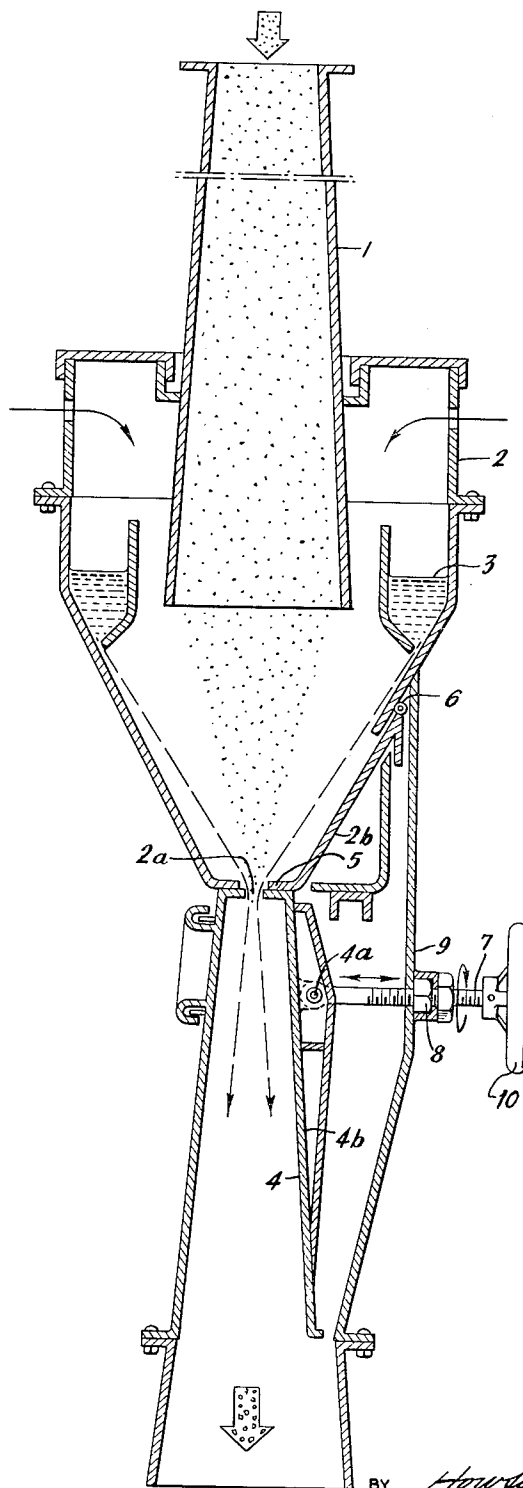


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ARRANGEMENT IN AN APPARATUS FOR THE SUPPLY AND ATOMIZING
OF A LIQUID IN A GASEOUS MEDIUM
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ARRANGEMENT IN AN APPARATUS FOR THE SUPPLY AND ATOMIZING OF A LIQUID IN A GASEOUS MEDIUM

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3 Claims. (Cl. 261-112)

The present invention relates to an improvement in an apparatus, such as that disclosed in U.S. Patent No. 2,883,167, for the supply and atomizing of a liquid in a gaseous medium. It has been discovered when using such an apparatus that the efficiency of atomization of the liquid is considerably diminished if the velocity of the supplied gaseous medium falls below the value calculated for a specific discharge orifice. As in many cases such a fluctuation with respect to the gas velocity, as a consequence of the variation of the supplied gas quantity cannot be avoided. However the result is unequal atomization whether the liquid is supplied for the purpose of moistening the gaseous medium or for agglomerating and separating dust commingled with the gas. The present invention relates to the elimination of the above mentioned drawback in such apparatus and in the present embodiment the gas channel is designed with a rectangular variable cross sectional area with at least one of two opposing walls, including one side of the constricted portion of the extension of the gas channel, adjustable to permit regulation of the flow area at the point where the atomization of the liquid takes place.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims taken in conjunction with the accompanying drawing.

The drawing is a sectional view through an apparatus made in accordance with the present invention.

Referring now to the drawing, a gaseous medium to be moistened or cleaned from accompanying dust enters a tubular supply conduit 1 which terminates in a concentric expansion chamber 2 which surrounds the tubular supply conduit and which is provided with liquid supply means 3 for distribution of a washing liquid in the manner described in Patent 2,883,167. The expansion chamber's side walls converge in the direction of flow of the gaseous medium and terminate in a constricted portion 2a to form a discharge orifice from which extends a duct 4. At the junction of the converging side walls of the expansion chamber 2 and the duct 4 substantially identical shoulders 5 form an angle of substantially 90° with respect to the direction of flow of the gaseous medium in order to create constriction of the gaseous medium and to allow proper atomization of the water film with the gaseous medium. In order to prevent a decrease in the efficiency of atomization of the liquid supplied by the liquid supply means 3, if the velocity of the supplied gaseous medium falls below the calculated value for a specific discharge orifice size, the area of the rectangular constricted flow portion 2a, or discharge orifice, is adjustable. To that end wall displacement means are provided actuable to move connected wall parts 2b and 4b about pivot means 6. In the present instance wall displacement means comprise a threaded spindle 7, one end of which is connected to wall part 4b by a ball and socket 4a, the other end of which passes through a tapped bonnet 8 which is secured to a rigid outer wall 9 so that as the threaded spindle turns, in the present instance by a handwheel 10, both of the connected wall parts 2b and 4b move to close or open the constricted portion 2a as desired. In elongated apparatus, several screw spindles are used to vary the opening of the constricted portion. In large constructions, only the wall part corresponding to the wall

part 2b in the illustrated embodiment is adjustable. The screw spindle in that case must of course be connected with only this wall part.

Although the invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes and details of construction and the combination and arrangement of parts may be made without departing from the spirit and the scope of the invention, as hereinafter claimed.

What I claim is:

1. In an apparatus for introducing a liquid into a flowing gaseous dust-laden medium comprising a tubular supply conduit for the dust-laden gaseous medium having an open end, an expansion chamber surrounding said conduit adjacent the open end thereof, said expansion chamber having side walls converging in the direction of flow of said dust-laden medium and terminating in an inwardly projecting shoulder transverse to the direction of flow of said gaseous medium and defining a discharge orifice, a diverging duct connected to and extending from said discharge orifice, a liquid supply means mounted in said expansion chamber along the inner periphery thereof and surrounding said supply conduit to form a continuous liquid film covering the entire converging inner surface of the expansion chamber whereby the flow of gaseous medium through said expansion chamber from said open end of the supply conduit to said discharge orifice causes said film to flow towards and into said discharge orifice effecting atomization of said liquid as said gaseous medium passes through said discharge orifice; the improvement insuring proper atomization of said liquid at said discharge orifice, comprising means mounting at least one side wall of said converging expansion chamber and the terminal shoulder thereof, for relative transverse movement toward and away from the opposite side wall and the terminal shoulder thereof, and wall displacement means cooperating with said side wall to vary the area of said discharge orifice so as to maintain a uniform gas velocity at the discharge orifice thereby causing uniform atomization of said liquid at said discharge orifice.

2. In an apparatus for introducing a liquid into a flowing gaseous dust-laden medium according to claim 1 wherein said expansion chamber is rectangular in cross section, and wherein said diverging duct from said discharge orifice is substantially rectangular in cross section, at least one wall of said diverging duct being operable to be displaced concurrently with said movable side wall of said converging expansion chamber upon manual operation of said wall displacement means.

3. In an apparatus for introducing a liquid into a flowing gaseous dust-laden medium according to claim 1 wherein said wall displacement means is manually operable and comprises a threaded spindle connected at one end to said movable side wall, and including a fixed outer wall adjacent said movable side wall, said fixed outer wall having threaded means therein through which passes in threaded engagement said threaded spindle so that as the spindle is turned said movable side wall is displaced thereby changing the size of the discharge orifice opening as desired.

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