

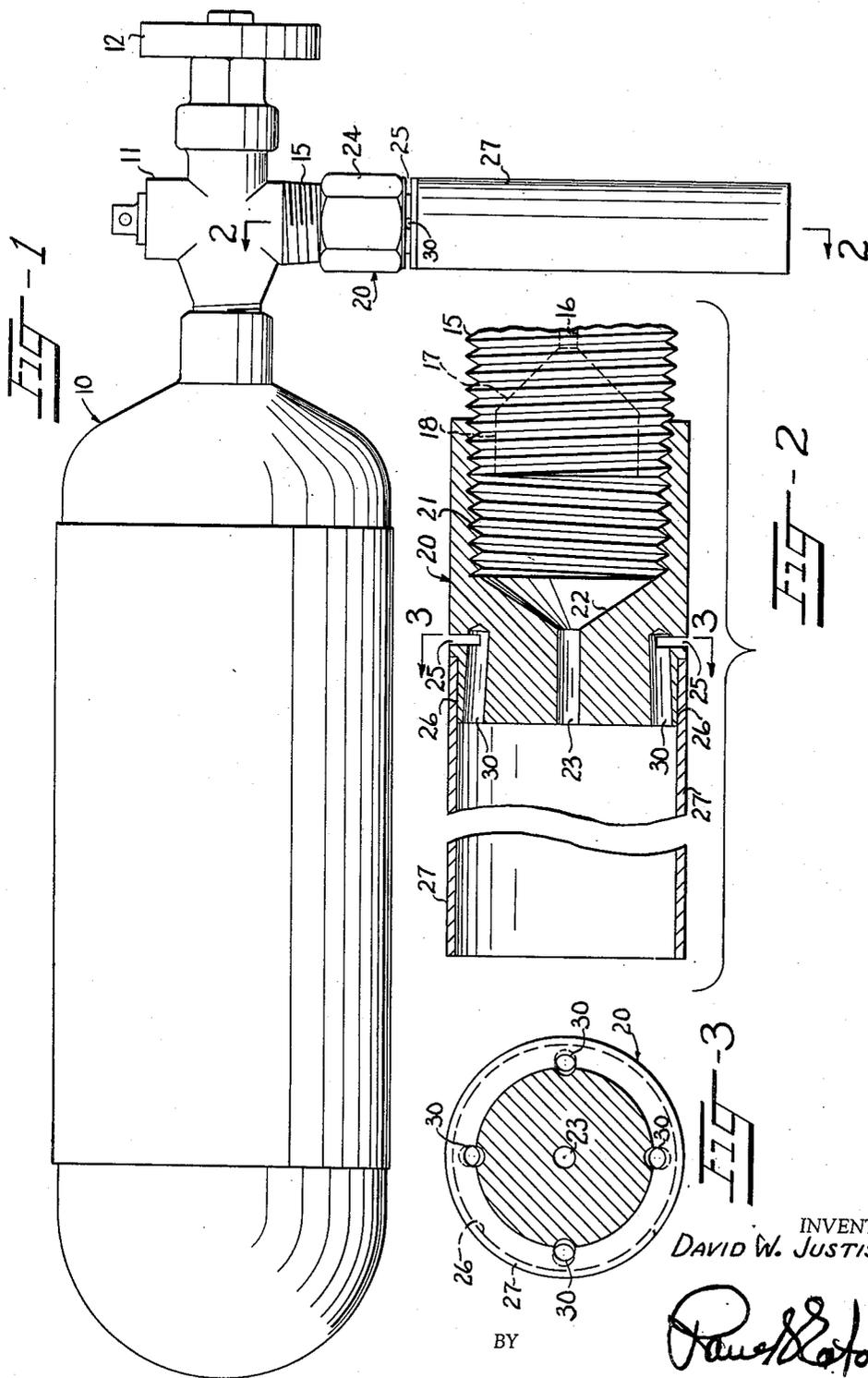
April 10, 1951

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2,548,725

NOZZLE

Filed Nov. 18, 1949



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2,548,725

NOZZLE

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Application November 18, 1949, Serial No. 128,213

3 Claims. (Cl. 169—31)

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This invention relates to a nozzle and more especially to a nozzle adapted to be used with a cylinder containing gas such as carbon dioxide so that the gas may be released from the cylinder through the nozzle and will be emitted from the nozzle in a spray.

It is well known that cylinders containing gas such as carbon dioxide are used as fire extinguishers and usually have a nozzle attached thereto or to a hose attached to the cylinder so that gas may be released from the cylinder and nozzle in a spray and directed to various spots where it is desired to spray the gas. Heretofore the nozzles employed on such cylinders have had a single bore in the base thereof through which gas from the cylinder is admitted into the nozzle. Nozzles heretofore used have been flared or funnel-shaped in order to break the vacuum due to the expansion of the gas. Now, as the gas would pass through this bore into the nozzle it would expand rapidly to either side of the nozzle and in so doing would tend to create a vacuum at the base of the nozzle. This vacuum would tend to pull the gas toward the base of the nozzle and would prevent it from being sprayed very far from the end of the nozzle. The funnel-shaped nozzles heretofore used did not have carrying power to project the gas any substantial distance.

It is therefore an object of this invention to provide a nozzle having means at its base for admitting air to the nozzle adjacent the point where gas is admitted to the nozzle to prevent a vacuum from forming at the base of the nozzle and to give added force to the gas so that it will be emitted from the ends of the nozzle with a greater force and velocity and will consequently be sprayed a greater distance from the nozzle than has heretofore been possible.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a cylinder of gas with my improved nozzle attached thereto;

Figure 2 is a vertical sectional view taken substantially along the line 2—2 in Figure 1 and showing the manner in which the nozzle is attached to the cylinder and also showing the structure of the base of the nozzle;

Figure 3 is a sectional view taken substantially along the line 3—3 in Figure 2.

Referring more specifically to the drawings the numeral 10 indicates a conventional cylinder of the type used in fire extinguishers and the like and which may contain various types of gases

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such as carbon dioxide. A valve housing 11 having a conventional valve seat and closure, not shown, therein is attached to one end of the cylinder 10 and connected to the valve in the housing 11 is a conventional handle 12 for opening and closing the valve within the valve housing 11. The lower portion of the valve housing 11 has a downwardly projecting portion 15 which is threaded for the reception of a suitable fitting such as the nozzle to be described. By referring to Figure 2 it will be observed that the downwardly projecting portion 15 has a bore 16 therein and a flared out portion 17 and a larger bore 18 in communication therewith.

The present invention comprises a nozzle which is adapted to be threadably secured on the portion 15 and this nozzle comprises a base or hub portion 20 which has a threaded bore 21 therein for reception of the threaded portion 15. This threaded bore 21 is restricted at its left-hand end in Figure 2 as at 22 and communicates with a small bore 23 which extends through the hub portion and into the nozzle proper. The outer surface of the hub has a plurality of flat portions 24 to provide suitable surfaces which may be engaged by a wrench for securing the hub 20 to the projecting portion 15. A groove 25 is cut around the circumference of the hub portion at a point near its left-hand end in Figure 2.

The left-hand end of the hub in Figure 2 is restricted as at 26 and a cylindrical tube 27 is fitted therearound and secured thereto as by a pressed fit or by brazing, or this tube 27 may be an integral part of the hub 20. A plurality of substantially longitudinally extending bores 30 are cut in the hub 20 adjacent its circumference and these bores 30 communicate at one end with the interior of the cylindrical tube 27 and at the other end with the circumferential groove 25.

It is thus seen that when gas is released from the cylinder 10 by means of the valve in the valve housing 11 being opened this gas will pass through the valve and through the bore 16 in the projecting portion 15 and will enter the bore 21 of the nozzle and will pass through the bore 23 into the base of the nozzle at the juncture of the hub 20 with the cylindrical tube 27. Now when the gas flows through the bore 23 into the tube 27 it will expand thus tending to create a vacuum at the juncture of the hub 20 and the tube 27.

However, in the present invention a vacuum will not be formed due to the fact that the expanding gas will cause air from the atmosphere to flow into the tube 20 through the circumfer-

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ential groove 25 and the bores 30 to give the gas an added force and to cause it to be emitted from the end of the tube 27 with a greater force and velocity than has heretofore been possible. It is thus seen that this nozzle will permit the gas within the cylinder 10 to be sprayed a greater distance from the end of the nozzle than has heretofore been the case.

The bores 30 are directed outwardly away from the longitudinal center of the tube 27 to thus cause the incoming air to wipe the walls of the tube 27.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. A nozzle having a hub portion and a tube portion having one of its ends fitted over the end of the hub portion, means for connecting the other end of the hub portion to a source of gas under pressure, said hub portion having at least one longitudinally extending bore for introducing the gas to the interior of the tube portion, the hub portion also having a peripheral groove therein adjacent the tube portion fitted over one end of the hub portion, and said hub portion having a plurality of substantially longitudinally extending bores therein adjacent its circumference, said last-named bores communicating with the interior of the tube portion and with the peripheral groove of the hub portion whereby upon gas entering the tube portion and expanding, air will be drawn into the tube through the last-named bores from the atmosphere to prevent the creation of a vacuum in the tube and to wipe the interior surface of the tube.

2. A nozzle for spraying gas and the like comprising a hub having a threaded bore therein for connecting the nozzle to a source of gas under pressure, a cylindrical tube having one of its ends connected to the other end of the hub, said hub extending a substantial distance within the cylindrical tube and having a groove around its

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circumference near the juncture of the hub and the tube, said hub having a centrally disposed bore therein communicating with the interior of the cylindrical tube and with the threaded bore, said hub also having a plurality of substantially longitudinally extending bores adjacent its circumference communicating with the interior of the tube and with the groove extending around the circumference of the hub.

3. A nozzle having a tube and a hub, means for connecting the hub to a suitable source of gas under pressure, said hub having at least one centrally disposed bore therein, said hub having a plurality of substantially longitudinally extending bores therein adjacent its circumference and whose axes when projected will strike the interior surface of the tube, said hub having a circumferential groove therearound, said last-named bores communicating with the interior of the tube and with the circumferential groove and said centrally disposed bore communicating with the interior of the tube and with the means for connecting the nozzle to a source of gas, whereby gas will pass through the centrally disposed bore and will expand within the interior of the tube and such expansion will cause air to be drawn into the tube through the bores adjacent the circumference of the hub to prevent the creation of a vacuum and to cause the gas to be emitted from the open end of the tube at a greater pressure.

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