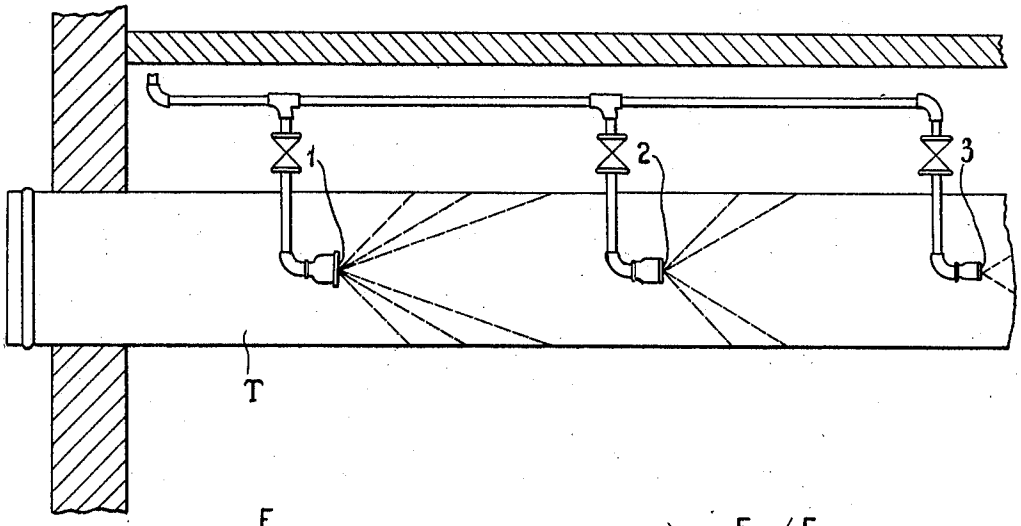
P. KESTNER.

NOZZLE FOR VENTILATING AND HUMIDIFYING APPARATUS.

APPLICATION FILED MAY 16, 1910.

1,093,996. Patented Apr. 21, 1914.

FIG 1



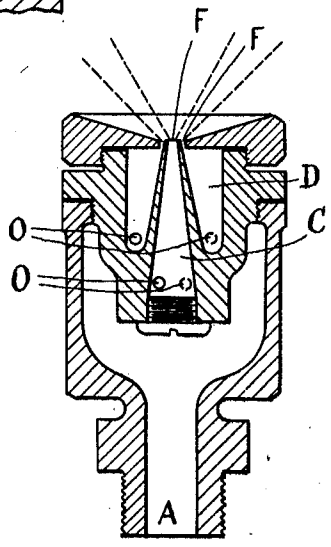


FIG 2

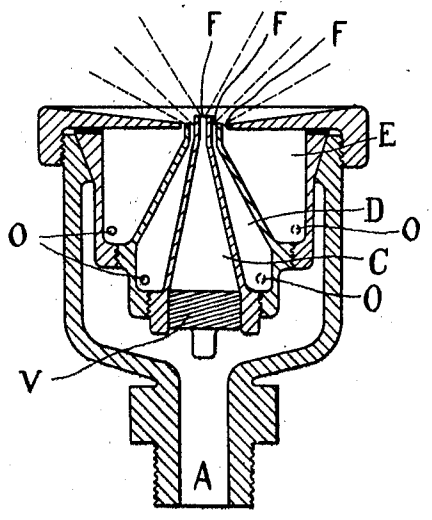


FIG 3

Witnesses:
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NOZZLE FOR VENTILATING AND HUMIDIFYING APPARATUS.

1,093,996. Specification of Letters Patent. Patented Apr. 21, 1914.

Application filed May 16, 1910. Serial No. 561,552.

To all whom it may concern:

Be it known that I, PAUL KESTNER, a citizen of the French Republic, residing at Lille, Nord, France, have invented new and useful Improvements in Nozzles for Ventilating and Humidifying Apparatus, of which the following is a specification.

This invention has reference to improvements in nozzles for ventilating apparatus in which air is supplied to the chamber being ventilated through an air tube by the action of one or more jets of water whereby the humidification of the air is also effected.

I have in the specification of my British Patent No. 494 of 1908 described an apparatus of that type which comprises a plurality of nozzles placed in alinement centrally within an air supply tube so that any one or more of said nozzles may be made to project a jet of water to simultaneously effect a movement forward and humidification of the air. While such jets are very efficient in moving forward the air they do not effect the humidification to a sufficient degree; hence the necessity of employing a fairly considerable number of such jets in those cases—such for example as in the ventilation of spinning and weaving factories—where the air supplied must be humidified to a high degree. The employment of such a large number of jets is disadvantageous however, inasmuch as the ventilating apparatus is of necessity of inordinate size; further the quantity of water used for a given resultant humidification is great and the presence of such a comparatively large number of jets in the air supply pipe retards to an appreciable extent the flow of the air.

The object of my invention is to obviate these defects while still retaining the advantages of the plurality of single jets, and to this end my invention consists essentially in the application to the purpose of propelling and humidifying air for ventilating purposes of a compound nozzle comprising a central nozzle which acts as an injector to throw a jet whereby the propelling effect is attained with a slight humidification and one or more annular nozzles around said central nozzle throwing a concentric jet or jets whereby the humidification of the air will be effected to a high degree. By the employment of one compound nozzle having a central jet and two concentric conical jets a very efficient ventilating and humidifying effect is attained, equal to a considerable number of single jets. Inasmuch as the degree of humidification of the air supplied to such factories as are referred to by way of example should be constant, it is necessary to be able to regulate the humidifying effect of the apparatus, as on a damp day less additional humidification of the air will be required than when the atmosphere is fairly dry. In order to attain a wide range of humidification I prefer to employ three nozzles, one of a construction to project a central and two concentric jets, another to project a central and one concentric jet, and a third to project a single or central jet only.

I have illustrated my invention in the accompanying drawing, in which:

Figure 1 shows three nozzles arranged one behind the other within an air in-take tube, one being a single jet nozzle and the others respectively double and triple compound spraying nozzles. Fig. 2 is a section of one construction of compound nozzle with a central jet and one annular spraying nozzle, and Fig. 3 is a like section of a compound nozzle with a central jet and two annular concentric spraying nozzles.

Referring to Fig. 1, T is a tube in which three nozzles 1, 2 and 3 are mounted centrally, all branched upon a common water supply pipe A and each provided with a stopcock. Water under pressure is admitted to the pipe A and the jets or sprays issuing from the nozzles induce a current of air to flow into the tube from the rear and carry it along and humidify it more or less according to the arrangement and number of the nozzles. The compound nozzle 1—shown separately in Fig. 3—gives three concentric conical jets and produces quite as good a humidifying effect as three single nozzles arranged behind each other as heretofore, with considerably less consumption of water and, obviously, a saving of space. The central jet serves more particularly to create the suction and draw in the air, and the three apertures F preferably diminish successively in size so that the water issues from the outer annular aperture in a thin film which impinges against the tube and is broken up into fine spray. This nozzle is shown as formed with a central chamber C to which the water is fed in the known manner through a screw V, and two annular chambers D, E, which are fed through tangential inlets O—likewise in accordance with a known principle—so as to impart a

gyratory motion to the water. The compound nozzle 2—shown separately in Fig. 2—gives a central jet and one concentric annular jet. In this case both the central chamber C and the annular chamber D are fed through tangential inlets O. The third nozzle shown in Fig. 1 is an ordinary single jet nozzle which, as already indicated, may serve alone on a humid day to produce the desired circulation of air.

By shutting off one or more of a series of nozzles, a corresponding variation of the humidification of the air and the ventilation of the factory or the like can be readily effected.

The number of nozzles employed and their arrangement may of course be varied to suit particular requirements.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A nozzle for ventilating and humidifying apparatus, comprising a casing having a main inlet for fluid, a central, tapered chamber within and communicating at its larger end with the interior of the casing and having an outlet at its smaller end, and a surrounding chamber having an annular outlet concentric with the outlet of the central chamber and provided with fluid inlets communicating directly with the interior of the casing, said concentric chambers being formed in a plug detachably connected with and closing one end of the casing.

2. A nozzle for ventilating and humidifying apparatus, comprising a casing having a main inlet for fluid, a central, tapered chamber within and communicating at its larger end with the interior of the casing and having an outlet at its smaller end, and a plurality of concentric chambers surrounding the central chamber and having annular outlets concentric with the outlet of said central chamber, the said concentric chambers being provided near their inner ends with inlet ports communicating directly with the interior of the casing.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PAUL KESTNER.

Witnesses:
HENRI CHARRIER,
LÉON PECKEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."