

Feb. 17, 1942.

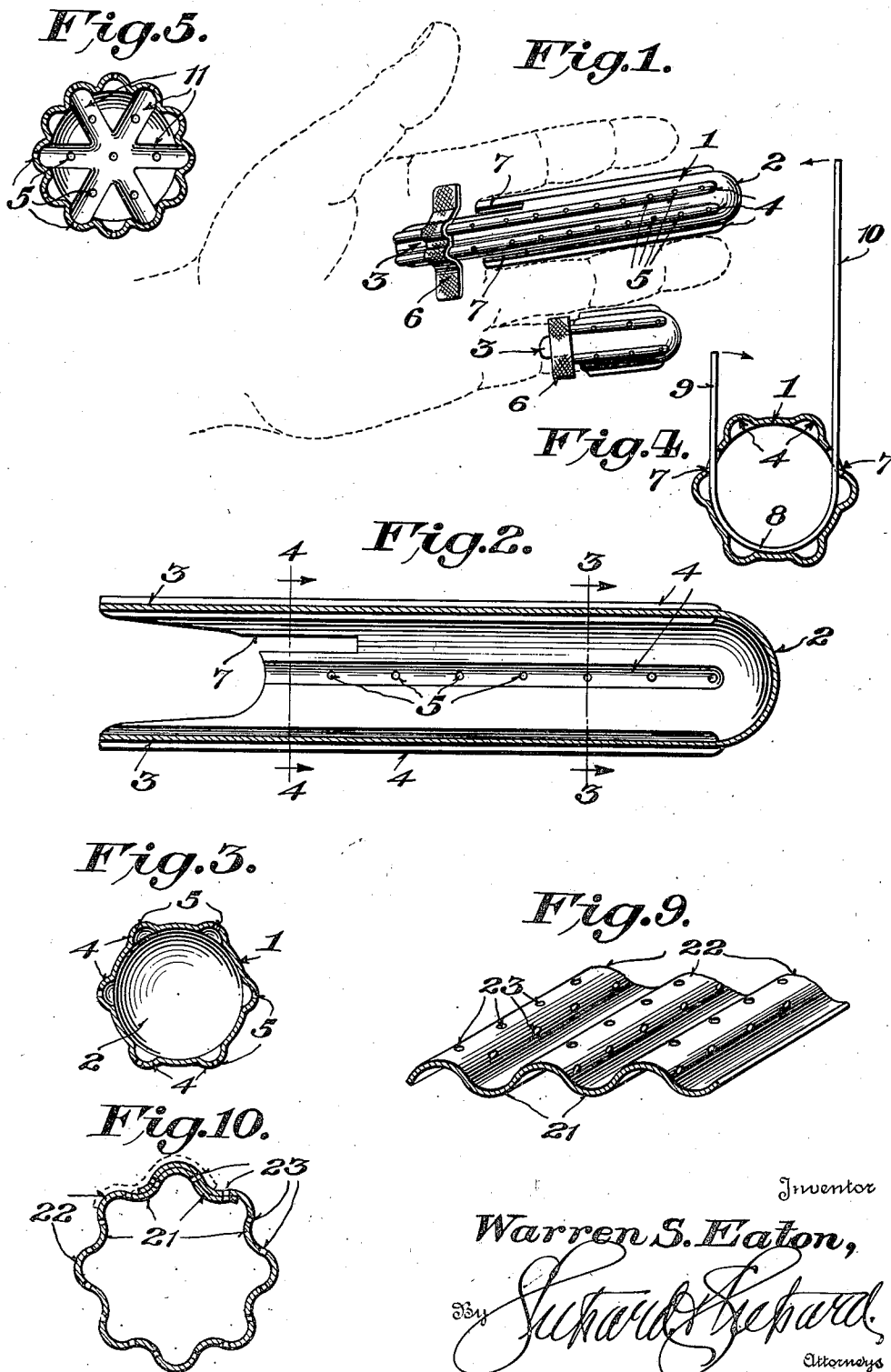
W. S. EATON

2,273,028

SPLINT

Filed Jan. 7, 1939

2 Sheets-Sheet 1



Inventor

Warren S. Eaton,

By *Richard S. Shepard*
Attorneys

Feb. 17, 1942.

W. S. EATON

2,273,028

SPLINT

Filed Jan. 7, 1939

2 Sheets-Sheet 2

Fig. 6.

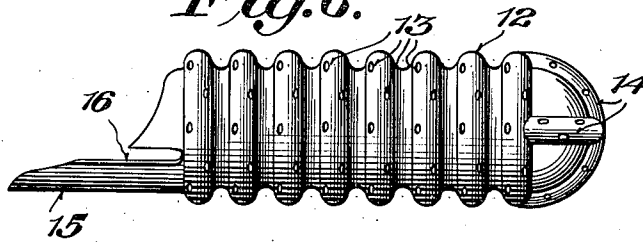


Fig. 7.

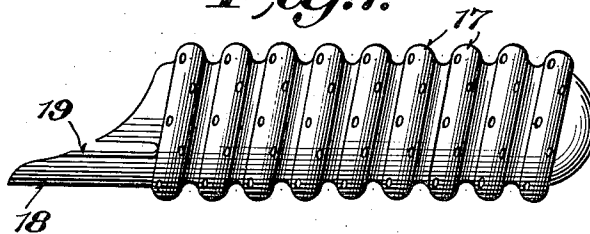


Fig. 8.

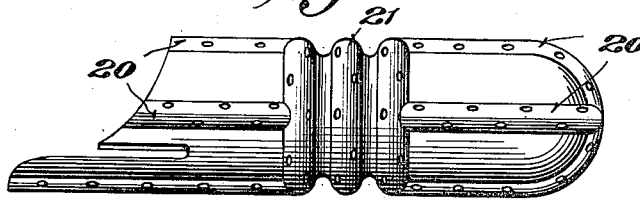


Fig. 11.

Fig. 12.

Fig. 13.

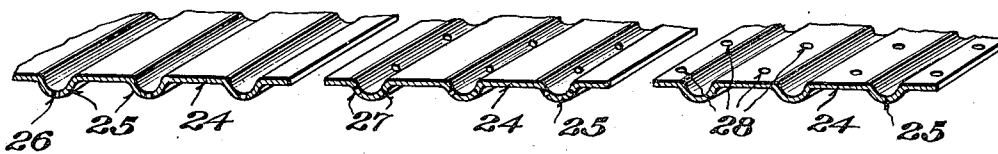
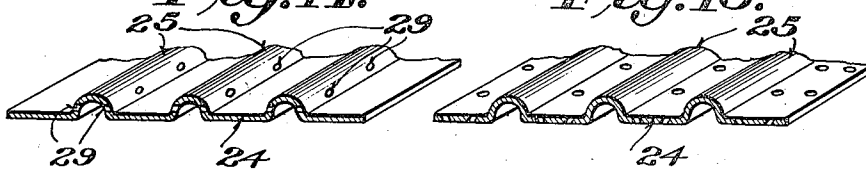


Fig. 14.

Fig. 15.



Inventor

Warren S. Eaton,

By *Shepard & Shepard*
Attorneys

UNITED STATES PATENT OFFICE

2,273,028

SPLINT

Warren S. Eaton, Los Angeles, Calif.

Application January 7, 1939, Serial No. 249,800

2 Claims. (Cl. 128—87)

This invention is a surgical device, it being an important object of the invention to cover and protect an injured part while at the same time providing for the ready and effective access of atmospheric air thereto, and also to expose the injured part to sunlight and artificial healing light, while at the same time effectually covering and protecting said injured part.

One specific embodiment of the invention, as shown in the accompanying drawings is that of a finger splint or finger stall in the form of a tube to enable the convenient application and removal with respect to a finger.

The invention may also be embodied in sheet form so that appropriate lengths thereof may be employed to envelope a limb for protecting the same against external injurious effects, and also for use as a splint to hold a broken bone after being set.

Another object of the invention is to provide for conforming the protection device while in position on or while being applied to an injured part so as to properly and satisfactorily adapt the device to the requirements of any particular use or application thereof.

With these and other objects in view, the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it of course being understood that changes in the form, proportion, size and minor details may be made, within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the present invention.

In the drawings:

Figure 1 is a perspective view of a finger splint embodying the features of the present invention.

Figure 2 is an enlarged longitudinal sectional view of the splint shown in Figure 1.

Figure 3 is a cross sectional view on line 3—3 of Figure 2.

Figure 4 is a cross sectional view on the line 4—4 of Figure 2 and showing in addition thereto a piece of tape positioned for securing the device to a finger.

Figure 5 is a view similar to Figure 3 and showing a modification.

Figure 6 is a side elevation of a tubular embodiment of the present invention having circumferential corrugations.

Figure 7 is a view similar to Figure 6 and showing spiral corrugations.

Figure 8 is a view similar to Figure 6 showing a combination of circumferential and longitudinal corrugations.

Figure 9 is a fragmentary perspective view of an embodiment of the invention in sheet form.

Figure 10 is a cross sectional view of the sheet form shown in Figure 9 as wrapped around an injured part.

Figures 11 to 15 inclusive, are fragmentary perspective views of various embodiments of the invention in sheet form.

The specific embodiment of the present invention as exhibited in Figures 1 to 5 inclusive, is that of a tube 1 having an end wall 2 closing one end of the tube and preferably convexed in shape. The other end of the tube is open, and there is a longitudinal extension 3, or a plurality of extensions, of a portion of the side wall at the open end of the tube. This tubular member is intended to function both as a finger stall and as a finger splint. The tube is to be formed of some transparent material which is also non-inflammable or at least slow burning. Reasonably stiff Cellophane is a material which will be effective. The tubular body is provided with a series of longitudinal and hollow ribs 4 lying on the outside of the tubular member, and provided with a series of perforations 5. These ribs strengthen and stiffen the finger stall or splint, and being open throughout their inner sides afford ready access of atmospheric air through the perforations 5 to the injured part enclosed by the finger stall or splint.

When placed upon an injured finger or other part, the walls of the stall or splint between the ribs will of course lie in more or less contact with the injured part, and so the latter will be exposed directly to the air in the hollow ribs, thus affording adequate access of atmospheric air to the injured part. As the stall or splint is transparent, sunlight will have access to the injured part, and at the same time the injured part can be readily inspected without requiring the removal of the stall or splint.

In using the present device, the injured part should not necessarily be wrapped in surgical gauze or any other material, but it is contemplated that the injured part could be dusted with some surgical powder which would not interfere with the access of air and sunlight to the injured part.

The device may be held in place by the use of a piece of adhesive tape 6, as shown in Figure 1, the tape being placed across one of the pro-

jecting parts 3 with its ends adhered to the hand. The device may also be provided with open ended slots 7 intersecting the end walls of the device at the open end thereof so as to receive a piece of adhesive tape in the manner illustrated in Figure 4 of the drawings. The tape 8 is first placed around the finger in the manner illustrated in Figure 4, and then the splint or stall is thrust endwise on the finger and the slots 7 positioned so as to receive the tape 8, after which the shorter end portion 9 of the tape may be folded down against the device, and then the longer end portion 10 may be folded over and wrapped around the device, it of course being understood that the tape is arranged with its adhesive side next to the finger and the device. As thus applied, the tape will be looped partially around the finger within the tubular device, while the end portions of the tape will be wrapped around the exterior of the device and thus adequately retaining the device in position on the finger in a very simple manner.

In Figures 1 to 4 inclusive, the corrugations 4 are widely separated, while in Figure 5, the corrugations have been shown close together, whereby to obtain the maximum access of air to the finger or other injured part on which the device is used. Also, end corrugations 11, as shown in Figure 5 of the drawings, may be employed and provided with perforations 5 whenever it may be desired to admit atmospheric air directly to the tip of a finger.

Another arrangement of corrugations has been shown in Figure 6 of the drawings, wherein the corrugations 12 are annular in form and provided with perforations 13. Perforated end corrugations 14 may be employed, as in Figure 5, at the closed end of the device. An extension 15 may be employed at the open end of the tubular device for convenience in securing the device in place in the manner shown in Figure 1, and the rear open end of the device may be provided with a longitudinal open ended slot 16, one at each side of the device for use in connection with the tape in the manner illustrated in Figure 4 of the drawings.

In Figure 7 of the drawings, a spiral arrangement of corrugations 17 is provided, the corrugations having perforations as usual, and the rear open end of the device having at least one projection 18 and an open ended slot 19, one for each side of the device, as in Figure 6.

In Figure 8 there has been shown a combination of perforate corrugations, some, as designated 20, being disposed longitudinally, while others, designated 21, are arranged circumferentially, the latter being at about the middle of the device, the longitudinal corrugations extending to the respective ends of the device.

In each of the several embodiments of the invention, the corrugations stiffen and strengthen the tubular member, while the arrangement shown in Figure 3 permits of some flexibility or bending of the device at the middle thereof where the annular corrugations 21 are located.

The features of the present invention may also be embodied in a sheet form of the device, for instance, as shown in Figures 9 and 10, wherein 22 designates a corrugated or convolute sheet of material, preferably transparent, certain or all of the convolutions being provided with perforations 23. A length of such material may be folded around an injured part, in the manner shown in Figure 10, and then a piece or pieces of

adhesive tape wound around the device so as to hold it in place.

In Figure 11 of the drawings, the invention has been shown as embodied in what is in effect a flat sheet 24 of transparent material, such sheet being provided with parallel corrugations 25 having perforations 26 in the crests thereof.

A modified sheet form of the invention has been shown in Figure 12, where the corrugated form of the device is the same as that shown in Figure 11, but the perforations 27 extend through the side walls of each corrugation and thus are disposed in rows at opposite sides of the crest of each corrugation.

In Figure 13, the perforations 28 have been shown in the flat part of the sheet.

The form shown in Figure 14 is similar to that shown in Figures 11, 12 and 13, but the perforations 29 are disposed in a plane substantially parallel to that of the flat portion 24 of the sheet instead of being obliquely disposed, as in Figure 12.

According to the form shown in Figure 15 of the drawings, the perforations are in the flat portion of the sheet, as in Figure 13, but are disposed obliquely.

While the perforations may be formed in the crest of each corrugation, it is preferred to have the perforations disposed at one side of the crest so as to be in a more or less oblique position, as foreign matter is less likely to pass through such obliquely disposed perforations, and consequently the injured part would be better protected. With the ventilation perforations in the side walls of the corrugations, there will be small possibility of threads, lint, and the like, working through the openings into the interiors of the corrugations, for the reason that it is the imperforate crest portions of the corrugations which rub against apparel or bed coverings, and therefore it will be understood that the imperforate crests of the corrugations serve to prevent the working in of foreign material through the ventilation perforations.

It is an important feature of my invention to provide for conforming the device to the requirements of any particular application thereof, and to accomplish this important result, I propose to employ material which by the application of a relatively small amount of heat thereto may be rendered sufficiently pliable or conformable to enable the bending, stretching, flattening of the corrugations, and otherwise deforming or conforming the device into such shape as may be desired preparatory to or after the application of the device to an injured part. Many well known plastics have the desired characteristic of becoming pliable or conformable under the application of a degree of heat which would not be objectionable or injurious even when used while the device is in place on an injured part.

I claim:

1. A surgical protective device, comprising a tubular member having hollow corrugations projecting at the exterior of the member, the inner side of each corrugation being open longitudinally and transversely to the interior of the tubular member, the corrugations being provided with ventilation openings extending through side walls thereof, said tubular member being open at one end, and the side walls of the member being provided with longitudinal slots intersecting the ends of the side walls at the open end of the device.

2. A surgical protective device, comprising a tubular member having hollow corrugations pro-

jecting at the exterior of the member, the inner side of each corrugation being open longitudinally and transversely to the interior of the tubular member, the corrugations being provided with ventilation openings extending through side walls thereof, said tubular member being open at one end, the side walls of the member being

provided with longitudinal slots intersecting the ends of the side walls at the open end of the device, and an adhesive tape disposed in a loop within the tubular member and having end portions extending outwardly through the respective slots.

WARREN S. EATON.