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Magdars

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[54] SWIVEL ASSEMBLY

[75] Inventor: **John T. Magdars,** Northbrook, Ill.

[73] Assignee: **General Fire Extinguisher Corporation,** Northbrook, Ill.

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[52] **U.S. Cl.** ..... **169/31 R,** 285/185

[51] **Int. Cl.** **A62c 13/00**

[58] **Field of Search** ..... 169/31 R; 285/190, 285/191, 185

[56] **References Cited**

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3,389,753	6/1968	Howard	169/31 R X

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Primary Examiner—M. Henson Wood, Jr.
Assistant Examiner—John J. Love
Attorney—Axel A. Hofgren, Ernest A. Wegner and William J. Stellman et al.

[57] **ABSTRACT**

A simplified swivel assembly for a fire extinguisher. The assembly includes a fire extinguisher valve body including a bore comprised of an enlarged portion through which fire extinguishing material may pass and a reduced, threaded portion for receiving the threaded end of a conventional bolt. A swivel block having an inlet adapted to be aligned with the bore enlarged portion and an outlet at an angle thereto is also provided. The inlet terminates in a reduced diameter portion having a diameter approximately equal to that of the shank of the bolt so that a bolt may pass therethrough to be received in the threaded reduced portion of the bore in the valve body to rotatably mount the swivel block on the valve body. A ring of bearing-like sealing material is interposed between the valve body and the swivel block.

2 Claims, 2 Drawing Figures

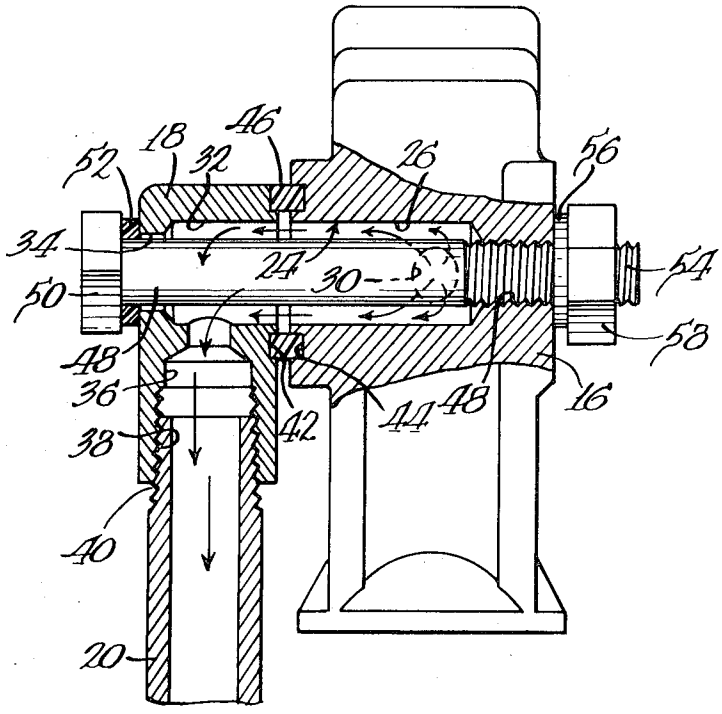


Fig. 1.

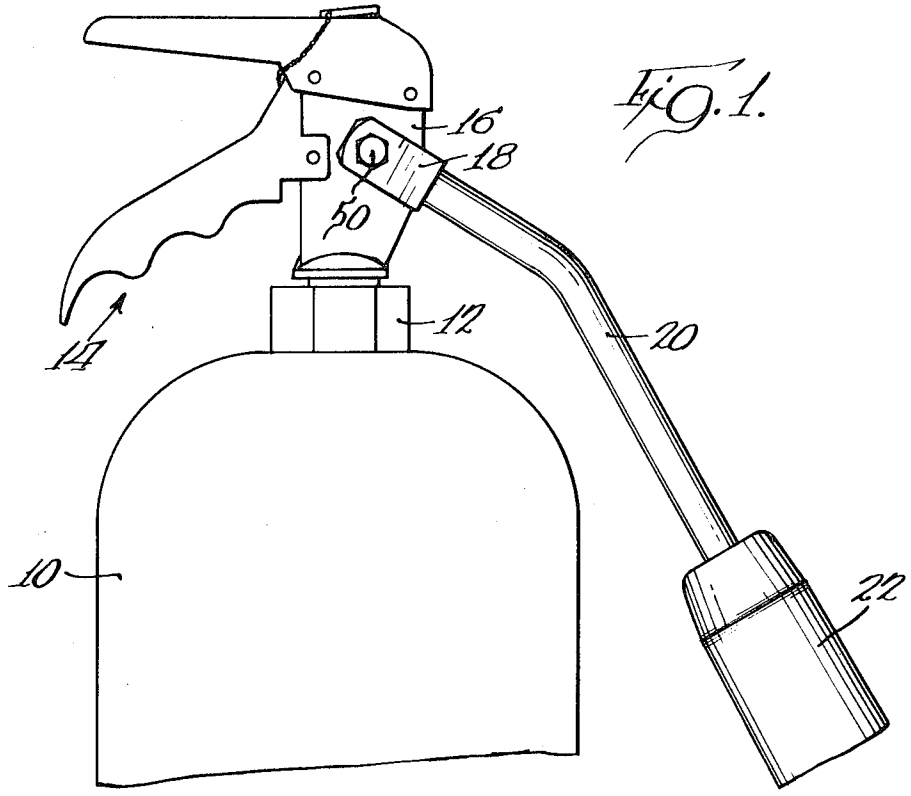
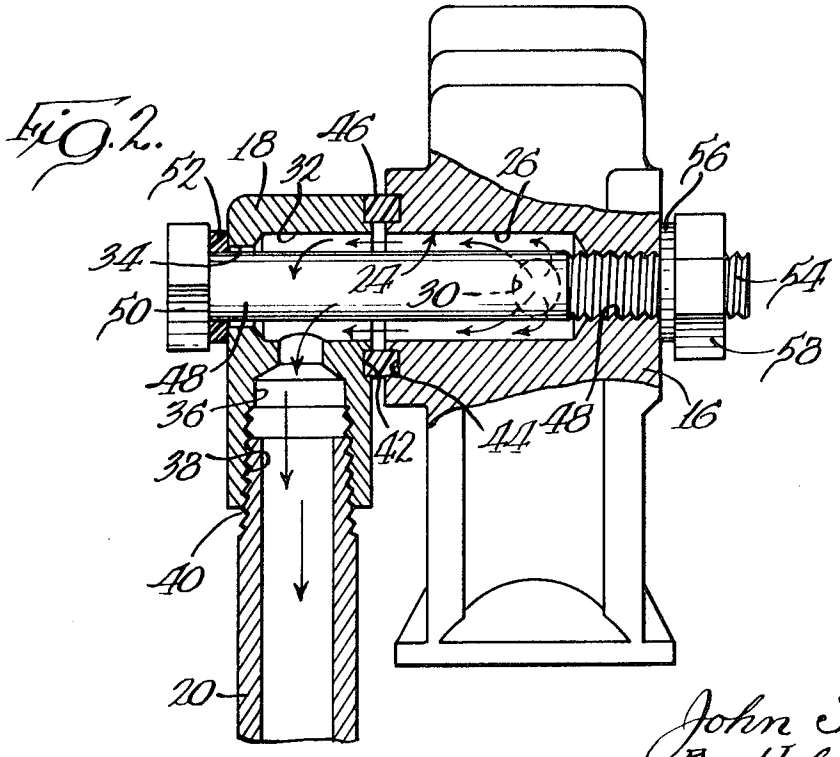


Fig. 2.



Inventor:
John T. Magdars
By Hofgren, Wegner,
Allen, Stellman & McCord
Att'ys

SWIVEL ASSEMBLY

BACKGROUND OF THE INVENTION

This invention relates to fire extinguishers, and more particularly, to swivel connections for fire extinguishers.

As is well-known, a number of varying types of fire extinguishers employ swivel connections between a container of fire extinguishing material and the extinguisher director such as a horn or a nozzle to permit the director to be moved relative to the container so that the contents of the latter may be easily directed to a fire for extinguishing the same. Such swivel connections must be such as to provide relatively free rotation of the director relative to the container as well as a good seal at the joint to preclude fire extinguishing material from escaping through the joint rather than passing through the director to the fire.

Over the years, a number of proposals for such connections have evolved, and while successful for their intended purpose, all too frequently have required relatively expensive machining operations or the like to insure the characteristics of relatively free rotation as well as good sealing.

For example, in the prior construction illustrated in U.S. Pat. No. 2,066,290 to Hill et al., a pair of countersunk passage surfaces are employed which require relatively costly machining. In addition, metal-to-metal bearing surfaces must be formed and finally, one element must be rolled over another to retain the director in connection with the valve housing of the extinguisher with which it is used, again, such steps being relatively costly to perform.

And, in U.S. Pat. No. 3,389,753 to Howard, it may be seen that costly operations in forming a swivel assembly have not been eliminated in more recent developments. For example, in Howard, a hollow connection element in the form of a bolt is employed, the hollow being used as a conduit for the extinguishing material. The Howard construction requires the formation of four passages transverse to the hollow passage in the bolt, the forming of which entails considerable expense. In addition, a bore receiving the bolt in the Howard construction requires steps at each end thereof for retention purposes so that while the Howard construction is ostensibly of a simple nature by reason of the employment of relatively few elements, in fact, it is relatively expensive by reason of the number of operations required to provide the structure.

SUMMARY OF THE INVENTION

It is the principal object of the invention to provide a new and improved swivel assembly for use in fire extinguishers. More particularly, it is an object of the invention to provide such an assembly that is relatively simple in terms of the number of elements employed and which may be fabricated with a minimum of costly steps such as machining operations.

The exemplary embodiment achieves the foregoing objects in a construction which employs a common, solid connecting element interposed between a fire extinguisher valve body and a swivel block to which a fire extinguishing material directing means may be connected. According to the preferred embodiment, the common securing element is an ordinary bolt having a head.

The valve body is formed with a bore having an enlarged portion through which fire extinguishing material may pass and terminating in a reduced, threaded portion which may receive the threaded end of the bolt. The swivel block is provided with an inlet terminating in a reduced diameter portion and an outlet in fluid communication with the inlet and arranged at an angle with respect to the axis thereto. The bolt is passed through the reduced diameter portion of the inlet and threadedly received in the threaded portion of the valve body to secure the two together with an inlet aligned with the enlarged portion of the bore in the valve body to establish fluid communication between the two.

According to one embodiment, the bolt may be selected to be of such a length that it extends through the valve body to receive a lock washer and a nut to insure positive retention.

In addition, a bearing-like sealing material such as nylon is employed at the interface between the swivel block and the valve body to not only seal the interface, but to provide a bearing surface for rotation of the swivel block relative to the valve body as well. According to a preferred form, both the swivel block and the valve body are provided with aligned grooved formations for receiving a ring of a combination bearing and sealing material.

A similar combination seal and bearing may be employed adjacent the bolt head and the swivel block to insure that fire extinguishing material cannot pass out of the swivel block through the reduced diameter portion of the inlet.

Other objects and advantages will become apparent from the following specification taken in conjunction with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary side elevation of a fire extinguisher made according to the invention; and

FIG. 2 is a partial vertical section of the swivel assembly employed in the fire extinguisher.

DESCRIPTION OF THE PREFERRED EMBODIMENT

An exemplary embodiment of a fire extinguisher employing a valve assembly made according to the invention is illustrated in FIG. 1 and is seen to include a container or tank 10 for holding a fire extinguishing material such as carbon dioxide or Freon. The container 10 terminates in a neck 12 which is connected to any known form of valve, generally designated 14, having a valve body 16. The particular form of the valve 14 forms no part of the instant invention.

A swivel block 18 is rotatably secured to the valve body 16 and attached to the former is a conduit 20 terminating in a horn 22, both of which form a fire extinguishing material directing means as is well-known.

Turning now to FIG. 2, the valve body 16 includes a bore generally designated 24 having an enlarged portion 26 and terminating in a portion 28 of lesser size which is threaded. At a desired point within the enlarged portion 26 of the bore 24 there is an opening 30 through which fire extinguishing material may pass into the enlarged portion 26 when the valve 14 is suitably manipulated.

The swivel block 18 includes an inlet 32 terminating in a reduced diameter portion 34 and which is adapted

to be aligned with the bore **24** in the valve body **16.** In addition, the swivel block **18** is provided with an outlet **36** in fluid communication with the inlet **32** and arranged at an angle with respect to the axis of the latter, as illustrated, 90°. The outlet **36** may be threaded as at **38** to receive a threaded end **40** of the conduit **20.**

Both the valve body **16** and the swivel block **18,** about the periphery of the inlet **32** and the bore **24** respectively, are provided with complementary grooved formations **42** and **44** respectively, for receipt of a sealing and bearing washer **46** which may be formed of any suitable material. According to one embodiment, nylon is preferred. Thus, the washer **46** serves as both a bearing and a seal at the interface between the swivel block **18** and the valve body **16.**

To secure the swivel block **18** to the valve body **16** in the relation illustrated in FIG. **2** and to establish a rotatable connection between the same, an ordinary solid bolt **48** having an enlarged head **50** is employed. As illustrated, the bolt **48** extends through the reduced diameter portion **34** of the inlet **32** and the swivel block **38** to be threadedly received in the threaded portion **28** of the bore **24.** Preferably, the bolt **48** may be formed of stainless steel to preclude deterioration due to corrosion or the like. In order to insure that fire extinguishing material cannot escape the swivel block **18** through the reduced diameter portion **34,** a combination sealing and bearing washer **52,** also formed of nylon, may be interposed between the head **50** and the swivel block **18.**

According to a preferred embodiment, the bolt **48** has sufficient length so that a threaded end **54** thereof extends beyond the side of the valve body **16** remote from the swivel block **18** as illustrated to receive both a lock washer **56** and a retaining nut **58** to insure a good connection.

As can be seen, the shank of the bolt **48** is of a lesser cross sectional area than either of the enlarged portion **26** of the bore **24** or the inlet **32.** Thus, fire extinguishing material directed to the enlarged portion **26** of the bore **24** through the opening **30** will pass about the periphery of the shank of the bolt **48** as illustrated by various arrows in FIG. **2** to the outlet **36** and ultimately to the horn **22** which may be appropriately aimed at a fire. The employment of a conventional, solid bolt such as the bolt **48** eliminates any complicated machining operations to provide hollows in the same and yet provides a secure but relatively freely rotatable connection between the valve body **16** and the swivel block **18** that is well sealed with a minimum of elements.

I claim:

1. A swivel assembly for a fire extinguisher consisting essentially of: a fire extinguisher valve body; a bore through said body, said bore including an enlarged first end portion through which fire extinguishing material may pass, and a lesser diameter opposite threaded second end portion; a swivel block including a through bore defining an inner inlet passage, and an outlet passage in fluid communication therewith and disposed at an angle to the axis of said inlet passage, said swivel block through bore further defining a reduced diameter outer portion; a bolt having a head and a shank portion extending inwardly freely coaxially through said swivel block through bore and said valve body bore first end portion and threaded in said body threaded second end portion to secure said swivel block to said fire extinguisher valve body accurately fixedly coaxially of said valve body bore first end portion with said swivel block inlet passage aligned with said valve body bore, said bolt having an annular clearance with said swivel block in said outer portion of the bore thereof; a sealing ring interposed between said bolt head and said swivel block for precluding the passage of fire extinguishing material outwardly through said outer portion of the swivel block bore; a bearing seal ring interposed between said swivel block and said valve body coaxially of said valve body and swivel block bores for precluding the passage of fire extinguishing material between said swivel block and said valve body and positioning said swivel block with its through bore maintained accurately coaxially of said valve body bore to define means for maintaining said swivel block coaxially aligned with said body bore; and means for selectively locking the bolt with the bolt head urged sealingly against said sealing ring to urge said sealing ring sealingly against said swivel block, said swivel block sealing against said bearing seal ring, and said bearing seal ring sealingly against said valve body with a preselected force for effecting said sealing of said bores while permitting ready swivelling of said swivel block about the valve body bore axis.

2. The swivel assembly of claim **1** wherein said bolt has sufficient length to extend through and beyond said threaded second end portion of the valve body bore, said bolt locking means comprising a lock washer disposed about the projecting end of said bolt and a nut threadedly received on said projecting end of said bolt.

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