C. F. STILLMAN.
Surgical-Splint.

No. 222,609. Patented Dec. 16, 1879.

Fig. 1.

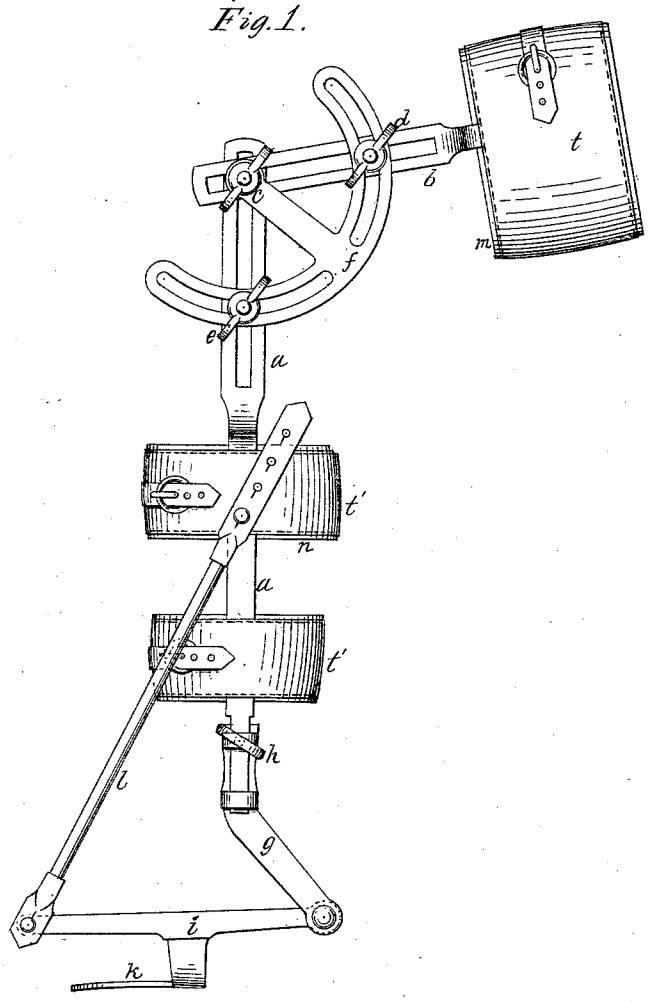
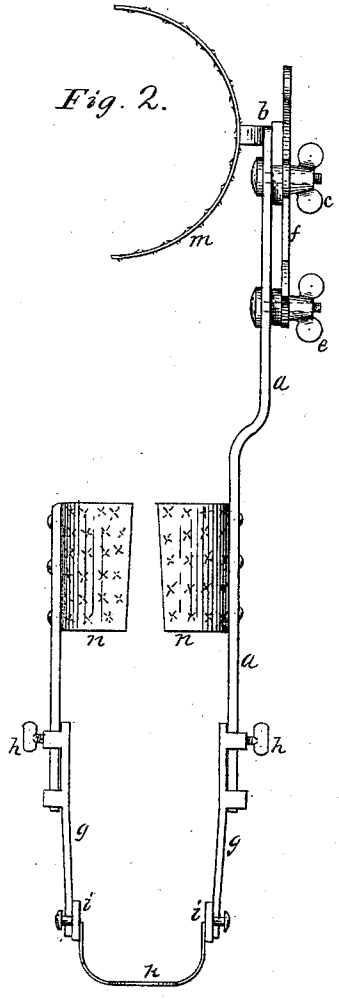


Fig. 2.



Attest.

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UNITED STATES PATENT OFFICE.

CHARLES F. STILLMAN, OF PLAINFIELD, NEW JERSEY.

IMPROVEMENT IN SURGICAL SPLINTS.

Specification forming part of Letters Patent No. **222,609**, dated December 16, 1879; application filed April 25, 1879.

To all whom it may concern:

Be it known that I, CHARLES F. STILLMAN, of Plainfield, Union county, State of New Jersey, have invented an Improved Surgical Splint, of which the following is a specification.

The object of my invention is to provide an improved splint for treatment of affections of the knee, hip, elbow, or other joints, whether arising from disease, injury, or operation, which will enable the joint to be fixed in any position, and yet allow exposure thereof and permit of a regulated extension or retraction or other movement of the limb or joint, as required.

Figure 1 of the annexed drawings presents a side view of one form of my improved splint as applicable to a leg for treatment of the knee-joint. Fig. 2 is a front elevation of the apparatus removed and modified in some respects.

The splint, as illustrated, is formed of two flat rigid bars, *a b*, of steel or other suitable metal, the outer ends of which are bent inwardly toward the limb, and are rigidly secured to curved plates *m n*, of sheet-zinc or other suitable metal, adapted to embrace the leg above and below the joint, these plates, as shown in Fig. 1, being embedded in a strong leather band or casing, *t t'*, encircling, respectively, the leg and thigh, and firmly bound thereon by elastic straps, the band or bands on the leg being arranged above and below the calf, as shown. The meeting ends of the bars *a b* overlie one another, and are formed with central slots extending lengthwise for several inches, as shown, in which the thumb-screws *c d e* are arranged, and by which the two bars may be relatively adjusted and clamped in required positions. A slotted arc, *f*, is also preferably attached to the bars at their meeting ends, as shown, its center being secured by the central thumb-screw *c*, which clamps both bars together, while its curved slotted ends are attached to the respective bars by the outer screws, *d e*, and by means of this arc and screws the bars may be firmly held at various angles, or may be extended or contracted to support the limb in any position of extension or retraction, as will be understood.

To alter the position of the limb, or to effect a regulated extension or contraction of the joint during the course of the treatment, it is only necessary to loosen two of the thumb-screws, make the desired adjustment, and again tighten the screws, thus obtaining a fixation of the limb as long as may be desired in the required position and under the desired tension.

The slotted ends of the bars *a b* may be graduated to enable the amount of extension or retraction of the joint to be indicated; and in cases where it is desired to maintain the limb in an extended or straight position only the slotted arc may be dispensed with, the bars being then held in line with each other by means of two or more of the thumb-screws extending through the slots and clamping the bars rigidly in line.

It will now be readily seen that while this splint gives a firm support to the limb in any position in which it may be set, it yet leaves the joint freely exposed for examination or treatment, permits a graduated extension or retraction of the joint in any position, and enables the same to be moved or to be altered or maintained in such position as often and as long as desired.

In some cases, where the limb requires a more firm support, the splint may be applied to the limb by means of a plaster bandage. In this case the leather casings are dispensed with, while the curved metal plates at the ends of the bars will be punched with a series of protrudent punctures to form jagged points on the surface, as shown in Fig. 2, for more firm adhesion to the bandage. One of the splints is then placed on each side of the leg, and the curved plates thereof are bent to encircle and properly conform to the limb, and are attached thereto by being embedded between two layers of the plaster bandage, wound, respectively, both under and over the plates, and which is applied in any of the usual manners well understood by surgeons.

Another feature of these splints is the mode of obtaining an elastic joint at the ankle to give elasticity to the foot and ankle.

As shown in Figs. 1 and 2, the leg-bar *a* is prolonged from below the lower girth to near the ankle, at which point a supplementary

bar, *g*, is attached, which extends at an angle to the back of the heel, where it terminates, and is held rigidly in this position by the clamp or thumb screw *h*. To the free extremity of the bar *g* is pivoted a hinged bar, *i*, extending parallel with the foot, or nearly so, and fixed to a sole-plate, *k*, which passes under the arch of the foot, and connects with a precisely similar arrangement of bars on the opposite side of the foot and leg, as seen in Fig. 2.

Strong elastic cords *l* or other suitable springs extend from the front end of the hinged bars *i* to the leg-bars at or near the clamp, as shown in Fig. 1. An elastic joint is thus effected at the ankle, which materially assists the movement of the foot, and compensates for the lack of muscular power which the bandaging causes, thus forming a great improvement over the false joint usually constructed. When the use of this ankle and foot contrivance is not needed it may be removed from the leg-bars by loosening the clamps *h*.

My improved splint being so simple and perfect in its construction, its principle may be applied to the elbow or ankle or other joints, as well as to the knee or hip. The two jointed bars or bridge may be so arranged that it may be used for any joint by providing a removable attachment to its terminal plates or girths. A set of these plates may be procured for each limb, thus requiring but one bridge for the entire series of joints, if so desired.

In treating fracture of the patella it enables the limb to be securely fixed in any position, allows extension in that position, and yet the surface of the joint remains open for the approximation of the fragments by elastic webbing, strips of adhesive plaster, or other contrivances, as the case may demand; and in many other fractures, simple and compound, it will be found of value.

I do not wish to be understood as inferring any claim of novelty in merely a splint formed of two bars with the encircling plates or girths, and jointed together at their meeting ends, so as to allow of adjustment to effect the extension or contraction of the limb, or allow its support at various angles, as I am, of course, aware that many splints of this character exist. The main novelty of my invention, however, consists in the simple connection of the meeting ends of the splint-bars, in combination with the loose slotted arc and clamp-screws arranged in the said slots, by which the adjustment of the bars is rendered much more quick and simple, and better adapted to different requirements.

What I claim as my invention is—

1. The combination, with the longitudinally-slotted overlapping bars *a b*, of the slotted overlapping or loose arc *f* and the adjustable clamp-screws *c d e*, substantially as herein shown and described.

2. A surgical splint formed of two adjustably-jointed supporting-bars with terminal plates, adapted to secure the splint to the limb, formed of sheet metal punched with protrudent punctures for better adhesion to the attaching bandages, substantially as herein set forth.

CHARLES F. STILLMAN.

Witnesses:

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R. N. BROSS.