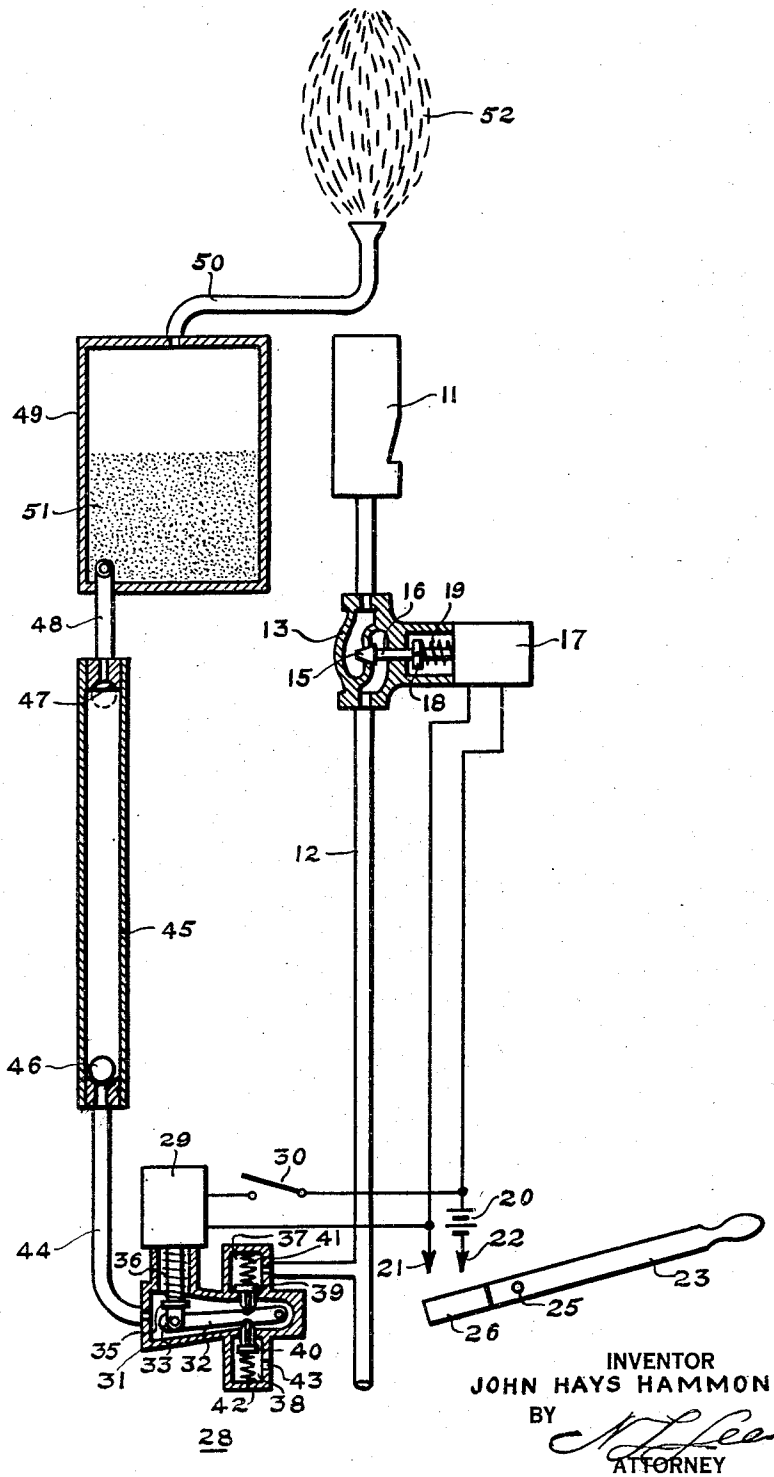
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SIGNALING SYSTEM

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INVENTOR
JOHN HAYS HAMMOND, JR.
BY
ATTORNEY

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SIGNALING SYSTEM

John Hays Hammond, Jr., Gloucester, Mass.

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2 Claims. (Cl. 177—324)

This invention relates to signaling systems for vessels and more particularly to an improved system in which a sound signal and a visible indication are produced simultaneously, and is an improvement of the invention set forth in my Patent No. 2,257,168, dated September 30, 1941.

Steam propelled marine vessels commonly use steam whistles for signaling purposes. In such whistles the blast of the signal is accompanied by a visible cloud of steam which supplements the audible signal and is particularly useful under weather conditions such that the audible signal may not be heard or in harbor traffic where several vessels may signal simultaneously and it may be difficult to determine from which vessel the signal emanated. Navigators have thus grown accustomed to watching for the visible steam vapors as well as listening for the audible signal.

In vessels not equipped with steam, such as vessels driven by Diesel power or sailboats, it is common to use an air whistle for signaling purposes. Such whistles, however, are not accompanied by a visible indication as in the case of a steam whistle and this at times may render the signal unreliable.

An object of the invention is to combine the usual air whistle with a visual indicating means for producing a visible cloud of very finely powdered material.

A further object is to provide automatic means for controlling the duration of time during which the visible cloud is produced.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, the mode of its operation and the manner of its organization may be better understood by referring to the following description taken in connection with the accompanying drawing forming a part thereof, in which:

The single figure of the drawing illustrates diagrammatically the system as applied to the air whistle of a marine vessel.

In the following description and in the claims parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring to the embodiment of the invention shown in the accompanying drawing an air whistle 11 is provided which is connected by a pipe 12 to a source of air under pressure not shown. In the pipe 12 is mounted a control valve 13, which may be of any desired type, but is shown as being of the solenoid operated type and comprises a valve 15 mounted on the end of a valve stem 16 which may form the core of a solenoid 17. Secured to the valve stem 16 is a collar 18 between which and the solenoid 17 is mounted a compression spring 19. The solenoid 17 is connected thru a battery 20 to two contacts 21 and 22 which are located adjacent to a lever 23. The lever 23 is pivoted for rotation at 25 and is provided with a contact segment 26 which is insulated from the rest of the lever 23.

A three way solenoid valve 28 is provided the solenoid 29 of which is connected thru a switch 30 and the battery 20 to the contacts 21 and 22. The valve 28 comprises a casing 31 in which is pivotally mounted a lever 32 to the end of which is connected the core 33 of the solenoid 29. Secured to the core 33 is a collar 35 between which and the solenoid 29 is mounted a compression spring 36. The valve 28 is provided with two chambers 37 and 38 in which are mounted two valves 39 and 40, which are operated by the lever 32. Holding the two valves 39 and 40 in place are two compression springs 41 and 42. The chamber 37 is connected to the air supply pipe 12 and the chamber 38 is vented to the atmosphere thru a port 43. The port 43 vents the chamber 45 so as to allow the ball 46 to return to its lower position after each actuation.

The interior of the valve 28 is connected by a pipe 44 to the lower end of a tube 45 in which is located a ball 46 which is somewhat smaller in diameter than the bore of the tube 45. In the upper end of the tube 45 is located a seat 47 which is a snug fit for the ball 46.

The upper end of the tube 45 is connected to a pipe 48 which projects into a container 49. The end of the pipe 48 is turned so that it is at approximately right angles to the diameter of the container 49. One end of a pipe 50 is connected to the top of the container 49 and the other end is located adjacent to the whistle 11. The container 49 is filled with any suitable light weight finely divided powder 51 which is capable of producing a stable visible cloud or vapor. I have found that aluminum stearate or magnesium oxide are particularly suitable and produce a visible cloud that floats in the atmosphere a considerable time before dispersing.

Operation

In the operation of the invention illustrated

in the accompanying figure when it is desired to sound the whistle 11 the lever 23 is rotated in a clockwise direction about the pivot 25. This causes the conducting segment 26 to engage the contacts 21 and 22 thus energizing both solenoids 17 and 29. When the solenoid 17 is energized the valve stem 16 will be moved to the right lifting the valve 15 off its seat and allowing air under pressure to enter the whistle 11 from the supply pipe 12 causing the whistle to sound in a well known manner.

At the same time the solenoid 29 will move the core 33 upward causing the lever 32 to be rotated in a clockwise direction. This motion will lift the valve 39 off its seat and allow air under pressure to pass from the supply pipe 12 thru the interior of the valve 28 and pipe 44 to the tube 45 where it will start the ball 46 moving up the tube 45. This motion will be relatively slow due to the fact that some of the air escapes past the ball 46 so that it will take an appreciable time interval for the ball 46 to reach the top of the tube 45 and seat itself in the seat 47, as indicated by the dotted line.

During this interval, which for example may be one or two seconds, air under pressure will pass from the tube 45 thru the tube 48 and into the base of the container 49 where it will set into rotary motion the finely divided powder 51. This finely divided powder will then be blown out thru the pipe 50 forming a cloud 52 adjacent to the whistle 11 which is clearly visible in the day time.

If it is desired to sound the whistle 11 without producing the cloud of powder 52 the switch 30 is opened so that when the lever 23 is operated only the solenoid 17 will be energized.

The time interval during which the cloud of powder 52 is produced may be varied by changing the length of the tube, its bore, the size of the ball 46 or reducing the air pressure to the tube 45 by inserting a reducing valve in the pipe 44.

The invention accordingly provides a visual signal which is particularly useful on shipboard for the purposes above outlined. It may, however, be applied to other uses such as code signaling. Obviously the air whistle may be replaced by a siren or by other sound producing means which is capable of operation without normally producing a visual indication as distinguished from a steam whistle which is made visible by the exhaust steam.

Although a specific embodiment of this invention has been shown herein, it is to be understood that the invention is not limited to any specific construction but may be embodied in various forms without departing from the spirit of the invention or the scope of the appended claims.

What is claimed is:

1. A signaling system comprising a container containing a powder suited to form a visible vapor or cloud in the atmosphere, a source of compressed air connected to said container and adapted when supplied thereto to eject said powder into the atmosphere, audible signaling means, means actuated therewith to control said compressed air supply and a measuring device connected to limit the duration of the air supply to said container at each actuation of the audible signaling means regardless of the length of time said signaling means is actuated, so that only a predetermined amount of said powder is ejected at each such actuation.

2. A signaling system comprising a container containing a powder suited to form a visible vapor or cloud in the atmosphere, a source of compressed air connected to said container and adapted when supplied thereto to eject said powder into the atmosphere, audible signaling means, means actuated therewith to control said compressed air supply and a measuring device connected to limit the duration of the air supply to said container at each actuation of the audible signaling means regardless of the length of time said signaling means is actuated, so that only a predetermined amount of said powder is ejected at each such actuation, said measuring device comprising a valve connected between the source of compressed air and said container, said valve having self-closing means to close after a predetermined quantity of compressed air has been supplied to said container.

JOHN HAYS HAMMOND, JR.