

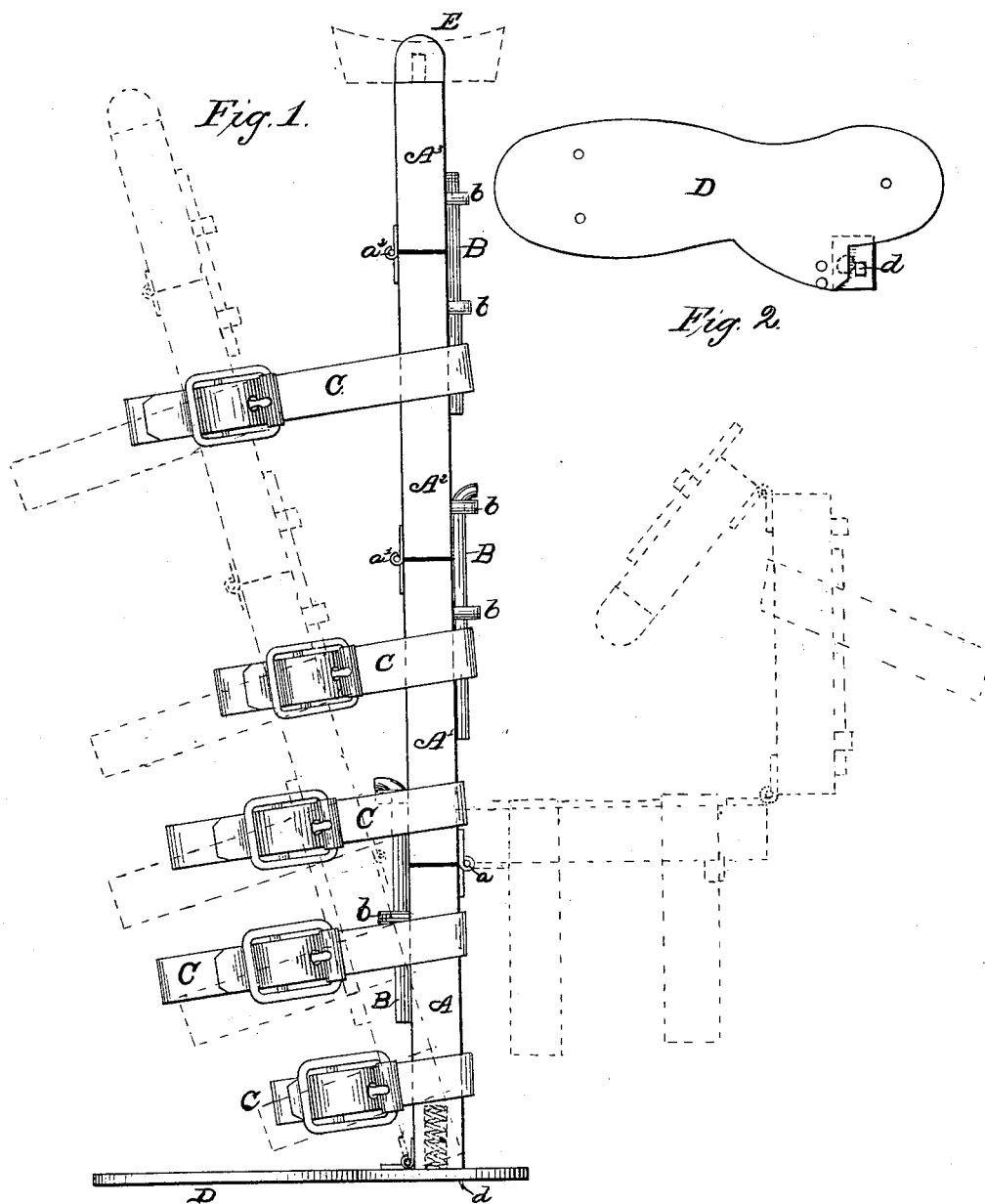
(No Model.)

C. COPELAND.

CRUTCH.

No. 348,267.

Patented Aug. 31, 1886.



Witnesses

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# UNITED STATES PATENT OFFICE.

CHARLES COPELAND, OF BARKER CREEK, MICHIGAN.

## CRUTCH.

SPECIFICATION forming part of Letters Patent No. 348,267, dated August 31, 1886.

Application filed April 13, 1886. Serial No. 198,724. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES COPELAND, a citizen of the United States, residing at Barker Creek, in the county of Kalkaska and State of Michigan, have invented certain new and useful Improvements in Crutches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to crutches, and has for its object to construct a crutch in sections hinged to correspond with the joints in the human limb, so that the crutch may be strapped to the limb and body, thereby forming a better support than the ordinary crutch made of a single length, while at the same time it permits of the patient sitting or moving any of the limbs. In actual use as a support the various sections will have their joints stiffened or rendered rigid by means substantially as hereinafter set forth.

A further object is having the foot of the crutch provided with a broad plate or base, preferably hinged, to give with the ankle-joint, said base being projected beneath the foot to form a support.

It consists in the novel features hereinafter set forth and claimed, and shown in the accompanying drawings, in which—

Figure 1 is a side view of a crutch of my construction, which is shown by full lines in a vertical position, and by dotted lines in an inclined and folded or bent positions. Fig. 2 is a bottom plan view.

The crutch is made up of a number of sections,  $A A' A^2 A^3$ , hinged together at points corresponding to the knee, hip, and waist by hinges  $a a' a^2$ , respectively. The ends of the sections abut when in alignment, and prevent the further unfolding. Each hinge-joint is supplied with suitable provisions to make a stiff joint. For instance, a staple,  $b$ , is fastened to each section at a short distance from its meeting end, and preferably on a side opposite the hinge. A keeper,  $B$ , passing across the joint formed between two of the hinged

sections and through the staples on each side of said joint, stiffens the same and renders it rigid. The joints being thus braced, the crutch may be raised in the ordinary way. In practice I provide the various sections with straps  $C$ , to buckle about the limb and body and secure the crutch to the person, thus leaving the hands free and unencumbered. A broad plate or base,  $D$ , secured to the lower end of the crutch, is to give sufficient area to prevent the end getting in small openings in paved sidewalks, and from sinking in soft ground, as is usual with the ordinary crutch. The base is preferably shaped to conform with the usual outline of a shoe-sole, and is adapted to be projected beneath the limb and secured to the sole of the shoe to form a support for the limb. Said plate is preferably hinged to the crutch, so as to move in unison with the foot and ankle-joint. A point,  $d$ , projecting from the end of the crutch and passing through the base, is adapted to enter the ground and steady the patient at and before each step. The forward movement of the body preparatory to taking the step turns the crutch about its hinge-connection with the base, and withdraws the point beyond the plane of the base, as shown by dotted lines on the left in Fig. 1. This movement releases the point from the ground, and readily permits the forward movement of the limb, as will be readily comprehended. The upper end of the crutch is provided with an arm-rest,  $E$ , swiveled thereto, to permit the partial turning of the upper part of the body, when desired, without subjecting the armpit to any unnecessary pressure.

In practice the crutch is secured to the patient by means of the straps  $C$ , and the hinge-joints made rigid, so that the crutch may perform its work in an efficient manner. In case the patient desires to be seated, the joints are relaxed, when the crutch may be folded or bent, as shown by dotted lines to the left in Fig. 1.

The advantages of this crutch are manifest. It forms a support for the limb, permits free use of the hands, strengthens the limb by being strapped thereto, and at the same time allows the free use of the joints, when so desired, without unstrapping or removing the crutch.

In constructing my device a small plate of

elastic material can be inserted in the joints between the sections, as indicated by the heavy dark lines. Again, in cases of weak ankles I insert in the lower end of the section A a coil-spring. (Shown in dotted lines.) This spring bears on the plate D and lightens the weight or pressure to be sustained by the foot.

While I prefer to make the straps C of leather, yet it will be understood that they can be made of any other suitable material.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a crutch, of a base-plate hinged to its lower end and a pin secured to the crutch and projecting beyond the under side of the plate, substantially as described, and for the purposes specified.

2. The combination of a crutch comprising a number of sections hinged together, staples or clips fastened to the sections at a distance from the joints, and keepers projected across said joints and held by the clips, substantially as and for the purposes set forth.

3. As a new article of manufacture, the herein shown and described crutch, comprising the following elements: a number of hinged sections, straps or bands connected therewith, an arm-rest secured to the top of the uppermost section, a base-plate hinged to the lowermost section, a spring inserted between the base-plate and the latter section, staples fastened to the meeting ends, and keepers projected across the joints between the sections and held in place by the staples.

4. The combination, with a crutch having a hinged base or foot plate, of a spring inserted in the lower end of the crutch and bearing against the said hinged plate, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES COPELAND.

Witnesses:

WILLIAM COLE,  
R. L. THOMPSON.