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INFLATABLE DAM FOR ARRESTING BLEEDING IN THE INTERNAL BODY CAVITIES

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Fig. 1.

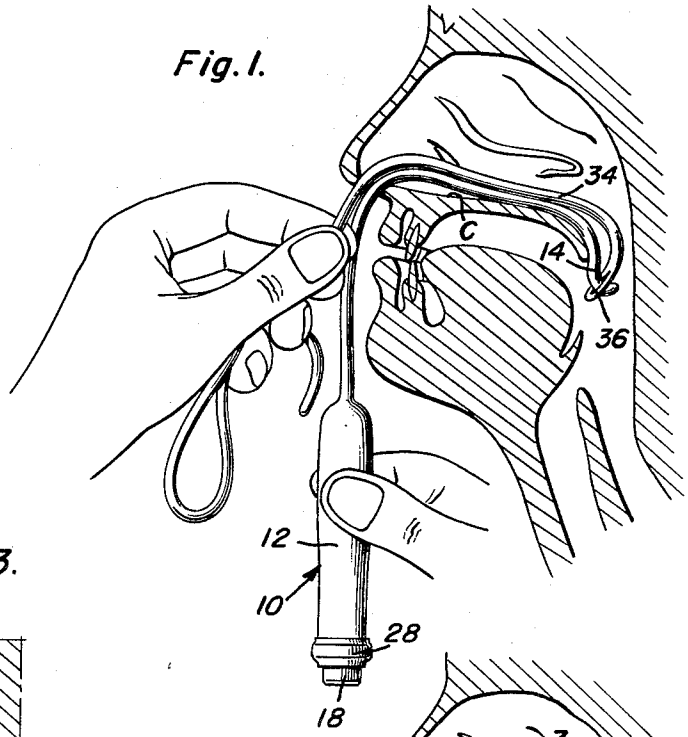
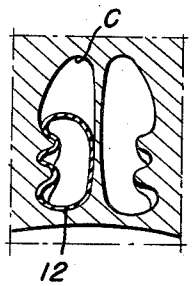


Fig. 3.



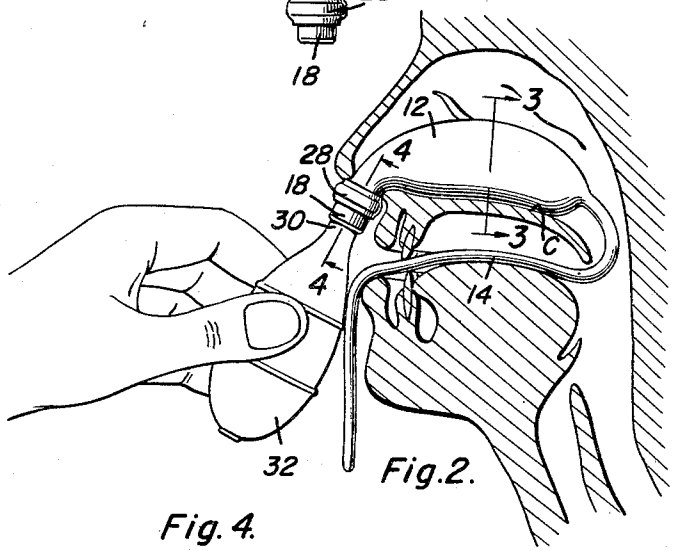


Fig. 2.

Fig. 4.

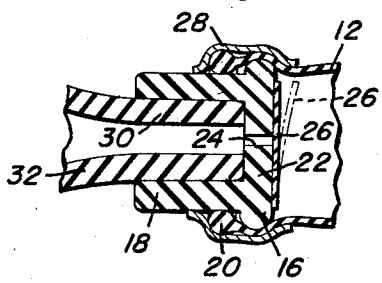


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Fig. 5.

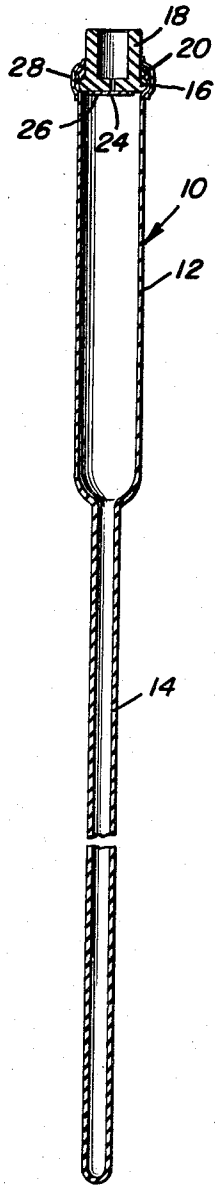


Fig. 6.

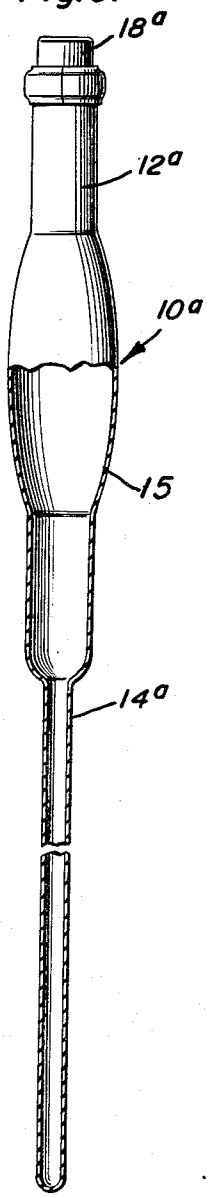


Fig. 7.

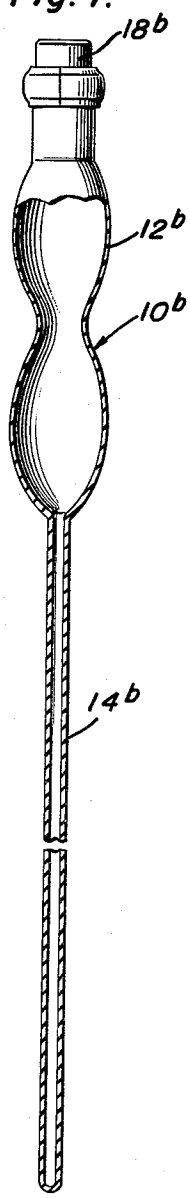


Fig. 8.

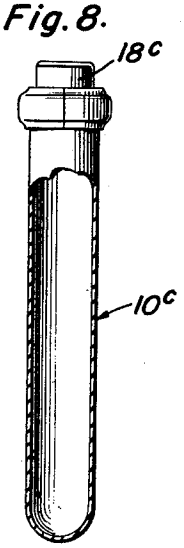


Fig. 9.

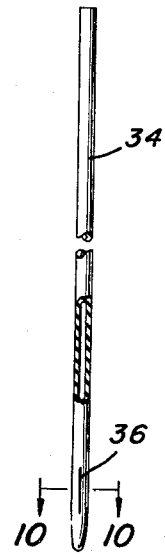


Fig. 11.

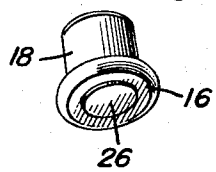
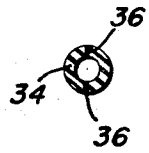


Fig. 10.



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Patented Aug. 4, 1953

2,647,515

UNITED STATES PATENT OFFICE

2,647,515

INFLATABLE DAM FOR ARRESTING BLEEDING IN THE INTERNAL BODY CAVITIES

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Application August 20, 1951, Serial No. 242,624

7 Claims. (Cl. 128—325)

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This invention relates to new and useful improvements in devices for arresting bleeding in the internal body cavities and the primary object of the present invention is to provide an inflatable dam that is conveniently inserted into a cavity and which is expanded against the wall of the cavity to arrest bleeding of the cavity.

Another important object of the present invention is to provide an inflatable dam for arresting bleeding in the internal body cavities including an expansible tube closed at one end and having a bulb detachably secured at its open end to permit the tube to be expanded after the same has been inserted into an internal body cavity.

A further object of the present invention is to provide a device of the aforementioned character wherein the tube includes a reduced extension at its closed end and a flexible guide element having a slit for receiving and holding the extension as the guide element is pulled through an internal body cavity.

A still further aim of the present invention is to provide an inflatable dam for arresting bleeding in the internal body cavities that is extremely simple and practical in construction, reliable and efficient in use, inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, references being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a sectional view of a human's face to show the invention being inserted into the nose for arresting a nose bleed;

Figure 2 is a view similar to Figure 1 but showing the guide element removed and a bulb applied to the tube and the bulb depressed and the tube expanded;

Figure 3 is an enlarged sectional view taken substantially on the plane of section line 3—3 of Figure 2;

Figure 4 is an enlarged detail sectional view taken substantially on the plane of section line 4—4 of Figure 2;

Figure 5 is a longitudinal sectional view through the center of one of the inflatable dams;

Figure 6 is a view partly in section and partly in elevation of another embodiment of the inflatable dams;

Figure 7 is a view similar to Figure 6 of a further embodiment of the inflatable dam;

Figure 8 is a view similar to Figures 6 and 7 but of a still further embodiment of the inflatable dam;

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Figure 9 is a view partly in section and partly in elevation of the guide element used in the invention in conjunction with the dam of Figures 5, 6 and 7;

Figure 10 is an enlarged transverse sectional view taken on the plane of section line 10—10 of Figure 9; and

Figure 11 is a perspective view of the plug used in the present invention.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents an inflatable dam composed of a resilient, expansible and contractable tube or body 12 having an elongated and reduced extension 14 at one end whose outer extremity is closed, whereby the tube 12 may be inflated by air admitted to the tube through its open end. The extension 14 constitutes a tail element whereby the tube 12 may be positioned in a cavity. Therefore, the extension 14 is longer than the tube 12 and of a length sufficient to extend through the nasal pharyngeal and from a patient's mouth, as shown in Figures 1 and 2.

The flanged portion 16 of a plug 18 is fitted into the open end of the tube 12 and the open end of the tube is formed with a beading 20 that extends about the periphery of the plug, intermediate the ends of the plug. The plug 18 is provided with an inner end wall 22 having a central aperture 24 that is adapted to be closed by a flap valve 26 secured by cement or the like at one end to the outer face of wall 22.

Means is provided for sealing one end of the plug 18 in the open end of the tube 12 and this means assumes the form of a rubberized fabric or gum stock 28 that is tightly wrapped about the beading 20 at the open end of the tube and the plug, thus hermetrically sealing the plug to the tube.

The discharge and intake portion 30 of a compressible and expansible bulb or syringe 32 is frictionally fitted in the axial recess or socket of plug 18 to permit expansion of the tube 12 as the bulb 32 is manually depressed.

A flexible guide element or applicator 34 is provided for placing the dam in a nasal cavity. This guide element 34 is made of either extruded or molded pliable rubber or plastic for nasal application. The guide element 34 is formed with a slit 36, adjacent one of its ends, that will receive and yieldingly grip the outer end of extension 14.

In practical use of the invention, the extension **14** is extended through the nasal pharyngeal cavity C by the guide element **34**, as shown in Figure 1, until the tube **12** is positioned in the cavity C as shown in Figure 2. The guide element **34** is then removed from extension **14** and the bulb **32** is applied to plug **18** so that as the bulb is depressed the tube **12** will be expanded to contact the wall of cavity C to arrest bleeding.

The flap valve **26** will permit air to enter the tube from the bulb, but will prevent the air in the tube from passing back into the bulb.

Figure 6 shows the inflatable dam **10***a* in slightly modified form to include a tube **12***a* having an enlarged, rounded central portion **15**. One end of tube **12***a* is provided with an elongated reduced extension **14***a* whose outer extremity is closed. The open end of the tube **12***a* receives a plug **18***a* identical to plug **18**.

Figure 7 illustrates the inflatable dam **10***b* in further modified form. In this embodiment, the dam **10***b* comprises a tube **12***b* in the shape of a dumbbell one end of which is formed with a reduced extension **14***b* whose outer extremity is closed. The opposite end of the tube **12***b* receives a plug **18***b* similar to plugs **18** and **18***a*.

The dam **10***c* shown in Figure 8 is similar to the dam **10**, however, the dam **10***c* comprises a tube **12***c* having a closed end and void of an extension. The open end of tube **12***c* accommodates a plug **18***c* identical to plugs **18**, **18***a* and **18***b*.

The wall section of each dam **10**, **10***a*, **10***b* and **10***c* is made of thin natural rubber latex dipped once full length of the form and then dipped a second or third time to increase the wall thickness. Then the beading at the open end of each tube is formed after which the dam is cured in regular manufacturing process. This material used for the dams is inert, non-toxic and can be marketed sterile.

Having described the invention, what is claimed as new is:

1. As a new article of manufacture, an inflatable dam for arresting bleeding in the internal body cavities, said dam comprising an elongated expansible and contractible tube having a reduced extension at one end considerably longer than the tube and including a closed outer extremity, means detachably engaging said extension for guiding the dam through a cavity, and means carried by the end of said tube remote from said extension for directing air into the tube for inflating the tube.

2. The combination of claim 1 wherein said means detachably engaging said extension includes a flexible guide element having a slit therein accommodating said extension.

3. An inflatable dam for arresting bleeding in the internal body cavities, said dam comprising an elongated resilient tube having one end open, an elongated flexible and tubular tail element integrally formed with the other end of the tube and having a closed outer extremity, said tail element providing means whereby the tube may be guided into a patient's nose and properly positioned within a patient's nose, and means releasably secured to the open end of the tube for inflating the tube after the latter has been placed in a body cavity.

4. The combination of claim 3 wherein said tube and said extension are constructed of thin

natural rubber latex so that the tube may readily and comfortably conform to the contour of a cavity in which the same is placed.

5. An inflatable dam for arresting bleeding in the internal body cavities, said dam comprising an elongated expansible resilient tube having inner and outer ends, said tube adapted to be inserted in an internal body cavity and inflated to block the cavity in which it is inserted, and a restricted closure at the outer end of said body, said tube having an elongated flexible extension at its inner end considerably longer than the tube and adapted to extend from a patient's mouth to provide a means whereby the tube may be properly positioned in a patient's nose, said extension having a closed outer extremity.

6. An inflatable dam for arresting bleeding in the internal body cavities, said dam comprising an elongated expansible resilient tube having inner and outer ends, said tube adapted to be inserted in an internal body cavity and inflated to block the cavity in which it is inserted, said inner end of said tube being formed with an elongated tail element longer than the tube and having a closed outer extremity for positioning of the tube in a cavity, a plug fitted in the outer end of said tube and having an opening therein communicating with the interior of said tube, and a flap valve supported by the plug and normally closing the opening, said plug having a socket concentric with the opening and adapted to receive the outlet nipple of a syringe.

7. An inflatable dam for arresting bleeding in the internal body cavities, said dam comprising an elongated expansible resilient tube having an open outer end and adapted to enter an internal body cavity and be inflated to block the cavity in which it is inserted, a plug having a flanged portion fitted in the outer end of said tube, said outer end of said tube having a peripheral bead about the plug, means sealing the plug in the tube, said plug having an opening in its flanged portion communicating with the interior of the tube and a flap valve carried by the plug positioned within the tube and closing the opening, said plug having an axial recess, and an expansible and contractible bulb having a stem frictionally fitted in said recess, said tube having an elongated flexible extension at its inner end considerably longer than the tube and adapted to extend from a patient's mouth to provide a means whereby the tube may be properly positioned in a patient's mouth, said extension being tubular and having a closed outer extremity.

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JOSEPH M. GAPSTUR.

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