

June 19, 1962

J. W. DICKEY, JR., ET AL
GASTRIC SUCTION CONTROL DEVICE

3,039,463

Filed May 9, 1960

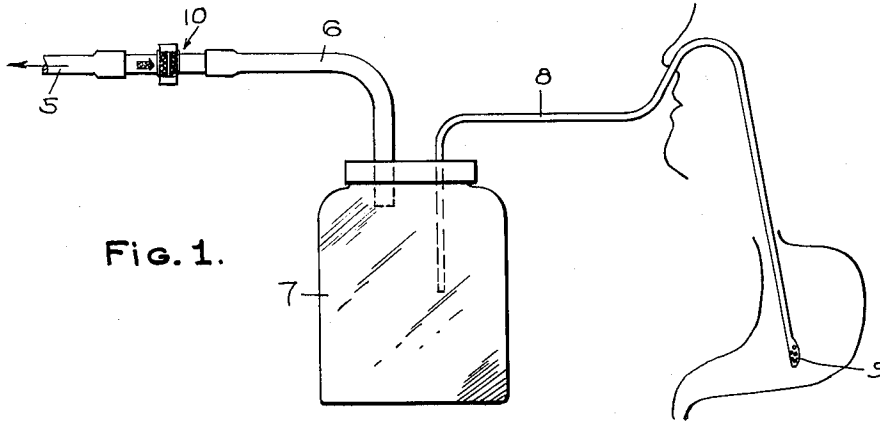


Fig. 1.

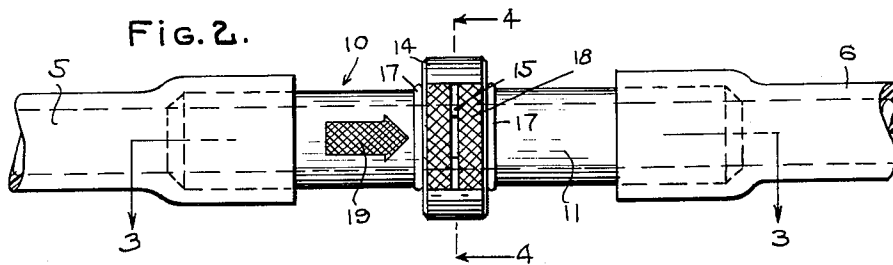


Fig. 2.

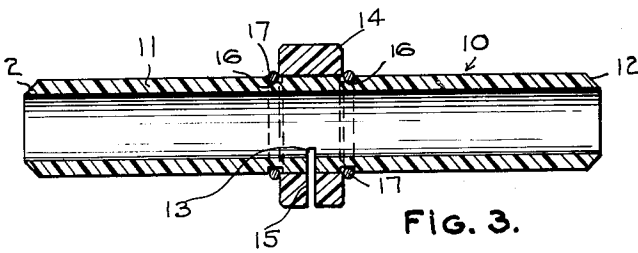


Fig. 3.

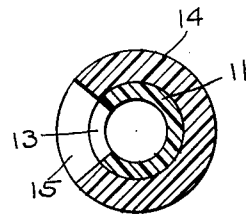


Fig. 4.

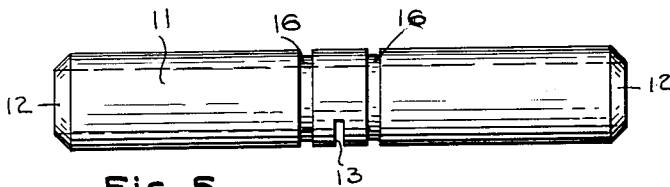


Fig. 5.

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3,039,463

GASTRIC SUCTION CONTROL DEVICE

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Filed May 9, 1960, Ser. No. 27,646

1 Claim. (Cl. 128—276)

This invention relates to a suction control coupling for varying and controlling the suction from a fixed source of suction pressure to a body cavity.

The suction control coupling comprises a simple mechanical device which has been designed to provide an easy yet highly efficient means of controlling the suction pressure in continuous gastric suction. Its use is especially important in preventing dangerous and damaging vacuum pressure build-up within the gastric tube, which collapses the wall of the tube and thereby interferes with its function. The suction control coupling is used in conjunction with existing standard hospital wall suction units or with any of the portable suction units. The device may be rapidly installed by insertion into the suction tubing between the patient and the suction source.

As the name implies, it is to allow a constant measured suction to be maintained in a system of rubber or plastic tubes which have been inserted into one of the body cavities, either into the stomach through the nose or mouth or other situations. The usual suction device has an excess of suction and without the control unit, suction builds up to such a high level that the walls of the rubber or plastic tubing have a tendency to collapse. Also, some of the lining of the body cavities can be drawn into the end of the suction tube thereby plugging it and it will not function. The suction control unit by bleeding air into the system in a controlled manner allows the suction to be maintained and changed as necessary.

Novel features of construction and operation of the device will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated the preferred form of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

FIGURE 1 is a general assembly view illustrating the suction control unit in use with a suction system as embodied in a body cavity,

FIGURE 2 is a side elevation of the device in coupled relation with opposed ends of a flexible tube,

FIGURE 3 is a horizontal section taken substantially on line 3—3 of FIGURE 2,

FIGURE 4 is a transverse section taken substantially on line 4—4 of FIGURE 2, and

FIGURE 5 is a side elevation of the suction control unit, with parts omitted.

Referring specifically to the drawings and particularly to FIGURE 1, there has been illustrated a section of plastic or rubber tubing 5, commonly connected to a suction outlet normally disposed in hospital units and whereby to generate a suction pressure. The numeral 6 illustrates a section of plastic or rubber tubing that enters the conventional jar 7, commonly employed in gastric suction devices. Leading from the jar 7 is a flexible tube 8, having a nozzle 9 that is normally inserted through the nose or mouth portion of a patient to enter the stomach. The system so far described is conventional and forms no part of the present invention.

Coupled with the ends of the tubes 5 and 6 is a suction control device illustrated as a whole by the numeral 10. The control device 10 comprises an elongated cylindrical tubular element 11, preferably formed of plastic and open at its opposite ends. The opposite ends of the

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element 11 are frictionally engaged into the tube ends 5 and 6. The ends of the tube 11 are beveled at 12 to facilitate the engagement of the device into the tubes 5 and 6. The tube 11 intermediate its length, is circumferentially slotted at 13 and with the slot communicating with the bore of the tube. Rotatably supported upon the tube is a preferably plastic ring 14. The ring 14 intermediate its width is circumferentially slotted at 15 and with the slots 15 and 13 being in alignment and communicating with the bore of the tube 11. Upon each side of the ring 14, the tube is circumferentially grooved at 16 to receive yieldable O-rings 17 and with the rings 17 having frictional bearing engagement against the sides of the ring 14 whereby to impart a slight frictional drag upon the ring 14 so that it may be held in any position of adjustment. The surface of the ring 14, for the length of the slot 15, is preferably knurled as at 18 while the surface of the tube 11, to one side of the ring 14, is knurled to form an indicating arrow-head 19. The ring 14 is adapted to be manually rotated to vary the communication between the slots 13 and 15 whereby to control the suction through the device from the suction control unit that is coupled with the tube section 5.

While the tube 11 and the ring 14 have been indicated as being formed of plastic, it will be apparent that these elements may be formed of metal or other desirable materials.

In the use of the device, the tube section 5 is coupled to the outlet section of the suction system provided in the wall of a hospital room or connected to a mobile suction unit, as the situation presents itself. The suction unit 10 is then engaged into one end of the tube 5 while its opposite end is engaged into the tube 6. The tubes 6 and 8 are then assembled with respect to the jar 7 and the operator then proceeds to insert the nozzle 9 through an oral cavity of the patient into the stomach or other area to be controlled. As the suction is created in the system, it may be varied in accordance with a particular situation by merely rotating the ring 14 to decrease or increase the inlet opening provided by the slots 13 and 15. This suction control will obviously be determined by the physician or the nurse in attendance in accordance with the patient's ability to accommodate himself to a predetermined suction. If the suction appears to be too great, the operator merely rotates the ring 14, exposing a greater portion of the slot 13 and the knurled areas 18 and 19 permit a visual observation of the degree of opening for the tube 11. The device is cheap to manufacture, simple in construction, easily sterilized and highly important from the standpoint of controlling gastric suction.

It is to be understood that the invention is not limited to the precise construction shown, but that changes are contemplated as readily fall within the spirit of the invention as shall be determined by the scope of the subjoined claim.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

A gastric suction control device for use in a gastric suction system whereby to control the degree of suction pressure within the system, comprising a rigid elongated tubular plastic body open at its opposite ends, the opposite ends of the body adapted to engage within flexible tubing within the control system, the body intermediate its length being provided with a relatively narrow circumferential slot that communicates with the bore of the body, a valve ring rotatably supported upon the body to overlie the said slot and to extend an equal distance to either side of said slot, the said ring being also circumferentially slotted and with the slots being of identical width and in normal communication, the said body at points on opposite sides of the valve ring being circumferentially grooved and with the grooves being relatively

shallow, non-metallic friction rings engaging within the grooves and with the rings projecting above the body and frictionally bearing against the opposite sides of the valve ring, the said body at its opposite ends being beveled for insertion into the flexible tubing of the gastric system, an indicator embossed upon the body device to indicate the degree of turning movement of the valve ring and to indicate the degree of registry between the slots, the said valve ring being embossed upon its surface for the length of its slot whereby to cooperate with the indicating means upon the body portion.

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