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V. J. HILL, JR., ET AL
FIRE EXTINGUISHING APPARATUS
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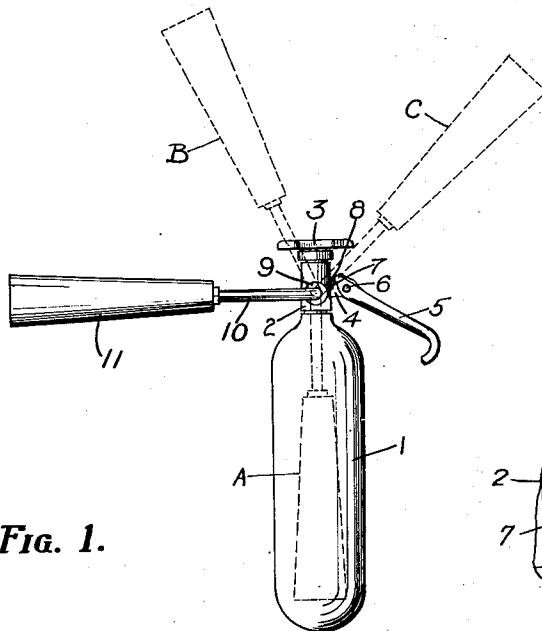


Fig. 1.

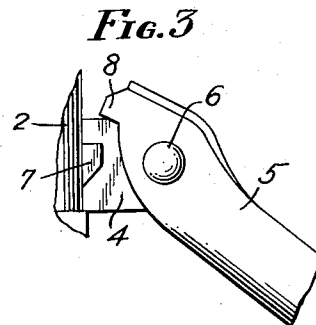


Fig. 3

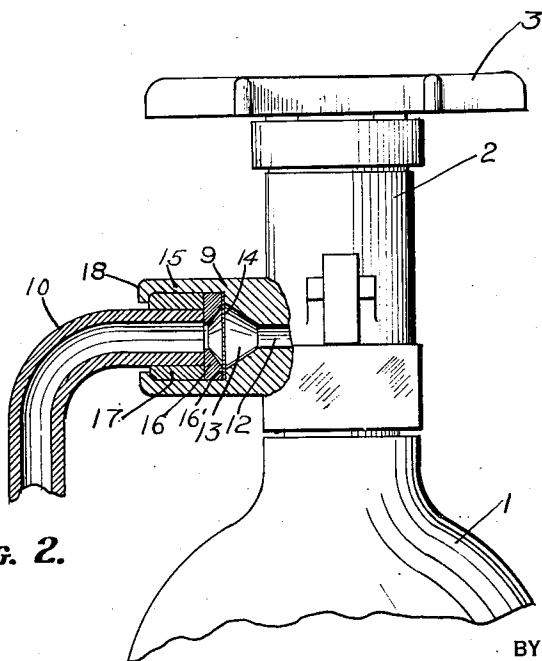


Fig. 2.

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FIRE EXTINGUISHING APPARATUS

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2 Claims. (Cl. 169—31)

The present invention relates to a device to facilitate the directing of the discharge of a fluid medium from a container.

The invention relates in particular to a carbon dioxide fire extinguisher of the portable type. It has been found in the past that an operator in using such an extinguisher was, of necessity, required to constantly employ both hands which at times proved very inconvenient.

An extinguisher of this type usually consists of a container of carbon dioxide. A valve is mounted on the container to restrain the carbon dioxide in the container during storage and to permit the medium to escape from the container when it is desired to employ it in fire extinguishing. Attached to the valve is a hose to conduct the medium to a shield from which the medium escapes to the point where the medium is desired. The usual practice has been to employ a flexible hose, and accordingly it was necessary for the operator to employ one hand to open the valve and to hold the container, while the other hand was used to hold the hose and shield and to thereby direct the discharge.

The objection to holding the hose and shield has, in the past, been overcome by employing a rigid hose or conduit to which the shield was secured, both of which were mounted in one fixed position with respect to the container of carbon dioxide. Devices of this description have met with many objections. In a device of this nature the direction of the discharge could not easily be changed since the direction of the shield was fixed with respect to the container and the entire container had to be moved to change the direction of the discharge. Up until the present, no method had been found by which the rigid conduit could be so connected to the container that it could be moved into different positions, in order that the discharge direction might be varied by the operator in the field, without moving the entire extinguisher, and which would prevent leakage of carbon dioxide at the connection.

Whenever carbon dioxide flows through an apparatus there is always a danger of leakage at any connection or joint through which the carbon dioxide passes, because of the fact that the pressure under which the carbon dioxide is held is very high and consequently the smallest passage will allow undesired escape of the gas. Hence, a connection providing movement of the discharge shield but allowing escape of the medium at that joint would be very objectionable, since the medium escaping is very cold and might

have a very deleterious effect on the operator, if he should come in contact with the cold gas.

The present invention embodies a device which provides a connection for a rigid conduit to the valve of the extinguisher, which may be moved into various positions with facility but which remains fixed in any particular position until it is moved, and at the same time there will be no escape of the gas except through the desired channels. The operator may then, once he has opened the valve, hold the container and direct the discharge thereof with one hand.

More specifically the invention embodies a swivel connection which joins a conduit to the discharge passage of the valve and has at the outlet end a shield from which the confined carbon dioxide is discharged. The swivel connection of this invention permits the shield to be easily rotated about the valve passage as a center without any undesired leakage of gas, and at the same time it provides a friction joint of such nature that the rigid conduit will remain in any position with respect to the valve discharge passage in which it is placed.

It will be evident from the following disclosure that the swivel connection is relatively simple and cheap to construct and adapted for efficient operation.

Referring to the drawing in which the same reference numerals will be used in the separate views to indicate the same or similar parts;

Figure 1 is a side elevational view of the combination of elements comprising this invention;

Figure 2 is an enlarged elevational view of the valve and upper portion of the container of Figure 1, showing the swivel connection in cross section and omitting the handle for the sake of clarity;

Fig. 3 is an enlarged view of the connection of the handle as shown in Figure 1.

Referring to Figure 1, the extinguisher consists of a container 1 to which is attached a valve 2 which may be any one of the ordinary types employed with carbon dioxide containers. Surmounting the valve is a handle 3 which serves to regulate the opening or closing of the valve 2. On one side of the valve is a lug 4 extending outwardly. A handle 5 is pivotally attached to the lug 4 by a pin 6. This handle is employed to lift and carry the extinguisher. On either side of the lug 4 are projections 7 extending out from the valve body and against which ears 8 on the handle 5 are adapted to rest.

Attached to an extension 9 on the valve 2 is a rigid conduit 10 which at its outer end is se-

curely connected to a shield or horn 11. By reference to Figure 1 it will also be seen by the dotted views A, B and C and the full view that the shield and conduit may be rotated through an arc of 360°. The conduit is fastened to the valve by the swivel connection which will be described in greater detail hereafter. This connection is such that the discharge members consisting of the shield and conduit may easily be moved from the position illustrated in full lines to the dotted line positions A or B, etc. When the discharge member has been placed in any of the positions shown it will remain in that position, being held by friction, until the operator desires to change the position at which time it is only necessary for him to move the member to the new position by grasping it in his hand and swinging it.

The swivel connection which permits such positioning of the discharge members will now be more fully described by reference to Figure 2. The extension 9 of the valve contains a discharge passage 12 which communicates directly with the container when the valve is open. The passage 12 has a portion 13 which diverges rapidly to form an opening of larger diameter than that of the passage 12. At the end of this portion 13 is placed a fine mesh screen 14 which serves the purpose of stopping any dirt or foreign matter from passing into the conduit 10 and thence to any small passage which may be located in the shield 11. The passage 12 at the point where the screen 14 is placed has a very large diameter forming a hollow tubular section 15. In this hollow tubular section resting against the wire screen 14 is a brass washer 16. One face 16' of this washer has been countersunk to form a hole which has a diameter of approximately the same size as the larger diameter of the passage 13. This face of the washer is placed next to the screen 14. The internal diameter of the washer is slightly less than that of the conduit 10 in order that the conduit may bear on the other face of the washer. Surrounding the conduit 10 and fastened securely thereto, as by soldering, is a bearing 17. The bearing 17 is so designed that it will rotate freely in the hollow tubular portion 9.

The bearing 17 is held in the tubular formation 15 by spinning in or rolling over, as at 18, the wall of the tubular portion 15. The wall then acts to maintain the bearing and hence the conduit is pressed against the washer 16 and forms a leakage proof joint.

From this description it will be readily apparent that the conduit and bearing may be freely rotated in the tubular portion 15. The surfaces which prevent free rotation are the inner surface of portion 15 and the face of the washer 16 which directly contact the bearing. These surfaces are such that enough friction is created between the surfaces to hold the bearing in any position in

which it is placed. In order to move the bearing and conduit it is only necessary for the operator to supply enough force to overcome this surface friction.

We are of course, aware that many changes in the details of construction and relative arrangement of parts will readily occur to those skilled in this art and we do not, therefore, desire to be strictly limited to the illustration in the drawing which has been given to set forth the principles of this invention, but rather to the scope of the invention as it is defined in the appended claims.

We claim:

1. A portable carbon dioxide fire extinguisher comprising a container of carbon dioxide, a valve on said container, a discharge outlet on said valve, a substantially L-shaped conducting conduit in continuous communication with said outlet and having a swivelled connection therewith, a carbon dioxide snow producing shield connected to said conduit and adapted to assume a position normally close to the container with its longitudinal axis substantially parallel to the longitudinal axis of the container, said shield being adapted to be rotated with said conduit to any desired position and to be held in such position by friction of the swivelled connection of the conduit to the outlet, a handle pivotally mounted on said valve and adapted to lie normally close to the container with its longitudinal axis substantially parallel to the longitudinal axis of the container and to be extended in use to a position substantially perpendicular to the longitudinal axis of the container, and means on the valve adapted to engage the handle when in its extended position to maintain the substantially perpendicular relationship of the container and the handle during use.

2. A portable carbon dioxide fire extinguisher comprising a container of carbon dioxide provided with a valve having a discharge outlet, a carbon dioxide snow producing shield having a swivelled connection with said outlet and adapted to assume a position normally close to the container with its longitudinal axis substantially parallel to the longitudinal axis of the container, said shield being adapted to be rotated to any desired position and to be held in such position by friction of the swivelled connection, a handle pivotally mounted on said valve and adapted to lie normally close to the container with its longitudinal axis substantially parallel to the longitudinal axis of the container and to be extended in use to a position substantially perpendicular to the longitudinal axis of the container, and means on the valve adapted to engage the handle when in its extended position to maintain the substantially perpendicular relationship of the container and handle during use.

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