(No Model.)

E. R. ELLIS.

SURGICAL SPLINT.

No. 458,804. Patented Sept. 1, 1891.

Fig. 4.

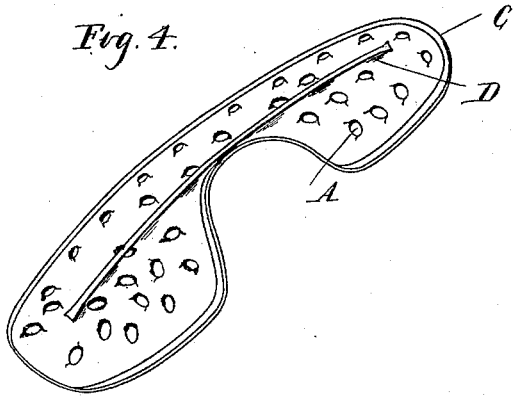


Fig. 3.

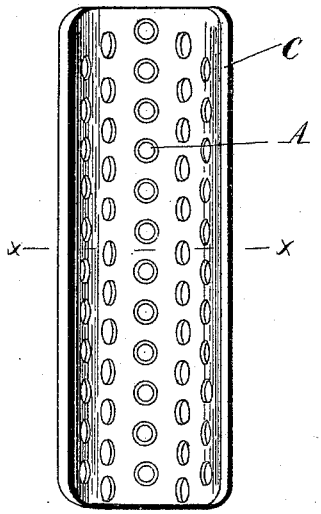


Fig. 2.

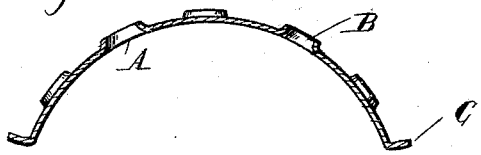
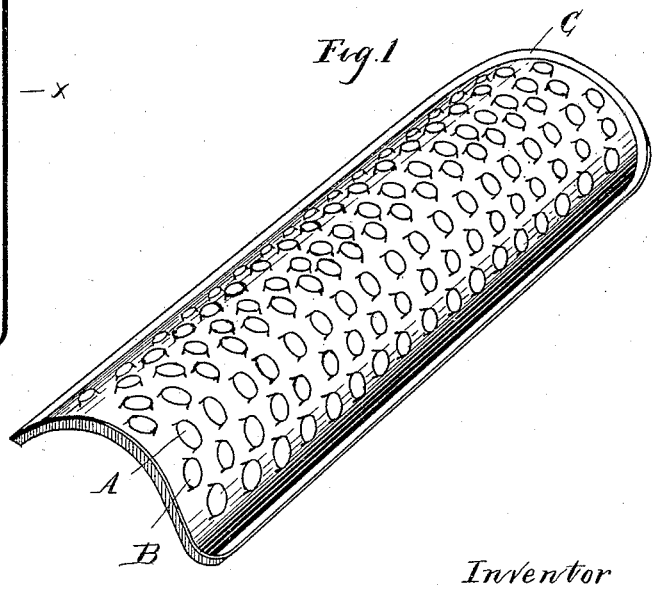


Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

ERASTUS R. ELLIS, OF DETROIT, MICHIGAN.

SURGICAL SPLINT.

SPECIFICATION forming part of Letters Patent No. 458,804, dated September 1, 1891.

Application filed May 27, 1891. Serial No. 394,317. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS R. ELLIS, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Splints, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in surgeons' metallic splints.

Figure 1 is a perspective view of the ordinary form of splint, showing the outside or convex side. Fig. 2 is a cross-section on line *x x* in Fig. 3. Fig. 3 is a plan of the splint, showing the inside or concave side. Fig. 4 is a perspective view of a yoke form of splint, showing outside thereof.

The object of surgical splints is to give support to a limb or part and keep it in proper position while under treatment in fractures, dislocations, and deformities. For this purpose that material which is the thinnest, lightest, and strongest is the best. They must be of a material which is rigid or unyielding lengthwise, but admits of some flexibility in their cross-section. Ample experience has convinced me that thin metal, like tin (that is, tinned iron plate) is the best, and I have found that with this and other metals splints can be made lighter than when constructed of any other material having sufficient strength, and also that when a large number of slots or openings are made in the splint its weight is greatly diminished without decreasing its strength. In fact, when these openings are made, as hereinafter described, the strength and rigidity of the splint is increased, thereby allowing very thin metal to be used.

My improved construction of splint is formed with openings A, which are of conical shape in cross-section and have an elevated conical ridge B around the openings of the convex or outer surface of the splint, as shown in Figs. 1 and 2, and corresponding conical depression around the openings on the inner or concave surface. (See Fig. 3.) These openings are made of a diameter of from one-fourth of an inch in small splints to one inch in large splints, but preferably of about seven-sixteenths of an inch in most of them. When thus constructed, several advantages result. Thus the depressions around the openings help materially to hold the cloth or felt packing or padding which is used on the concave surface of the splint, while the external ridges or elevations hold the outer bandages in their place. Thus neither the splint nor its padding or bandages can slip or become displaced by any ordinary force. The numerous large openings also ventilate the skin or tissues, so as to give it more healthy action, and, as above mentioned, greatly diminish the weight of the splint. To further increase the rigidity of these splints, a ridge or flange C is turned up all around the edges of from one-sixteenth to one-fourth of an inch, depending upon the size of the splint. This ridge or flange at the sides and ends of the splints also protects the skin and tissues from abrasions or injuries and greatly strengthens the splint.

In some splints, notably those for treating fractures and dislocations of the clavicle, acromion process, or shoulder, in which a yoke form of splint is used, the main strain upon the splint is in its middle cross-section. To give this more strength or firmness, a brace or cord D of metal is soldered or firmly attached over the convex surface of the splint, as seen in Fig. 4.

These splints are made in several sizes, according to the ages of persons requiring them, and can be bent or molded to quite a degree by the surgeon using them, so as to fit very accurately to the limb or part of any patient. They are so made as to be interchangeable to a large extent, the same splint being used on persons of different ages and sizes. Thus the thigh-splints for a boy or youth can be used on the arm or forearm of an adult, or vice versa.

It is an important feature of surgical splints that they admit of being bent or molded to the limb or part which the surgeon has before him. These splints will admit of this, and also allow him to cut them with ordinary shears found in every house, so as to shorten them a little to make an accurate fit, or to cut out a section in case there is a compound fracture or ulcer which needs local treatment.

Another feature of these splints which is of much practical importance to the surgeon is that they be made of material so cheap or

furnished to him at so little expense that their loss will not be felt, for, as a fact within the experience of all surgeons, many patients never return to him, or when well throw the splints aside where it is not worth the surgeon's time to look after or gather them up.

These splints are superior to all others which I have used, in that they may be applied to the shoulders and upper extremities and occupy so little space that the patient can put on his clothing over them and walk about for needed exercise without others observing his condition.

What I claim as my invention is—

A surgical splint consisting of a curved thin metal plate, a continuous unbroken flange around the edge struck up from the metal of the plate at right angles, a series of perforations on the plate encompassed by regular conical-shaped flanges, and a brace-rod having its ends curved downwardly and rigidly secured to the outer face of the plate and arranged lengthwise thereof, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ERASTUS R. ELLIS.

Witnesses:

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