Dec. 8, 1936. K. BRAEM 2,063,480

MECHANICAL MEANS FOR DISTRIBUTING GASES AND VAPORS IN LIQUIDS

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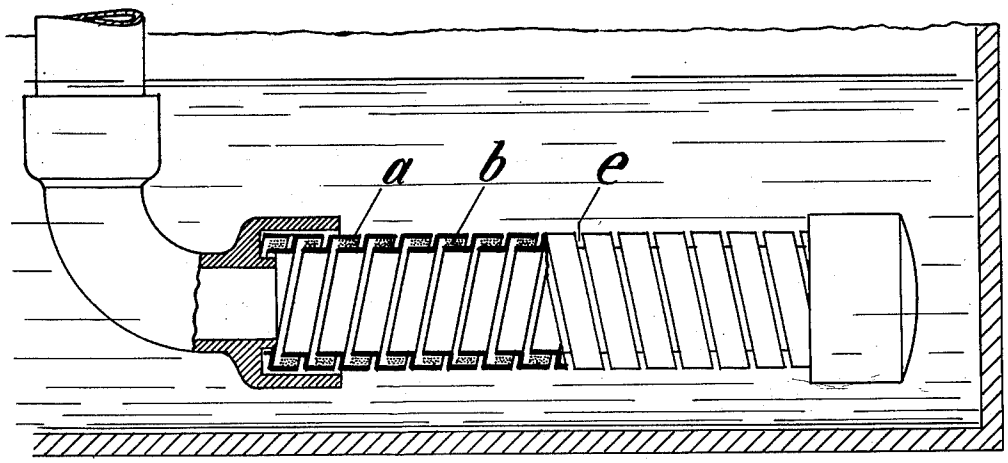


Fig. 1

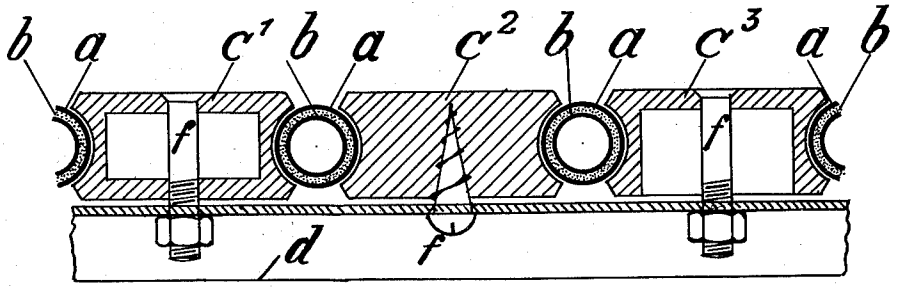


Fig. 2

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MECHANICAL MEANS FOR DISTRIBUTING GASES AND VAPORS IN LIQUIDS

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2 Claims. (Cl. 261—121)

The distribution of gases and vapors in liquids may serve various purposes, e. g. the impregnation of the liquid with the gas, the enriching of the latter with the liquid, the attainment of germicidal, biological and therapeutical effects.

My invention relates to improvements in the mechanical means for distributing gases and vapors in liquids; and the objects of my improvement are first, to provide a uniform and equal distribution of gases and vapors throughout the liquid; second, to afford facilities for the proper penetration of the gases and vapors into the liquid in a finely divided state; and, third, to hold the mechanical means for said operation immovably in their assigned place and position during said operation.

I attain these objects by the mechanical means illustrated in the accompanying drawing, in which—

Fig. 1 is a view, partly in section, of the distributing element proper submerged in a tank; and

Fig. 2, a sectional elevation of a plurality of said elements in combination with various and different forms of means for holding said elements in line and in place.

The distributing means proper consists of at least one metallic hose *a*, of the well-known flexible type, which, however, possesses as packing means a porous insert *b* embedded in the folded windings of said hose.

Flexible metallic hose, as used for the purposes of my invention, are well-known to-day in various forms of construction and manufacture; they generally comprise overlapping spiral windings of metallic bands and an impermeable packing means between the overlapping portions. According to the essence of my present invention I replace said impermeable packing means, of any type of flexible metallic hose *a*, by a porous material *b* which is embedded in the form of a continuous strip between the overlapping portions of said hose.

Said insert *b* may be represented by an organic material, e. g. cotton, silk, hair and the like, or by an inorganic material, e. g. copper-netting, glass-threads or glass-wadding and the like. Said metallic hose, which is to be laid into the liquid in which gases or vapors have to be distributed, is plugged up at one end and connected at the other end to a source of gas or vapor. The latter, when introduced into the hose, escapes in the form of minute bubbles through the porous fabric-insert *b* at points *e* which—in their continuity—form a close spiral winding around said hose. Said porous material *b* also may be spun, plaited, braided or woven in the form of a fabric web or thread and the like. A suitable insert e. g., is made out of a material not subject to swelling.

In order to distribute the gas or vapor over a relatively large area, I suitably combine any desired number of hose into a distributor-unit (Fig. 2) by inserting the hose between parallel rods or mouldings forming a grate or grillage and connecting them to a main. Fig. 2 shows the hose *a* supported and held in place between longitudinally grooved mouldings of various suitable forms—c^1, c^2, and c^3—whereby such a grate eliminates the possibility that the hose may move about either horizontally or vertically. The grooved mouldings on their part are immovably interconnected by means of the ledge *d* and screws *f* into a grate.

In certain cases it may prove of advantage to make said porous insert *b* out of certain metals, e. g. porous copper or porous silver, since the latter—as well known—are capable of exerting a germicidal, oligodynamic influence in water.

What I claim and desire to secure by Letters Patent is:

1. A device for distributing gases or vapors in liquids comprising in combination, at least one flexible metallic hose consisting of overlapping spiral windings, and an insert of porous material embedded in said windings between each winding and the overlapping portion of the next adjacent winding, said insert serving as means of transition for the gas or vapor from said hose into said liquid in the form of minute bubbles.

2. A device for distributing gases or vapors in liquids comprising in combination, at least one flexible metallic hose consisting of overlapping spiral windings, an insert of porous material embedded in said windings between each winding and the overlapping portion of the next adjacent winding, and a grid consisting of a plurality of grooved mouldings lying parallel to one another said mouldings being fluted on two sides according to the outside diameter of said hose, said grid serving the purpose of holding said hose in proper alignment and position, and said insert serving as means of passage for the gas or vapor from said hose into said liquid in the form of minute bubbles.

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