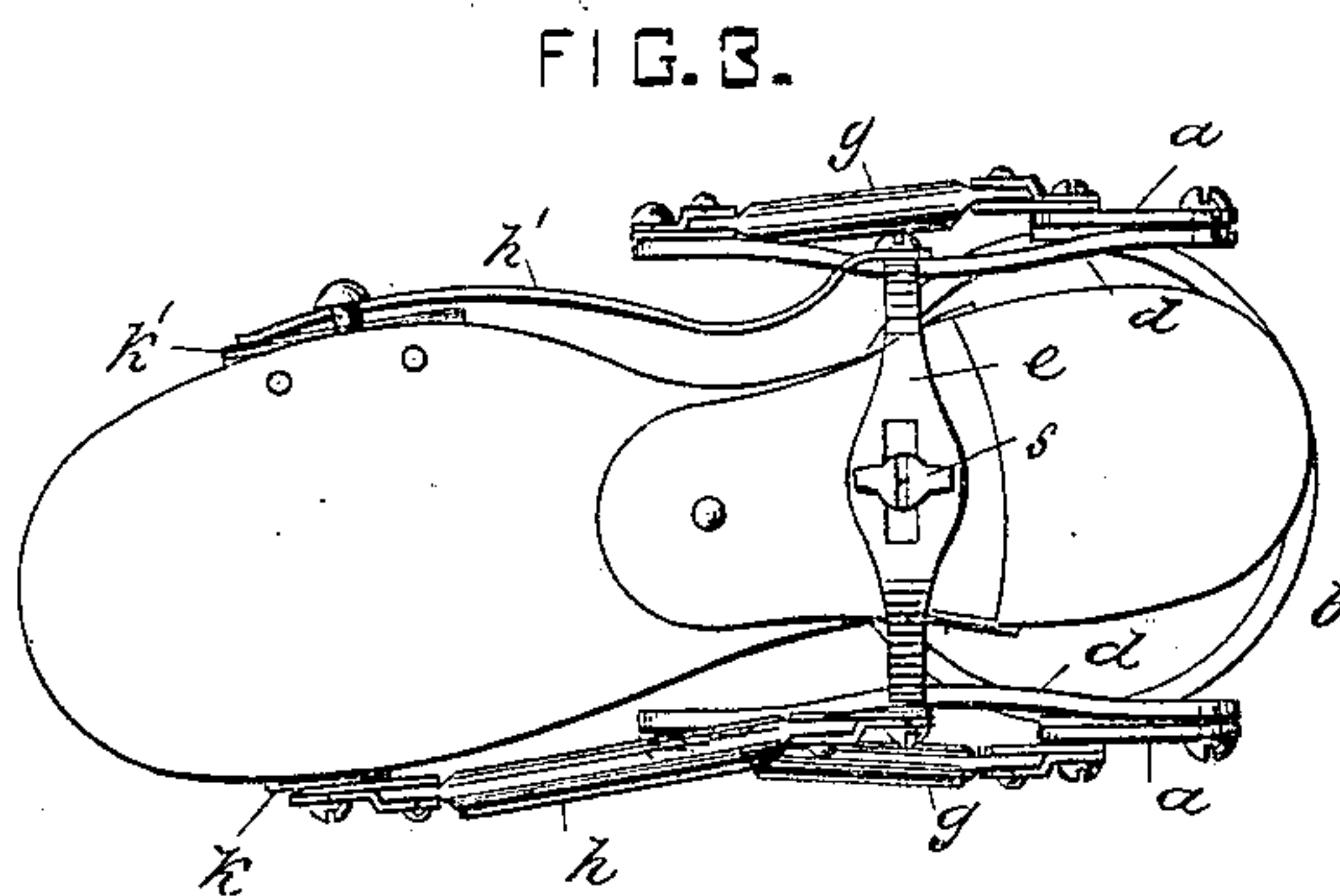
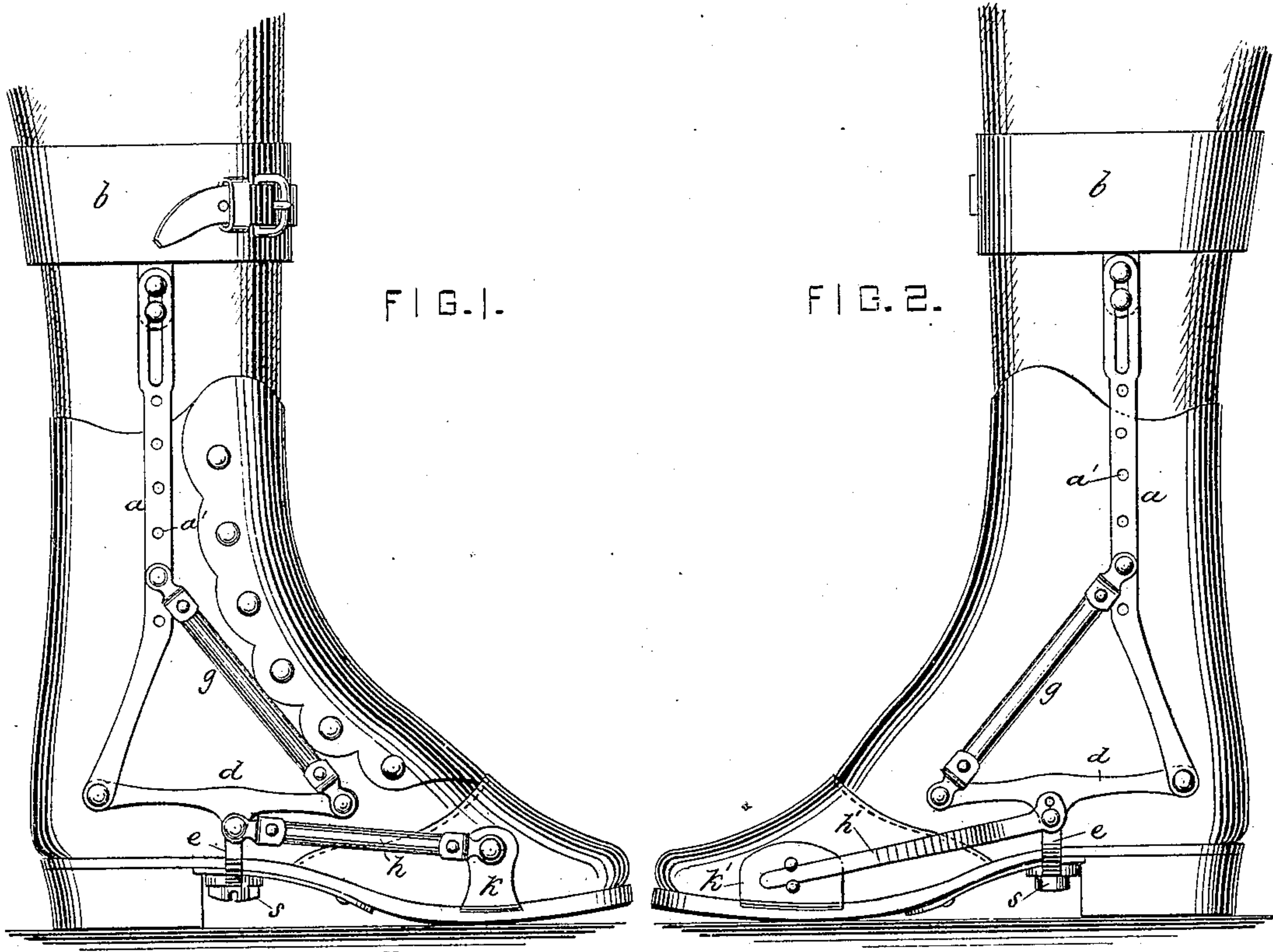


(No Model.)

C. F. STILLMAN.
SURGICAL BRACE.

No. 246,984.

Patented Sept. 13, 1881.



ATTEST =
Chas. M. Higgins
Geo. E. Gawn

INVENTOR =
Charles F. Stillman
by S. H. Wales for
attys.

UNITED STATES PATENT OFFICE.

CHARLES F. STILLMAN, OF PLAINFIELD, NEW JERSEY.

SURGICAL BRACE.

SPECIFICATION forming part of Letters Patent No. 246,984, dated September 13, 1881.

Application filed April 16, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. STILLMAN, of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Surgical Braces, of which the following is a specification.

This invention applies to braces for treating deformities or abnormal conditions of the foot and leg, whether occurring in children from their birth or in adults or children by subsequent injuries to the joints or muscles.

My invention aims to provide a brace of this kind which will act upon the foot in a more physiological manner than those heretofore produced and permit a more natural and easy movement of the foot, while supporting and directing it in the required directions, such, also, as will enable the patient to wear his own shoe, and which may be applied to or detached from the shoe in a simple manner, as may be required.

My improved brace is represented in elevation in Figures 1 and 2 applied to the foot and leg, which figures present respectively an inside and outside view thereof. Fig. 3 is an inverted plan of the same.

In these figures the brace is represented as double—that is, as applied to and bracing each side of the leg; but it may be either single or double, or applied to but one or both sides of the leg.

In difficult cases the double brace may be used, but ordinarily the single brace is sufficient. I have, however, shown the brace in the drawings as double, as this gives an opportunity to illustrate two slightly different but equivalent constructions, as hereinafter explained.

This brace is designed more especially for treating those affections of the foot and leg where there is a weakness in the ankle and in the muscles of the leg, in which the foot tends to fall and to turn inward, being thus designed for treatment of the club deformity, as well as for those cases of weakness and maltendency where no positive deformity exists.

The main portion of the brace consists of the vertical rod *a*, usually of steel, placed parallel with the leg and extending down along the side of the leg, below the ankle. The upper

end of the rod is fixed to a girth, *b*, which is strapped around the leg at the base of the calf, and is adjusted on the rod by a screw-and-slot connection, as shown, by which it may be adapted to the size of the limb. The lower end of this rod diverges in an oblique direction backward from a point above the ankle, and terminates at the back of the foot, at about the middle of the heel, and at a good distance behind the ankle, where it is jointed to a horizontal bar, *d*, disposed about parallel with the sole and terminating about the middle of the instep, well in advance of the ankle, as illustrated. A lateral branch, *e*, extends from about the center of the horizontal bar *d*, and is curved under the arch of the foot, where it is pivoted centrally in front of a vertical line from the ankle, at or about the center of motion of the foot in its horizontal plane, by the screw or pivot *s* on a pivot-plate, *f*, riveted to the sole of the shoe, as seen best in Fig. 3.

In case of a double brace the two horizontal bars on each side of the foot are, of course, connected together by this lateral branch *e*, which in this case will be pivoted at its middle and connected at the opposite ends to the bars *d d*, as illustrated in Fig. 3. A spring, *g*, of rubber or other suitable material, extends in an oblique position from the vertical brace-rod *a* and connects to the front end of the horizontal bar *d*, the spring being connectable at various points *a'* on the rod *a*, to obtain any desired tension thereof. This spring, constantly tending to contract, thus tends to raise the pivoted bar *d*, and with it the patient's foot, it being attached to the shoe under the arch of the sole, as already described, and hence overcomes the tendency of the foot to fall and enables the vertical ankle movement of the foot to be performed in an easy and natural manner.

In Fig. 1 the spring *h* is shown arranged on the outside of the foot, and this spring is hence a contracting rubber or spiral spring, which is attached at one end to the bar *d* or its lateral branch *e*, and at its opposite end to a plate, *k*, secured to the sole of the shoe near the toe, and accordingly tends to pull the toe outward, and thus cause the foot to assume its proper position.

In Fig. 2 the spring h' is shown applied on the inside of the foot, and in this case the spring is a flat metal one, whose front end presses laterally on the plate k' , and thus tends to press the toe outward, with the same effect as in the other case. The back end of the spring h' is attached to the bar d by a screw, l , and pin m , or by two screws, so that it may be readily attached or removed to substitute stronger or weaker springs, as may be required, and the front end of the spring is guided by two pins on the plate k' , or by a slot or equivalent device.

I prefer to make the pivot screw or pin s of the brace on the sole, as seen in Fig. 3, with a round center and a T-shaped head, and the pivoting-bar e with a slot of similar shape, so that when the pivot-screw is turned parallel with the slot the brace may be readily affixed to or detached from the patient's shoe, and when the pivot-screw is turned at right angles thereto the brace will be securely retained upon the shoe.

What I claim as my invention is—

1. A surgical brace for the leg and foot, constructed with a vertical bar attached to the leg and extending toward the heel, in combination with a horizontal bar pivoted at the back end to the lower end of the aforesaid bar, and having a branch pivoted on the arch of the shoe-sole, and a spring tending to raise said doubly-pivoted bar, and with it the foot, whereby the vertical ankle movement of the foot is assisted and its horizontal movement allowed, substantially as herein shown and described.

2. A surgical brace of substantially the kind shown, having a branch passing under and removably adjusted to the arch of the sole of the patient's shoe, substantially as and for the purpose set forth.

CHAS. F. STILLMAN.

Witnesses:

J. B. COWARD,
GEO. A. MARSH.