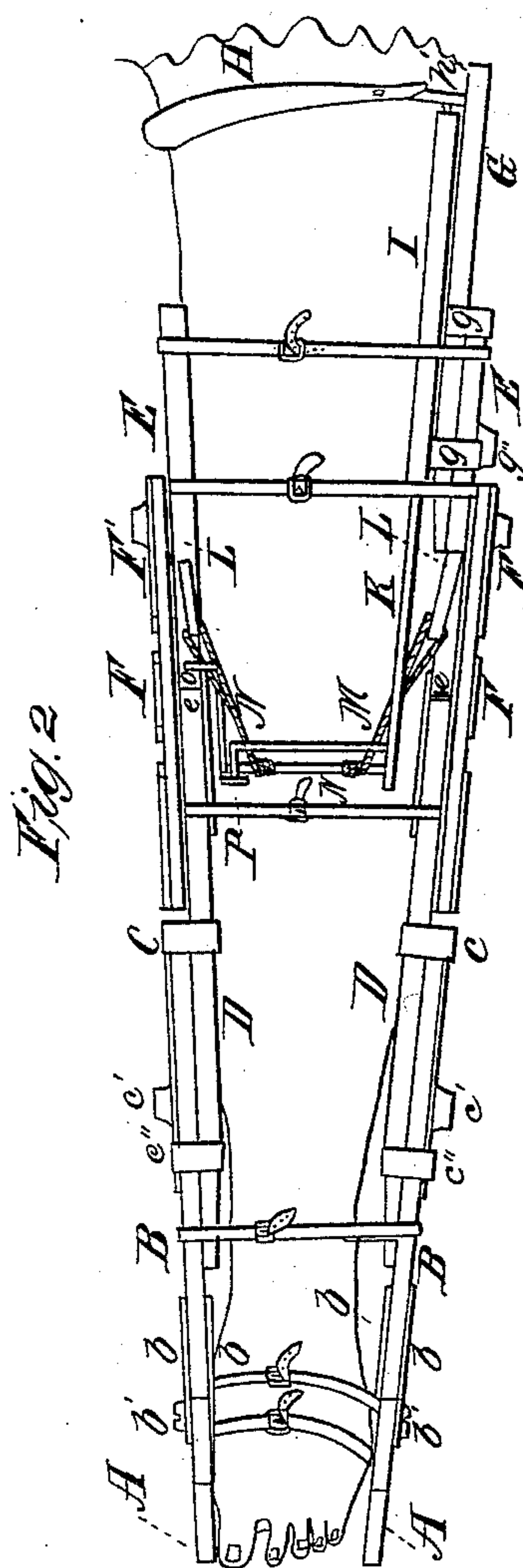
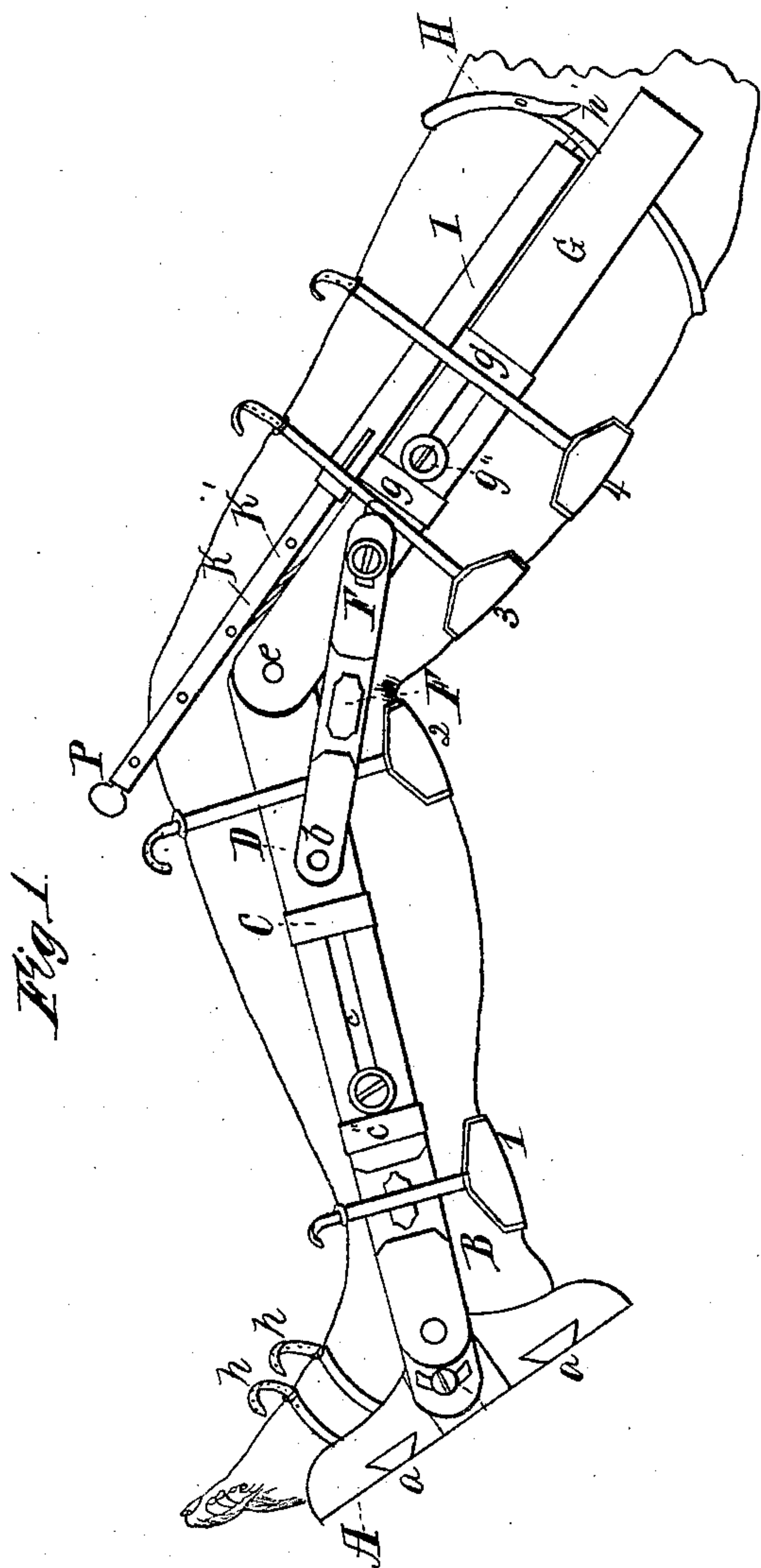


W. Bunde,

Fracture Apparatus.

N^o 21,872.

Patented Oct. 26, 1858.



Witnesses

G. W. Jason

J. C. Porter

Inventor.

Wm Brice

UNITED STATES PATENT OFFICE.

WILLIAM BUNCE, OF SULLIVAN, OHIO.

EXTENSION-SPLINT.

Specification of Letters Patent No. 21,872, dated October 26, 1858.

To all whom it may concern:

Be it known that I, W. BUNCE, of Sullivan, in the county of Ashland and State of Ohio, have invented new and useful Improvements in the Construction of Surgeons' Splints for the Reduction of Fractures and Dislocations; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of the apparatus, as it appears upon the leg of the patient, and Fig. 2 a top view, showing the extension rod and other parts not seen in Fig. 1.

The nature of my invention consists in the construction of an adjustable extension splint and pads for the reduction of fractures and dislocations, being so constructed and arranged that extension to any desired extent, can be made without removing the splint from the limb of the patient; in the adjustment of the pads, in such a manner that pressure is not produced upon the arteries, and also in such an arrangement that the free use of the knee joint is allowed without disturbance to the fractured bone, either above or below the knee joint.

Like letters refer to like parts in the several views.

The splint is made in part of wood and in part of metal, and is composed of several parts as follows; the two sides (one of which is seen in Fig. 1) being duplicates of each other, except as hereinafter specified.

A A represents the foot piece; the pieces composing this are kept in their places by crossbars *a, a*, dovetailed into their under edges, which bars support the bottom of the foot. At one end the bars are fastened to the side piece A; upon the other side they are free, thus allowing a greater or less amount of space between the two foot pieces A, A; these pieces extend backward for the purpose of supporting the leg without bringing the heel into contact with the couch or other object upon which the patient reclines.

The two side pieces B, B, are attached to the foot pieces A, A, at the middle, by an articulating or rule joint. Metallic strips *b b*, are fastened to both sides of the side pieces B, B. These extend below the articulation and are provided with a slot running concentric with the center of motion, as seen at *b'*. This slot is furnished with a set screw, by means of which the side pieces B, B, can be set at any desired angle with

the foot pieces A A. These side pieces B, B, extend upward along the tibia and fibula, about half way to the knee joint, the upper end passing under or through a metallic band C, C, which also encircles another piece D, shortly to be described. The side pieces B, B, are each provided with a slot *c*, and a thumb screw *c'*, the thumb screw passing through the slot and into the piece D. A band *c''* also encircles both the pieces D and B, just below the thumb screw *c'*. The piece D extends from a point just below the band *c''* inside of the piece B, through the bands *c''* and C, to the knee joint, where it articulates with the piece E, by a rule joint, as seen at *e*.

The two sides being duplicates of each other, and placed on both sides of the limb, and exactly opposite the knee, the limb can be flexed when the splint is upon it, without relaxing the extension.

From the upper end of the piece D, at the point *e*, the pieces E extend upon each side of the thigh, to about the middle of the femur, or higher, if needed.

The two pieces D, and E, are kept at any desired angle, by means of the brace F, seen most plainly in Fig. 1, but represented in Fig. 2. The lower end of this brace is attached to the piece D, by a screw seen at *f* Fig. 1. The upper end of this brace is secured to the piece E, by a thumb screw that passes through a slot seen at *F'*. The piece G is secured to the inside of the piece E, by the bands *g, g'*, and the thumb screw *g''*, which passes through a slot in the piece E into the piece G, and is held in place inside of the piece E, by the bands *g, g'*. The piece G is not duplicate, and is on the outside of the limb, and may be changed to either side of the splint, to suit the right or left limb. The lower ends of both the pieces G and D, are chamfered off upon the inside so as not to present an abrupt termination.

I will now proceed to explain the method of applying this splint to a fracture or dislocated leg, (it can be applied to the arm in the same manner) and then explain that part of the apparatus adapted to, and the manner of obtaining the extension. In Fig. 1, there are shown several pads, which I number 1, 2, 3, and 4, beginning at the one near the heel. It will be observed that this splint is so constructed, that it can be adjusted to any desired length by means of the thumb screws *c'*, and *g''* and the slots in the

pieces B and C. To apply it properly, it should first be adjusted so as to suit the limb of the patient in regard to length. The pads 1, 2, 3, and 4, are placed in the positions represented in Fig. 1, and the straps buckled around the limb, sufficiently firm to secure it properly. The foot piece is also secured to the foot by the straps *h*; all these parts being thus adjusted. A perineal pad H, is placed in the groin; the straps of this pad are hooked upon a curved bar *h'*, which receives the sheath of the extension bar I. The extension bar K, is inclosed in the sheath I, and can be drawn out and secured at any point by a screw in the holes K'.

Extension is made upon the limb by means of a cord M attached to the splint at L, the cord being brought to a state of torsion by means of the windlass N, and the crank O. The upper end of the sheath I resting in the curved bar *h'* the splint being at the same time firmly bound to the legs by turning the crank, the cord M is wound around the roller N, and the desired amount of tension thereby produced. The sheath I

around the extension bar K, may be dispensed with, if preferred, and the bar kept in place by thumb screws.

P, is a thumb screw which holds the roller N, in place. 30

I do not claim any of the herein described devices, separately considered, but

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

The combination and arrangement of the side pieces B, D, E, forming with the band *c*, *c'*, *g*, *g'*, and set screws, an adjustable splint; the foot piece A, with its joint *b*, and set screw, the flexing braces F, the extension bar K, the windlass N, and cord M, the perineal pad H, and pads 1, 2, 3, 4, all combined and arranged as herein described, so as to form an extension splint, operating in the manner substantially as set forth, for the purpose specified. 35 40

WM. BUNCE.

Witnesses:

G. W. JASON,
H. PORTER.