Jan. 26, 1954

W. E. HENSEL

2,667,383

MULTIPLE JET SPRAY DEVICE

Filed May 15, 1952

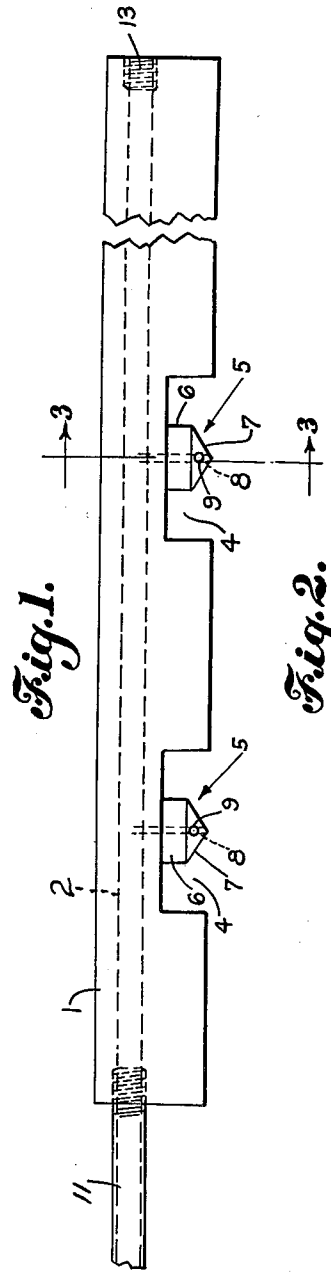


Fig. 1.

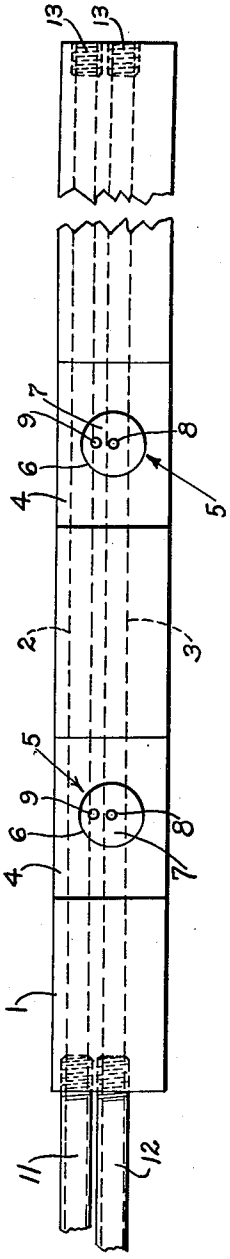


Fig. 2.

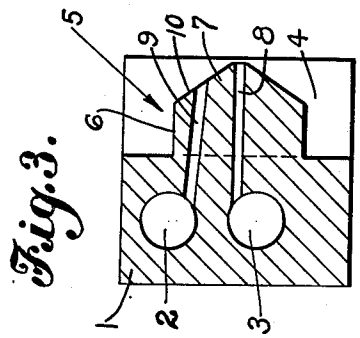


Fig. 3.

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Patented Jan. 26, 1954

2,667,383

# UNITED STATES PATENT OFFICE

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## MULTIPLE JET SPRAY DEVICE

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Application May 15, 1952, Serial No. 287,977

1 Claim. (Cl. 299—104)

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In my Patent No. 2,551,538 May 1, 1951, there is illustrated a multiple jet spray device for delivering a plurality of jets of liquid in spray form and which is useful for applying emulsion, oils, or other conditioning liquid in spray form to fibrous material such as wool, cotton, jute, hemp, etc., during the processing of such material.

The present invention relates to an improved multiple jet spray device adapted for the same use as that of the device shown in the patent, and an object of the invention is to provide a multiple jet spray device which is simpler in construction than that of the patent and less expensive to manufacture.

In the drawings, wherein I have illustrated a selected embodiment of the invention,

Fig. 1 is a top plan view of a multiple jet spray device embodying the invention;

Fig. 2 is a front view of Fig. 1;

Fig. 3 is a section on the line 3—3 Fig. 1.

The device herein illustrated comprises an elongated body member 1 of brass, aluminum, or any other suitable metal, which is formed with two chambers 2 and 3 that extend the full length of the body member, said chambers being arranged one above the other. The chamber 2 is a liquid-containing chamber adapted to contain the oil, emulsion or other liquid which is to be delivered in spray form, and the chamber 3 contains air under pressure by which the spray is formed, as will be presently described.

The body member 1 is provided on one face with a plurality of recesses 4 in each of which is situated a nozzle or spray element 5 which is integral with the body member 1. The inner portion 6 of each nozzle or spray element 5 is cylindrical in form and the outer portion 7 has the form of a relatively flat cone, as shown in the drawings. Each nozzle element 5 is formed with an axial duct 8 which extends from the tip of the nozzle element into the air-containing chamber 3.

The nozzle element also has a liquid-delivering duct 9 which communicates at its inner end with the liquid-containing chamber 2, the other end of which opens through the conical face 10 of the nozzle element above the tip or point thereof, the open end of the duct 9 being well spaced from the open end of the duct 8.

The liquid to be sprayed is delivered to the chamber 3 through a suitable pipe 11 which is screwed into the body 1 at one end thereof and communicates with said chamber 2. The compressed air is delivered to the chamber 3 through a similar pipe 12 which is screw threaded to the end of the body 1 and which communicates with said chamber 3. At the opposite end of the body 1 the chambers 2 and 3 are closed by suitable screw plugs 13. The body member 1 may be of any desired length and may carry any desired number of nozzle or spray elements 5.

In using the device the liquid to be sprayed will be delivered to the chamber 2 at substantially

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atmospheric pressure and in the use of the device such liquid will flow from the chamber 2 through the duct 9 of each nozzle and as it emerges from the duct it will spread by gravity and in the form of a film over the conical surface between the supply end of the duct 9 and the tip of the nozzle. This film will gravitate toward the tip and as it reaches the pointed end of the conical surface such film will be met by the air jet issuing from the duct 8 and thereby the liquid will be broken up into a fine spray.

The fact that the nozzle elements 5 are integral with the body 1 simplifies the construction of the device because the only assembling operations which are required are those of introducing the plugs 13 and attaching the pipes 11 and 12 to the body. Moreover, since the nozzle elements 5 are made from the same bar from which the body 1 is made, there is no possibility that said elements will ever get out of adjustment, and when the ducts 8 and 9 are once properly formed they will always have the proper relative sizes to perform in their intended manner.

I claim:

A multiple jet spray device comprising an elongated one-piece integral body member having a liquid-containing chamber and a separate air-containing chamber extending longitudinally thereof and also having integral therewith a plurality of laterally directed nozzle members, each presenting a relatively flat cone-shaped end portion, means for delivering to the liquid-containing chamber the liquid to be sprayed under approximately atmospheric pressure, means to deliver air under pressure to the air-containing chamber, each nozzle member having an air delivery duct extending axially therethrough and communicating at its inner end with the air-containing chamber and open at its outer end at the tip of the cone-shaped end portion of said nozzle member, each nozzle member also having a liquid delivery duct communicating at its inner end with the liquid-containing chamber and opening through the cone-shaped end portion of said nozzle member at a point between the tip and the base of the cone shape and above and spaced from the tip, whereby the liquid under atmospheric pressure which is delivered from the liquid delivery duct will spread by gravity in the form of a film over a portion of the conical surface between the liquid delivery duct and the air delivery duct at the tip of the nozzle, said film flowing toward said air delivery duct and being atomized by the air issuing therefrom.

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