinafter described, and for straightening crooked legs, and a splint for crooked limbs.

Referring to the drawings, K represents the sole of the shoe, having raised sides J, counter H, and upper L, attached to the sides by screws W, by means of which the upper L may be adjusted up or down to regulate its pressure on the foot to assist in straightening it when desired. The side plates, E, connect the shoe to the upright shaft R, having cog-teeth to engage with the pinion V, so that by rotating said pinion the shoe may be elevated or lowered, or one side elevated more than the other, as shown in Fig. 2. The shafts R are provided with hinged joints *j* to permit such tilting to one side of the shoe, and so that said shaft may bow outward to conform to the shape of the ankle.

The joint *g* is intended to be opposite the ankle-joint, so the toe of the shoe may be elevated or lowered. The slide *j'* is intended to cover the joint *j* when it is desired to hold said shaft R straight at that joint. The lower end of the calf splint C' attaches to a circular plate, F, which nearly encircles the leg immediately above the ankle-joint. This plate or band has both the upper and lower edge turned to inclose a similar plate, S, that slides annularly on the outer surface of the plate F in the grooves thus formed, as shown in Figs. 1 and 4. The upper and lower edges of the plate F are provided with segmental toothed racks R^2, as shown in Figs. 1 and 4, into which the pinions P, attached to the sliding plate S, mesh. The frames S', containing and supporting the pinions V, are also attached firmly to the side of the plate S, as shown in Figs. 1, 2, and 4. By applying a key to the shaft X of the pinions P, Fig. 1, said pinions may revolve and carry with them the plate S. As the shafts R are attached to said plate S, also, by means of their passing up through the frame S', they are carried forward with said plate S, and by this means the shoe is rotated to give extension to the contracted muscles of the foot by degrees, as it may need, until it gains its natural position and shape. The rotation of the shoe of course is gradual, a little at a time, to finally extend the muscles of the foot or ankle that may be contracted to their natural extent. As no springs are used, the extension is unyielding, so the muscle cannot retract at any time or to any degree. The calf-splint C' is provided with the ordinary flaps, D', laced together along on the shin, as shown, to hold the whole firmly on the leg. The leg is inclosed above the knee by the thigh-splint C, having similar flaps and lacings as the calf-splints C', to hold it firmly to the leg, and the two splints C and C' are hinged together opposite the knee-joint, at *d*, by the plates B and *d'*. The plate B is constructed in two parts, B and B', hinged together at *b*, and extends upward to the hip-joint, where it hinges at *e* to the plate or band A' in the belt A, which encircles the body about over the hip joint. The joint *b* allows the leg a side motion, and the joint *e* allows it a forward-and-backward motion. The plate A' fits over the head of the femur and reaches from the hip to the groin, and is inclosed in a belt, A, that is fastened around the body. The belt A, being connected, as shown, to the splints C and C', assists very materially to prevent their rotation on the leg, so that when the shoe is rotated, as stated, the pressure against the foot is firm and unyielding, not permitting the foot to regain its contracted position, as in the case where springs are used.

Fig. 3 shows the manner in which the foot

is rotated until it is brought around straight, as shown by the dotted lines. The upper part of the shoe is held on the raised sides of the shoe by means of screws W, (shown in Fig. 4,) so that it may be adjusted up or down to compress the foot more or less, as may be desired, by turning the screws in or out.

To straighten the leg should it bow in or out, an inner plate, *o*, is used, as shown in Figs. 4 and 5, at the side of the leg. This plate *o* attaches at either side to the straps *a* and *a'*. An additional splint, N, on the opposite side of the leg, supports the shaft a^2, upon which the straps *a* are wound up and held by the ratchet a^4 and spring-pawl a^3, while the straps *a'* are held by the rod a^5 on the splint N. By winding up the straps *a* on the shaft a^2 as much pressure may be given the plate *o* against the leg to straighten it or hold it in place, if broken, as may be desired.

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

1. The combination of the plate F, having the segmental toothed racks R^2, plate S, having the pinions P and V, frame S', and toothed shaft R, hinged at *g* to the shoe, and having the hinge-joint *j*, as and for the purpose set forth.

2. In an apparatus for club-feet, the toothed side shafts, R, having the joint *j*, in combination with the pinion V, for the purpose set forth.

3. In an apparatus for club-feet, the upper L of the shoe, adjustable up or down by means of the screws W, as set forth.

4. The combination of the plate *o*, straps *a* and *a'*, splint N, shaft a^2, ratchet a^4, and pawl a^3, as and for the purpose set forth.

5. In a club-foot apparatus, the combination of the plate *d*, plates B and B', hinged together at *b*, splints *c* and *c'*, flaps D and D', plate A', and band A, as and for the purpose set forth.

JAMES BURNS.

Witnesses:
THOS. H. HUTCHINS,
WM. J. HUTCHINS.