

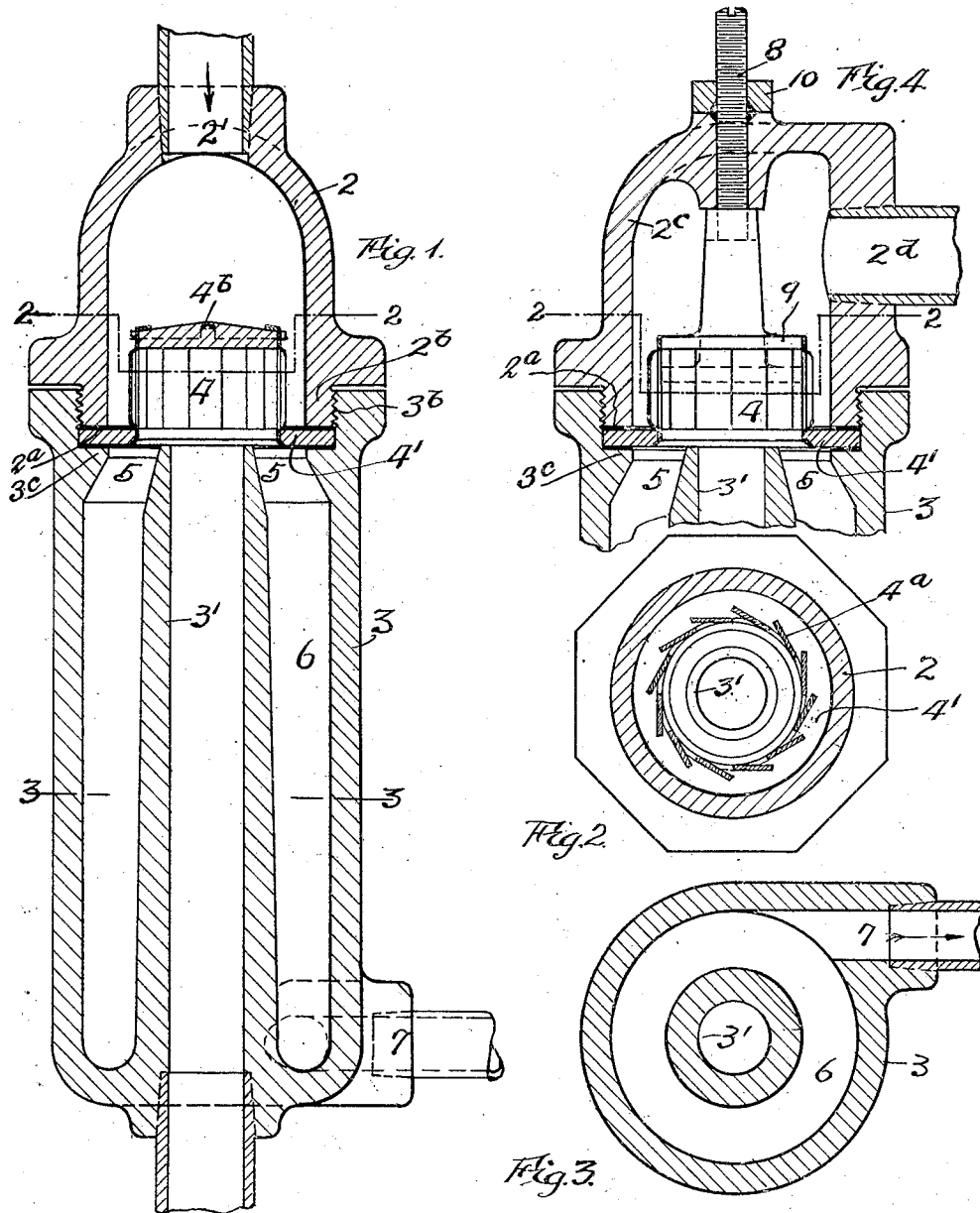
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CENTRIFUGAL FIXTURE

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CENTRIFUGAL FIXTURE.

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My invention relates to separators for use in extracting or separating moisture and solids from steam, air and gas lines, and the object of the invention is to provide a combined centrifugal separator and collection pocket for use with a downflowing stream of fluid from which foreign substances should be removed.

The structure embodying the invention will be clearly understood on reference to the accompanying drawings; in which Fig. 1 is a vertical section of a centrifugal fixture or separator embodying my invention; Fig. 2 is a horizontal section on the line 2—2 of Fig. 1; Fig. 3 is a section on the line 3—3 of Fig. 1; and Fig. 4 illustrates the invention in the form of a volumetrically adjustable separator.

The separator of Fig. 1 comprises the head or dome 2, the drip pocket 3, and the interposed fluid-whirling tuyère 4. The fluid is admitted at the top 2' and in the part 4 encounters a bar to its immediate downward passage. This bar comprises a device which sets the fluid into rapid rotation in a plane transverse to the vertical axis and in advance of reaching the pocket 3. The pocket contains an upstanding central tube 3' of less internal diameter than the fluid-whirling element 4. Preferably the tube has a tapered end. The whirling of the fluid coupled with its preliminary subdivision into many longitudinally extensive thin films effects a centrifugal separation of the heavier from the lighter substances, or components of the stream; and on reaching the lower end or bottom of the member 4, the heavier substances are expelled laterally through the circumferential gap 5 at the top of the tube 3'. Thus, the heavier substances are collected in the drip pocket or cavity 6, while the purified fluid is discharged centrally from the elements 4 and passes downward through the tube 3'. The bottom of the pocket 6 is provided with a drain hole 7, normally closed, by a plug or valve.

The head 2 is distinguished by a packing shoulder 2^a and a threaded end 2^b. The upper end of the pocket 3 has a corresponding shoulder and thread 3^b and, in addition, a shoulder 3^c. The member 4 is characterized by a wide bottom flange or ring 4'. The margin of that flange is held between the parts 2^b and 3^c and when made of soft ma-

terial may serve as the packing between those parts. Otherwise, suitable packing is added.

The body of the member 4 comprises a circumferential series of operatively overlapping tangential blades 4^a, which form the slit-like tangential tuyères through which the fluid flows from the head into the pocket. The upper end of the ring of blades is closed by a plug 4^b.

It is often convenient to connect or serve a downgoing pipe from a horizontal supply pipe. In such cases, the head 2 is made in the form of an elbow 2^c, which supplies the top inlet 2^a, as shown in Fig. 4. The upper end of the head is thus left free and the advantage is taken of this for the accommodation of a central stem 8 that may be moved up and down and to which the tuyèred plug or end 9 is attached. It frequently happens that the flow through the inlet 2^a is so sluggish that it is desirable to pass the fluid through smaller tangential tuyères to the end that the whirling velocity of the fluid shall be increased. This is made possible by the adjustable tuyère end 9. The part 10 is a lock nut, which may also serve as a packing flange for the threaded stem 8.

I desire it to be understood that in the larger sizes of this fixture the threaded connection between the parts 2 and 3 should be abandoned wherever high pressure fluids are to be dealt with, and in such cases the screw connection of the parts should be replaced by ordinary bolted flanges.

Having thus described my invention I claim as new and desire to secure by Letters Patent:—

1. The herein described centrifugal fixture, comprising a head having a fluid inlet at the top and an open bottom fluid-whirling member at the bottom of said head, in combination with means in said head and operable from the exterior thereof for adjusting the action of said member, a part containing a cavity beneath said member and itself containing a central outlet of less diameter, and means for discharging the centrifugally collected substances from said cavity.

2. The herein described centrifugal fixture, comprising a head having a fluid inlet at the top, a body member depending from said head and containing a central stand pipe forming the outlet of the fixture, a ring

held between said head and body and a barrel-like multiple tangential tuyère erected on said ring and therewith separable from said head and said body, said barrel-like tuyère being separated from the head by an annular fluid admission space.

3. The herein described centrifugal fixture comprising a vertically extended drip pocket portion containing a vertically extended and downwardly leading fluid outlet tube, said pocket having a drain hole at the bottom, a ring member positioned at the top of said pocket above the upper end of said outlet tube and containing an opening concentric with said tube but of larger diameter than the outlet passage in the upper end thereof, a multiple-bladed barrel-like tuyère erected on said ring member coaxially with the opening in the latter, a disk closing the upper end of said tuyère, the lower end of said tuyère being in open communication with the interior of said pocket and said tube, and a head member fastened upon the top of said pocket and ring member, said head member being of larger diameter than said tuyère and disk and containing a fluid inlet opening.

4. The improved separator herein described comprising a vertical casing having an inlet in its top and in its lower part con-

taining a standpipe and an encompassing collection space, said standpipe forming the outlet of the separator, and a whirl promoting member having a central discharge opening toward and co-axial with said standpipe, said member fixed in said casing above said standpipe, and said central discharge and standpipe being in free axial communication.

5. A centrifugal filter or separator comprising a casing having an inlet at the top and an outlet at the bottom, said outlet initiating in an orifice centrally and immediately positioned within said casing, said casing having a collection space in its lower portion, in combination with a fluid whirling member having a central discharge and positioned within said casing centrally above said orifice and axially spaced therefrom, said fluid whirling member being adapted to set the fluid in whirling motion directly above said orifice and said central discharge being in free axial communication with said orifice and in free radial communication with the collection space in said casing.

In testimony whereof I have hereunto set my hand this 30th day of April, A. D. 1925.

CHARLES GILBERT HAWLEY.