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E. MAYNARD.

APPARATUS FOR DECANTING FLUIDS INTO SPECIALLY PREPARED RECEPTACLES.

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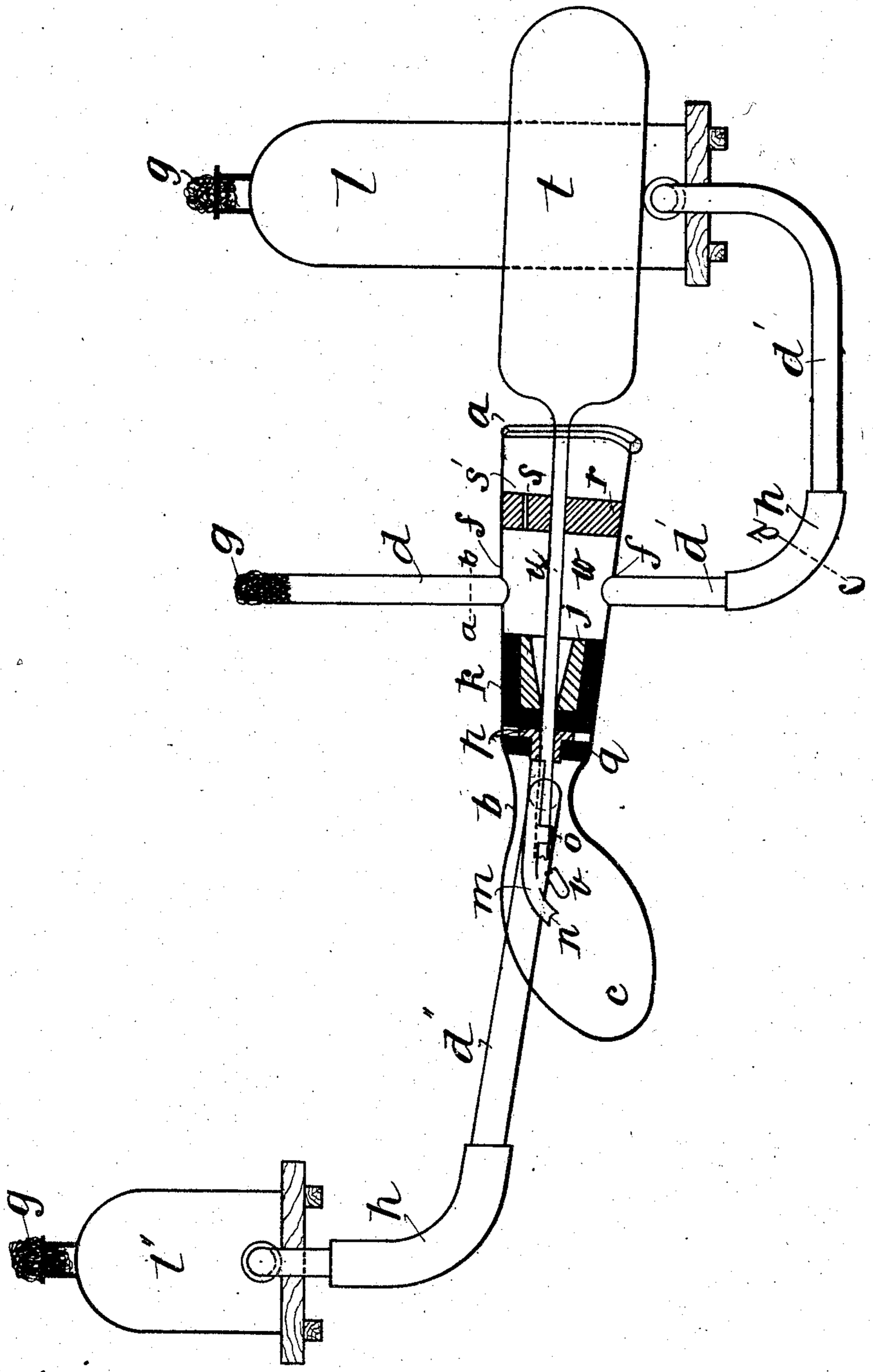

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UNITED STATES PATENT OFFICE.

EDWIN MAYNARD, OF BOMBAY, INDIA.

APPARATUS FOR DECANTING FLUIDS INTO SPECIALLY-PREPARED RECEPTACLES.

SPECIFICATION forming part of Letters Patent No. 791,480, dated June 6, 1905.

Application filed June 6, 1904. Serial No. 211,393.

To all whom it may concern:

Be it known that I, EDWIN MAYNARD, residing at The Plague Research Laboratory, Bombay, India, have invented certain new, useful, and Improved Apparatus for Decanting Fluids into Specially-Prepared Receptacles without Exposing the Same to the Risk of Contamination; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in improved apparatus for decanting fluids into specially-prepared receptacles without exposing the same to the risk of contamination.

The arrangement, construction, and operation of the apparatus will be readily understood by reference to the drawing, which shows, partly in elevation, a general view of the complete apparatus.

a is a glass funnel-shaped tube which is constricted at the point *b* and terminates in a bulb *c*. Two pieces of glass tubing *d d'* are fused into opposite sides of the funnel at the points *f*, the end of the upper tube *d* being plugged with cotton-wool *g* or other like and suitable filtering medium. A piece of rubber tube *h* connects the lower tube *d'* with the stock-bottle *l*, containing sterilized fluid. Another piece of glass tube *d''* is fused into the neck or constricted part *b* and connected by rubber tubing *h* with the stock-bottle *l''*, containing the particular fluid to be decanted. This vessel is fitted with a filtering-plug, of cotton-wool or the like, *g*. A tapering metal thimble *j*, which is shown in section, acts as a guide, is surrounded by a rubber sleeve *k*, (also shown in section,) the end of which is punctured centrally, so that when the capillary tube is withdrawn it closes instantly, so as to be air and water tight. The thimble being forced into the funnel supports and keeps in position a metallic breaker *m* and at the same time forms a water-tight joint. This breaker consists of a split piece of tube slightly curved downward toward its end *n* and having a collar *o*, formed, as shown, by filing or cutting away the tube on either side of it. This split tube is soldered into a circular sealing-plate *p*, and over the upper part of this is a rubber washer *q*, which forms an elastic joint when the thimble is forced up to its seat in the manner described. Both the sealing-plate *p* and the rubber washer *q* are shown in section to render the action clearer.

At a suitable point in the funnel-shaped tube a rubber washer *r* (shown in section) of special construction is mounted. It is perforated centrally; but the hole does not quite pass through the washer, being only large enough to admit the capillary tube *u* of the receptacle *t*. A slight puncture through the remaining thickness of the washer is made with a sharp knife, so that a close and air-tight joint is secured when the tube is forced through. A small hole *s*, preferably lined with a piece of glass capillary tube *s'*, open at both ends, is provided, so that the sterilized fluid may be kept circulating through the chamber and that the outer face of the plug or washer may be kept sterilized. The receptacle employed with this form of my improved apparatus consists of a tube, preferably of glass, *t*, one end of which is drawn down into a long capillary tube *u*. This receptacle is exhausted, the end sealed off and slightly nicked with a glass-knife near the end to enable the same to be readily ruptured when forced into the breaker *m*, curved at its upper end *n*, as shown. The receptacle is sterilized in a suitable sterilizing-box.

In arranging the decanting apparatus it is important that the vessel *l''*, containing the fluid to be decanted, should be at a sufficient height above the vessel *l*, containing the sterilizing fluid, so that its additional statical pressure may tend to press together the punctured end of the sleeve and assist in preventing the contents of vessel *l* passing into the bulb *c*, since the sterilized chamber is filled from this vessel to the line *a b*.

In some cases I may dispense with the sterilized chamber *w*, branch tubes *d d'*, and vessel *l*. I prefer to place a pinch-cock at the point *c d*, so that the fluid from vessel *l* may be regulated so as to pour into the chamber *w* at such a rate as to be carried off by the capillary tube *s'* without rising above line *a b*.

The operation of my invention is as fol-

lows: The fluid to be decanted, from which contaminated air is excluded, flows into the bulbous part of the apparatus *c* from the stock vessel *l''* by tube *d''*, and, on the other hand, the sterilized fluid contained in the vessel *l* flows by pipe *d'* into the intervening space *w* between the thimble *j* and the washer *r*. The sealed end *v* of the receptacle *t*, which is to be charged and which in this particular form of my apparatus is preferably of the shape shown and described, is passed through washer *r* and guided by thimble *j* through the rubber sleeve *k* into the breaker *m*. As it is forced along it encounters the collar *o* and curved end of the breaker *n*, which breaks it off, as shown at *v*, the broken piece falling into the bulb, the nicking of the tube with a knife or file assisting this result. The receptacle now fills with the serum or other preparation it is desired to keep free from contamination and is withdrawn from the apparatus and sealed.

The apparatus shown and described is more particularly suited for filling small vessels with preparations employed for medical or surgical purposes. I do not, however, limit myself to such use, as by increase in size of the coöperating parts it can be adapted for bottling milk, dietetic, and other preparations free from risk of germ or bacterial contamination.

After the receptacle is sealed off the contents may be tested by closing off a piece from the capillary tube by means of the blowpipe without effecting the bulk contained in the vessel *t*.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In apparatus for decanting fluids free from germ contamination the combination with a funnel-shaped chamber having a depending bulb and rubber-jointed tube connecting said bulb with a vessel containing the fluid to be decanted and means for closing the mouth of said vessel by a filtering-plug for excluding contaminated air, of a breaker having a downwardly-bent extremity and collar, passing into said bulb and the perforated rubber washer forming a liquid-tight seat for said breaker, a tapering and perforated guiding-thimble surrounded by a rubber sleeve for holding the breaker in position, a central chamber filled with sterilizing fluid, the air-tube closed with a filtering-plug and fused into said chamber, a depending tube fused into the under side of said central chamber and connecting it with a vessel containing sterilized fluid, the mouth of which is closed with a filter-plug, the perforated washer for closing the open end of the central chamber and the capillary tube in said washer substantially as described.

2. The combination with apparatus for decanting fluids free from germ contamination fitted with a funnel-shaped central chamber having a depending bulb and breaker mounted therein, of a vessel containing the fluid to be decanted, and a vessel containing sterilizing fluid, and means for connecting said vessels with the bulb and the central chamber, substantially as described.

3. In apparatus for decanting fluids free from germ contamination the combination with a central chamber fitted with an air-tube and terminating in a bulb connected to the vessel containing the fluid to be decanted of the washer fitted with a capillary tube for maintaining circulation of the sterilizing fluid supplied to said chamber from the containing vessel by the rubber-jointed tube fused into said chamber and connected to said vessel substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDWIN MAYNARD.

Witnesses:
P. BYRNE,
VENAYAK MADUROV.