

[54] **ONE-PIECE SEAMLESS HOLLOW
RESUSCITATION PLAQUE**

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[51] Int. Cl. **A61h 31/00**

[58] Field of Search **128/28, 51, 67; 9/348**

[56] **References Cited**

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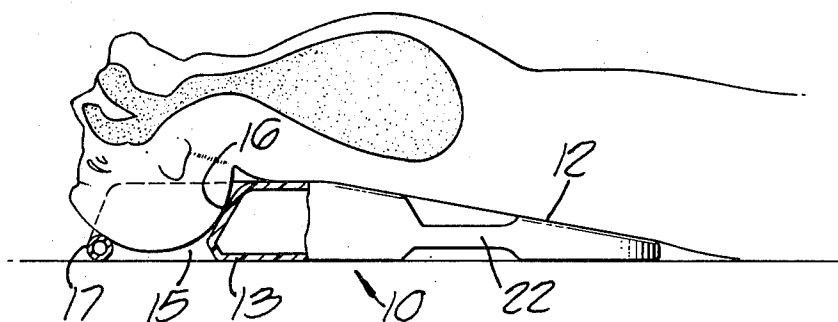
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[57] **ABSTRACT**

A resuscitation plaque for use in the emergency treatment of patients suffering from suffocation, shock and cardiac conditions comprising a light-weight rigid plaque insertable beneath the head and chest and providing a firm support therefor while resuscitation and revival efforts are applied. The plaque is deeply recessed to receive and support the head in a backwardly and downwardly inclined position, without restraint against sidewise movement, whereby the bronchial passages of a patient lie open in a generally straight path providing free, unobstructed access through the mouth into the lungs.

9 Claims, 5 Drawing Figures



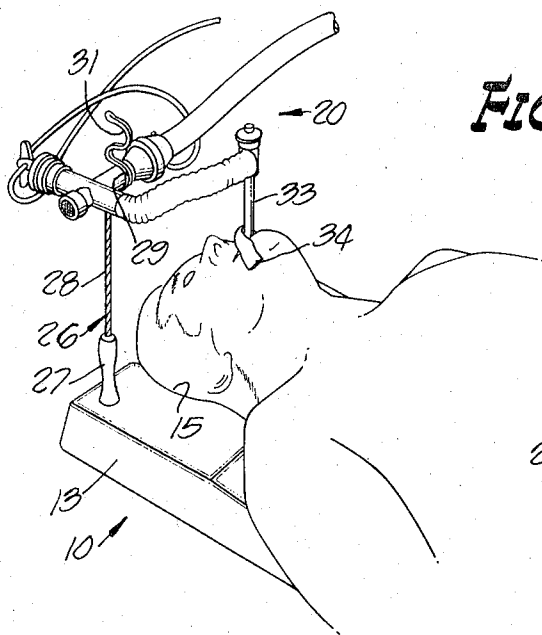


FIG. 1.

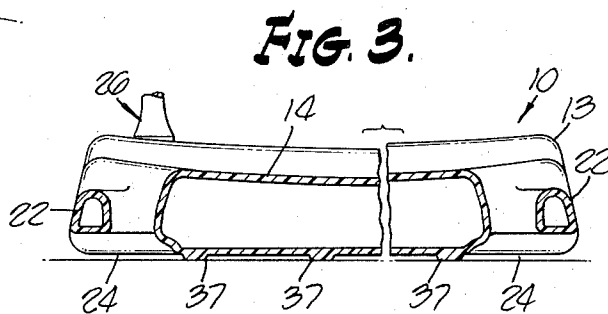


FIG. 3.

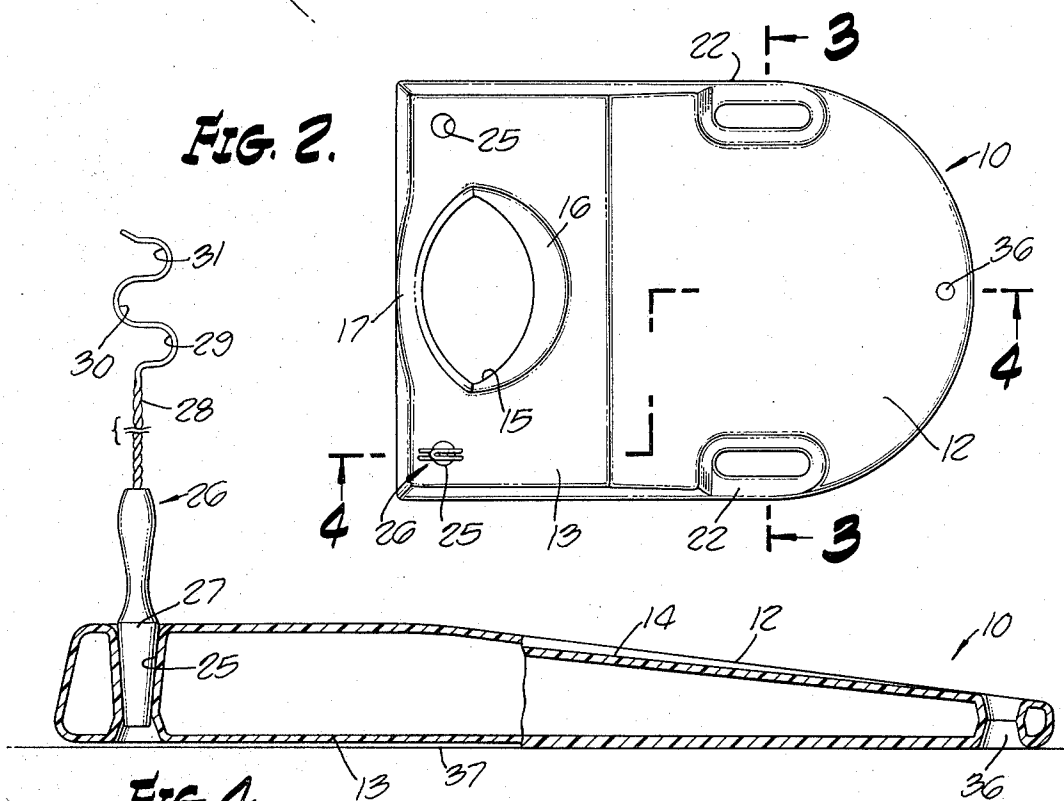


FIG. 2.

FIG. 4.

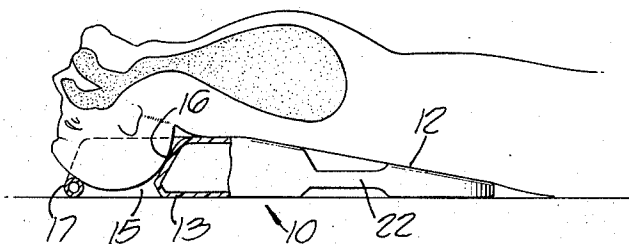


FIG. 5.

ONE-PIECE SEAMLESS HOLLOW RESUSCITATION PLAQUE

This invention relates to resuscitation equipment and more particularly to an improved light-weight rigid buoyant plaque insertable beneath the patient's head and chest to support the latter rigidly in an elevated position with the head inclined downwardly and rearwardly while the patient undergoes resuscitation and revival treatment.

Persons suffering a cardiac arrest are frequently in bed and the time available for revival is so critically short that it is impractical to consider moving the patient off the bed mattress. This is true despite the fact that the presence of the soft mattress greatly impairs efforts to apply artificial respiration techniques. Additionally, it is most difficult to support the neck in an elevated position with the head tilted backwardly and downwardly thereby affording a straight open air-way to the lungs through the mouth and trachea. Likewise persons suffering from suffocation and shock have similar needs not adequately and satisfactorily satisfied by prior devices.

In view of the foregoing and other shortcomings of prior practice, there is provided by this invention a simple light-weight hollow rigid plaque readily inserted beneath the patient's back and effective to hold the chest elevated and providing a firm rigid spinal support while allowing the patient's head to incline sharply downwardly and rearwardly into a stabilizing recess formed centrally of the rear end portion of the plaque. The plaque is rotationally molded from high strength plastic material and has pronounced buoyancy. Accordingly, it is readily used by life saving personnel in rescue operations. Thus it is readily floated by the lifesaver to a swimmer in distress. Upon arrival the plaque is placed beneath the swimmer's back to support his head and chest out of the water while being floated back to shore where it continues to serve useful purposes during revival of the swimmer.

Accordingly, it is a primary object of the present invention to provide an improved resuscitation plaque for use in the treatment and movement of patients in distress.

Another object of the invention is the provision of a wide area long rigid light-weight buoyant plaque for supporting a patient's chest elevated and having provision allowing the head to incline downwardly and rearwardly without need for sandbags and other head positioning expedients.

Another object of the invention is the provision of a hollow rigid seamless plaque which is buoyant and usable to rescue a swimmer in distress and having provision for supporting the head with the trachea providing a straight unobstructed air-way to the lungs through the mouth during revival efforts.

Another object of the invention is the provision of a resuscitation plaque having a deep recess for the patient's head and so designed as to permit lateral movement of the head to allow for projectile vomiting without risk of aspiration back into the patient's lungs.

Another object of the invention is the provision of an improved resuscitation plaque readily passing X-rays and having provision for supporting a detachable bracket for breathing accessories and the like.

These and other more specific objects will appear upon reading the following specification and claims

and upon considering in connection therewith the attached drawing to which they relate.

Referring now to the drawing in which a preferred embodiment of the invention is illustrated:

FIG. 1 is a perspective view showing a patient supported on the invention plaque with the mouth piece of an intermittent positive pressure breathing apparatus connected to his mouth and firmly supported by the plaque;

FIG. 2 is a top plan view of the plaque per se;

FIG. 3 is a cross-sectional view through the plaque along line 3—3 on FIG. 2;

FIG. 4 is a cross-sectional view on an enlarged scale taken along the broken line 4—4 on FIG. 2; and

FIG. 5 is a side elevational view, partly in section and partly diagrammatic, showing a patient in position for treatment with his trachea open and lying in a straight horizontal plane.

The invention resuscitation plaque, designated generally 10, comprises a seamless hollow shell rotationally molded in one piece from high strength plastic composition. Various thermoplastic compositions well known to those in the plastic art may be used. One suitable material cited by way of example is high density linear polyethylene powder desirably ground to a fineness of 28 to 35 mesh. A suitable quantity of this material is charged into the plaque mold which is then closed and mounted in a conventional rotary molding apparatus designed to rotate the mold both about its horizontal and vertical axes to tumble and distribute the plastic material while being heated. The mold is rotated 2 to 12 revolutions per minute for 15–30 minutes depending upon the quantity of charge placed in the mold cavity. During this period the mold is held at a suitable curing temperature for the particular thermoplastic employed as, for example, 400°–600°F. The mold is then subjected to cooling in accordance with customary practice and opened to release the finished hollow shell having substantially uniform wall thicknesses throughout and translucent to X-rays.

Plaque 10 is sufficiently wide to underlie the patient's shoulders and sufficiently long to support the back and the spinal column in the manner best shown in FIG. 5 with the rear end of the plaque underlying the patient's head. The forward end portion 12 of the plaque tapers downwardly and forwardly to a relatively thin edge adjacent the lower end of the patient's spine. The rear end portion 13 of the plaque is relatively thick to support the shoulders and upper back of the patient in an elevated position to facilitate artificial respiration operations. The upper transverse surface 14 of the plaque is dish-shaped or of slightly concave configuration as is best shown in FIG. 3.

The rear end portion of the plaque is provided with a deep opening or recess 15 for receiving the patient's head and specially designed to cradle the head in a hyperextended position illustrated in FIG. 5 thereby automatically providing a straight open and unobstructed air-way through the patient's mouth and trachea into the lungs.

Recess 15 is substantially wider transversely of the plaque than lengthwise thereof and generally elliptical in contour. The forward transverse edge 16 of recess 15 is inclined steeply downwardly and rearwardly to receive the patient's head. The rearmost edge portion of recess 15 is generally tubular in cross-section as indicated at 17 in FIG. 5. The lower transverse side of tubu-

lar member 17 is generally flush with the bottom wall of plaque 10 whereas its upper transverse side arches upwardly and merges with the transverse end portions of recess 15 as is best shown in FIG. 2. When the head is in a hyperextended position, as it is in FIG. 5, the crown rests against tubular member 17 with the rear of the head bearing against inclined arched surface 16.

Under other conditions of use the head need not be supported in the hyperextended position as, for example, when using an intermittent positive pressure breathing device such as that indicated generally at 20 in FIG. 1. Of importance is the fact that the elliptical shape of recess 15 permits the head to rotate laterally to one side or the other to avoid aspiration in the event of vomiting.

The opposite lateral sides of plaque 10 are preferably provided with hand grips 22, the outer sides of which lie generally flush with the adjacent sidewalls of the plaque. It will be noted from FIGS. 3 and 5 that these hand grips are spaced above the lower surface 24 of the plaque sufficiently as not to interfere with grasping the hand grips if the plaque happens to be supported on the pavement or other flat surface. It will be understood that the plaque is readily usable as a temporary stretcher with two attendants facing one another along the opposite sides of the patient with one hand of each on a hand grip and the other hand beneath the patient's legs.

Plaque 10 is also preferably provided with an upright tapering opening 25 adjacent either rear corner of the plaque. One or both of these openings is used to seat an accessory-supporting bracket designated generally at 26. As there shown, bracket 26 is provided with a mounting member 27 at its lower end tapered complementally to opening 25 and firmly seating the bracket in an upright position. The upper end of the bracket comprises a resilient twisted wire support 28 having been bent to provide a plurality of resilient notches 29, 30, 31 of different widths and sized to receive and grip tubing or accessories of different sizes. As shown in FIG. 1, the tubular main body of any well-known intermittent positive pressure breathing apparatus 20 is firmly seated and gripped within notch 29. This apparatus is of a well-known type and its details are described in my U.S. Pat. No. 3,603,313, granted Sept. 7, 1971. The mouthpiece 33 of that equipment is shown seated in the patient's mouth and secured in place as by a strip of adhesive tape 34.

The opening 36 through the forward end of the plaque is useful in hanging the plaque from a hook or bracket when the plaque is not in use. It should also be pointed out that the bottom wall of the plaque is provided with a plurality of longitudinally extending ribs 37 (FIG. 3) which strengthen the plaque and grip a supporting surface and resist lateral displacement.

The seamless construction of plaque 10 in a thin-walled completely sealed and hollow configuration renders the plaque highly buoyant. Because of this, lifesavers find that the plaque is most valuable. It is easily floated to a swimmer in distress and then installed beneath the swimmer's head and back. The deep recess for the head and the concave upper surface serve to hold the plaque in place beneath the swimmer while being returned to the shore line by the lifesaver. The assistance thereby provided calms and reassures the person in distress and very substantially reduces the effort required by the lifesaver in the rescue operation.

Once the rescued swimmer is ashore he is already in position and beneficially supported for the application of artificial respiration.

While the particular one-piece seamless hollow resuscitation plaque herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiment of the invention and that no limitations are intended to the detail of construction or design herein shown other than as defined in the appended claims.

I claim:

1. A one-piece resuscitation plaque for use in treating a patient suffering from suffocation, shock, cardiac conditions and the like, said plaque comprising a rigid seamless hollow buoyant shell of high-strength, rotationally molded thermoplastic material having a substantially uniform wall thickness, said plaque being elongated and tapering to a substantially thinner thickness at the forward end thereof, said plaque being relatively thick at the rear end and sized to underlie and firmly support the head and back of a spine patient, the rear end of said plaque having a head-supporting recess with a continuous head-supporting perimeter shaped to support the patient's head firmly while tilted rearwardly and downwardly and with the chest supported rigidly elevated whereby the bronchial passages of a supine patient lie open in a generally straight path to provide free unobstructed access through the mouth and into the lungs of the patient.

2. A resuscitation plaque as defined in claim 1 characterized in the provision of means thereon laterally of said head seating opening for detachably supporting bracket means equipped with resilient means for frictionally gripping and releasably supporting breathing accessories closely beside the patient's mouth.

3. A resuscitation plaque as defined in claim 2 characterized in that said means for supporting bracket means comprises an upwardly diverging tapering socket for seating the complementally shaped tapered lower end of said bracket means.

4. A resuscitation plaque as defined in claim 3 characterized in that said plaque is provided with a similar upwardly diverging tapering socket on either lateral side of said head supporting opening.

5. A resuscitation plaque as defined in claim 1 characterized in that said hollow shell includes a plurality of hand grips molded integral therewith and located at spaced apart intervals along the periphery of said plaque.

6. A resuscitation plaque as defined in claim 5 characterized in that said hand grips include one along either lateral side thereof with the hand grip portion thereof lying spaced substantially inwardly of the patient-supporting surface of said plaque thereby permitting the operator to gain a firm hold of the hand grip while the plaque is resting against the floor or other flat surface.

7. A resuscitation plaque as defined in claim 1 characterized in that said head supporting recess extends through the rear end portion of said plaque, said recess having an arcuate forward side wall which is inclined sharply downwardly and rearwardly, and the rear end transversely extending arcuate portion of said head supporting recess being confined substantially to an area closely adjacent the back surface of said plaque.

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8. A resuscitation plaque as defined in claim 1 characterized in that the bottom of said shell includes ribs extending parallel to one another and cooperating to resist lateral movement of said plaque relative to a supporting surface for said plaque, and the top of said shell being arched downwardly lengthwise thereof.

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9. A resuscitation plaque as defined in claim 1 characterized in that said walls of substantially uniform thickness are translucent to X-rays whereby the chest of a patient supported thereon may be X-rayed without need for removing said plaque.

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