Oct. 20, 1942. H. A. C. BRINKMANN 2,299,125

PLASTER CAST OPENING MEANS

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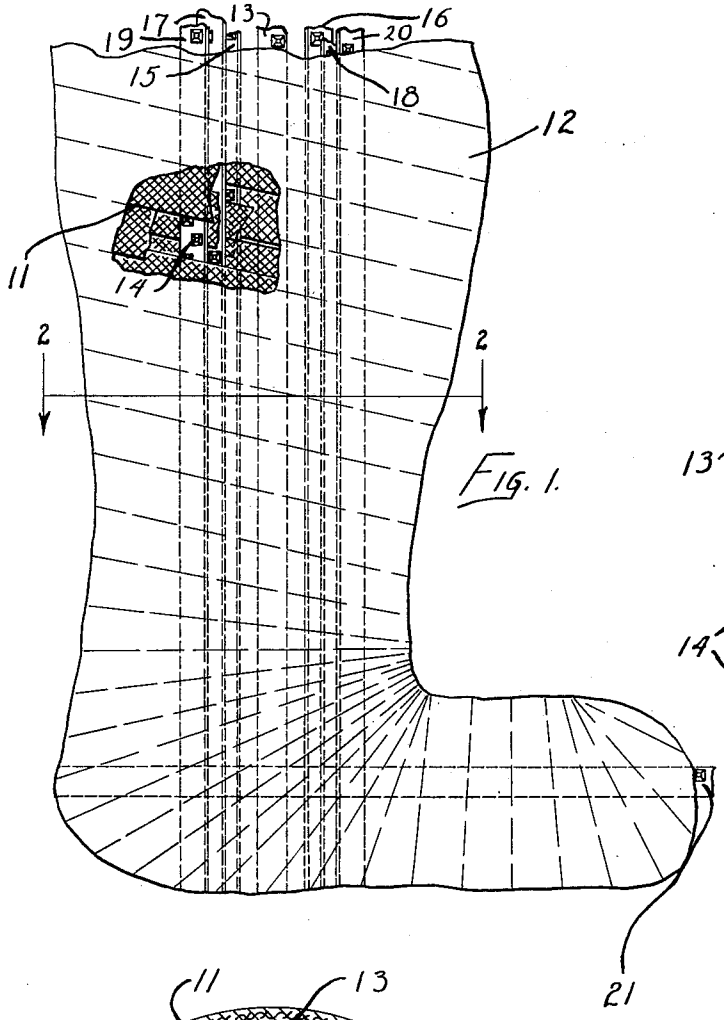


FIG. 1.

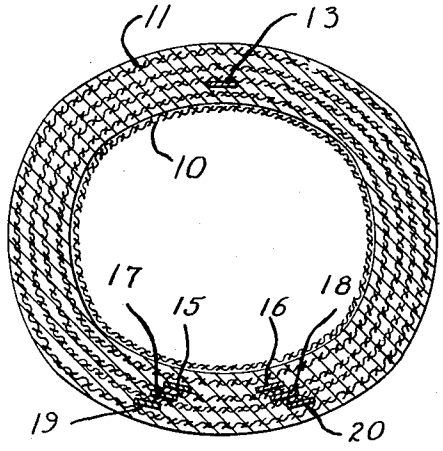


FIG. 2.

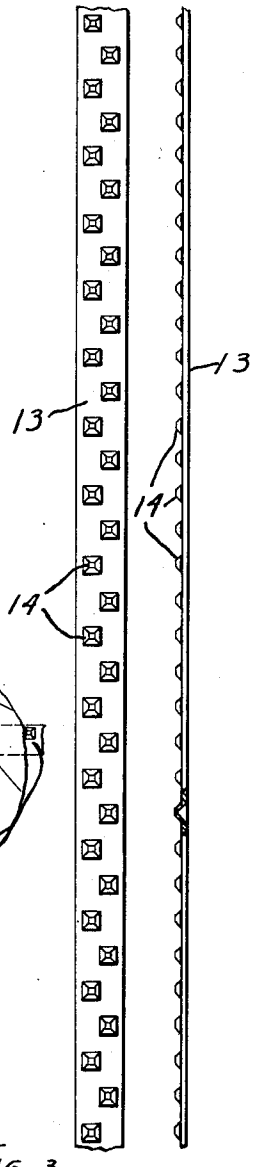


FIG. 3.

FIG. 4.

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PLASTER CAST OPENING MEANS

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2 Claims. (Cl. 128—317)

This invention relates to casts commonly employed in treating fractures, sprains and the like, or in any instance where it is desired to immobilize a part or member of the human body. The invention primarily relates to means for removing the cast without pain or injury to the encased member. The invention is applied to the well known plaster-type cast.

A primary object of the invention is to incorporate in the cast means for cutting or tearing a slot thereacross without having to use a knife or saw as has heretofore been the common practice. A still further important object of the invention is to premit the opening of the cast for inspection of the encased member without having to remove the entire cast to the end that the cast may be continued in use without having to discard it following the opening thereof.

These and many other objects and advantages of the invention will become apparent to those versed in the art in the following description of one particular form of the invention as illustrated more or less diagrammatically in the accompanying drawing, in which

Fig. 1 is a view in side elevation of a fragmentary length of a leg cast;

Fig. 2, a view in transverse section on the line 2—2 in Fig. 1;

Fig. 3, a view in front elevation of a length of a cutting tape; and

Fig. 4, a view in edge elevation thereof.

Like characters of reference indicate like parts throughout the several views in the drawing.

Referring to the drawing, it is to be understood, of course, that the invention is not limited to the one precise form of cast shown, this particular form of cast being shown simply for the purpose of illustration. In this form of cast, the cast is built up in the usual manner by first applying a fabric sleeve or stocking 10 next to the skin of the person to whom the cast is to be applied and then a strip of fabric in the nature of a wide tape of gauze 11, previously impregnated with plaster of Paris and dipped in water, is wound around the stocking 10 in overlapping layers to build up the cast to the desired thickness, this thickness, of course, varying as the doctor or operator may desire for the particular situation.

In anticipation of opening the cast, generally designated by the numeral 12, one or more lengths of a metal tape 13 are placed either immediately against the outer side of the stocking 10 or on the outside of one or more layers of the fabric strip 11 in positions along which the cast opening is to be made.

The tape 13 is preferably made to be exceedingly thin and on the order of a few thousandths inches in thickness so that it is quite flexible. The width is not critical since it may vary, although, of course, it is desired to hold the width within practical limits to avoid excessive cost, a practical width being around three-eighths inches. The longitudinal edges of the tape are left with sharp corners and the tape itself is provided with protruding parts in order to effect engagement with the overlapping fabric tape 11 and embedding with the plaster of Paris carried thereby. In the particular form shown, the tape 13 is regularly punched from one side to push out protuberances 14 from the other side in the nature of a roughened surface of a grater or shredder, the protuberances preferably being perforated at their center outermost parts to leave roughened edges. In other words, there is a minute hole left with a torn edge for ready engagement with the fabric tape and the plaster carried thereby. While such an engaging means is preferable, the invention is not to be limited to that precise form since the necessary structure in this regard is to provide engaging means along the tape 13 which will prevent longitudinal slippage of the tape within the cast 12 when it is in a dried state.

While reference has been made above to the tape 13 being made of metal, the material is not intended to be limited thereto. For example, the tape may be highly serviceable if made out of Celluloid or synthetic resins which will give a sufficiently sharp rigid cutting edge and yet at the same time be sufficiently flexible to permit bending of the tape laterally from the cast without breaking. The important characteristics of the tape in this respect are that the tape be flexible and yet relatively non-stretching and sufficiently hard along the edges at least to form cutting edges. Furthermore, in some instances, it will be sufficient to merely perforate the tape 13 in place of providing the protuberances. Obviously other patterns of a roughened surface may be employed than that shown in Figs. 3 and 4.

The tape 13 is provided with a sufficient length to have one end at least thereof extend from the end of the cast 12. When the cast is to be removed, this end is grasped and pulled outwardly to cause one or both edges of the tape to exert a shearing action against the overlapping layers of the fabric tape 11 and the hard plaster

between and through those layers. The tape 13 may, of course, be given a slightly twisting action as it is pulled away from the cast 12 so as to have the shearing action principally along one edge of the tape. Where the finished cast is relatively thin, one of these metal tapes 13 on one side of the cast is sufficient since the tape will cut through that side of the cast, whereupon the cast may be spread and broken apart.

On the other hand where it is desirable to cut the cast into two parts, the tape may be embedded on opposite sides of the cast, as above described, so that the cast may thereby be sheared by the respective tapes. If it is desired to provide for inspection of the encased member, then a number of tapes may be arranged, particularly when the cast is quite thick, to permit the cutting away of a longitudinal window down along one side of the cast. To provide for cutting such a window, the lengths of tapes 15 and 16, Figs. 1 and 2, may be initially placed in spaced apart relation along one side of the cast and embedded in the innermost part thereof. Then the fabric tape 11 may be wrapped around and over these two innermost strips 15 and 16. Over this additional fabric wrapping are placed two more lengths of metal strips 17 and 18 off center in relation to the underlying strips 15 and 16. These strips 17 and 18 are held in position by an additional wrapping thereover of the fabric tape 11 to be followed by the positioning of other lengths of metal tape 19 and 20 followed by the finishing wrapping over these last metal tapes. The numbers of these lengths of metal tape will vary, depending upon the thickness of the cast. The purpose of using the number of tapes one over the other is to permit ready cutting through of the overlapping fabric tape 11 without having to exert too much force which would be the case should only one tape be employed.

In any event by first pulling outwardly on the two outermost tape lengths 19 and 20, and then following successively with the next underlying tapes 17, 18 and then 15, 16, a window is cut down to the first layer of fabric tape 11 or even to the stocking 10, depending upon where the innermost tapes 15 and 16 were initially positioned. This leaves a window through the cast having inclined side edges so that ready access may be had to the encased member through that window.

Following the inspection through the window, if the encased member is in a satisfactory condition, the window may be left open if desired and tape wrapped around the cast 12 to prevent spreading thereof, or the opening cut to form the window may be filled in and the filling held in place by tape wrapped thereover. It is obvious that various positionings of lengths of the metal tape 13 may be had in accordance with the particular shape of cast encountered. For example, as indicated in Fig. 1, where the casting continues down over the foot, a horizontally disposed length of tape 21 may be embodied in the cast as it is built up for the purpose of providing an additional opening. Of course, the lines of opening of the cast will depend upon the desire of the operator, but in any event the invention is flexible enough to permit meeting these desires.

Since the metal tape 13 is embossed or provided with roughened surfaces, the tape cannot be pulled up longitudinally from between the layers of fabric tape 11 and the solidified plaster since the roughened surface of the tape provides secure interlocking with this plaster. Obviously such means for opening a cast is extremely safe, fast, and painless and easily operated. Where the metal tape 13 is applied directly in contact with the inner stocking 10, the tape may be made out of such metal as stainless steel or plated metal to prevent corrosion or chemical reaction adjacent the skin of the encased member.

Thus it is to be seen that a means is provided for opening a plaster cast without having to employ any particular or special devices or machinery and this is of particular advantage where the patient is to be examined at home or removed from a hospital or the office of a surgeon. Moreover the cost of the tape is exceedingly low in comparison with the cost of general treatment and with the cost of having to have on hands the special machinery heretofore required. Obviously the metal tape 13 may be supplied in suitable rolls or spools from which the desired lengths may be cut at random.

While I have herein shown and described my invention in the one particular form, it is obvious that structural variations may be employed without departing from the spirit of the invention and I therefore do not desire to be limited to that precise form beyond the limitations as may be imposed by the following claims.

I claim:

1. In a plaster cast, the combination of overlapping windings of fabric impregnated with plaster; a length of tape along one side of the cast and imbedded between layers of said windings throughout a length of the cast, to have at least one end of the tape extend from the cast; and said tape being ribbon-like in nature to have a width greatly exceeding its thickness and having straight line cutting edges.

2. In a plaster cast, the combination of overlapping windings of fabric impregnated with plaster; a length of tape along one side of the cast and imbedded between layers of said windings throughout a length of the cast, to have at least one end of the tape extend from the cast; and said tape being ribbon-like in nature to have a width greatly exceeding its thickness and having straight line cutting edges; and an additional like tape between other windings of said fabric spaced thereby from said first tape and held in a superimposed, parallel, overlapping in part only position in relation to said first tape, whereby one flat tape is partially offset laterally in respect to the other tape.

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