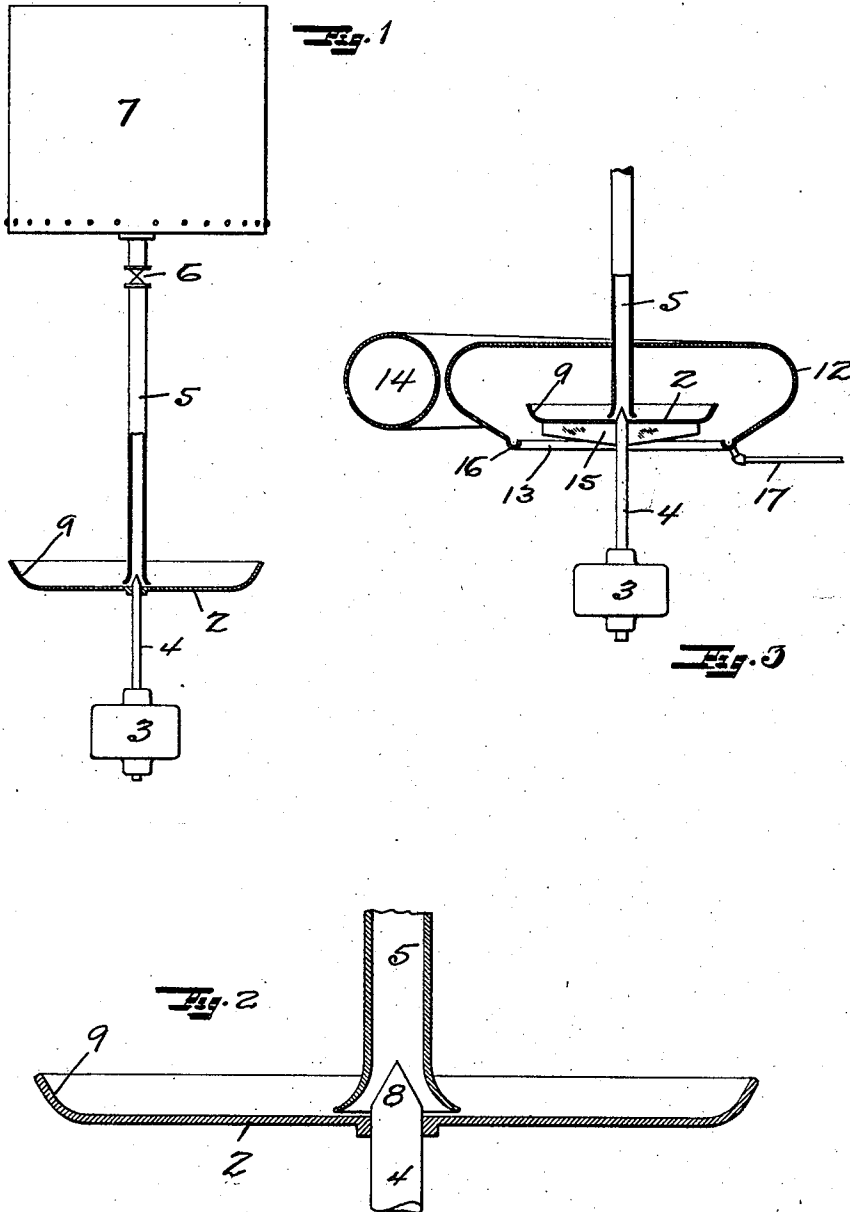


F. RIEBER.
 APPARATUS FOR NEBULIZING LIQUIDS.
 APPLICATION FILED MAY 21, 1917.

1,330,218.

Patented Feb. 10, 1920.



Witness
J. B. Gaudner

INVENTOR
 FRANK RIEBER
 BY *White & Frost*
 HIS ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK RIEBER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO RIEBER LABORATORIES, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

APPARATUS FOR NEBULIZING LIQUIDS.

1,330,218.

Specification of Letters Patent.

Patented Feb. 10, 1920.

Application filed May 21, 1917. Serial No. 169,867.

To all whom it may concern:

Be it known that I, FRANK RIEBER, a citizen of the United States, and a resident of the city and county of San Francisco and State of California, have invented a certain new and useful Apparatus for Nebulizing Liquids, of which the following is a specification.

The invention relates to an apparatus for nebulizing liquids.

An object of the invention is to provide an apparatus whereby a liquid may be readily and efficiently divided into minute particles.

The invention possesses other advantageous features, some of which, with the foregoing, will be set forth at length in the following description where I shall outline in full that form of the invention which I have selected for illustration in the drawings accompanying and forming part of the present specification.

Referring to said drawings:

Figure 1 is a diagrammatic representation of one form of apparatus of my invention.

Fig. 2 is a cross section of the rotating plate on a larger scale.

Fig. 3 is a diagrammatic cross section of an apparatus for producing a stream of a mixture of gaseous material and nebulous liquid.

By my invention I provide means for producing a uniform spray or cloud of liquid material, the droplets in which have a high degree of uniformity as to size and which have been reduced to the smallest feasible dimension.

The apparatus of my invention for producing the nebulous liquid comprises a disk 2, preferably horizontally disposed, which is rotated at high speed by an electric motor 3 or other high speed driving means. The driving shaft 4 preferably extends through the disk from below and that part of the shaft which projects above the surface of the disk is preferably conical in form and acts to distribute the liquid evenly on the disk. Arranged above and concentric with the disk is a feed conduit 5 having a valve 6, through which conduit the liquid flows from the storage tank 7. The lower end of the conduit 5 preferably incloses the cone 8 and is flared outwardly to evenly distribute the liquid in a relatively thin film. The disk is pro-

vided with a turned-up or inclined marginal portion 9. The liquid, flowing in a thin sheet or film over the face of the disk at increasing speed, strikes the inclined portion and discharges from the edge thereof in the form of a fine spray.

When the rapidly-moving film or stream strikes the inclined portion, it is flattened out and pressed against the inclined surface in a uniform film. This flattening action is due to the sudden change in direction of the stream which strikes the inclined surface at high velocity, and causes the liquid to discharge over the edge of the disk in a film which may attain extreme thinness approximating the film of a soap bubble. Under these conditions this film when rapidly projected from the edge or periphery of the disk immediately contracts into minute globules of highly uniform dimensions and of extremely small size. This size will, of course, increase as the thickness of the film increases. An increase in the thickness of the film may be caused either by increasing the rate of flow or by decreasing the velocity of the disk. In other words, the thickness of the film depends on the proportionate value of the rate of flow to the velocity of the rotating member.

The diameter of the rotating member may be taken as one of the factors in the velocity as any change in the diameter at the same given angular velocity produces a change in the peripheral velocity.

Fig. 3 shows an arrangement of my invention adapted to nebulize liquid material, mix it with a stream of gaseous material and discharge the mixture under controllable conditions and permits the production of predetermined mixtures. In this apparatus, the disk is inclosed with an involute casing 12 having a gaseous inlet opening 13 and a mixture discharge opening 14. Impeller blades 15 secured to the under side of the disk induce air or other gas into the device and the amount of gas induced may be varied by varying the speed of the disk. The casing 12 is provided at its lower portion with a gutter 16 for collecting the liquid condensing within the apparatus, which is carried off by the pipe 17.

I claim:

1. An apparatus for nebulizing liquids comprising a rapidly rotatable member having a flat central portion and an upwardly

inclined peripheral portion merging directly into the central portion and means for flowing liquid onto said member.

2. An apparatus for nebulizing liquids
5 comprising a rapidly rotatable member having a marginal portion inclined to the plane of rotation thereof, a conical projection arranged concentrically on said member and a

liquid supply pipe having a flaring end surrounding said projection.

In testimony whereof, I have hereunto set my hand at San Francisco, California, this
10 15th day of May, 1917.

FRANK RIEBER.

In presence of—
H. G. Prost.