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2,067,268

DEVICE FOR PROMOTING RESPIRATION

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Fig. 1

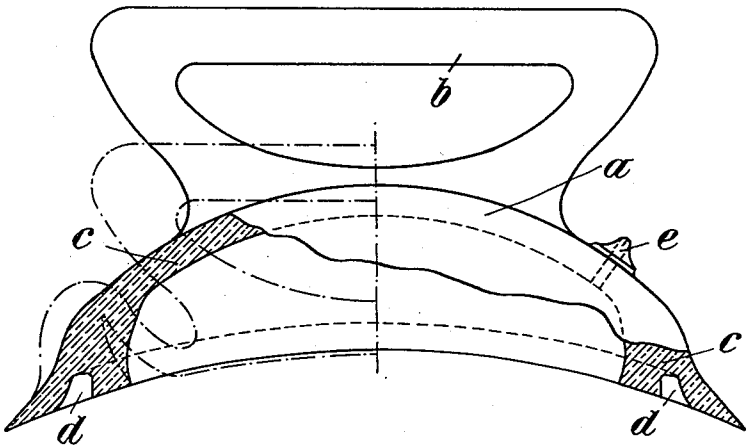


Fig. 2

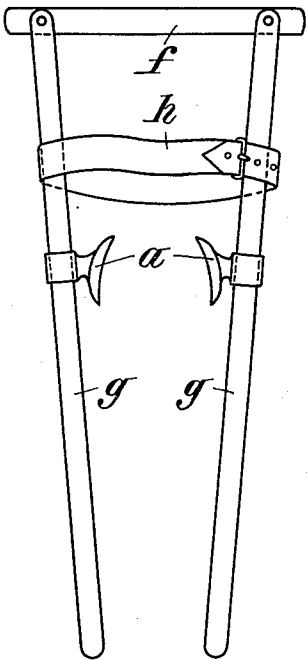
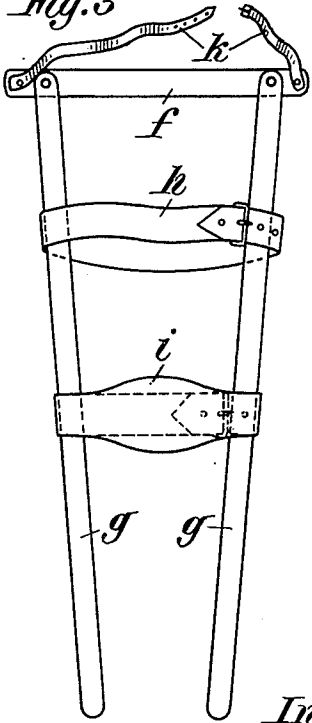


Fig. 3



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DEVICE FOR PROMOTING RESPIRATION

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3 Claims. (Cl. 128—29)

This invention relates to a device for promoting respiration for example in the case of drowning, asphyxiation or unconsciousness, also of newly born babes and the like.

Many devices for this purpose are known which operate on the known Sylvester arm method. No mechanical means are known for the Howard or Schafer hand method. This method consists solely in compressing the chest, whereas the most important for causing the respiration, i. e. the inhalation of air, is left to the elasticity or springing back of the ribs. This method is consequently imperfect and in different cases absolutely insufficient. With the known devices one was restricted to the compression of the chest for producing artificial respiration. No means are provided for gripping parts of the chest, such as the ribs themselves, to cause an artificial chest expansion. A further drawback of the known large pneumatic chambers accommodating the whole trunk and operated by varying air content in the chambers consists in their high cost which restricts their use to hospitals, first aid stations and the like, but does not make them available for the public in general as is necessary at the present time, and it is very difficult for the ambulance staff to convey such instruments to the scenes of an accident.

These drawbacks are overcome according to the invention by a device for promoting respiration by artificial chest expansion, characterized in that a pair of elongated suction cups or bells provided with handles having a curved edge conforming to the shape of the body, these bells being placed on the flanks of the chest or the lower edge of the ribs of the patient. By exerting pressure on the suction bells and owing to the different wall thickness it is possible to compress these and almost completely displace the air from the interior thereof and thus to obtain a perfect bearing on the chest itself. The escapement of the air from under the suction bell can be accelerated and rendered more complete by a valve provided in the wall and communicating with the atmosphere. By means of these suction bells provided with handles the rescuer is in a position to apply artificial respiration in the rhythm of the natural breathing. These suction bells may be connected in the manner known from other reanimating apparatus to hingedly interconnected two levers by straps or the like in such a manner that they adapt themselves to the flanks of the chest. In addition to a strap to be stretched across the back and another to be stretched over the belly, a third

auxiliary strap may be provided by which the head can be held turned sharply to one side when the victim is lying on his back.

An embodiment of the invention is illustrated by way of example in the accompanying drawing in which:—

Fig. 1 shows the adhesive plates partly in elevation and partly in section.

Fig. 2 shows a respiration lever system with the adhesive plates.

Fig. 3 shows the lever system alone with the head strap.

For the purpose of carrying out artificial respiration the patient, after being freed from all articles which fit tightly and impede respiration, is laid flat on his back and his head turned as far as possible sideways in alignment with the shoulders. The two suction bells *a*, one of which is illustrated in Fig. 1, are pressed from the front outer side on the lower edge of the ribs and caused to automatically adhere tightly to the body by suction by the complete exhausting of the air from the interior of the suction bell. The escaping of the air from under the suction bell is assisted and rendered complete by a suitably constructed valve *e*. By the pressing on of the adhesive plates an exhalation and liberation of the respiratory passages is first caused. If a pull is now exerted on the adhesive plates in outward and upward direction, the adhesive plates being easily gripped by means of the handles *b* provided for this purpose, an artificial chest expansion takes place, the ribs being lifted and turned as in natural inhalation. The suction bells can easily be removed by depressing the valve or by pressing together the side edges of the bell or by raising the edge thereof. In order to attain as far as possible complete evacuation of the air from the suction bell, the wall *c* of the bell is made of different thicknesses. In order to obtain a good adhesion of the lower edge of the suction bell on the skin of the body, this lower edge is enlarged and preferably has a circumferential groove *d* which can be filled with grease in any suitable manner. In order that the largest possible surface of the body can be acted upon by the suction bell for the purpose of exerting a gentle pressure and pull, it is elongated and its edge is curved to conform to the lower rib curves. The handle *b* may be integrally connected with the wall *c* of the suction bell and made of the same material, preferably rubber. A handle made of rigid material may likewise be employed which can be easily detachably connected with the suction bell.

The suction bell is partly indicated in operative position in dash lines.

In order to carry out the artificial respiration more easily and without tiring, even after hours of work, a lever system may be employed such as shown in Figs. 2 and 3. This lever system consists of two hand levers *g* hingedly connected to a head cross bar *f* and designed to extend one on each side of the body of the patient whose neck rests on the cross bar *f*. The two hand levers *g* are interconnected by an adjustable strap *h*, which is passed under the back of the patient, whereas a second strap *i* of the levers is placed over the belly of the victim. Each hand lever carries a suction bell *a* of the type above described. The artificial respiration is carried out by correspondingly moving the hand levers. To hold the head of the patient in the desired position turned sideways, a thin auxiliary strap *k* is provided on the cross bar *f* connecting the levers and this strap is passed over the head of the patient to maintain his head in the desired position to prevent vomiting and swallowing of the tongue.

I claim:—

1. A device for promoting respiration by the artificial expansion of the trunk or chest, comprising in combination a suction bell of soft rubber constructed in elongated cup-shape with a brim curved to conform to the curvature of the body, a handle on the outer side of said bell for pressing said bell against the body and compressing the same to cause it to automatically adhere to the body by suction, and an outwardly opening valve directly communicating with the atmosphere arranged in the wall of said bell and adapted to allow the escapement of air from the interior of said bell during the compression thereof by means of said handle and to close automatically when pressure is no longer exerted on said handles.

2. A device for promoting respiration by the artificial expansion of the trunk or chest, comprising in combination a suction bell of soft rubber constructed in elongated cup-shape with a brim curved to conform to the curvature of the body, a handle on the outer side of said bell for pressing said bell against the body and compressing the same to cause it to automatically adhere to the body by suction, and an outwardly opening valve directly communicating with the atmosphere arranged in the wall of said bell and adapted to allow the escapement of air from the interior of said bell during the compression thereof by means of said handle and to close automatically when pressure is no longer exerted on said handles, said bell having an annular groove extending around its rim and adapted to increase the suction between the bell and body.

3. A device for promoting respiration by the artificial expansion of the trunk or chest, comprising in combination a suction bell of soft rubber constructed in elongated cup-shape with a brim curved to conform to the curvature of the body, a handle on the outer side of said bell for pressing said bell against the body and compressing the same to cause it to automatically adhere to the body by suction, an outwardly opening valve directly communicating with the atmosphere arranged in the wall of said bell and adapted to allow the escapement of air from the interior of said bell during the compression thereof by means of said handle and to close automatically when pressure is no longer exerted on said handles, and a frame composed of two levers interconnected by a cross bar, each lever adapted to carry one of said bells, straps on said levers adapted to secure said levers to the body of the patient, and a strap on said cross-bar adapted to secure the head of the patient in the desired position on said cross-bar.

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