

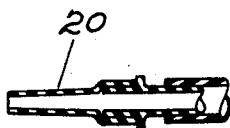
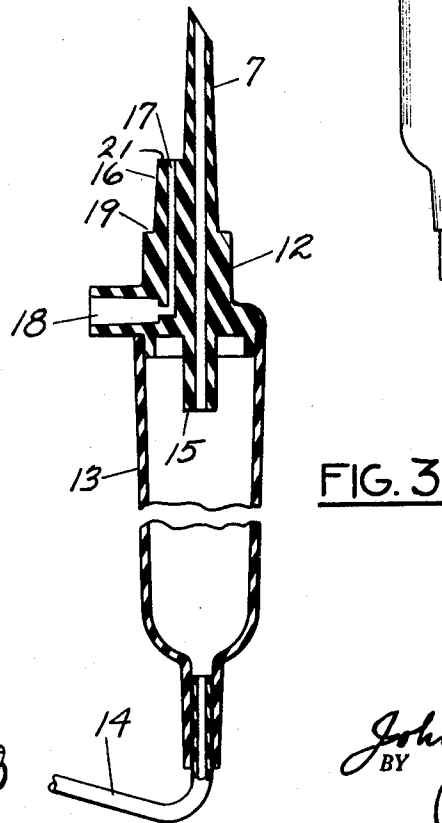
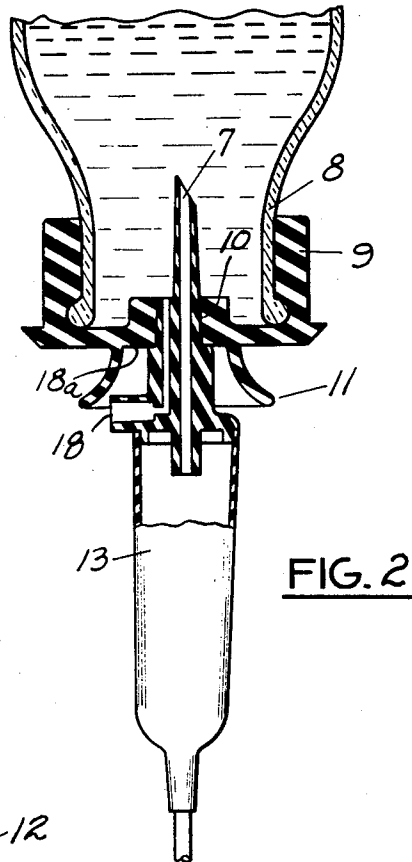
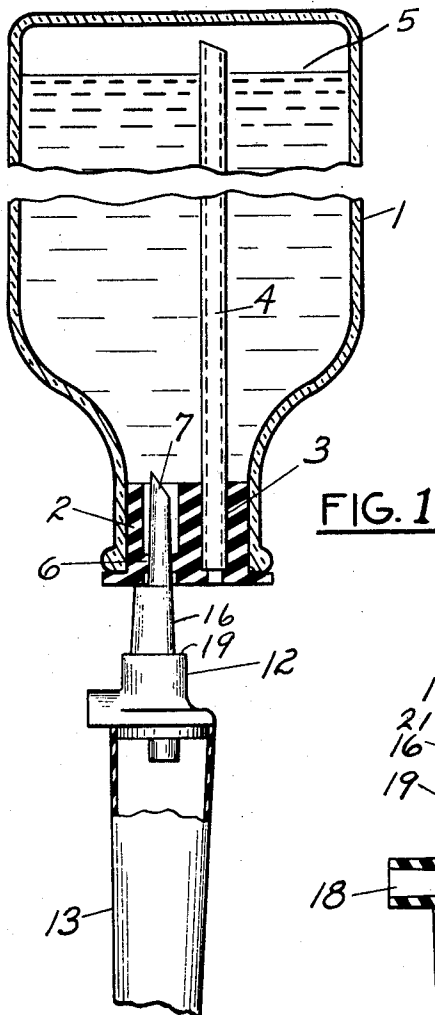
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2,884,924

DRIP METER

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2,884,924

DRIP METER

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4 Claims. (Cl. 128—214)

This invention is a universal drip meter for dispensing intravenous solutions which can be used with flasks having either vented or non-vented closures.

In the drawing, Fig. 1 is a section through a drip meter applied to a vented stopper; Fig. 2 is a similar view with a non-vented stopper, and Fig. 3 is an enlarged section through the drip meter.

In Fig. 1 there is shown a flask 1 having a stopper or closure 2 having an opening 3 carrying a vent tube 4, which in the dispensing position projects above the liquid level 5 in the flask and also having an opening 6 for receiving a draw off tube 7. This is the so-called vented closure in common use for dispensing intravenous solutions. In Fig. 2 the flask has a mouth 8 over which is telescoped a cup-shaped closure 9 having in its bottom wall an opening 10 for receiving a draw off tube and also having on its bottom wall a pouring lip 11. The closure 9 does not have a separate opening for a vent tube and accordingly is a non-vented closure. The parts so far described are or may be of common construction.

In accordance with this invention, a drip meter is provided which can be universally used, either with the vented closure of Fig. 1 or the non-vented closure of Fig. 2. The drip meter consists of two molded plastic pieces, a cap 12 and a body 13 at the lower end of which is fixed a flexible plastic tube 14. At the center of the cap is the draw off tube 7 which fits snugly in the draw off opening 6 in the stopper 2. The lower end 15 of the draw off tube 7 projects below the cap into the upper end of the body 13 and provides the sole connection for feeding the fluid from the flask to the tube 14. As is customary in drip meters, the tube 7 terminates well above the bottom of the body 13 so the fluid drops through space into the lower end of the body. Adjacent the lower end of the draw off tube 7 is a cylindrical section 16 of large enough diameter to fit snugly in the opening 10 in the non-vented closure 9. In the cylindrical section 16 is a capillary passageway 17 which extends alongside of the draw off tube 7 and leads into a conical passageway 18 extending out one side of the cap 12. When the drip meter is in place in the non-vented closure 9, the cylindrical section 16 is pressed into the opening 10 until the outer surface 18 of the cap bottoms on a shoulder 19. In this position the upper end of the capillary opening 17 is in contact with the fluid in the flask and the conical opening 18 is outside the flask so that air can flow through the opening 18 into the capillary 17 to take the place of the fluid dispensed through the draw off tube 7. The conical opening 18 may be packed with sterile oiled cotton which will repel any fluid and prevent blocking of the flow of air through the capillary 17. The conical opening 18 is also useful when fluid is to be fed into the flask 1 from another flask, in which case the dispensing tubing 14 is provided with a conical fitting 20 which can be fitted into the conical opening 18. Of course before

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feeding into the flask, the oiled cotton would have to be removed.

When the drip meter is used with the vented closure, the draw off tube 7 is inserted in the opening 6 until a shoulder 21 bottoms on the outside of the closure. This establishes the fluid connection feeding fluid into the body 13 from which it flows to the dispensing tube 14. When used with the vented closure, the capillary 17 is entirely outside the stopper. When used with the non-vented closure, the cylindrical section 16 is inserted in the opening 10 until the shoulder 19 bottoms on the stopper. In this position the drawing off tube is in fluid feeding position and the upper end of the capillary 17 conducts air into the flask to take the place of the fluid fed from the draw off tube.

What is claimed as new is:

1. A universal drip meter comprising a hollow body having dispensing tubing leading from its lower end, a cap sealed to the top of the body having a draw off tube extending through the cap with its upper end receivable in the draw off opening of a vented closure and its lower end terminating above the bottom of the body, a cylindrical projection at the center of the cap integral with the draw off tube, said projection being of greater diameter and shorter than the draw off tube and of lesser diameter than the cap and being receivable in the draw off opening of a non-vented closure, a shoulder at the lower end of the projection limiting the insertion of the projection into the draw off opening of the non-vented closure, said projection having a capillary venting passageway leading from the upper end of the projection to below said shoulder, and means providing a lateral passageway leading from the venting passageway to the outside of the cap below said shoulder.

2. A universal drip meter for dispensing intravenous liquids which can be used with flasks having either vented or non-vented closures comprising a hollow body having dispensing tubing leading from its lower end, a cap sealed to the top of the body having a draw off tube extending through the cap with its upper end projecting above the cap and receivable in the draw off opening of a vented closure and having its lower end projecting below the cap and terminating above the bottom of the body, a cylindrical projection at the center of the cap and sealed to the draw off tube midway between its ends, said projection being of greater diameter and shorter than the draw off tube and of lesser diameter than the cap and being receivable in the draw off opening of a non-vented closure, a shoulder at the lower end of the projection limiting the insertion of the projection into the non-vented closure, and said projection having a capillary venting passageway leading from its upper end down through the projection to the atmosphere outside of the cap below said shoulder.

3. A universal drip meter comprising a hollow body having dispensing tubing leading from its lower end, a cap sealed to the top of the body having a draw off tube extending through the cap with its upper end receivable in the draw off opening of a vented closure and with its lower end terminating above the bottom of the body, a cylindrical projection at the center of the cap integral with the draw off tube, said projection being of greater diameter and shorter than the draw off tube, said projection being receivable in the draw off opening of a non-vented closure, a shoulder at the lower end of the projection limiting the insertion into the draw off opening of the non-vented closure, said projection having a capillary venting passageway leading from the upper end of the projection down through the projection, means providing an enlarged lateral passageway leading from the venting passageway to the outside of the cap below said

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shoulder, and a water repellent air pervious packing within said lateral passageway.

4. A universal drip meter comprising a hollow body having dispensing tubing leading from its lower end, a cap sealed to the top of the body having a draw off tube extending through the cap with its upper end receivable in the draw off opening of a vented closure and with its lower end terminating above the bottom of the body, a cylindrical projection at the center of the cap integral with the draw off tube, said projection being of greater diameter and shorter than the draw off tube, said projection being receivable in the draw off opening of a non-vented closure, a shoulder at the lower end of the projection limiting the insertion into the draw off opening

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of the non-vented closure, said projection having a capillary venting passageway leading from the upper end of the projection down through the projection, and means providing a conical lateral passageway leading from the venting passageway to the outside of the cap below said shoulder.

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