

# United States Patent

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[54] **HEMOSTATIC APPARATUS FOR  
OPERATIONS ON THE HEAD OF  
HUMAN BEINGS**

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[30] **Foreign Application Priority Data**

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[51] Int. Cl. ....A61b 17/12

[58] Field of Search .....128/1, 303, 325, 350

[56] **References Cited**

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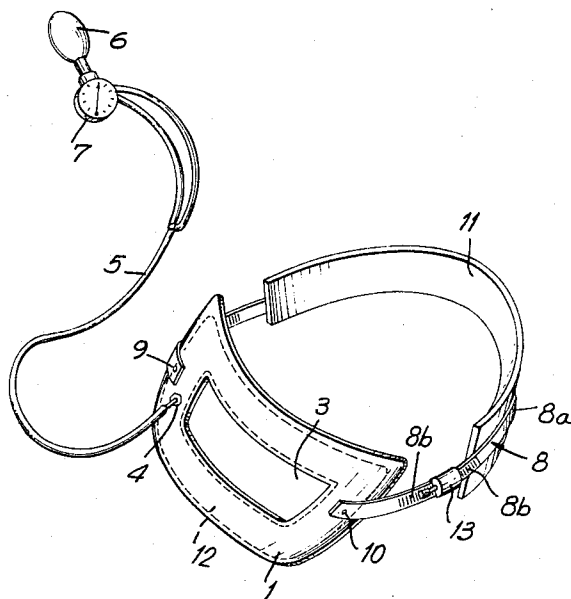
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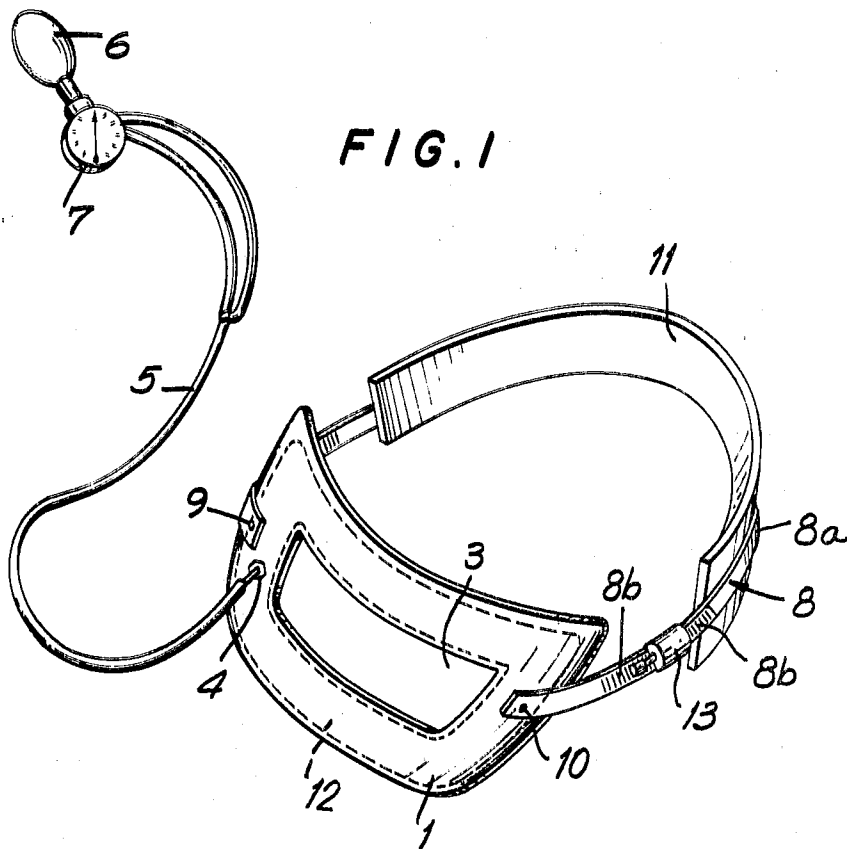
*Primary Examiner*—Channing L. Pace  
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[57] **ABSTRACT**

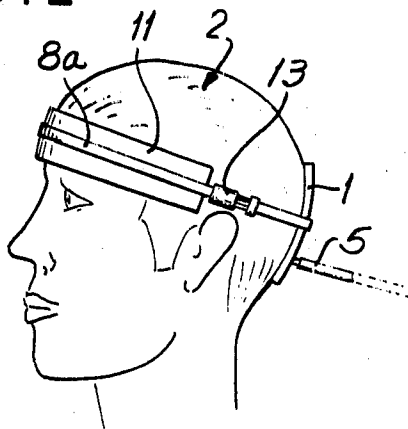
Hemostatic apparatus is disclosed for operations on the head of a human being, more particularly for scalp grafts. The apparatus includes a frame of plate form provided with a strap fastener for attachment on the head of a patient, the plate being rectangular with an opening therein. Mounted on the plate is a flexible tube of loop form encircling the opening and adapted for being pressurized to exert the necessary pressure on the patient's head to render it free of blood in the region of the opening in the plate whereby scalp grafts or the like can be performed within the field of the opening in the plate without bleeding.

**13 Claims, 6 Drawing Figures**





**FIG. 2**



**FIG. 3**

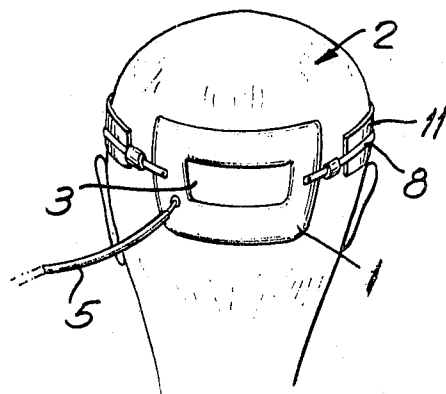


FIG. 4

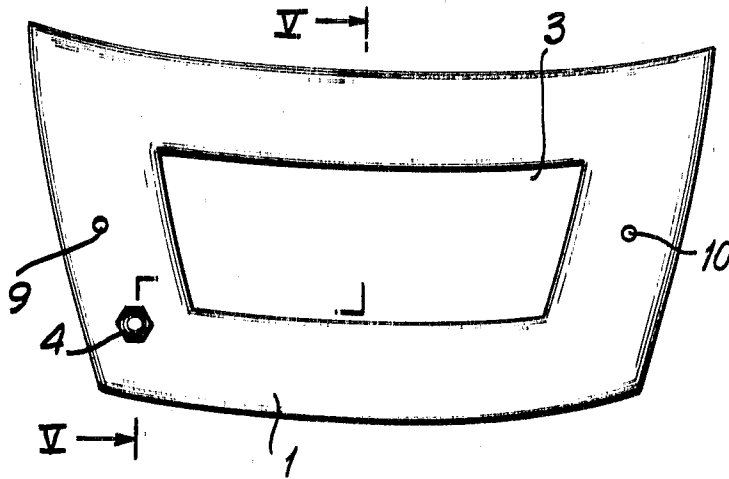


FIG. 5

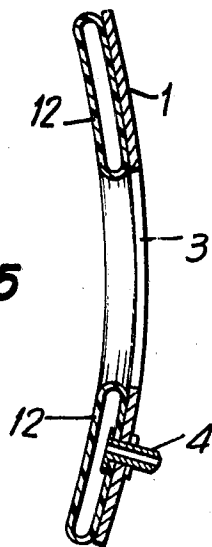
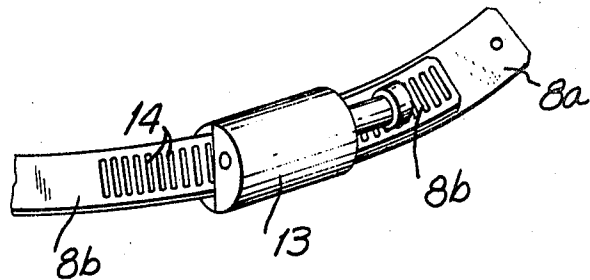


FIG. 6



# HEMOSTATIC APPARATUS FOR OPERATIONS ON THE HEAD OF HUMAN BEINGS

## BRIEF SUMMARY OF THE INVENTION

The present invention relates to hemostatic apparatus that can be used for operations on the head of human beings, and more particularly, but not exclusively, for scalp grafts.

Hemostasia refers to a process of stopping hemorrhages, and is usually effected by applying a tourniquet on the limb in which blood circulation is to be stopped. The tourniquet consists of a band surrounding the limb for applying compression thereto. For the lips of a wound, mechanical hemostasia is effected by the use of clips or similar instruments.

However, when it is desired to remove scalp grafts from the occipital area of the head for transplantation on another denuded area of the skull, there is no convenient hemostatic apparatus, and the operation is carried out without hemostasia. This is very objectionable because of the resulting bleeding, which interferes with the action of the surgeon.

An object of the present invention is to overcome this deficiency and to provide haemostatic apparatus which can prevent blood flow through a predetermined area of a patient's scalp.

The invention contemplates haemostatic apparatus for operations on the head of a human being, more particularly for scalp grafts, which includes a frame provided with means for mounting on a patient's head, and including compression means on the frame forming a loop to delimit a predetermined area on the patient's scalp to apply the required pressure to render it bloodless.

In a particular realization of the invention, the frame to be fixed on the patient's head is a plate of a generally rectangular shape, slightly concave on the side facing the head, with an opening or window delimiting the operative field, the frame bearing a pneumatic closed circuit member to exert the necessary pressure.

According to another feature of the invention, the pneumatic member is constituted as a flexible tube having the same shape as the frame and mounted on the concave side thereof between the outer rim of the plate and the operative window.

According to another feature of the invention, the inner tube is connected to a pumping bulb coupled with a pressure-control manometer. It is thus possible to pressurize the inner tube at a pressure slightly higher than the patient's arterial pressure, to intercept the blood circulation.

With the above hemostatic apparatus, the removal of scalp grafts and their transplantation, is greatly facilitated.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the apparatus according to the invention;

FIG. 2 is a profile view of a patient's head equipped with the apparatus;

FIG. 3 is a rear view of the patient's head of FIG. 2;

FIG. 4 is a plan view of a plate of the apparatus;

FIG. 5 is a sectional view taken along line V—V of the plate shown in FIG. 4, and

FIG. 6 is a perspective view, on enlarged scale, of a part of the fixing device of the apparatus.

## DETAILED DESCRIPTION

Referring to the drawing, therein is shown the hemostatic apparatus which is made of a frame including a semi-rigid plate 1, of a rectangular shape but curved with respect to its two axes to conform to a generally convex area of a patient's head 2.

The plate 1 is advantageously constituted of a light aluminum base alloy having a certain elasticity in bending. The plate 1 has a central opening or window 3, also rectangular, and a tubular juncture 4 for connection with a flexible tube 5 terminating in a pumping bulb 6 and a manometer 7, both similar to those employed in customary sphygmomanometers for measuring blood pressure. A strap 8 serves for mounting

the frame on the patient's head and the strap is fastened to hinge pins 9 and 10 on each side of the plate 1. A supple head-band 11 is joined to the strap 8 to protect the areas of the head encircled by the strap 8.

The plate 1, on its concave side facing the head, supports a flexible tube 12 (FIG. 5) forming a rectangular loop between the rim of plate 1 and the window 3. The flexible tube 12 communicates with the tubular juncture 4 and, consequently, with the pumping bulb 6 and the manometer 7.

The fixing strap is also of a semi-rigid material, it comprises two ribs 8a and 8b. Rib 8a is shorter than the rib 8b and bears at its free end a screw-jack 13 intended to receive the free end of rib 8b which bears notches 14 meshing with the jack's screw 13.

When removing scalp grafts for transplantation, the above described apparatus is placed on the occipital area as represented in FIGS. 2 and 3, and the strap 8 surrounding the forehead is tightly adjusted against the latter by means of the screw-jack 13.

Once the apparatus is adjusted in place, the inner tube 12 is pumped by means of bulb 6 to a pressure slightly higher than the blood pressure, as controlled by the manometer 7. Then the skin appearing in the interval circumscribed by the window 3 and which represents the operating field is bloodless and it is possible to operate with substantially no bleeding, which greatly facilitates the operation.

It is quite evident that the invention is not limited to the embodiment described nor to its particular application to scalp grafts. As a matter of fact, the apparatus can be used for other operations on the head of a human being necessitating a localized hemostasia.

What is claimed is:

1. Hemostatic apparatus for operations on the head of a human patient said frame having an opening, comprising an elongated frame with means for mounting the frame on the head of a patient, inflatable compression means supported on the frame and surrounding said opening for contacting the patient's head to delimit a predetermined area on the patient's head, and means for applying pressure to said inflatable means to pressurize the same and stop the flow of blood in said predetermined area, said opening in said frame providing access to the predetermined area and defining an operative field.

2. Hemostatic apparatus as claimed in claim 1, wherein said frame comprises a plate with said opening defining the operative field, said inflatable compression means comprising a pneumatic closed circuit member surrounding said opening to exert the necessary pressure.

3. Hemostatic apparatus as claimed in claim 2, wherein said plate has a slightly concave surface in two directions facing the head.

4. Hemostatic apparatus as claimed in claim 3, wherein said pneumatic member comprises a flat, flexible tube mounted at said concave surface.

5. Hemostatic apparatus as claimed in claim 1, wherein said means for mounting the frame on the head of the patient comprises a semi-rigid strap in two parts, and means on one part engaging the other part to effect adjustment of tightness of the frame on the head of the patient.

6. Hemostatic apparatus as claimed in claim 5, wherein said means for mounting the frame on the head of the patient further comprises a supple head band connected to said strap to partially encircle the head of the patient.

7. Hemostatic apparatus as claimed in claim 5, wherein said means to effect adjustment of the tightness of the frame on the head of the patient comprises a screw-jack mounted on the free end of said one part of the strap engageable in notches provided in the free end of the other part of the strap part.

8. Hemostatic apparatus as claimed in claim 2 comprising means coupled to said inner tube for inflation thereof.

9. Hemostatic apparatus as claimed in claim 8, wherein said means for inflation is a manual operation pumping bulb.

10. Hemostatic apparatus as claimed in claim 9, wherein said means for inflation further comprises a manometer coupled to said pumping bulb.

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11. Hemostatic apparatus as claimed in claim 2, wherein said frame and said opening are of generally rectangular outline.

12. A method of effecting hemostasia on the head of a human being to effect operation in a given area thereof without bleeding, said method comprising applying pressure in an annular region surrounding said given area greater than the

arterial pressure to interrupt blood flow into said area.

13. Hemostatic apparatus as claimed in claim 2 wherein said plate is constituted of a lightweight metal having elasticity in bending to enable the plate to conform to the shape of the head of the patient.

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