

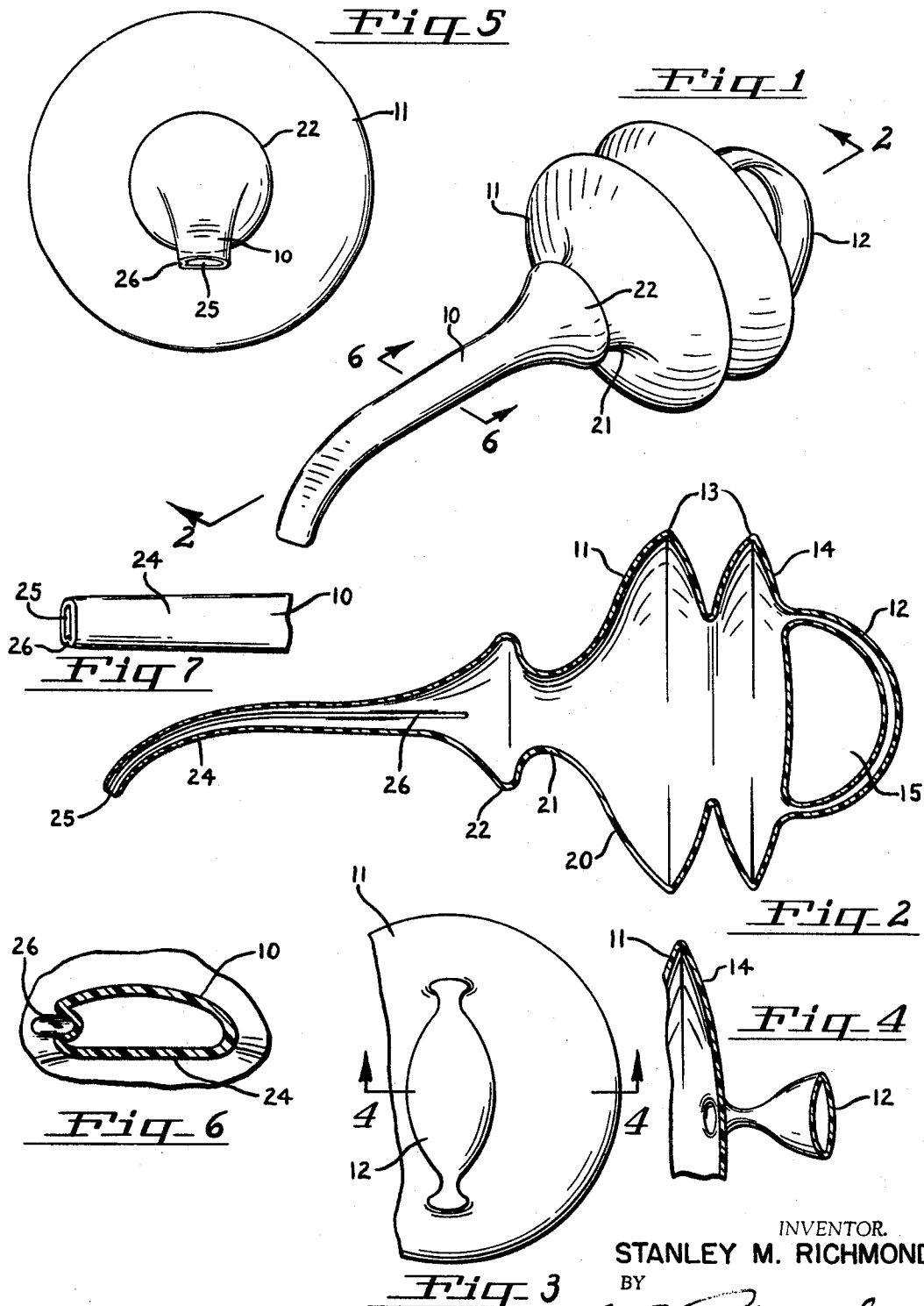
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NEWBORN ASPIRATOR

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NEWBORN ASPIRATOR

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ABSTRACT OF THE DISCLOSURE

A bulb type aspirator having a thumb loop on one end of the bulb and a neck on the other end to receive the operator's fingers for either squeezing or extending the bulb. The aspirator has a longitudinally curved nozzle portion with a transversely flat tongue depressor surface on its under side and an exterior air vent groove extending along one edge of the nozzle.

This invention relates to a suction syringe for medical use and more particularly to an aspirator for removing mucous and any other fluids that may be present in the pharynx of a newborn baby.

In most cases the pharynx of a newborn baby is congested with fluids and mucous which must be removed quickly so that the baby can start breathing. There is no known device which is well adapted for this purpose. For lack of something better, physicians long have used a conventional rubber ear syringe despite a number of obvious objects to such devices.

The conventional ear syringe is not the right shape and is often incapable of applying sufficient suction. The short, round, tapered nozzle tube on an ear syringe will not reach sufficiently far down into the pharynx and larynx, which is a rectangular space, and, when forced into the larynx, it causes damage to the delicate epithelial tissues. Damage is also caused by trying to project a straight tube into the curved passage of the pharynx.

Such syringes, which are intended only for irrigation purposes, depend entirely upon the resilience of the rubber to expand the bulb after it has been squeezed. The expansion force is relatively weak since it is intended to be sufficient only to refill the bulb with a non-viscous irrigating liquid. When the rubber deteriorates with age and steam sterilization, its suction capabilities become even more inadequate for removing viscous material such as thick mucous. There is no possible way manually to expand the bulb to compensate for the lack of resilience when the rubber has deteriorated.

Also, rubber syringes are always opaque whereby their effectiveness in removing fluids and mucous can only be ascertained by removing the syringe from the baby's throat and observing the discharge when the bulb is squeezed. Thus, the syringe often must be inserted repeatedly and forcibly into the baby's throat, aggravating the injury to the delicate tissues. In addition, conventional ear syringes become wet and slippery in the delivery room and are quite difficult to grasp and manipulate with dexterity when they must be applied quickly to prevent the baby from choking to death. In short, they are injurious and only partially effective and are very awkward to use.

Objects of the invention are, therefore, to provide an improved suction syringe, to provide an improved aspirator for removing mucous and other fluids from a baby's throat, to provide a syringe having positive means for expanding a suction bulb, to provide an aspirator having a curved nozzle end to fit a baby's pharynx without damage, to provide an aspirator which will operate effectively as a tongue depressor, to provide an aspirator having an air vent to admit air into the pharynx as fluids and mucous are being removed, and to provide a syringe made of

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transparent or translucent material so that the amount of material drawn into the syringe may be observed.

The present syringe or aspirator is preferably molded of a durable and gas sterilizable transparent or translucent plastic so that its contents may be readily observed immediately while material is being drawn into the syringe. The bulb of the syringe is equipped with a thumb loop to develop the desired amount of suction by positive action. The syringe is provided with a transversely flattened and longitudinally curved nozzle end of appropriate size and shape to fit a newborn baby's pharynx and serve as a tongue depressor. One side of the nozzle portion is grooved to provide an air vent for admitting air and relieving the vacuum produced in the pharynx and larynx by the suction of the bulb.

The foregoing and other objects and advantages will become apparent from the following description of the preferred embodiment illustrated on the accompanying drawing. Various changes may be made, however, in the details of construction and certain features may be used without others. All such modifications within the scope of the appended claims are included in the invention.

In the drawing:

FIGURE 1 is a perspective view of a syringe embodying the principles of the invention;

FIGURE 2 is a sectional view on the line 2—2 of FIGURE 1;

FIGURE 3 is a fragmentary end elevation view of the bulb end;

FIGURE 4 is a view taken on the line 4—4 in FIGURE 3;

FIGURE 5 is an end elevation view of the nozzle end;

FIGURE 6 is a cross sectional view on the line 6—6 in FIGURE 1; and

FIGURE 7 is a fragmentary elevation view on the line 7—7 in FIGURE 2.

The syringe comprises, generally, a nozzle portion 10, a bulb or bellows portion 11 and a generally semicircular thumb loop 12. These parts are preferably integrally blow molded of a soft, resilient, transparent or translucent plastic which may be gas sterilized. The parting line between the two mold halves lies in the plane of the view in FIGURE 2. The bulb portion 11 comprises a pair of circular bellows folds 13, the end wall 14 of the bellows carrying the hollow thumb loop 12 as an integral part thereof. This loop provides a semicircular opening 15 for insertion of the physician's thumb.

On the other end of the bellows the end wall 20 is necked at 21 adjacent an enlarged portion 22 which forms the base of the nozzle 10. By straddling the neck 21 with two fingers, the thumb in loop 12 may be pressed toward the fingers to compress the bellows or moved away from the fingers to extend and produce suction in the bellows. This arrangement also provides a secure hand grip so that the syringe, even when wet and slippery, will not slip out of the operator's hand. To provide an even more secure grip, the surfaces which come in contact with the operator's hand are preferably of a rough texture.

If the walls of the bellows are made thick enough, they will have sufficient spring action to exert considerable suction pressure by their own resilience. An advantage of the present construction, however, is that the walls may be made relatively thin for greater economy in production, whereby the syringe may be discarded after a single use and does not require hospital sterilization. Since the suction capability does not depend upon the spring force of the plastic itself, the wall thickness normally used for conventional rubber bulb construction may be reduced considerably. Thus, the present form of construction is adapted for either single use and discard or for repeated use with gas sterilization.

When the bulb is squeezed, the palm sides of the operator's fingers disposed in neck 21 bear against end wall 20. When the bulb is being extended to apply suction, the back sides of the operator's fingers bear against the shoulder formed by enlarged portion 22. Thus, the grip is not shifted in squeezing and extending the bulb and the operator has a firm and sure grasp on the bulb at all times so that it does not slip out of his hand.

Nozzle 10 is longitudinally curved as shown and has a tongue depressor surface 24 on its under side which is transversely flat as shown in FIGURES 6 and 7. The nozzle preferably has only a slight taper in both width and thickness. The nozzle tip has a suction opening 25. The outside edges of the tip are rounded and the surfaces of the nozzle are polished for smoothness. Extending along one edge of the nozzle is a longitudinal groove 26 for admitting air to the pharynx when suction is applied. When this edge of the nozzle is in contact with the wall of the pharynx, the groove remains open to provide an air passage exterior to the nozzle whereby any liquid and mucous may be freely removed.

The use of transparent or translucent material in the nozzle and bulb makes the quantity of removed material readily observable as it is flowing through the nozzle and into the bulb without removing and emptying the syringe. The nozzle is dimensioned and curved not only to fit a newborn baby's pharynx but also to reach relatively far down into the larynx so that removal of undesirable fluid material may be accomplished quickly and easily without injury to the infant.

Having now described my invention and in what manner the same may be used, what I claim as new and desire to protect by Letters Patent is:

1. A suction syringe for use in the larynx comprising a resilient squeeze bulb, a thumb loop on one end of said

bulb for extending the bulb for suction, a neck on the opposite end of the bulb to receive an operator's fingers for either squeezing or extending the bulb, a shoulder on said neck forming an abutment behind the fingers for extending the bulb, a longitudinally curved nozzle extending from said shoulder, and a transversely flat tongue depressor surface on the concave side of said nozzle.

2. A syringe as defined in claim 1, including channel means extending along said nozzle for admitting air into the larynx.

3. A suction syringe adapted to be blow molded of plastic material for use in the larynx comprising a squeeze bulb, a hollow thumb loop integral with one end wall of the bulb, a neck portion integral with the opposite end wall of the bulb, a circular shoulder on said neck spaced from said opposite end wall, a longitudinally curved nozzle extending from said shoulder, a transversely flat tongue depressor surface on the concave side of said nozzle, and an exterior air vent groove extending along one edge of said nozzle.

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