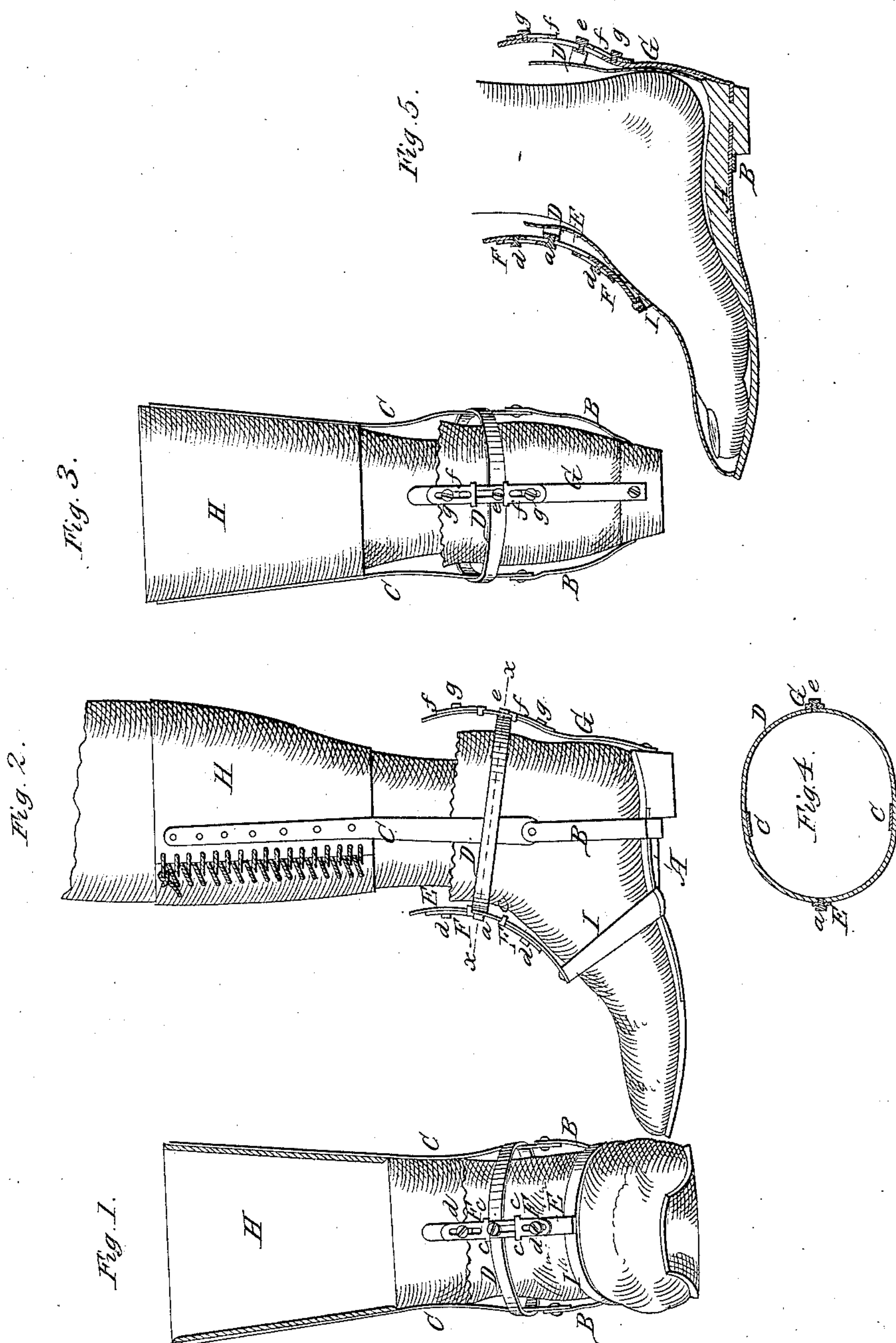


*G. W. Yerger,*  
*Fracture Apparatus.*

*N<sup>o</sup> 6,214.*

*Patented Mar. 20, 1849.*





# UNITED STATES PATENT OFFICE.

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## SURGICAL APPARATUS FOR FRACTURED OR INJURED ANKLES.

Specification of Letters Patent No. 6,214, dated March 20, 1849.

*To all whom it may concern:*

Be it known that I, GEORGE W. YERGER, of Kensington, in the county of Philadelphia and State of Pennsylvania, have invented  
5 a new and useful Improvement in Surgical Apparatus, being a Double-Acting Graduating Spring Ankle-Supporter for Persons with Fractured or otherwise Injured Ankles, which is described as follows, reference be-  
10 ing had to the annexed drawings of the same, making part of this specification.

Figure 1 is a front elevation of a boot, with improvement attached. Fig. 2 is a side elevation of ditto. Fig. 3 is an elevation  
15 of the back part of ditto. Fig. 4 is a horizontal section of ditto at the line  $x x$  of Fig. 2. Fig. 5 is a vertical longitudinal section through the center of ditto.

Similar letters in the several figures, re-  
20 fer to corresponding parts.

The nature of this invention and improvement, consists in securing to the shank and heel of the boot, designed for the fractured, or otherwise injured limb, a series of curved,  
25 and spring, and jointed bars, corresponding in form as near as possible with the parts of the boot to which they are contiguous, extending over the front part and instep, and upward behind, and on the sides of the  
30 ankle of the boot, and on the sides of the calf of the leg of the wearer, and attached at this last mentioned part to a pad, corresponding with the form of the calf of the said leg, in such a manner as to cause the  
35 weight of the body of the wearer, to rest entirely on the lower part of the calf of the leg, and relieve the ankle of all the pressure of the body, forming a double acting, graduating, spring support, for fractured or other-  
40 wise injured ankles, and enabling persons thus afflicted, to walk without the aid of crutches or other support, and with much greater facility than with them.

To enable others skilled in the art to make  
45 and use my invention, I will proceed to describe its construction and operation.

A is a cast steel plate, secured by screws or otherwise, to the bottom of the shank of the boot, and corresponding with the form  
50 of the same, extending a short distance under the heel, where it is slightly tapered.

B is a cast steel bar, secured to the under part of the plate, A next the heel, and extending upward on either side of the boot,  
55 (corresponding with the form of the same) about as far as the ankle of the wearer.

C are two other steel bars, jointed to the extremities of the last mentioned bar by pins, and extending upward in curved and straight lines, to correspond with the form  
60 of the calf of the leg of the wearer, to within a short distance of the knee joint.

D is a steel bar of the form of a cycloid of a circle, surrounding the boot above the ankle joint, and firmly secured to the jointed  
65 bars C, on the sides of the same, with which it moves.

E is a curved steel spring slotted bar, arranged immediately in front of, and over the instep, secured at its lower end to the upper  
70 part of the curved bar I surrounding the front part of the boot and secured to the shank plate, and extending upward in a curved line, corresponding with the shape of the instep, about one third its length, above  
75 the oval bar D, against which it presses, and to which it is connected by a screw  $a$  passing through a slot  $b$ , in the same, and into said oval bar, D in such a manner as to guide the oval bar in its up and down movement with  
80 the vibration of the jointed bars C.

F are slotted stop bars, or plates, arranged on the outside of the curved bar E a suitable distance apart, to correspond with the re-  
85 quired movement of the jointed bars C and ankle, having small projections  $c$  at the ends toward each other, bent around the curved bar, for guiding them, with the assistance of the slots, in their movement over the same, and being provided with set and clamp  
90 screws  $d$  passing through the slots, and screwed into the curved bar E.

G is another spring slotted bar, of the form of a cima-reversa, arranged behind the boot, and secured at its lower end to the  
95 back of the heel of the boot, and extending upward and slightly outward, from the same, and connected to the back part of the oval bar, and on the outside of the same by means of a screw  $e$  passing through the slot, into  
100 the oval bar in a similar manner to the curved bar in front. This cima-reversa spring bar, springs outward from the heel, in a reverse direction to the front curved spring, and is provided with slotted stop bars  $f$ , or  
105 plates, on its outside, and set and clamp screws  $g$ , similar to those attached to the curved bar E, said stops being set the same distance apart, as those in front.

H is a bandage or pad, bolted, or other-  
110 wise secured to the upper part of the jointed bars C inside the same, composed of strong



leather, and padded on the inside with solid packing. This pad or bandage is of the form of the lower part of the calf of the leg of the invalid, and is separated vertically 5 in front, and provided with metallic eyelets, near the edges of the line of separation, and a cord for bracing it to fit the lower portion of the form of the calf of the leg. It is also 10 provided with a separate pad, on the inside connected to near one edge of the same, and extending beyond the other, after the manner of the tongue of a boot, so as to supply the space between the edges of the main pad.

In fitting the boot with the above attachments, to the fractured or otherwise injured 15 limb, the foot of the limb is to be inserted into the same, until the heel is within a short distance of the heel of the boot, (the front part of the foot resting on the sole of the same) and suspended or supported, in that 20 position by lacing the edges of the pad or bandage, with the cord, until said pad or bandage is fitted to the lower part of the calf of the leg, with a sufficient degree of tightness, to sustain the weight of the body, when 25 the invalid is walking or standing, and prevent the heel of the fractured limb from descending nearer the heel of the boot.

When this is accomplished the stop bars, 30 or plates F, attached to the segmental spring bar E, over and in front of the instep, and on the cima-reversa shaped spring G attached to the heel of the boot, are moved, nearer to or farther from each other, to conform with the amount of bend the ankle will 35 bear, and there clamped by the screws. The invalid will then be able to walk, without allowing any pressure from the weight of the body, to rest on the foot of the fractured 40 limb, (the weight being borne entirely by the calf of the leg resting in the pad or bandage) the jointed and oval bars C D

allowing a gentle bend at the ankle, corresponding with the distance between the stop bars or plates, and the front curved and 45 cima-reversa springs, pressing against said bar D preventing a too sudden movement of the same.

If the fracture, or other injury to the ankle, is of such a serious nature, as not to 50 admit of any bend at that joint, the stop bars or plates, should be brought to immediate contact with the heads of the screws in the front and back part of the oval bar, so as to entirely stop its movement, over the 55 faces of the curved bar and cima-reversa spring bar.

The steel spring, and curved bar, are to be made of a size, to correspond with the size 60 of the invalid and the nature of the fracture.

This surgical apparatus may be applied to a person with a fractured knee, for supporting the same, and relieving it of the pressure of the body, by extending the jointed 65 bars above the knee, and jointing them at that part, and attaching a pad to their extremities, for the reception of the leg, in a similar manner to the pad surrounding the calf of the same.

What I claim as my invention and desire 70 to secure by Letters Patent, is—

The mode of supporting the ankle, when fractured or otherwise injured, at the same time allowing a flexible movement to the 75 same, by means of the before described combination of spring bars E, G and movable stops F, f shank plate, A curved, jointed and oval bars, and pad, or bandage, as described.

GEO. W. YERGER.

Witnesses:

THOMAS F. CULKINS,  
ARMON DAVIS.