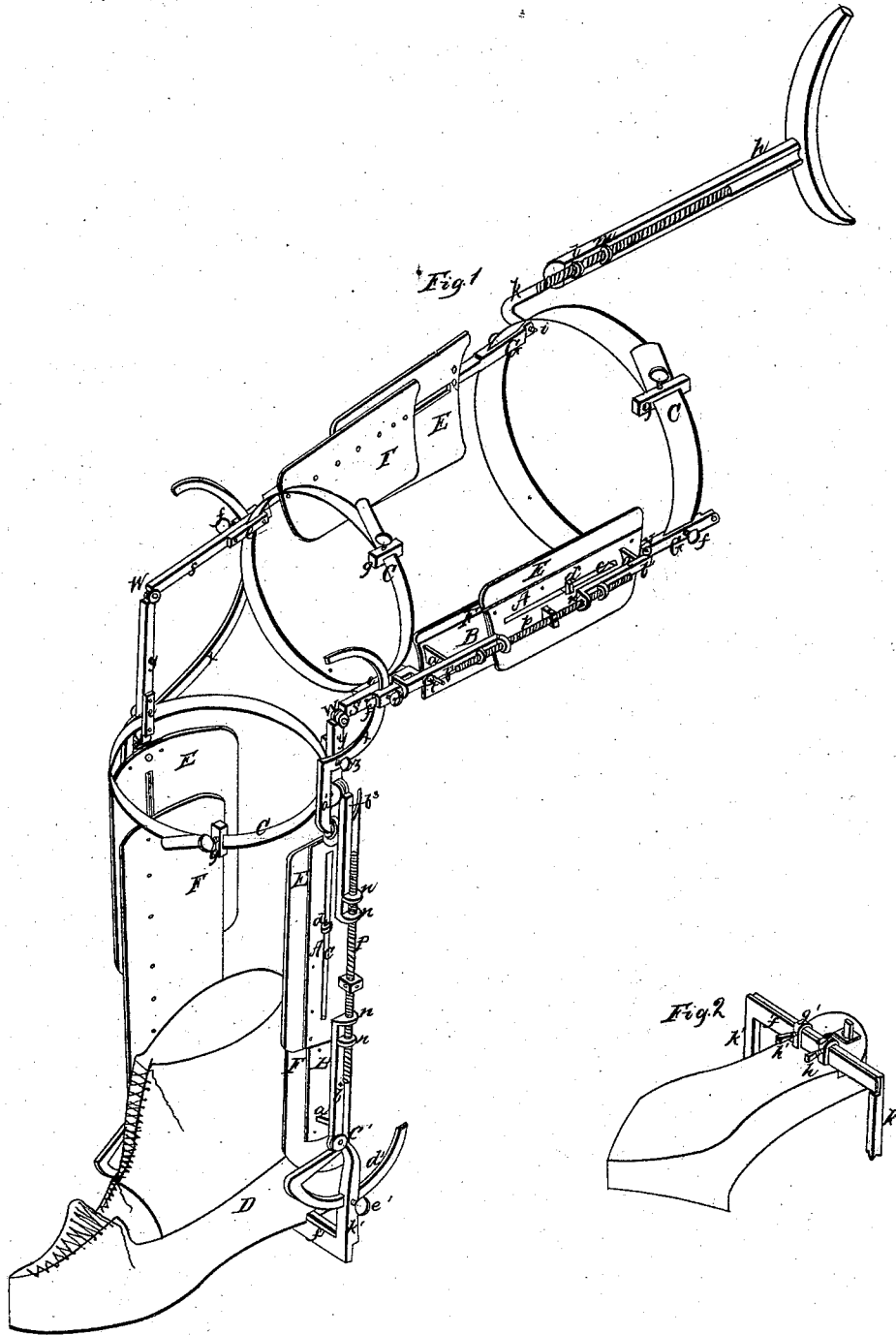


*Mills & Hoar,
Fracture Apparatus.*

No 4,255.

Patented Nov. 8, 1845.



UNITED STATES PATENT OFFICE.

WM. MILLS AND MAHLON HOAR, OF NEW ATHENS, OHIO.

FRACTURE APPARATUS.

Specification of Letters Patent No. 4,255, dated November 8, 1845.

To all whom it may concern:

Be it known that we, WILLIAM MILLS and MAHLON HOAR, of New Athens, in the county of Harrison and State of Ohio, have invented certain new and useful improvements in fracture apparatus for adjusting fractures and dislocations of the lower extremities and in case of the former injury to secure the parts in coaptation by making and continuing any desirable degree of extension and counter-extensions; and we do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1, is a perspective view of our entire apparatus, and Fig. 2, is a perspective view of the bottom of the over shoe attached to the same.

A, A, and B, B, are brass slides riveted to the leather side pieces E, E, and F, F. The leather side pieces F, F, and slides B, B, are fixed in their places on the under side of the leather side piece E, by connecting pieces *a, a*, securing their lower ends to the side rods *b', b², b³, b⁴* and by sliding rivets *d, d*, made fast to their upper ends; the sliding rivet *d*, passes through the slot *c*, in the leather side piece E, and brass plate A, and is secured by a head so as to slide freely in the slot *c*.

C, C, C, are steel bands, one passing around the thigh, another above the knee and the third just below the knee; the thigh band passes through apertures in the upper joint pieces G, G, hinged to the side rods *b', b'*; the band that passes around the leg just above the knee, is secured to the knee hinge pieces *s, s*, by the thin cap pieces *e, e*, one end of which is secured by the thumb screws *f, f*, the steel band C, just below the knee, is secured to the inner sides of the knee joint pieces *y, y*, by the caps *e, e*. On these bands the side pieces can be elevated or depressed and secured by the thumb screws *f, f*, in any desired position; the bands can also be expanded or contracted around the thigh or leg and secured by thumb screws where they pass through the heads *g, g, g*. One end of each band is made fast in each of the heads *g, g, g*, and the other end slides over it and is secured by the thumb screws.

D, is the shoe attached to the fracture apparatus.

h, is an arm piece extending from the

axilla to the head of the os femoris, and forms a joint at *i*, corresponding to joint at the head of that bone, and will permit flexions of the body on the thigh as in sitting, &c. The piece *h*, is made of wood with a groove cut in one side; *k*, is an iron screw secured in the groove of the arm piece by the rests *l*, and *m*, by which it is made longer or shorter; it can also be taken off and screwed on the opposite side if required.

b', b², b³, b⁴, are four flat iron rods fastened to the brass pieces A, A, and B, B, by the rests *a, a*; the upper end of *b'*, is jointed to the upper joint piece G, the lower end of the same as also the upper end of *b²*, is turned up at right angles forming the nuts or rests *n n* for the right and left hand screw P, to work in; at a short distance from each end of these rods are additional nuts or rests secured to the same to give additional support to the screw P. The lower end of the rod *b²* is forked, the prongs being turned in at right angles and embraces the knee hinge piece *s*; the upper end of knee hinge piece *s*, is turned out at right angles, having a screw upon the end of the same, which passes through an aperture in the rod *b²*, and is secured by the nut *t*. When the nut *t*, is unscrewed the whole side A, B, E, F, can be turned back at right angles on the hinge V, thus exposing one side of the thigh and affording an opportunity of dressing in case of compound fracture. When both sides are thus detached and the thigh band opened the upper splint can be removed.

The side rod *b³*, is connected by a hinge at its upper end to the knee joint piece *y*, the lower end of it is of the same shape and form, and connected to the lower screw P, in the same manner that rod *b'*, is connected to the upper screw P. The lower end of rod *b⁴*, is connected by the ankle hinge *c'*, to the ankle piece *k'*, its upper end is of the same shape of rod *b²* and connected in the same manner with the lower screw P, that that is with the upper screw P. The knee joint at *w*, connecting side pieces *s*, and *y*, must be made to correspond to the center of motion in flexions of the knee by elevating or depressing the sides on the quadrants *x, x*, and securing them by thumb screws *r, r*. The length of the side leather slides is regulated by turning the regulating screws *p, p*; thus running the slides in or out on the thigh or leg. When thus regulated the leg can be flexed without pain

or difficulty, and secured at any degree of flexion in the form of a double inclined plane by the quadrants w, w , which slide through apertures between the joint pieces s, s , and the caps that secures them to the outer sides of the same, and may be secured at any point by the thumb screws r, r . The lower part of the quadrant w , is fixed to the hinge piece y , by a screw z , passed through the same—the lower extremity a' , descends parallel with hinge piece y , till it passes the lower band C, and is secured by passing through the projecting nut b'' , on the upper end of side rod b^3 . At c' , is the ankle joint by which the shoe D, is secured to the rod b^4 , in such a manner as to permit of flexion and extension of the foot, and can be fixed at any point on the quadrant d' , by a thumb screw e' . The ankle joint extension pieces k', k' , turn at right angles and pass side by side under the bottom of the shoe; the pieces f', f' , which pass under the bottom of the shoe are flattened down to one half

the thickness of the joint pieces k, k , to which they are connected. In Fig. 2, the manner of securing the pieces f', f' , to the bottom of the shoe is shown, viz. they pass through the two staples g', g' , projecting from the bottom of the shoe, and are firmly secured by the set screws h', h' .

What we claim as our invention and desire to secure by Letters Patent, is—

The construction of a fracture apparatus with four adjustable side splints connected with each other by means of circular metallic hoops or bands, the upper and lower sets of splints being connected by means of the quadrant hinge joint, and the ankle joint similarly constructed. We do not claim these parts separately but in combination as above described.

WM. MILLS.

MAHLON HOAR.

Witnesses:

GEORGE COOKE,
GEORGE LOREE.