

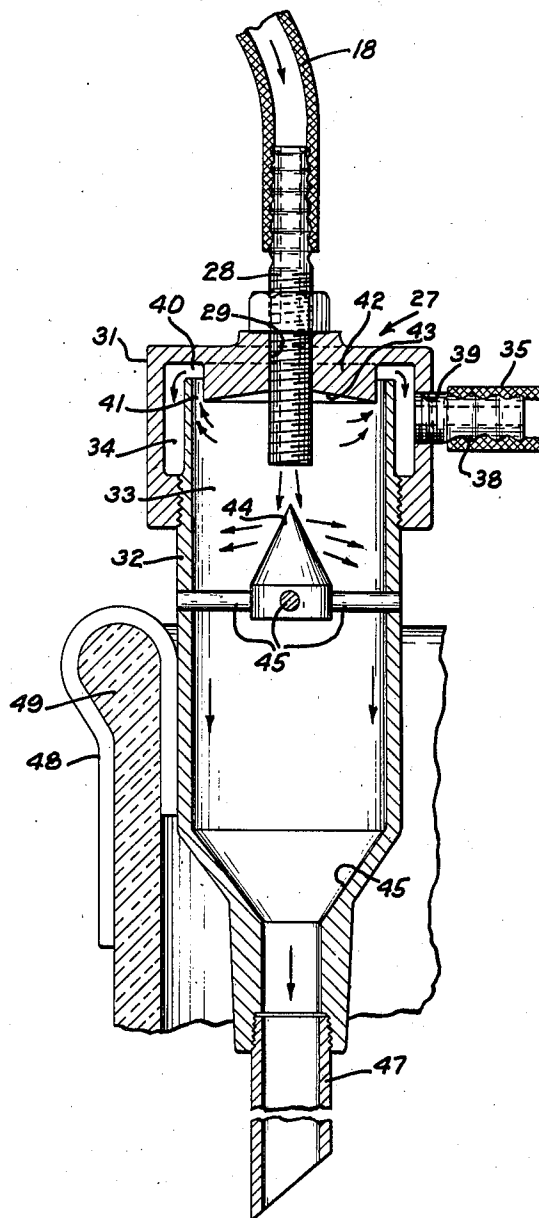
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SEPARATING APPARATUS

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SEPARATING APPARATUS

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1 Claim. (Cl. 183—105)

This invention relates to separating apparatus and more particularly to devices for separating liquid and gas.

The invention is particularly useful in the transfer of liquids, such as dangerous acids, from a carboy to a crock for use, or transferring used liquid from the crock back to the carboy.

An object of this invention is to provide a simple and practical device for efficiently separating liquid and gas.

In attaining this object, there is provided in one embodiment of the invention a liquid and gas separating device having a separating chamber with a centrally positioned pointed cone therein and a labyrinth thereabove connected to an outlet pipe, the lower end of the chamber having a funnel-shaped portion connected to a discharge pipe which extends into a receiving container. The upper end of the chamber has an adjustable inlet member in axial alignment with the cone whereby it may be adjusted relative thereto in accordance with the velocity with which the mixture enters the separating chamber to produce an optimum separation of the liquid and gas. In the operation of the apparatus the liquid is ejected into the separating chamber and upon the pointed cone which directs the liquid against the chamber wall, whereupon it drains into the discharge pipe and thence into the receiving container, while the spent air escapes through the labyrinth into the outlet pipe.

Other objects and advantages of the invention will be understood by referring to the following specification and accompanying drawing, in which the single figure is a vertical section through a liquid and gas separating device embodying the features of this invention.

Referring to the drawing, a liquid and gas separating device is indicated in general at 27, which carries an adjustable nipple 28 at its upper end to which is connected a flexible pipe 18 communicating with the liquid source. The nipple 23 is secured in an inlet opening 29 formed in an internally shouldered cap member 31 screw threaded onto an externally shouldered upper end of a circular casing 32 having a chamber 33. At its upper end the chamber 33 communicates with an annular chamber 34 formed between the spaced inner and outer shouldered peripheries of the cap member 31 and casing 32, respectively. The chamber 34 communicates with a flexible pipe 35 attached to a nipple 38 secured in an air outlet opening 39 in the wall of the cap member 31. At its upper end the casing 32 is spaced, as indicated at 40, from the inside surface of the end

wall of the cap member 31 and also, as indicated at 41, from the periphery of a central depending portion 42 of the cap member which extends below the upper end of the casing. The passages provided at 40 and 41, together with the chamber 34, form a labyrinth for the passage of the spent air from the chamber 33 into the flexible pipe 35. The lower surface of the depending cap portion 42 is concave, as indicated at 43, so that any liquid thereon will drain towards the peripheral edge thereof and drop off. Arranged axially within the chamber 33 of the casing 32 and similarly aligned with the inlet nipple 28, is a pointed cone 44 supported from the cylindrical wall of the casing 32 by a spider arrangement of arms 45, the cone being arranged a suitable distance from the lower end of the nipple 28. This distance is varied in accordance with the velocity with which the mixture enters the separating chamber to produce an optimum separation of the liquid and gas by raising or lowering the adjustable nipple 28. The lower end of the casing 32 is formed with a central funnel-shaped portion 45 providing a discharge outlet to which is connected a discharge pipe 47. Secured to the casing 32 upon its side opposite the air outlet opening 39 in the cap member 31 is a hook 48 arranged for supporting the separating device 27 upon the upper edge of the wall of a crock 49 with the discharge pipe 47 extending therinto.

In the operation of the apparatus, in one example of its application, liquid is being transferred from a source (not shown) to the crock 49, and it will be assumed that suitable air pressure is being supplied to effect the transfer. During its transfer the mixture of liquid and air passes through the pipe 18 into the chamber 33 of the separating device 27 and is discharged above and against the pointed cone 44, whereupon it is deflected and thrown against the circular wall of the chamber. The liquid flows by gravity therefrom into the funnel-shaped portion 45 of the casing 32 into the discharge pipe 47 and thence into the crock 49. The air liberated from the mixture after entering the chamber and striking the cone 44 and the wall of the chamber passes upwardly through the labyrinth comprising the passages 40 and 41 and chamber 34 and escapes from the device through the nipple 38 and discharge pipe 35.

It is to be understood that the embodiment of the invention herein illustrated and described represents one useful form of the invention which is capable of modification and other applications.

What is claimed is:

A device for separating liquid and gas comprising a circular chamber, cone-shaped means in said chamber in the path of the mixture directed thereinto for deflecting and throwing it against the wall of said chamber to liberate the gas from the liquid, a cap member attached to the upper end of said chamber and spaced from the upper edge of the chamber wall to provide an annular chamber surrounding the upper end of said chamber, the inner and outer surfaces of the cap member and chamber wall being spaced concentrically for a distance below said edge of the chamber wall, said member having a central depending portion concentrically spaced from the

inner wall of the chamber and extending below said upper edge of the wall and having a concave lower surface whereby liquid thereon will drain towards its peripheral edge, and a hollow inlet member adjustably connected to said cap member and extending below the depending portion thereof into said chamber for directing a liquid and gas mixture thereinto, the spaces between the member and chamber wall forming a labyrinth connected to an outlet in the side of the cap member for the escape of the gas, said chamber having an outlet at its lower end for the passage of the liquid.

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