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H. A. MARSDEN
RESUSCITATOR-ASPIRATOR
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3,079,916

Fig. 1.

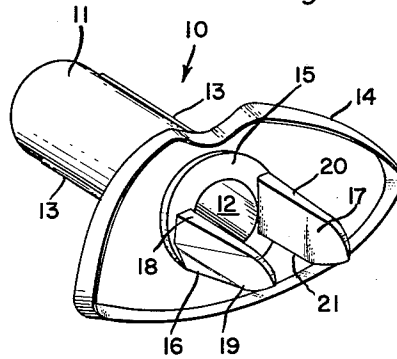


Fig. 2.

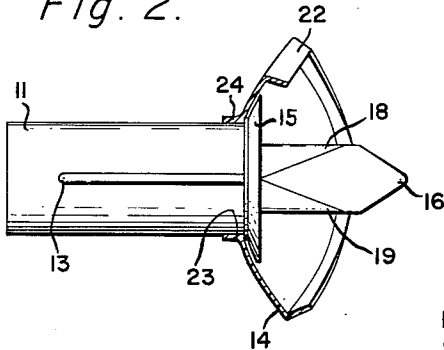


Fig. 3.

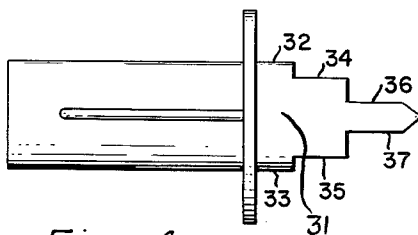
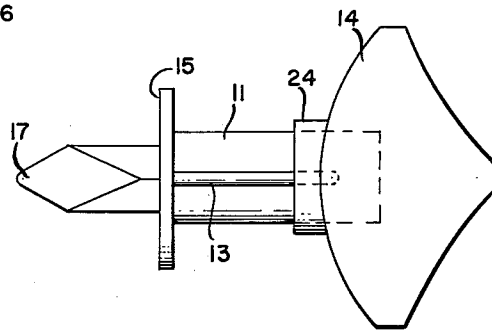


Fig. 4.

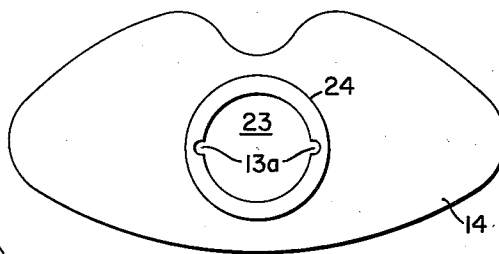


Fig. 1a.

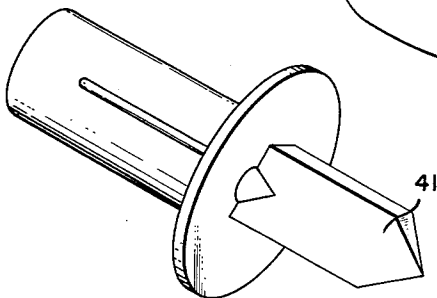


Fig. 5.

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RESUSCITATOR-ASPIRATOR
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This invention relates generally to apparatus for reviving asphyxiating patients and more particularly to a resuscitator for applying mouth-to-mouth insufflation to a patient and which is also adaptable to be utilized as an aspirator on a drowning patient.

Although a number of resuscitators adapted for practicing mouth-to-mouth insufflation are presently known to the art, including those disclosed by applicant in his patent applications Serial Nos. 750,982 filed July 25, 1958, now abandoned and 834,060 filed August 17, 1959, now Patent No. 3,021,836 have proven to be highly efficient and very successful, it has been discovered as a result of practice and additional research in the art of mouth-to-mouth insufflation that some problems still exist.

Among these problems, it was discovered that under some circumstances the teeth of a patient may have a tendency to slip upon a very smooth and relatively hard surfaced mouthpiece. Such slippage occurs particularly as the patient is being revived and first passes from a state of unconsciousness to a state of semi-consciousness and has a tendency to involuntarily bite in a rather hard manner as a result of muscle spasms in the jaw. As a result of this slippage, the seal about the external portion of the mouth cavity of the patient, which is necessary to efficiently practice mouth-to-mouth insufflation, has on some occasions been momentarily broken.

It was also found that in practicing mouth-to-mouth insufflation upon an asphyxiating patient, particularly during the period of time that the patient was being moved from one point to another for proper medical treatment, the mouthpiece has on occasion been inadvertently forced into contact with the throat of the patient. This occurred in such instances as those of transporting the patient over bumpy roads or by aircraft during turbulent weather.

When a patient is unconscious from asphyxiation it has been found that the jaw of the patient sometimes becomes paralyzed and cannot readily be opened. As a result thereof, it becomes necessary to provide an apparatus which can function as an oral screw for prying open the jaw of the asphyxiating patient, or alternatively may be used even though the jaw cannot be opened, to thereby permit the application of mouth-to-mouth insufflation to the patient as more fully explained below. Such apparatus preferably should be a portion of the resuscitator. None of the prior art devices presently known provides such apparatus.

When a patient is asphyxiating from drowning, and the lung and throat cavities of the patient contain water or other foreign matter, it becomes necessary to remove the foreign matter from the various cavities of the body prior to practicing artificial respiration. Although the normal method of applying pressure to the abdomen and lungs of the patient to remove such foreign matter is effective to some degree, it has been found that aspiration is much more effective and efficient. It is therefore also necessary to provide apparatus which may be utilized as an aspirator where such is necessary. Preferably such an aspirator should be an integral part of the resuscitation apparatus.

Each of the foregoing problems should be overcome while at the same time providing apparatus which is effective to overcome the well-known disadvantages inherent in practicing mouth-to-mouth insufflation such as elimination of intimate contact between the patient and the

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one applying mouth-to-mouth insufflation; providing an apparatus which may be utilized to accomplish rotation of the head and chin of the victim up and back to open the throat passage thus permitting the entrance of air through the throat and into the lungs; preventing the expulsion of foreign matter from the victim to the one practicing the mouth-to-mouth insufflation; and providing a simple and compact apparatus having no moving parts.

Accordingly, it is an object of the present invention to provide an apparatus for reviving an asphyxiating person which may be used in the practice of mouth-to-mouth insufflation, which prevents undesired movement of the victim's teeth during the practice of the mouth-to-mouth insufflation, and which may be used even though the victim's teeth are locked together.

It is another object of the present invention to provide an apparatus for reviving an asphyxiating person which may be utilized both as an aspirator and as a resuscitator, and which contains means for opening the jaw of the asphyxiating person.

It is another object of the present invention to provide an apparatus for reviving an asphyxiating person which includes means for limiting the movement of the mouthpiece into the mouth of such person irrespective of violent motion during revival.

It is another object of the present invention to provide apparatus which may be utilized as a resuscitator or aspirator in the revival of asphyxiating persons which is exceedingly compact, simple, rugged, inexpensive to manufacture, and which has no moving, adjustable or renewal parts.

In accordance with one aspect of the present invention, a resuscitator-aspirator is provided which includes an elongate member having an unimpeded opening there-through and a bite-block extending therefrom. Interposed between the bite-block and the elongate member is a flange which, upon insertion of the mouthpiece into the mouth of a victim, restricts the travel thereof by abutting against the lips or teeth of the victim. A face mask for sealing the exterior portion of the mouth cavity of the victim is detachably disposed in positioned relationship adjacent the flange and upon positioning means extending from the elongate member.

Other and more specific objects of the present invention will become apparent from a consideration of the following description taken in conjunction with the accompanying drawing which is provided by way of example only and is not intended as a limitation upon the present invention, and in which:

FIG. 1 is a perspective view illustrating a resuscitator-aspirator in accordance with the present invention;

FIG. 1a is a rear elevational view of the face mask which is a part of the resuscitator-aspirator of the present invention;

FIG. 2 is a side elevational view partly in cross section of a resuscitator-aspirator in accordance with the present invention as illustrated in FIG. 1;

FIG. 3 is a side elevational view of the structure of FIGS. 2 and 3 illustrating an additional use of the resuscitator-aspirator of the present invention; and

FIGS. 4 and 5 are alternative embodiments of a resuscitator-aspirator in accordance with the present invention.

Referring now to the drawings, and more particularly to FIGS. 1, 1a, and 2 thereof, a resuscitator-aspirator in accordance with the present invention is illustrated in its preferred embodiment. As is illustrated in FIG. 1, the resuscitator-aspirator designated generally at 10 includes an elongate member generally in the form of a right circular cylinder 11 having an opening 12 extending there-through. Extending outwardly from the surface of the cylinder 11 is a positioning means in the form of ridges 13.

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The ridges 13 cooperate with keyway type slots 13a formed in the face mask 14 to position the face mask to properly administer mouth-to-mouth resuscitation or aspiration. It should be noted that the ridges 13 do not extend to the end of the cylinder 11. The lack of the ridges 13 at the end of the cylinder 11 permits fast and positive assembly of the face mask and cylinder and then fast and positive positioning of the face mask during the period when all possible speed is necessary.

A radial flange 15 extends outwardly from one end of the cylinder 11. The flange 15 is utilized during the practice of resuscitation or aspiration to prevent inadvertent damage to the patient. In the event of violent motion of the patient, the flange 15 strikes his teeth or lips thereby preventing the remainder of the apparatus from engaging his throat.

Extending from the flange 15 is a bite-block consisting of a pair of projections 16 and 17 which are spaced on each side of the opening 12 to thereby provide a substantially unimpeded continuation thereof.

As can be seen, particularly from FIG. 1, each of the projections 16 and 17 is relatively thick at the base (the interconnection with flange 15) and tapers at the ends thereof to a rounded point. At the same time it should be noted that each of the projections 16 and 17 has a pair of spaced apart parallel flat surfaces 18-19, 20-21, respectively.

The thick base provides additional strength to the projections while the pointed ends permit the apparatus to be used as an oral screw. That is, one or both of the projections may be forced (flat wise) between the teeth of a patient, whose jaw is paralyzed or locked, and then rotated to pry the teeth apart thus opening the mouth. At this point the projections are in a position to be inserted in place.

The flat parallel surfaces 18-19, 20-21 on the projections provide a surface upon which the teeth of a patient may rest in non-slipping engagement. This becomes important in those cases where the patient's jaw may contract as a result of muscle spasms during revival.

The flange 15 and the projections 16 and 17 are preferably constructed as an integral part of the cylinder 11, however, it should be expressly understood that they may be constructed as individual parts which are assembled with the cylinder 11.

The face mask 14 is used to exteriorly seal the mouth cavity of the patient during the practice of resuscitation or aspiration. Preferably, the face mask 14 is constructed of pliable resilient plastic material, or the like, which may be easily conformed about its outer edge to the surface of the patient's face surrounding the mouth cavity. The face mask 14 is preferably formed as a separate part that detachably cooperates with the cylinder 11 and is positioned by ridges 13.

As is more clearly seen in FIG. 2, the face mask 14 is provided with a peripheral flange such as lip 22 extending outwardly therefrom in one direction. The lip 22 aids in effecting a seal about the patient's mouth. An opening 23 is provided through the face mask 14 to permit its cooperation in the desired manner with cylinder 11. A second flange such as the collar 24 extends in the opposite direction and defines the opening 23. The collar 24 thus provides an increased area of contact between the face mask 14 and the cylinder 11 and thereby aids in effectively providing a seal between the face mask and the cylinder. The collar 24 and the opening 23 are also provided with small keyway type slots 13a which, with ridges 13, position the face mask appropriately for the practice of resuscitation or aspiration.

As is illustrated in FIG. 3 the face mask 14 may be detached from the cylinder 11, reversed, and then positioned to cooperate with the end of the cylinder opposite the projections 16-17. In this position the resuscitator-

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aspirator of the present invention may be used in those cases where the patient's jaw is locked to such a degree that it cannot be opened. The end of the cylinder 11 is placed against the teeth of the patient, the face mask 14 positioned to effect a seal, and air is then forced between the teeth at a slower rate but sufficient to revive the patient.

In operation, the resuscitator-aspirator of the present invention may be used in the following manner. The projections 16-17 are inserted into the mouth of a patient up to the flange 15. The face mask 14 is then fitted about the exterior of the patient's mouth to effect a seal about the mouth cavity. The rescuer then places his mouth upon the opposite end of the cylinder 14 and blows into the patient's mouth and lungs in the proper and accepted manner until the patient is revived. The patient's lungs and mouth are, of course, first cleared of any foreign matter.

Referring now more particularly to FIG. 4, it can be seen that the bite-block may have a plurality of spaced apart flat parallel surfaces. As is therein shown the bite-block includes a pair of projections 31 (only one is shown) having a generally wedge shape. A series 32-33, 34-35, 36-37, of spaced apart parallel flat surfaces are provided each pair of which is spaced closer together than the preceding pair. Each pair of surfaces functions in the same manner as above described. The remainder of the structure is identical to that above described.

Alternatively, the mouthpiece of a resuscitator-aspirator in accordance with the present invention may include only a single projection 41 as illustrated in FIG. 5. Such a structure may be obviously utilized as an oral screw and is efficient to carry out the various other requirements of a resuscitator-aspirator in accordance with the present invention as above described.

There has thus been disclosed a resuscitator-aspirator which is exceedingly simple, small and compact, rugged and which may be utilized as an oral screw, an aspirator or a resuscitator.

Although various features and concepts of the resuscitator aspirator of the present invention have been set forth in the foregoing illustrative embodiments, the present invention is not to be limited in accordance therewith but is to be construed only in accordance with the claims set forth below.

What is claimed is:

1. A resuscitator-aspirator comprising: a hollow elongate member defining an unimpeded opening longitudinally therethrough; an outwardly extending radial flange at one end of said elongated member; a pair of ridges extending outwardly from the exterior surface of said elongated member and backwardly from said flange; a pair of spaced apart projections extending outwardly from said flange and having opposed spaced apart substantially flat and parallel surfaces; and a mask for sealing the oral cavity of a patient, said mask including a lip extending in one direction for engagement with the face of said patient, an opening for receiving said elongate member in positioned relationship with said ridges, and a collar surrounding said opening and extending in the opposite direction to effectively provide a seal between said mask and said elongate member.

2. Apparatus as defined in claim 1 in which each of said projections has a thick base portion and terminates in a rounded point thereby to permit said apparatus to be used as an oral screw.

3. Apparatus as defined in claim 1 in which each of said projections has a plurality of spaced apart flat parallel surfaces.

4. Apparatus as defined in claim 1 in which said ridges extending backwardly from said flange terminate intermediate said flange and the end of said hollow elongate member opposite said flange and said collar defines a pair

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of slots for receiving said ridges thereby to position said mask.

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