June 16, 1931. J. DYHR 1,810,394

MEANS FOR THE PRODUCTION OF FOAM

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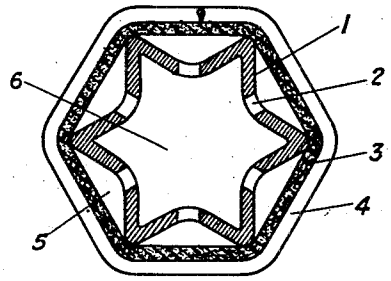


FIG. 1.

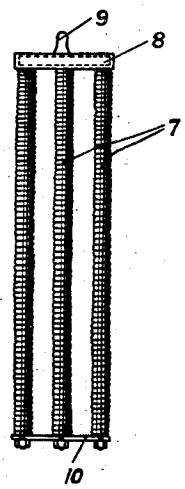


FIG. 2.

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MEANS FOR THE PRODUCTION OF FOAM

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Devices are known for introducing gases into liquids in a finely distributed state. Usually however the fineness of distribution is insufficient; especially in balneology for the production of shower baths, foam baths or in foam therapy. In the production of fire extinguishing foams also the gases are usually not sufficiently finely distributed.

Those devices in which metal tubes with slits or perforations for the passage of the gases are employed are not satisfactory for the reason above given.

As it is not possible to make the slits or holes narrow enough to ensure a sufficiently fine distribution of the gas, it has been proposed to wrap or enclose such metal tubes in porous materials such as linen or fine metal gauze in order to subdivide still further the gases passing through the slits or holes.

Since naturally the gas can only flow through those parts of the tubes where the tube wall is interrupted and as for reasons of strength too many slits or perforations cannot be made, only about 50% of the surface of the tubes is effective for the passage of gas.

In order to increase the distribution of the gas in accordance with the present invention there are employed in lieu of the usual round tubes, tubes provided with longitudinal projecting ribs or with deep grooves so as to form with the wrapping of porous material longitudinal passages between the tube wall and the wrapping. If holes are bored at the bottom of the grooves or between the longitudinal ribs the gas passes from the interior of the tubes through the holes into the longitudinal channels and thence to the wrapper along the whole length of the tube. Only the narrow projecting longitudinal edges of the grooves or of the ribs where they are contacted by the wrapper interfere with the passage of air. The surface thus lost is so small as to be negligible. The tube may of course be round or oval and spacing members may be provided between the wrapping and the tube so as to form the longitudinal channels.

An embodiment of the invention showning a tube of star-shaped section is illustrated by way of example in the accompanying drawings in which Fig. 1 is a cross section of the improved foam forming device. Fig. 2 shows a battery of such devices connected together. For the sake of clearness the tube is shown in Fig. 1 to a very enlarged scale.

Referring to Fig. 1, along the bottom of the grooves of the tube are located holes 2 while porous material is wrapped or coiled around the tube thereby forming a perforated metal wrapper. A metal wire outer covering around the wrapping is indicated at 4. The walls of the tube 1 and the wrapper 3 forms channels 5 which lead the gas introduced into the interior of the tubes and passing through the holes 2 along the whole length of the tubes.

As the drawings clearly show, almost the entire wrapper may be used for the passage of air.

A tube having six ribs is shown in the drawings, but tubes having more or fewer grooves or longitudinal ribs may be used. If the gas is to pass out over the upper half of the tube only as is often required, only the bottoms of the upper grooves need be formed with holes. A number of tubes can be arranged in known manner to form batteries as illustrated in Fig. 2.

In that figure three tubes 7 are shown as connected to an air chamber 8 in such manner that the air can pass from the air chamber 8 into the tubular members. Air is supplied by way of a branch connection 9 while the tubes 7 are closed at their opposite ends. The tubes may be held together in their proper positions by means of bar 10.

I claim:—

1. A device for introducing gas in a finely distributed condition into liquids for foam forming purposes, comprising a tube shaped to provide a plurality of grooves and ribs, said tube perforated between the ribs to form a fluid passageway, a porous medium enveloping said tube, a perforated metal wrapper surrounding said porous medium, and means associated with said tube for creating a fluid pressure therein, whereby the fluid is caused to pass through the porous medium in a finely distributed condition.

2. A device for introducing gas in a finely

distributed condition into liquids for foam forming purposes, comprises a tube shaped to provide a plurality of ribs and grooves formed parallel to the longitudinal axis thereof, perforations through the tube forming a fluid passageway, a porous medium enveloping said tube, and means associated with said tube for creating a fluid pressure therein, whereby the fluid is caused to pass through the porous medium in a finely distributed condition.

3. A device for introducing gas in a finely distributed condition into liquids for foam forming purposes, comprising a plurality of tubes connected at the ends thereof by conduit which forms intercommunicating passages between the tubes, each of said tubes shaped to provide a plurality of grooves and ribs, each of said tubes perforated between the ribs to form a fluid passageway, a porous medium enveloping said tube, a perforated metal wrapper surrounding said porous medium, and means associated with said tube for creating a fluid pressure therein, whereby the fluid is caused to pass through the porous medium in a finely distributed condition.

In testimony whereof I have signed my name to this specification.

JENS DYHR.