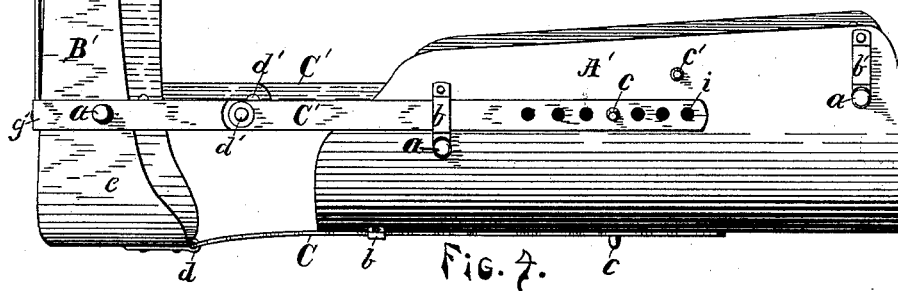
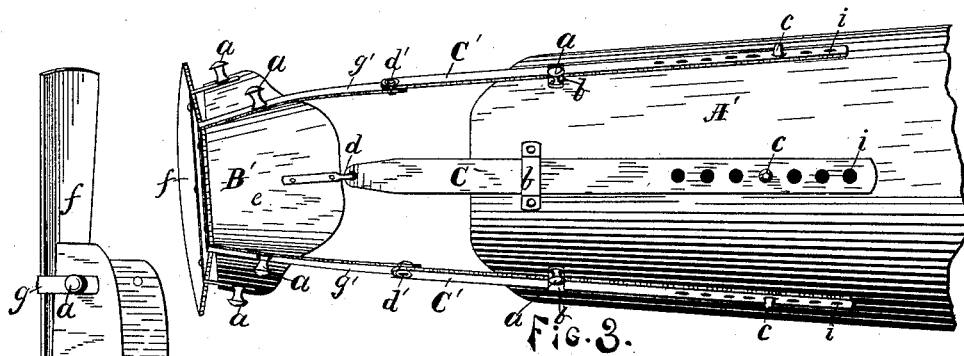
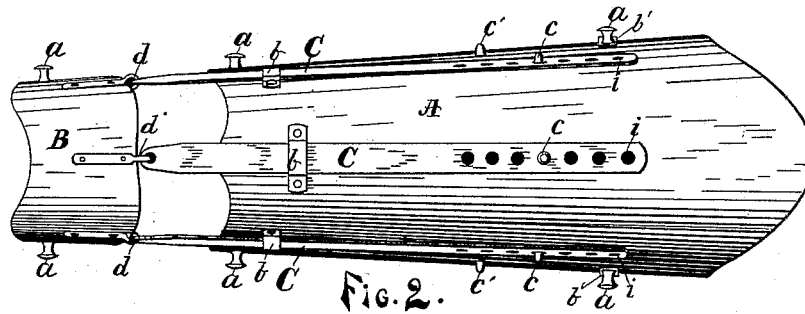
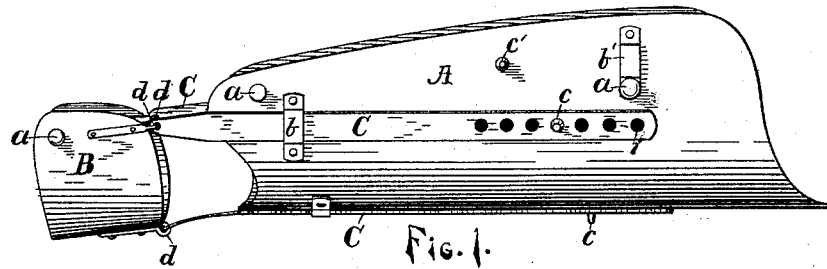


(No Model.)

W. H. DE CAMP.
SURGEON'S SPLINT.

No. 385,507.

Patented July 3, 1888.



Witnesses

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WILLIAM H. DE CAMP, OF GRAND RAPIDS, MICHIGAN.

SURGEON'S SPLINT.

SPECIFICATION forming part of Letters Patent No. 385,507, dated July 3, 1888.

Application filed January 24, 1887. Serial No. 225,339. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DE CAMP, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented a new and useful Surgeon's Splint, of which the following is a specification.

My invention relates to improvements in surgeons' splints designed to treat fractures, sprains, and deformities at or near the wrist or ankle joint; and it consists in combining with separate splints adapted to partially inclose and be firmly secured to the arm and hand (or leg and foot, as the case may be) certain means of adjustably connecting said splints to each other, as will more fully appear in what follows.

Heretofore splints have been connected by rigid rods having hinge-joints and secured by means of set-screws. These are objectionable, because such rods and joints have no lateral movement, and would not in this respect conform to the movement of the wrist and ankle joints, and are only adapted to the knee or elbow joints; also, that set-screws are liable to become loosened and are cumbersome.

The objects of my invention are, first, to so connect said splints that the distance between them may be adjustable at pleasure, while firmly attached to the limb; second, to provide said connecting device with a joint movement conforming to that of the wrist or ankle to which it may be applied; third, to provide means for rigidly fixing said device in any desired position. I accomplish these results by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my device adapted to the wrist; Fig. 2, a plan of the same; Fig. 3, a plan of my device adapted to the ankle, and Fig. 4 a side view of the same.

Like letters refer to like parts in all the figures.

A is a splint, made of any flexible material, (preferably of vulcanite,) and of any convenient form to partially inclose the arm, (preferably of the form shown.)

B is a similar splint for the hand.

C C C are strips of flexible metal, preferably of spring-steel, which are attached to the edge of the splint B by loop-hinges *d d d*, one

at the bottom or center and one at either side. These strips C C C are arranged nearly parallel to each other, extending along the outer surface of the splint A, and passing under loops *b b b*, attached to said splint near the end adjacent to B. Rigidly secured to the splint A are pins *c c c*, which engage with series of holes *i* in the strips C C C.

The studs marked *a* are for the purpose of attaching straps to secure the parts within the splints. *b'* and *c'* are loops and pins for attaching the splint A to other splints (not shown) by means of strips similar to C, as occasion may require.

In the adaptation of my device shown in Figs. 3 and 4, A' and B' are splints adapted to the leg and foot and connected by my device. In this case I prefer to use a hinge-joint, *d'*, in the side strips, C C, attaching them to a continuous flexible strip, *g'*, which passes under the heel, inclosing the parts *e* and *f*, to which they are secured.

The operation of my device is as follows: The splints are first secured to the limb, with the wrist or ankle joint between the parts A and B. By springing the strips C away from the splint A, I can disengage the pins *c*, and can then by sliding said strips in the loops *b* either elongate or contract the parts, or turn the wrist or ankle joint naturally in any direction, the center of movement, due to the position of the joints *d* and the flexibility of the strips C, being the same as that of the inclosed ankle or wrist joint. I can then secure the parts in the new position by re-engaging the pins *c* with the holes *i*. The spring of the strip C will have a constant tendency to maintain this engagement, and all danger of displacement is thus avoided. It will also be observed that said strips C are flexible only in the direction of their sides, and are rigid laterally, or in the direction of their edges, the result being that the foot or hand is kept in line with the leg or arm at all times, while permitting a free movement of the ankle or wrist joint in all directions. By respectively extending or retracting the side strips C' C', Figs. 3 and 4, I secure a lateral movement of the ankle-joint upon a pivot directly above the joint *d*. The lateral rigidity of the strip C prevents any lateral displacement of the said

joint. So, also, when the strip C is extended or retracted, a vertical or hinge movement of the ankle-joint is had, the lateral rigidity of the strips C' C' preventing like vertical displacement of the parts, said hinge movement being in a line between the loop-hinges *d d*. In like manner the wrist is free to turn in all directions about a point equidistant from the loop-hinges *d d d*. If, however, the loop-hinges *d* are used at the sides, these strips need not be flexible to accomplish the lateral movement described. I am also by this device enabled to readily change the position of the joint, elongate or compress the same, all of which is of great utility in the treatment of sprains and deformities of these parts, as well as fractures.

What I claim and wish to secure is as follows:

- 20 1. In combination with surgeons' splints, and forming the sole connection between the same, a series of strips attached to one of said splints by loop-hinges and adjustably attached

to the other of said splints, substantially as described.

2. In combination with surgeons' splints, flexible strips connecting said splints having hinge-joints and having separate longitudinal adjustment, substantially as described.

3. In combination with surgeons' splints having flexible strips connecting the same, loops through which said strips pass, and fixed pins engaging with holes in said strips, substantially as described.

4. In combination with surgeons' splints, and forming the sole connection between the same, a series of strips attached to one of said splints by loop-hinges, and to the other of said splints by loops encircling said strips, and pins engaging with holes in the same, substantially as described.

WM. H. DE CAMP.

Witnesses:

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