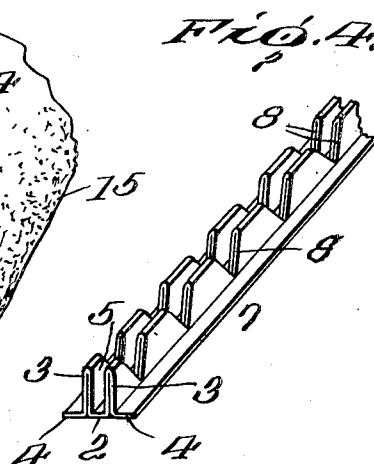
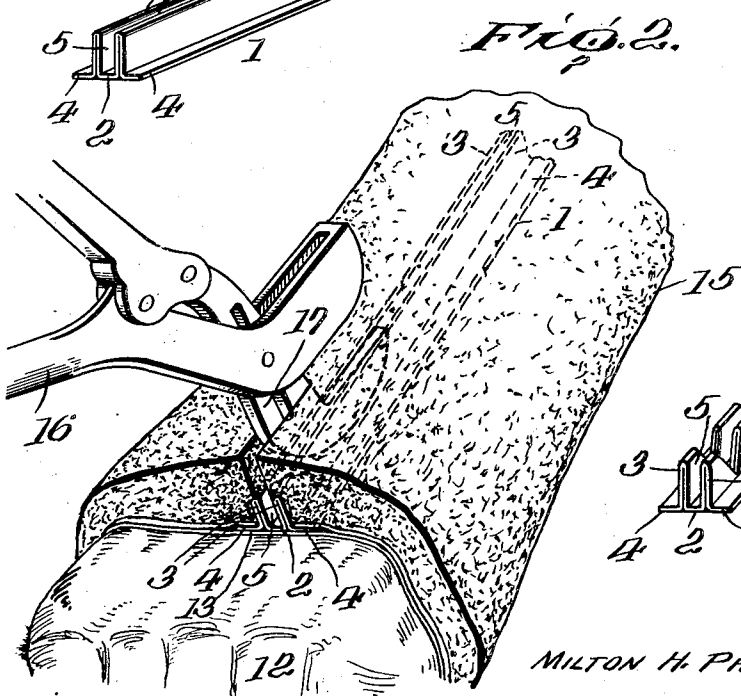
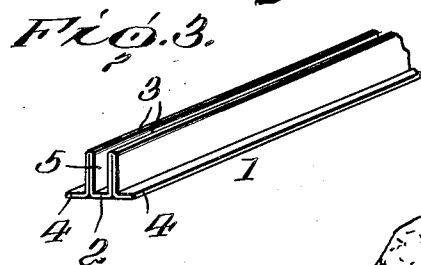
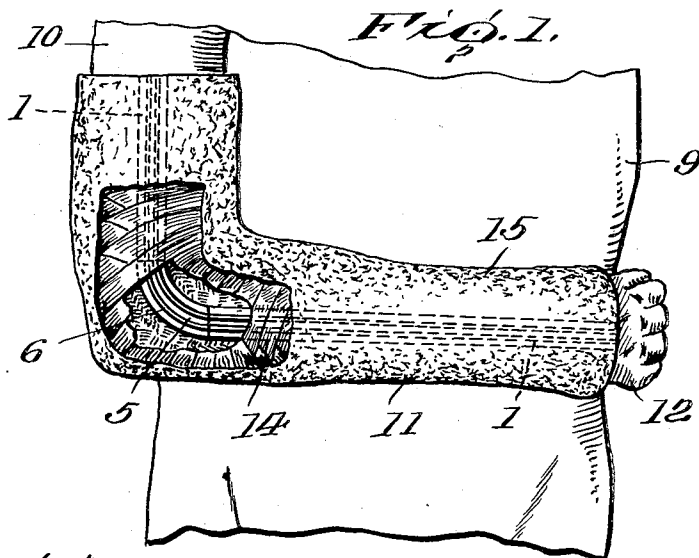


Jan. 16, 1940.

M. H. PROSPERI
CAST REMOVAL CHANNEL

2,187,175

Filed Dec. 20, 1937



Inventor
MILTON H. PROSPERI

By *E. F. Newdirth*

Attorney

UNITED STATES PATENT OFFICE

2,187,175

CAST REMOVAL CHANNEL

Milton H. Prosperi, Washington, D. C.

Application December 20, 1937, Serial No. 180,858

3 Claims. (Cl. 128—91)

My invention relates to the surgical art, and more particularly concerns a method and means for facilitating the removal of plaster and similar casts used to immobilize the limbs of a patient.

5 Difficulty has been encountered in cutting open such casts, first in inserting the cutting or breaking instrument, and second in performing the cutting itself without a resultant bruising of the skin. Furthermore, it frequently happens that
10 the cast is damaged to such an extent that it could not be used a second time, after its first removal for inspection of the limb.

It is highly desirable to provide some means for insuring the easy ingress of the cutting tool to the cast, and a step in that direction is represented in the device shown in German Patent No. 587,069, wherein is shown a flexible, elongated member having in section an outwardly extending bow, open at its inner surface. The disadvantage here, however, is that the open end is disposed against the skin, so that attendant injury to the skin from the cutting instrument may quite easily result.

My invention comprises an elongated channel-shaped member, either straight or curved in one or more planes to fit the limb, having a yoke and lateral and outwardly-extending wings, one on each side of said yoke, to form a solid back to protect the skin, the channel being formed by up-
25 standing ribs to form a slot for guiding the cutting tool. This member or members are embedded in the plaster cast, being maintained open at at least one end, and the cutting tool is inserted in said open end. A clean cut results, without any possibility of injury to the patient, and
30 without damage to the cast. This member, while it can be formed of any desired material, either metal or non-metal, preferably is formed of lightweight, radio-transparent material possessing a fair degree of flexibility, such as aluminum.

An object of my invention is, therefore, to produce a new form of device for facilitating removal of plaster and similar casts without injury to either the patient or the cast.

45 Another object is to produce such a device, adapted to be embedded in the cast.

Another object is to produce the combination of a plaster or similar cast and a device for facilitating removal of the cast without injury to either
50 the patient or the cast.

Other objects will be obvious in part, and in part will be explained hereinafter.

Referring to the accompanying drawing forming part of this application and illustrating sev-
55

eral embodiments of my invention which I prefer at present, it will be seen that

Fig. 1 is a front elevation showing my invention as applied to a cast on the arm of a patient;

Fig. 2 is a perspective of the device as embedded in a cast, which cast is being opened; while

Figs. 3 and 4 are perspective views of several modifications of my device.

Referring more particularly to Fig. 3, it will be seen that the elongated channel member 1 shown therein is illustrated as formed of a single piece of material, stamped, molded or otherwise arranged into the desired shape. This member 1 can be formed of any desired material, but I prefer to form it of suitable, partly-flexible, lightweight metal, radio-transparent, such as aluminum, in order that no interference will be occasioned by it when it is desired to make any exposure after the cast has been applied.

The metal is bent to form a yoke 2, which, together with sides comprised of the upstanding ribs 3, 3, for a channel. The channel-shaped member is completed by outwardly extending bearing wings 4, 4, comprising in effect a prolongation of the yoke 2. As will be seen, the ribs 3, 3, being closely spaced together, form between them a slot 5 preferably just wide enough to receive the blade of a cutter, a cast knife, or other instrument for removing the cast.

This member may either be straight, as shown at 1 in Fig. 3, or curved in one or more planes to adapt itself closely to the limb, as shown at 6 in Fig. 1; the straight members 1 and curved members 6 being fitted together to conform to the shape of the limb undergoing immobilization, while providing a substantially unobstructed and continuous channel 5 throughout the length of the cast.

A variant of the member 1 is shown in Fig. 4. Here the member 7 has the yoke 2, wings 4, 4, sides composed of ribs 3, 3 and channel 5 of the member 1 of Fig. 3. However, in this embodiment the ribs 3, 3 have a plurality of triangular notches 8 along their lengths, with their apices near the back comprised of yoke 2 and wings 4, 4. These notches serve the three-fold function of lightening the weight of the channel-shaped member, of ensuring the better positioning and anchoring of the member 7 by the plaster cast due to the interlocking of the plastic material in the notches 8, and of facilitating removal by cutting transversely of said members, across said notches, where hasty removal is desired at the sacrifice of the cast itself.

An example of the application of my channel-

shaped members is depicted in Fig. 1. The body of the patient is shown at 9, the upper arm at 10, the forearm at 11, and the hand at 12. Referring for the moment to Fig. 2, it will be seen that immediately over the hand 12 and the arm, a stockinet 13 or alternatively a layer of cotton is applied directly on the skin. On top of this stockinet I place the metal channels. As shown in Fig. 1 there are two straight sections 1 and one curved section 6, the latter being placed intermediate the straight sections, and the channels of all the members abutting so as to form a continuous slot 5. Preferably these members are anchored in place as by two or three strips of adhesive tape, or other suitable securing means, adhesive or otherwise. It will be seen that the light-weight of the members, coupled with the broad bearing surface offered by the yoke 2 and the wings 4, forming a substantially uninterrupted back, effectively precludes injury to the limb through localized pressure.

After the channel members 1 are positioned, the plaster bandage 14 is applied. By the term plaster cast as used hereinafter and in the claims I mean any sort of plastic or similar immobilizing means applied to the limbs. This plaster cast is usually though not invariably applied by moistening sheets of cotton bandage impregnated with the plastic materials, and then wrapping the bandage around the limb until the proper thickness and shape is realized, whereupon the plastic is allowed to set or harden into an immobile cast 15.

Two or more such channels may be formed around the periphery of the cast, as desired. They add to the strength of the cast, and show only the slightest irregularity of outline after completion of the cast. It is necessary to provide some means at the free ends of the channel-shaped members to prevent chafing of the skin. This is accomplished readily, as by wrapping some of the plaster bandage over such ends.

It is unnecessary to cover the top or open end of the slot 5, as has been done in certain prior art devices, such as are shown in German Patent No. 291,524, for example, which is an addition to German Patent No. 285,540 (the two must be read together for an understanding of the invention disclosed therein), filling of the slot with plaster will not interfere with proper functioning of the opening or cutting instrument. In fact in the present invention only plaster and no stockinet is over the channel, and the cutting tool cuts plaster only.

In Fig. 2, is shown a manner of opening the cast when my device is employed. A pair of cutters 16 or similar opening device is employed.

The blade 17 of the cutter is inserted in the free end of the channel or slot 5. It rests on the yoke 2, so that it does not contact the skin itself. The force applied thereto is equalized over the bearing wings 4, 4, so that bruising is effectively prevented. By continuing the cutting action along the length of the member, the cast is cut in a clean sharp line, so that it can be removed without difficulty, and thereafter re-applied, if desired, it being held in position as by adhesive tape.

It is obvious that once the broad features of my invention are disclosed, many modifications and adaptations will readily occur to those skilled in the art, all falling within the scope of my invention. Accordingly, I intend to be limited only by the scope of the appended claims.

I claim:

1. A device adapted to be embedded in a surgical plaster cast, to facilitate opening the latter, comprising an elongated channel member, the back of which is adapted to bear against the limb of the patient, to protect the same, each side of said channel member being first bent reversely upon itself, and thereafter bent outwardly along lines adjacent the yoke of the channel member, to form load-bearing wings, serving to stabilize the elongated member and to distribute the load on the limb of the patient.

2. A device adapted to be embedded in a surgical plaster cast, to facilitate opening the latter, comprising an elongated channel member, the back of which is adapted to bear against the limb of the patient, to protect the same, each side of said channel member being first bent reversely upon itself, and then outwardly along lines adjacent the yoke of the channel member, to form load-bearing wings, serving to stabilize the elongated member and to distribute the load on the limb of the patient, the said channel member having a plurality of notches in each side thereof.

3. A device adapted to be embedded in a surgical plaster cast, to facilitate opening the latter, comprising an elongated channel member, the back of which is adapted to bear against the limb of the patient, to protect the same, each side of said channel member being first bent reversely upon itself, and then outwardly along lines adjacent the yoke of the channel member, to form load-bearing wings, serving to stabilize the elongated member and to distribute the load on the limb of the patient, the said channel member being formed entirely of a single sheet of metal.

MILTON H. PROSPERI.