July 17, 1928. 1,677,732

O. B. SCHELLBERG

LIQUID FLOW REGULATOR

Filed April 14, 1927

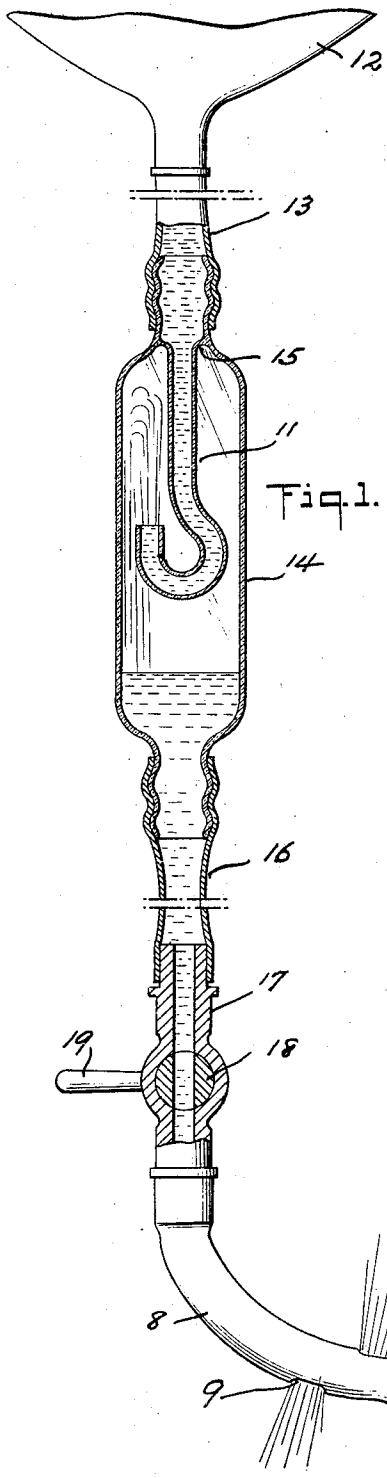


Fig. 1.

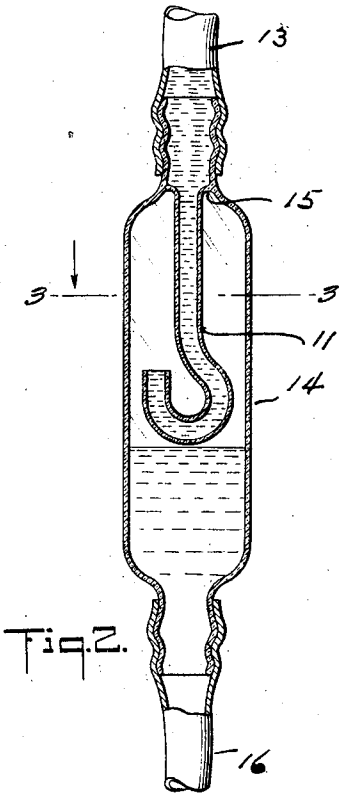


Fig. 2.

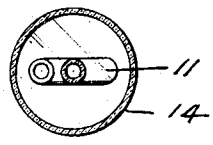


Fig. 3.

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LIQUID-FLOW REGULATOR.

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Among the objects which the present invention has in view are: to visibly indicate the flow condition of liquid used for internal treatment; to provide an automatic control for the flow of liquid used in invisible locations, or where the delivery end of the flow-promoting means cannot be seen; and to provide a detector adapted to show the condition of fluid intermediate the supply reservoir thereof and the point of application.

Figure 1 is a vertical section of a regulator constructed and arranged in accordance with the present invention, and fragments of other apparatus used in connection therewith shown and attached thereto.

Figure 2 is a similar view of a regulator showing the same as in the inactive condition thereof, the flow having been arrested by conditions in the delivery pipe.

Figure 3 is a cross section of the regulator, the section being taken on the line 3—3 in Fig. 2.

While the device herein disclosed is adapted for use in a great many installations, that principally relied upon by me is the use as a visible gage or detector to show the condition of the flow in the delivery tube 8 used in the practice of colonic therapy. When thus employed the tube 8 is introduced through the rectum to the intestines of the person being treated and is of sufficient length to extend into and through the descending colon and into the ascending colon and the intervening intestinal tract.

The tube 8 has orifices 9 adjacent the forward tapered end 10 thereof. The orifices 9 are preferably disposed in staggered relation for the purpose of delivering fluid to the intestinal tract to locally dilate the intestines so that the tube may be advanced therethrough or through any sphincter therein. It is obvious that in this operation the tube may become bent or otherwise strangulated, or the pressure incident to the dilation of the local portion of the intestines may exceed that which it is desired to employ, and in these events the flow of the liquid from the goose-neck 11 will be arrested, or the spray or spout of the fluid will visibly decline.

A fluid reservoir or container 12 is disposed at any suitable height above the point of application for which the fluid is destined. A flexible hose 13 connects the reservoir with a clear glass receiver 14 within the hollow chamber of which is disposed, the goose-neck 11. The goose-neck 11 is structurally attached to the receiver 14 as at the position indicated by the numeral 15 to hermetically seal the upper end of the receiver 14 when the goose-neck 11 is filled partially or entirely with fluid. The lower end of the receiver 14 is connected by a flexible pipe 16 with a valve casing 17 wherein is mounted a rotary valve 18 and operable by means of a handle 19. The lower end of the valve casing 17 is operatively connected with the tube 8.

When in operation and after the tube 8 has been partially inserted, the attendant opens the valve 18 to let the fluid flow from the receiver 14 through the tube 8. The receiver 14 is at all times in open communication with the reservoir 12 through the goose-neck 11. Any fluid in the reservoir 12 will flow from the goose-neck 11 in the form of a fountain as indicated in Fig. 1, so long as the pressure in the receiver 14 is below the pressure on the fluid in the goose-neck. This indicates to the attendant a clear and unresisted passage in the tube 8. When, however, the resistance to the exit of the fluid from the tube 8 or through the tube 8, the fluid delivered from the goose-neck 11 being in excess of that flowing from the receiver 14 increases the water content in the receiver 14 as indicated in Figure 2 of the drawings. As the fluid content increases in the receiver 14, the air pressure in the upper end of the receiver increases until it overcomes the pressure on the fluid in the goose-neck 11. When and as the pressure overcomes the flow from the goose-neck, the attendant is made aware of the stoppage condition in the tube 8 or intestinal tract under treatment, being thus apprised of the condition he is supposed to take steps to relieve the condition. This is accomplished by using an apparatus set forth in a Patent Reissue No. 16,251, which was granted to me on January 12, 1926.

By thus providing a visible means for determining the rate and extent of pressure of the fluid in its delivery, enables the attendant to prevent and relieve painful conditions which might otherwise arise in such treatments.

Claims:

1. In combination with a liquid reservoir and delivery tube therefor, a visible indicator disposed between said reservoir and

tube for disclosing the condition of the flow through said tube, said indicator embodying a transparent receiver operatively connected with said reservoir and said tube in open communication therewith, and an inlet member extending part-way into said receiver for delivery thereinto, said receiver being closed at the upper end of said inlet member to form an air pressure chamber, the pressure wherein is increased or diminished in accordance with the accumulation in the end of said receiver opposite said inlet member, said pressure being employed to restrict and stop the flow from said inlet member.

2. In combination with a liquid reservoir and delivery tube therefor, a visible indicator disposed between said reservoir and tube for disclosing the condition of the flow through said tube, said indicator embodying a transparent receiver operatively connected with said reservoir and said tube in open communication therewith, the delivery end of said member being bent to deliver liquid therefrom in a vertical direction within said receiver, the upper end of said receiver being closed to form an air pressure chamber, the pressure wherein is adapted to correspond with the accumulation of liquid in the delivery end of said receiver, whereby the flow from said member is graduated and terminated in accordance with said accumulation.

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