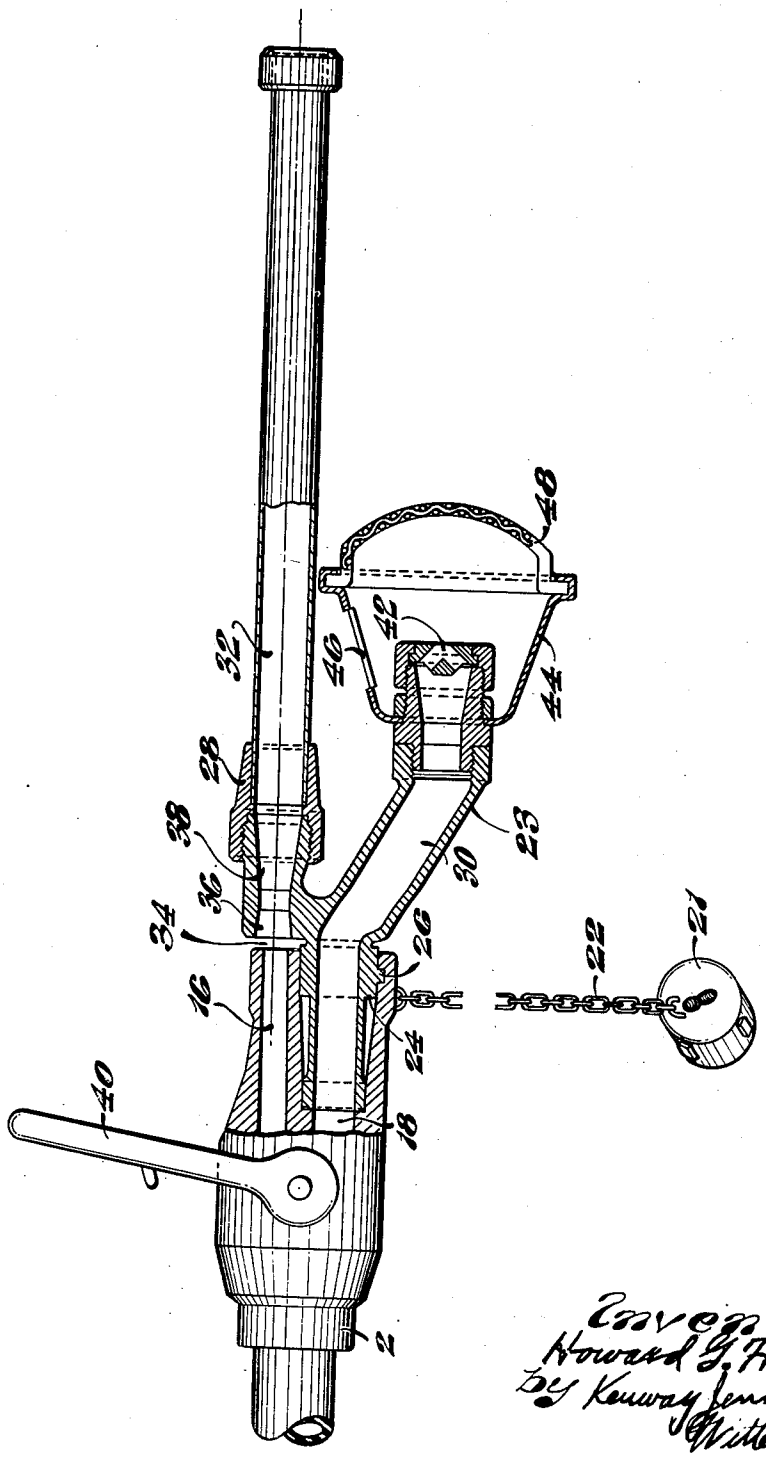
July 29, 1952

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2,604,948

FIRE FIGHTING APPARATUS

Filed Sept. 15, 1949



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Patented July 29, 1952

2,604,948

UNITED STATES PATENT OFFICE

2,604,948

FIRE FIGHTING APPARATUS

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Application September 15, 1949, Serial No. 115,833

2 Claims. (Cl. 169—15)

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The present invention relates to nozzles used for fire-fighting apparatus, and more particularly to portable apparatus for generating foam.

The principal object of the present invention is to provide a simple and easily operated portable device capable of generating either a projected stream of foam or a fog-foam. With this object in view, the present invention comprises a device having a straight foam-mixing tube and a fog-foam generator, each having means for aerating the liquid, together with valve means for controlling the passage of liquid through either. In its simplest and best form the device comprises an attachment to be applied to apparatus of the type described in my prior Patent No. 2,337,321, granted December 21, 1943.

The nozzle described in my prior patent produces either a stream of water or a fog, under the control of a valve. By the present invention a simple attachment places at the disposal of the operator a stream of foam or a fog-foam. Such equipment is particularly useful in fighting fires occasioned by airplane crashes, since a wide variety of conditions is encountered in such situations.

The accompanying drawing is a sectional elevation of the preferred form of apparatus according to the present invention.

The illustrated embodiment of the invention includes a valve body 2 having a ball valve to determine the flow of liquid to either of two discharge passages 16 and 18. These parts are similar to corresponding parts of the apparatus of my prior patent, in which the passage 16 is used for a straight stream of water and the passage 18 is provided at its discharge end with an integral metal wall having fog-generating orifices at 12 in said patent. According to the present invention the structure is modified by leaving the discharge end of the chamber 18 completely open. A removable fog-nozzle member 21 is provided, adapted to fit snugly into the discharge end of the chamber 18, locking therein with a bayonet-type lock. The fog-nozzle member 21 is made removable to render possible its replacement by the attachment which constitutes a feature of the present invention. The fog-nozzle member is shown mounted on a chain 22.

The attachment 23, which includes the foam generator, has a cylindrical portion 24 which fits snugly into the chamber 18 and is locked in place by the bayonet lugs 26. These lugs are at such an angle (as shown on the member 21) that the attachment fits into the chamber in only one position.

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The attachment 23 has a straight extension member 28 aligned with the passage 16 and a tubular member 30 communicating with the chamber 18 and serving to convey liquid to the fog-foam-generating means.

The part 28 is provided with a long straight tube 32. As heretofore stated the part 28 is aligned with the passage 16, and as shown in the drawing, a space 34 is provided for aspirating air into the stream of liquid. The part 28 has a passage, of which the rear portion is enlarged, indicated at 36, to insure catching of the stream from 16. The passage subsequently expands, as indicated at 38, to introduce turbulence into the stream and thereby promote foam formation. The portions 36 and 38 of the passage are jointed by a throat, so that the entire passage is of general Venturi shape. Thus, by the mixing action in the passage of liquid through the tube 32, a straight foam stream may be projected from the tube. This is brought about when the handle 40 is set to direct liquid through the passage 16.

From the fitting 24 the passage 30 leads to a fog generating nozzle 42, preferably of the type described in my Patent 2,302,021, dated November 17, 1942. The nozzle forms a part of a fog-foam generator which is of the general type described in the Freeman and Hencinski application, Serial No. 592,658, filed May 8, 1945, now Patent No. 2,492,037.

The fog-nozzle preferably consists of a cover plate for the end of the passage 30, with two holes drilled in it in such a manner that their center-lines intersect at the outer surface of the cover plate. The nozzle is surrounded by a hood 44. The streams of liquid emerging from the nozzle impinge upon each other and form a mist which, in passing through the hood 44, creates an aspirating effect, drawing air in through the openings 46. This air is mixed with the fog to form a fog-foam. To complete the entrainment of the air within the droplets, the mixture of air and mist is caused to impinge on and be projected through a screen or grid 48. The operation of this part of the apparatus is described at greater length in the above-mentioned pending application of Freeman and Hencinski.

In the operation of the apparatus of the present invention, the valve body 2 is connected to a source of foam-producing solution, that is, a solution of some material capable of stabilizing the foam produced. A number of such materials are known to those skilled in the art. The handle 40 is turned to direct the stream of solution into either the passage 16 or the passage 18. In

the former case the apparatus produces a stream of foam which can be directed at a fairly high velocity at particular points in the fire. In the latter case the apparatus produces a fog-foam which emerges in a wide-angle pattern. This is useful to blanket a fire or to form a protective cloud behind which the operator can approach nearer the flames.

The apparatus of the present invention has been described as consisting of two parts, one locking into the other. It will be understood that the invention might also be embodied in a single structure in which the foam-generating attachment **23** would become an integral part of the valve body **2**. The form of the invention pictured is, however, the preferred form. With the foam-generating attachment **23** in place, the operator can produce either a stream of foam or a fog-foam. By removing it and inserting the fog-nozzle member **21** in the passage **18**, the operator can adapt the apparatus for use with water rather than with foam-forming solution. He can then produce either a stream of water or a fog.

By the present invention, the versatility of the apparatus of my Patent No. 2,337,321, is enhanced, since in addition to straight water stream and a fog of water, it is possible to obtain a stream of foam or a blanket of a fog-foam, without detracting from the portability of the equipment.

Having thus described my invention, I claim:

1. Fire fighting apparatus for producing selected patterns of fog and foam comprising a valve body containing a valve and two water discharge passages, a foam attachment having a tubular portion to align one of said body passages and a second tubular portion to align with the other of said body passages, means for securing the attachment to the body, and a screen-like member mounted on one of said tubular portions and having air-aspirating openings, the second tubular portion of the attachment being spaced from the body passage with which it is aligned to form an air-aspirating space.

2. Fire fighting apparatus for producing selected patterns of fog and foam comprising a valve body containing a valve and two water discharge passages, a foam attachment having a tubular portion to fit into one of the body passages, a bayonet-type connection to secure the attachment to the body, the attachment having a second tubular portion aligning with the other of said body passages but separated therefrom to form an air-aspirating space, said second tube portion having an expanding section to introduce turbulence, and a screen-like member mounted on the first-named tubular portion of the attachment and provided with air-aspirating openings.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,043,714	Schellin	June 9, 1936
2,089,646	Friederich	Aug. 10, 1937
2,130,745	Rosenbauer	Sept. 20, 1938
2,337,321	Freeman	Dec. 21, 1943
2,364,848	Hurst	Dec. 12, 1944
2,492,037	Freeman	Dec. 20, 1949