

[72] Inventor **Dennis Arblaster**  
**34081 La Serena, Dana Point, Calif. 92629**  
 [21] Appl. No. **849,072**  
 [22] Filed **Aug. 11, 1969**  
 [45] Patented **Sept. 7, 1971**

2,491,647	12/1949	Colavita .....	128/275
2,898,908	8/1959	Sovinsky .....	128/142.6
3,099,987	8/1963	Bartlett, Jr. ....	128/146.6
3,330,271	7/1967	Hozier .....	128/351
3,316,904	5/1967	Wall et al. ....	128/146.6

*Primary Examiner*—Charles F. Rosenbaum  
*Attorney*—Sellers and Brace

[54] **THROWAWAY CONDENSATE COLLECTOR**  
**9 Claims, 5 Drawing Figs.**

[52] U.S. Cl. .... **128/275,**  
 128/140, 128/146.6, 128/351

[51] Int. Cl. .... **A61f 5/44**

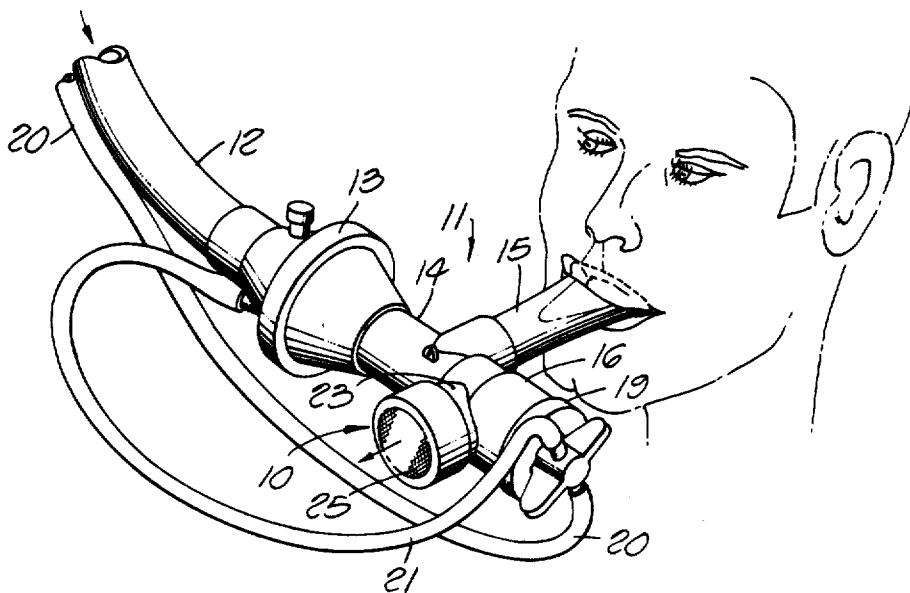
[50] Field of Search ..... 128/136,  
 139, 140-147, 188, 191, 195-203, 205-212, 275,  
 351

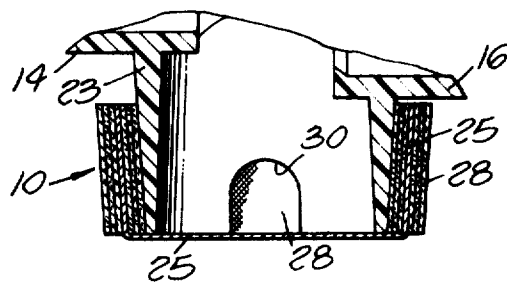
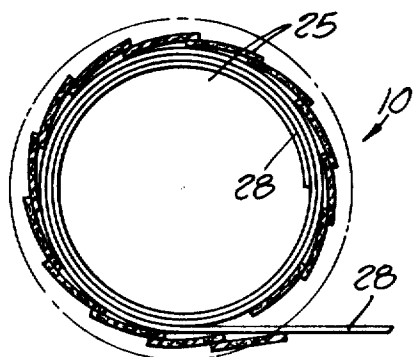
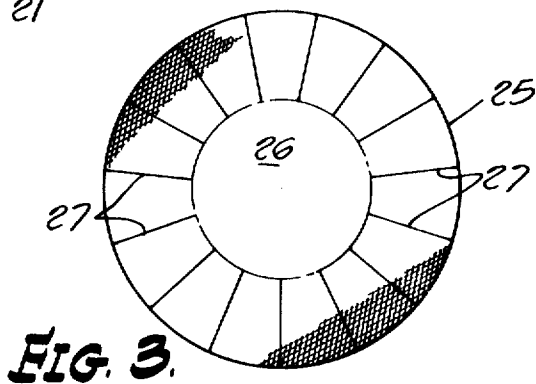
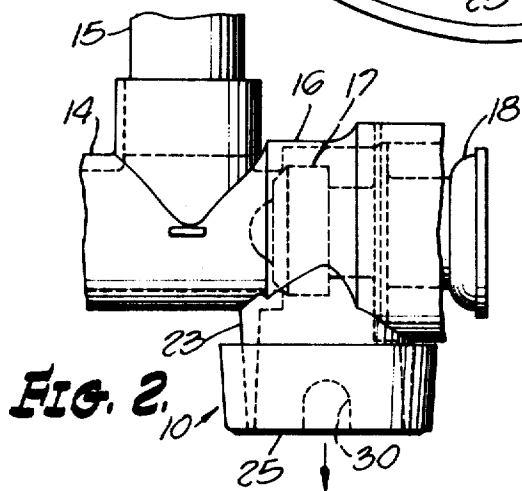
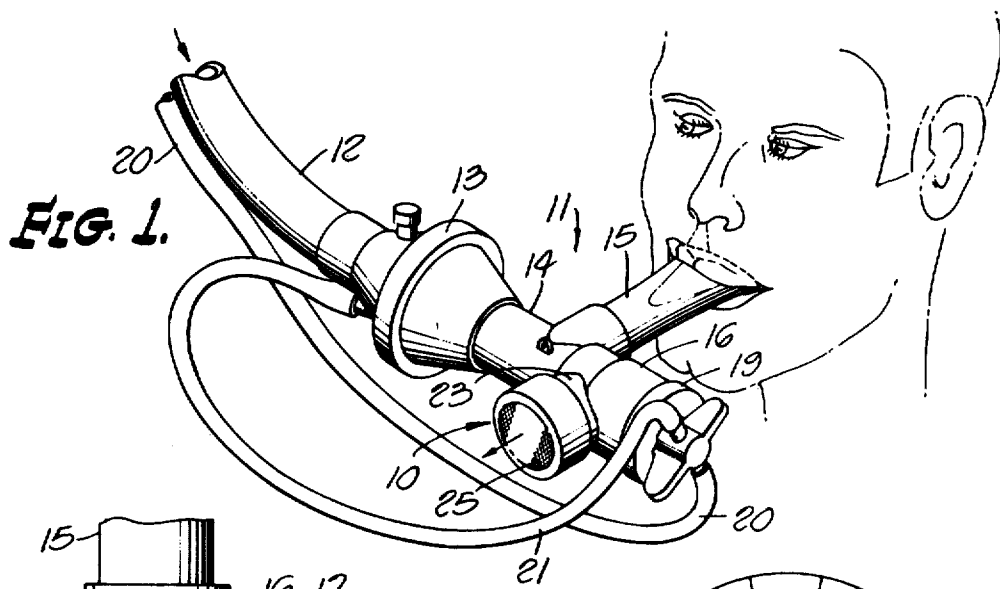
[56] **References Cited**

**UNITED STATES PATENTS**

2,248,349 7/1941 Heidbrink ..... 128/202

**ABSTRACT:** A throwaway sanitary collector of condensate carried in exhalant of a patient using an intermittent positive pressure breathing apparatus. The collector safeguards against contamination of clothing and bedding utilizing a plaque of gossamer intimately associated with a mass of absorbent material having substantial capacity for absorbing moisture collected from exhalant as it passes through the gossamer. The collector may be retained in place by friction and is readily replaceable by a fresh one.





INVENTOR  
DENNIS ARBLASTER

BY  ATTORNEYS

### THROWAWAY CONDENSATE COLLECTOR

This invention relates to breathing equipment useful in treating respiratory and pulmonary ailments and more particularly to a simple, inexpensive, throwaway moisture collector adapted to be used with such respiratory equipment.

The use of intermittent positive pressure breathing apparatus useful in the treatment of respiratory ailments usually makes use of medicants atomized into the gas stream entering the lungs. Other treatments applied with the aid of such equipment utilize surface active agents beneficial in lifting tenacious secretions from mucosa by their emulsifying action as well as by diluting and liquifying secretions and the like. Accordingly, it is commonplace for the patient to exhale substantial quantities of fluid particles along with portions of the medicant itself. These liquid particles of pus, mucous and the like form droplets of condensate which escape onto the person of the patient, his clothing and the adjacent bedding. Proposals have been made for passing the exhalant through filter devices but this is objectionable and unsatisfactory from several viewpoints because interfering objectionably with exhalation and because imposing an intolerable load on the strength of critically ill patients. Moreover, the filter quickly becomes contaminated and saturated with moisture substantially cutting off exhalation.

To overcome the foregoing and numerous other shortcomings of breathing apparatus of the type referred to there is provided by this invention a simple, inexpensive, easily attached and detached throwaway condensate collector. The principal condensate separator comprises a thin plaque of gossamer supported transversely of the exhalation passage and having its rim edges in intimate contact with a sizeable mass of absorbent material. The gossamer is highly efficient and effective in collecting both large and minute particles of moisture and quickly conducting same into the mass of absorbent material by capillary action. Owing to the thinness of the gossamer, there is no noticeable interference with the exhalation effort and the strong absorbent characteristics of the main body of absorbent material avoids the retention of moisture by the gossamer. In a preferred embodiment, the condensate collector is cup-shaped and sized to have a friction fit over the tapering exhaust end of the exhalation passage. Accordingly, a fresh collector is quickly substituted for a used one with a minimum of effort and without need for manipulating fasteners or tools of any kind.

Accordingly it is a primary object of the present invention to provide a simple, inexpensive, throwaway condensate collector for use with breathing apparatus.

Another object of the invention is the provision of a single use condensate collector employing a film of gossamer having its perimeter in intimate contact with a mass of moisture absorbent material effective to drain the gossamer of moisture and keep it unclogged until the mass of absorbent material is substantially saturated.

Another object of the invention is the provision of a single use throwaway condensate collector designed for temporary use over the outlet of respiratory apparatus and constructed to be frictionally retained thereon.

These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawing to which they relate.

Referring now to the drawing in which a preferred embodiment of the invention is illustrated:

FIG. 1 is a perspective view showing a preferred embodiment of the invention condensate collector in use over the exhaust outlet of the mouthpiece assembly of conventional intermittent positive pressure breathing apparatus;

FIG. 2 is a fragmentary plan view of a portion of the apparatus shown in FIG. 1;

FIG. 3 is an exploded view of a blank of gossamer;

FIG. 4 is a generally diagrammatic view showing one mode of assembling the condensate collector; and

FIG. 5 is a fragmentary cross-sectional view on an enlarged scale of the exhalant outlet with the collector in position thereover.

Referring to FIG. 1 there is shown a typical mouthpiece assembly, designated generally 11, of an intermittent positive pressure breathing apparatus well known to those skilled in this art and operating to supply pressurized oxygen or a mixture of oxygen and room air to the mouthpiece assembly through hose 12. The air and oxygen supplied through the hose passes through a medicant nebulizer 13 operating in a known manner to supply atomized medicant into the air as it passes through chamber 13 and thence into manifold 14 and thence into mouthpiece 15 supported in the patient's mouth.

An extension 16 of manifold 14 houses a highly sensitive valve assembly, designated generally 17, controlled by a flexible diaphragm 18 connected therewith and secured in place across the end of extension 16 by a removable end cap 19. Valve 17 will be understood as opening to the right as viewed in FIG. 2 in response to a very slight breathing effort and with the aid of pressurized gas supplied through hose 20 acting on the outer face of diaphragm 18. This pressurized gas continues to flow through tube 21 into nebulizer 13 where it is utilized to atomize medicant.

Accordingly, it will be understood that valve 17 is held closed during the inhalation cycle at which time the nebulizer is activated to supply finely divided medicant into the air being breathed by the patient. During the other half of the cycle of air pressure in hoses 12, 20 ceases and valve 17 opens allowing exhalant from the lungs to escape therepast to the atmosphere through discharge tube 23.

The exhalant can and usually does contain substantial quantities of condensate including mucous, pus, and highly infectious material in finely divided form. Much of this condensate tends to collect on the interior surfaces of discharge outlet 23 and to drain from the lower outer end of this passage. Other quantities remain suspended in the exhalant and escape into the ambient air.

To prevent this drainage and escape of condensate there is provided by this invention a simple condensate collector, designated generally 10, best shown in FIGS. 3, 4 and 5. Collector 10 includes a relatively thin disc or plaque 25 of fine gossamer. Plaque 25 may be only a few mils thick and comprise a multiplicity of fine absorbent fibers felted together so as to leave voids providing only imperceptible interference with the flow of exhalant. The absorbent character of the fibers together with the capillary action thereof is highly effective in retaining even minute particles of moisture carried in the exhalant.

Plaque 25 is shown in freshly blanked condition in FIG. 3, the central area 26 being circular and of sufficient size to bridge the entire width of passage 23. Outwardly of this central area, plaque 25 may be formed with slits 27 to facilitate fabrication of the completed collector. Thus, the outer rim portion of the plaque is folded upwardly and sandwiched between a mass of highly absorbent material 28 such as a tape of absorbent gauze with a portion of its convolutions formed inwardly of the upturned edges of plaque 25 and additional convolutions encircling the exterior of the gossamer. FIG. 4 illustrates the strip of absorbent material 28 in the process of starting the initial convolution about the upturned edges of the gossamer. If desired the exposed surfaces of the completed absorbent assembly 28 may be coated with an impervious film in the interests of sanitation.

Desirably the sidewalls of the cup-shape condensate collector 10 flare outwardly at a slight angle corresponding to the flare on the outer surface of the discharge tube 23, the collector being sized to have a firm frictional fit as it is telescoped into assembled position over this outlet.

The respirator is used in conventional manner, the escape of condensate being safeguarded against by the presence of collector 10 over exhalant outlet 23. Major portions of the condensate collecting on the interior sidewalls of tube 23 drain toward the bottom thereof, and thence through port 30

directly into absorbent material 28. Other portions coalesce on gossamer 25 and are conducted by capillary action into the upturned sidewalls of the plaque and thence into the mass of absorbent 28. As soon as the collector approaches a saturation condition it is quickly and easily replaced by a fresh one without in any way interfering with the operation of the respirator. Either the patient or an attendant withdraws a used collector 10 and telescopes a fresh one into a friction fit with tapered surface of tube 23.

While the particular condensate collector herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention.

I claim:

1. An article of manufacture comprising a throwaway collector of breathe-laden moisture discharging from breathing apparatus used in the treatment of pulmonary and respiratory ailments, said collector being detachably mountable in the path of exhalant from the patient and including a plaque of absorbent gossamer extending transversely of the exhalant with its rim edges in intimate contact with a mass of absorbent material adequate to absorb substantial quantities of moisture and foreign matter suspended therein.

2. An article of manufacture as defined in claim 1 characterized in that said collector is formed in one unitary assembly and with said absorbent material in contact with substantially the entire peripheral rim portion of said plaque of gossamer.

3. An article of manufacture as defined in claim 1 characterized in that said mass of absorbent material is located exteriorly of the stream of exhalant bridged by said plaque of gossamer.

4. An article of manufacture as defined in claim 1 characterized in that the rim edges of said plaque of gossamer are sandwiched between portions of said mass of moisture absorbent material.

5. An article of manufacture as defined in claim 3 characterized in that said collector is cup-shaped with said mass of absorbent located in the sidewall portion thereof and with said plaque of gossamer forming the bottom of said cup.

6. An article of manufacture as defined in claim 5 characterized in that said sidewall is sized and shaped to telescope over and seat against the discharge end of a complementally shaped discharge end of an exhalant member.

7. An article of manufacture as defined in claim 6 characterized in that said sidewall is sized to have a frictional fit with the discharge end of an exhalant member.

8. An article of manufacture as defined in claim 5 characterized in the sidewall of said cup-shaped mass of absorbent flares slightly from the interior bottom end thereof.

9. An article of manufacture as defined in claim 1 characterized in that said plaque of gossamer is sufficiently thin and large in area as not to cause any sensible interference with the free escape of exhalant.

30

35

40

45

50

55

60

65

70

75