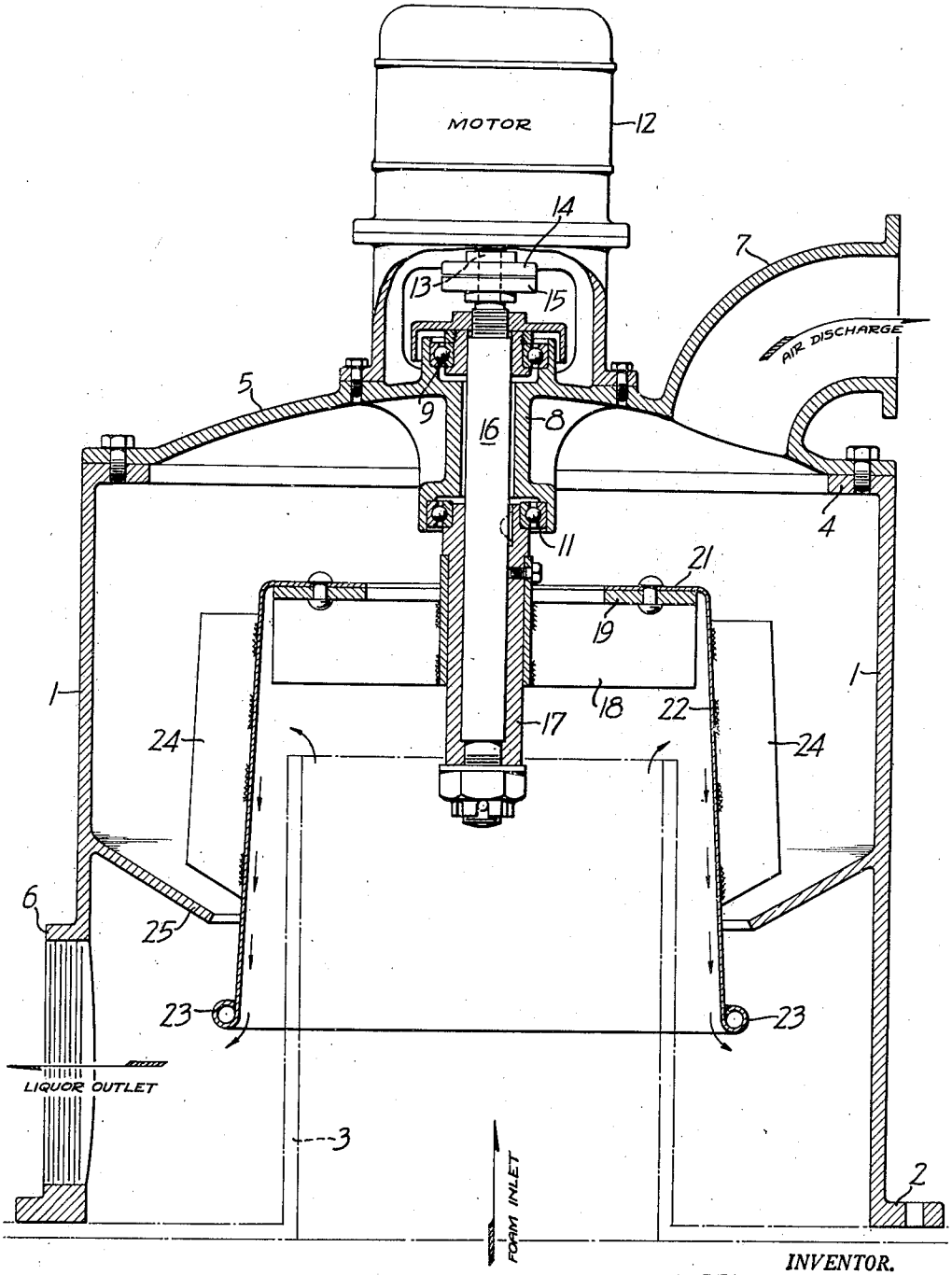
Dec. 6, 1949 H. W. DENHARD 2,490,421

FOAM BREAKER

Filed Dec. 29, 1945



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Patented Dec. 6, 1949

2,490,421

UNITED STATES PATENT OFFICE

2,490,421

FOAM BREAKER

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Application December 29, 1945, Serial No. 637,901

6 Claims. (Cl. 252—361)

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This invention relates to a device for breaking down the foam incidently formed in many industrial operations as the result of pumping or otherwise agitating a soapy fluid in the presence of air.

The problem of eliminating foam of this character is one of long standing and many expedients have been resorted to in an attempt to solve it. For example, various chemical reagents with the thought of decreasing the surface tension of the bubbles; flames have been applied with the hope of expanding the bubbles to a point where their collapse will take place; and various mechanical devices have been tried wherein the foam is made to pass through a screen or restricted zone on the theory that in so doing the bubbles will collapse. It has been found, however, that for one reason or another all of these methods have been ineffective. In the case of the devices employing a screen or restricted passageway the bubbles simply reform on emerging from the screen or passageway.

In general the object of this invention is the provision of a mechanical foam breaker wherein the foam is delivered to the interior of a centrifugal basket formed with solid walls, the foam being broken by the centrifugal pressure imposed thereon.

The invention possesses other advantageous features, some of which with the foregoing will be set forth at length in the following description where that form of the invention which has been selected for illustration in the drawings accompanying and forming a part of the present specification is outlined in full. In said drawings, one form of the invention is shown, but it is to be understood that it is not limited to such form, since the invention as set forth in the claims may be embodied in a plurality of forms.

The single figure of the accompanying drawing is a vertical mid-section of a foam breaker embodying the objects of my invention.

The device thereon shown comprises a cylindrical housing or shell 1, provided at its lower end with an outwardly extending flange 2 for bolting it to a foam delivery conduit 3, and at its upper end with an inwardly extending flange 4 for bolting it to an upwardly dished cover 5. Provided on the shell 1 adjacent the lower flange 2 is a threaded liquor outlet connection 6, and formed on the cover 5 is a flanged air discharge connection 7.

Formed centrally of the cover 5 is a depending hub 8 provided on its upper and lower ends respectively with ball bearings 9 and 11.

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Bolted to the cover 5 concentrically with the shell 1 is a motor 12, having a drive shaft 13 terminating in a coupling 14. Engaging the coupling 14 is a coupling 15 carried on the upper end of a shaft 16, the shaft 16 being journaled at its upper end in the ball bearing 9. Keyed to the shaft 16 is a sleeve 17 journaled in the bearing 11, and welded to the sleeve 17 is a spider 18 provided with a ring 19. Riveted to the ring 19 by an inwardly extending flange 21 is a downwardly diverging solid walled centrifugal basket 22 formed at its lower end with a bead 23 in horizontal alignment with the liquor outlet connection 6.

Welded to the basket 22 are a plurality of peripherally spaced, vertically extending vanes 24, terminating at their lower ends immediately above a downwardly and inwardly extending flange 25 formed integral with the shell 1.

In the operation of the device above described, foam passing upwardly through the conduit 3 is delivered to the inner walls of the centrifugal basket 22 and rotates therewith at from 1200 to 1500 R. P. M. The centrifugal force so produced collapses the foam bubbles against the walls of the baskets, the resulting liquor traveling downwardly over its diverging walls and around its bead 23. The liquor is then thrown from the bead 23 into the lower end of the shell 1 from which it can be drawn off through the connection 6. Simultaneously the vanes 24 serve as an impeller to force the air content of the collapsed foam upwardly through the shell 1 and out through the connection 7.

Although my foam breaker has been particularly designed for installation in a kraft black liquor washing system, its use is by no means limited to this type of system.

I claim:

1. A foam breaker comprising: a solid walled downwardly diverging centrifugal basket having an unobstructed open lower end arranged to receive a foam delivery duct therein; means for delivering foam to a point within said basket adjacent the walls thereof; and a shell surrounding said basket adjacent its rim; the interior of said centrifugal basket being substantially unobstructed, the inclination of the walls of said basket with respect to its axis being substantially less than 20°.

2. A foam breaker comprising: a downwardly diverging solid walled centrifugal basket having an unostructed open lower end arranged to receive a foam delivery duct therein; a shell surrounding said basket in spaced relation thereto;

peripherally spaced, longitudinally extending vanes secured to the outer surface of said basket; said shell being provided with an air discharge outlet at its upper end and with a liquor discharge opening at its lower end; the interior of said centrifugal basket being substantially unobstructed.

3. A foam breaker comprising: a downwardly diverging solid walled motor driven centrifugal basket; having an unobstructed open lower end arranged to receive a foam delivery duct therein; a plurality of longitudinally extending, peripherally spaced vanes mounted on the outer surface of said basket, the lower ends of said vanes terminating at a point substantially above the lower end of said basket; a shell surrounding said basket and provided with an inwardly and downwardly extending flange adjacent and below the lower ends of said vanes, said shell being provided at its upper end with an air outlet and at its lower end with a liquor outlet; the interior of said centrifugal basket being substantially unobstructed.

4. A foam breaker comprising: a cylindrical shell having an open lower end and closed at its upper end by a cover; a shaft journaled in said cover coaxially with said shell; a motor mounted on said cover in driving engagement with said shaft; a downwardly diverging solid walled centrifugal basket carried by said shaft for rotation therewith and having an unobstructed open lower end arranged to receive a foam delivery duct therein; and longitudinally extending peripherally spaced vanes mounted on the outer surface of said basket, said shell being provided with an inwardly and downwardly converging skirt extending below the lower ends of said

vanes to a point adjacent said basket; the interior of said centrifugal basket being substantially unobstructed.

5. A foam breaker comprising: a solid walled downwardly diverging centrifugal basket having a substantially unobstructed interior and a substantially unobstructed open lower end, the inclination of the walls of said basket with respect to its axis being substantially less than 20°; a pipe extending into the lower open end of said basket for delivering foam thereinto adjacent the walls thereof; and a shell surrounding said basket adjacent its rim.

6. A foam breaker comprising: a solid walled downwardly diverging centrifugal basket having an open lower end and containing no vanes or other obstructions within its confines, the inclination of the walls of said basket with respect to its axis being substantially less than 20°; a shell surrounding said basket; and means for rotatably mounting said basket within said shell.

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