Jan. 14, 1936. S. F. BARCLAY 2,027,954

NOZZLE

Filed Jan. 2, 1935

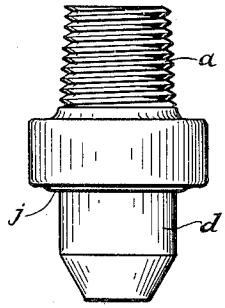


Fig. 1

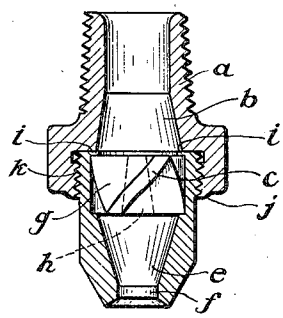


Fig. 2

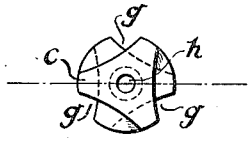


Fig. 3

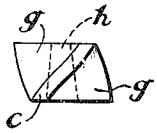


Fig. 4

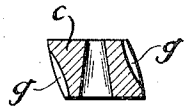


Fig 5

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UNITED STATES PATENT OFFICE

2,027,954

NOZZLE

Sidney Fraser Barclay, Manchester, England, assignor to General Fire Extinguisher Company, Providence, R. I., a corporation of Delaware

Application January 2, 1935, Serial No. 41
In Great Britain January 4, 1934

3 Claims. (Cl. 299—115)

The object of the present invention is to provide improved apparatus for projecting water on to the surface of burning oil or spirit for the purpose of producing a non-inflammable emulsion between the water and the oil or spirit at the said surface which results in the rapid extinction of the fire.

If the oil or spirit is of a highly inflammable kind, the emulsion thereof with water is of a fleeting character and persists only where an effectual bombardment of the oil or spirit surface by the water is taking place. In such cases it is of the utmost importance that the water be projected in the form of drops which strike the burning oil or spirit with considerable force and over substantially the whole of its surface.

My invention comprises the production of the desired high velocity uniformly distributed water drops by a nozzle having therein in advance of a converging discharge portion, a fixed scroll device providing peripheral passages which impart a rapid swirling motion to the water issuing therealong and a central hole preferably diverging, through which a central jet issues, the high velocity swirling jets and the central jet combining in the throat of the nozzle to give an evenly distributed discharge of high velocity drops over a considerable area.

The invention further comprises the mounting of the scroll in a cylindrical part of the bore of a separate part of the complete nozzle, the scroll being secured in position by spinning over the inner end of the said separate part.

The invention further comprises mounting the scroll in a cylindrical part of the bore of the nozzle with a diverging portion of the nozzle delivering the water to the scroll and a converging portion discharging the water drops through a throat upon the burning oil or spirit.

The invention further comprises securing the separate part of the nozzle in position by screwing, and by spinning the metal of the body part over the end of the threaded part of the separate part.

Referring to the accompanying sheet of explanatory drawing:

Figure 1 is an elevation and Figure 2 a sectional elevation of a water projecting device constructed in accordance with this invention for use in producing an evenly distributed discharge of high velocity water drops over a large area for the purpose of forming a non-inflammable emulsion of the burning surface liquid upon which the water is projected.

Figure 3 is a plan view, Figure 4 a side elevation and Figure 5 a sectional view of the scroll device within the projector.

The projector comprises a water inlet portion *a* which has a part *b* of divergent form through which the water issues on to a scroll device *c* fixed in the discharge portion *d* of the projector. There is a convergent part *e* in the discharge portion and a throat *f* through which discharge takes place.

The scroll *c* has spiral grooves *g* in its periphery which in conjunction with the wall of the portion *d* in which the scroll is fitted, provide spiral passages for the flow of water with a strong swirling motion. A passage or hole *h* extends through the scroll and diverges towards its outlet side. This hole is of vital importance in the obtaining of the uniformly distributed discharge of high velocity water drops for the jet issuing from the hole is relatively stable and when it meets the swirling jets from the spirally disposed passages *g*, it causes a breaking up of the latter into drops which are expelled through the throat *f* at high velocity so as to effect the desired bombardment of the burning surface liquid which is to be converted into an aqueous emulsion to render it non-inflammable.

The scroll *c* is non-rotatable and fixed within the part *d* by spinning the metal of the part *d* over the scroll as shown at *i*. In like manner, in order to prevent the removal of the portion *d* from the complete projector, the metal of the portion *a* is spun at *j* over the end of the threaded part *k* of the portion *d*.

The projectors are placed above the surface of the liquid which is to be protected from fire or which is to be made non-inflammable should it be burning and water is supplied under a suitable pressure to the projectors. Where the projectors deal with fuel oil, the water pressure should be not less than about 40 lbs. per square inch and where the projectors have to deal with light oils or spirits a water pressure of at least about 80 lbs. per square inch should be provided. The control of the water supply to the projectors may be by hand or by automatic devices operating when a predetermined temperature is exceeded.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. A water projector for bombarding inflammable liquid comprising a fixed scroll device providing peripheral passages through which the

water is caused to pass and which impart to it a swirling motion and a central hole diverging towards the delivery side of the scroll device for the delivery of a central jet, the latter striking the swirling jets at the throat of a converging nozzle and projecting the water drops with high velocity through said nozzle.

2. A water projector comprising an inlet portion, a discharge portion having a cylindrical section and a scroll device; the said device being fixedly mounted in the cylindrical section of the discharge portion with the inner edge of said portion spun over the said device, and with the discharge portion screwed into the inlet portion against a shoulder which reinforces the spun over edge.

3. A water projector having an inlet portion with a diverging passage; an outlet portion having a cylindrical section adjacent said diverging passage and having a converging discharge passage beyond said section; and a scroll device in said section having peripheral spiral grooves cooperating with the wall of the said chamber to form spiral passages for imparting a swirling motion to the water passing therethrough, and a central passageway through said device diverging in the direction of flow, whereby the water passing through said central passage strikes the water having the swirling motion in the converging discharge passage.

SIDNEY FRASER BARCLAY.