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C. G. HAWLEY

1,765,918

CENTRIFUGAL FIXTURE

Filed May 4, 1925

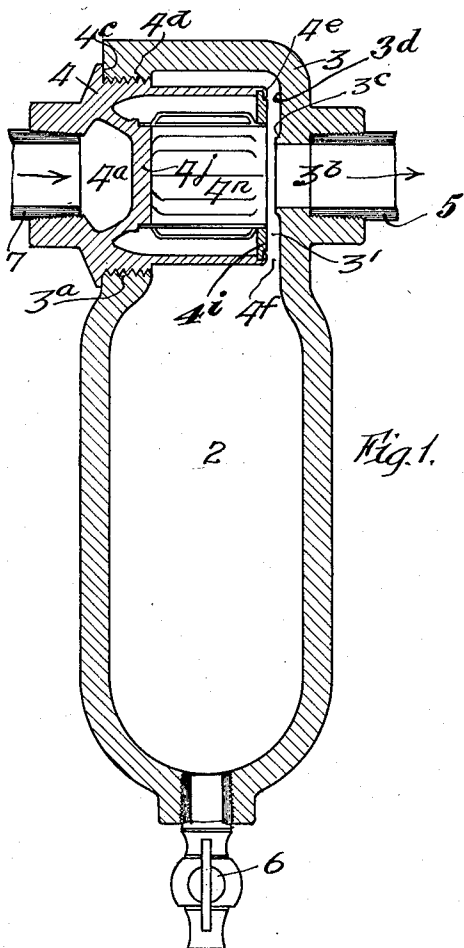


Fig. 1.

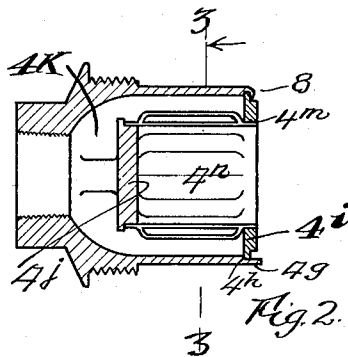


Fig. 2.

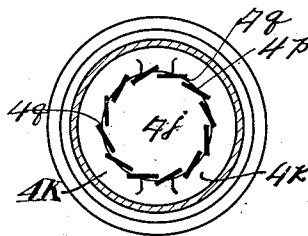


Fig. 3.

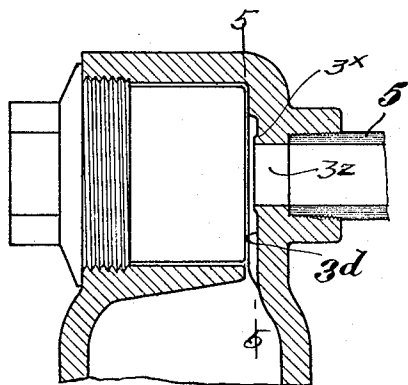


Fig. 4.

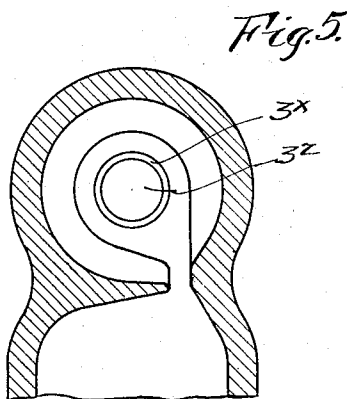


Fig. 5.

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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 drip pocket for use in horizontal lines or pipes; and which shall be of a simple and convenient construction of relatively small size and little weight and highly efficient.

10 The structure embodying the invention and the manner in which the foregoing objects are attained will be clearly understood on reference to the drawing which forms part of this specification; and in
15 which, Fig. 1 is a vertical section of a centrifugal fixture or separator embodying my invention. Fig. 2 is an enlarged longitudinal section of the tuyère plug which comprises one of the two parts of the separator;
20 Fig. 3 is a vertical section on the line 3—3 of Fig. 2; Fig. 4 illustrates a slightly modified construction intended to suppress or lessen the evaporation of the moisture collected in the drip pocket during periods of
25 idleness; and Fig. 5 is a vertical section on the line 5—5 of Fig. 4.

The pocket portion of the separator comprises the pocket proper 2 and the substantially cylindrical head 3 which is integral
30 therewith. The axis of the head is horizontal. The axis of the pocket is vertical. The cavity 3' within the head obviously forms the top of the drip pocket 2. One end of the head contains a large threaded hole 3^a which
35 receives the tuyère plug 4 about to be described. The other end of the head 3 contains the small central outlet 3^b and is threaded to receive the outlet pipe 5. Preferably, though not necessarily, the inner
40 end of the outlet 3^b is distinguished by the circumferential lip 3^c. The surface surrounding the lip 3^c is flat and transverse to the axis of the head. The lower end of the pocket is threaded to receive a plug or valve
45 6 through which the pocket is drained.

The inlet or supply pipe 7 is threaded into the end of the plug 4 so that the pipe communicates with the internal cavity 4^a of the plug. The plug itself has a stop shoulder 4^c
50 and a threaded portion 4^d which fits the

thread 3^a. The plug is of such length that the inner end 4^e thereof reaches almost to the surface 3^d leaving only the circumferential gap or race 4^f between them. Initially the end 4^e of the plug is machined to a thin
55 edge 4^g and provided with a shoulder 4^h. Afterward, the disk or ring 4ⁱ is placed on the seat or shoulder 4^h and the thin edge 4^g is peened or spun down to hold the ring as shown at point 8 in Fig. 2, and also in Fig. 1.
60 At the same time that the shoulder 4^h is formed the integral disk 4^j within the plug is machined. That disk is connected with the body of the plug by two or more arms leaving the clear openings 4^k at the periphery of
65 the disk 4^j. The ring 4ⁱ contains a central hole 4^m slightly larger than the disk portion 4^j. When the disk 4^j is fastened in place it serves to secure the tangential tuyère ring 4ⁿ, the inner end of the ring being seated
70 against the shoulder of the part 4^j and the outer end against the disk 4^j, as well shown in Fig. 2. The ring 4ⁿ is made from a strip of metal which is cut and pressed to form the many tangential tuyère blades 4^p between
75 which are the many tangential tuyères 4^q.

The structure of Figs. 4 and 5 differs from the above only in the particulars of the smaller opening or space between the end of the tuyère plug and the surface 3^e and the
80 restricted area of the flat portion 3^e surrounding the outlet 3^e. The purpose in such restriction is to restrict the communication between the drain pocket and the outlet.

It is of much convenience that the tuyère
85 plug may so easily be removed from the drip pocket at times when it should be inspected or cleaned.

Pressure fluid that is admitted to the interior of the plug enters the ring 4ⁿ through
90 the many tangential tuyères 4^q and is thereby set into rapid rotation. The effect is to centrifugally separate the heavier substances carried by the fluid and to throw them out into the race 4^f, thence to fall into the pocket
95 2 while the purified fluid departs through the outlet 3^b. These small separators find use in many places and are particularly desirable when used in advance of pneumatic hammers and like tools, the same serving to
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extract the moisture and solids from the compressed air before it is allowed to enter the tool.

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

5 1. A generally cylindrical member open at both ends and containing an integral transverse disk, in combination with a ring sealed
10 in the end of said member and having a central opening coaxial with said disk and a multiple tangential tuyère held between said disk and said ring.

2. A combined centrifugal separator and
15 drip pocket, comprising a member containing a drip pocket and having a transverse head portion, the latter having a large opening in one side and a smaller outlet in its
20 opposed side, in combination with a fluid whirling member positioned between said openings, a hollow plug held in the larger side opening, containing at its outer end an inlet opening and itself forming an enclosure for said fluid whirling member, and said
25 member being spaced from but opposite to said outlet, whereby the fluid entering the plug is caused to flow first inwardly through the fluid whirling member and thence to said outlet across the space between said member
30 and outlet to centrifugally eject the separated substances into said pocket.

3. A horizontal line separator comprising a vertically extended pocket having a drain hole at the bottom and at the top provided
35 with a transverse head portion the lower side of which opens into the upper part of said pocket, said transverse portion having a large opening in one end to receive a tuyère enclosing plug and coaxially a smaller opening in its other end, in combination with a
40 fixed fluid entrance tuyère mounted in said plug which is coaxial with said large opening and which presents an open end toward but in longitudinally spaced relation to said
45 smaller opening, said tuyère including a circumferential series of inclined blades between which the fluid flows inwardly and, taking on a whirling motion within the tuyère and in the space between the same
50 and the smaller opening, results in centrifugally separating the heavier substances carried by the fluid and their discharge into said pocket.

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