HOLDING DEVICE FOR GAS TANKS AND THE LIKE

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This invention relates to a device for securing gas tanks or cylinders, such as those used for holding oxygen or acetylene, in an upright position.

In hospitals and the like, where large quantities of oxygen are used, a problem is presented in storing the oxygen tanks or cylinders both before and after use in a manner which maintains the tanks in an orderly arrangement and which prevent the tanks from being knocked over when an individual tank is removed from a group of such tanks. The same problem occurs in industry where similar tanks or cylinders are frequently used to hold various other gases, such as acetylene, hydrogen, nitrogen and argon.

Accordingly, it is an object of this invention to provide a device for holding gas tanks or cylinders, such as oxygen tanks, in a predetermined location and in upright position on a supporting floor or the like.

It is another object of the invention to provide a device for holding gas tanks or cylinders which maintains a plurality of such tanks in an orderly arrangement in a storage place for the tanks.

It is another object of the invention to provide a device for holding a plurality of gas tanks or cylinders in upright position, and in which the tanks may be easily positioned in or removed from the holding device.

It is another object of the invention to provide a device for holding gas tanks which secures a plurality of such tanks in upright position while permitting individual tanks to be easily removed without any possibility of damaging or knocking over the other tanks.

It is another object of the invention to provide a device for holding gas tanks or cylinders which is inexpensive in manufacture, which can be sold at a nominal price, and which is easy to install.

In achievement of these objectives, there is provided in accordance with an embodiment of this invention a holding device for gas tanks or cylinders, comprising a pair of parallel, laterally spaced chains each secured at one end to a retaining bar mounted on a vertical wall or the like. The two chains are connected together at spaced intervals by spring cross members which define, together with the parallel chains, a series of loops or circuits, each loop being adapted to be slipped over the upper reduced diameter end of a single gas tank or cylinder. The plurality of loops of a given holding device hold a plurality of aligned tanks securely in an upright position while permitting individual tanks to be removed without disturbing the remaining tanks. A plurality of such holding devices may be secured to a common mounting bar on a wall or the like.

Further objects and advantages of the invention will become apparent from the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an elevation view showing a plurality of the tank holding devices of the invention secured to a retaining bar, and with several of the holding devices in use to each respectively secure a plurality of tanks in upright position;

FIG. 2 is a top plan view of one of the holding devices of FIG. 1 engaging two aligned tanks; and

FIG. 3 is a side elevation view, partially in section, of the retaining bar of FIG. 1, showing the device for removing one side of the holder being disconnected so as to give a better view of the spring dividers or cross members.

Referring now to the drawing, and more particularly to FIG. 1, there is shown a typical installation utilizing the tank holding devices of the invention which may be installed, for example, in the storage room of a hospital where the gas tanks may be stored prior to or after use. A plurality of the holding devices, each generally indicated at 10, are each secured at one of their respective ends to a metal retaining bar 12 which is suitably secured to the vertical wall 14 of the storage room in which the tanks are located.

Only one of the tank holding devices 10 will be described, since all of the devices 10 are the same. Each holding device 10 includes a pair of laterally spaced parallel chains 16a and 16b, which are each respectively secured at one end thereof to eyelets 18a and 18b and attached at laterally spaced points on retaining bar 12 to provide two-point support. Eyelets 18a and 18b are attached to retaining bar 12 at a height corresponding to the height above the floor surface of the reduced diameter or neck portion 24 of the otherwise generally cylindrical tanks 22. In an actual operating embodiment, the two eyelets 18a and 18b are spaced apart approximately four inches from each other, and the chains 16a and 16b are each twenty-two inches long. The retaining bar 12 of the same embodiment is made of steel 3/4 inch thick, 2½ inches wide, and 6 feet long.

A plurality of spring dividers or cross members respectively indicated at 20a, 20b, and 20c are connected between the chains 16a and 16b at equally spaced intervals along the chains to define a series of loops or circuits 21 each of which is adapted to receive and engage the upper reduced diameter end 24 of the neck portion of a plurality of aligned tanks 22 in a given row of tanks engaged by a given holding device 10. The cross members or dividers 20a, 20b, 20c are preferably made of spiral springs having their opposite ends suitably connected to corresponding opposite links of chains 16a, 16b.

The spacing between the first spring divider 20a and the adjacent surface of wall 14, between dividers 20a—20b, and between dividers 20b—20c, is such that the respective dividers will be moderately tensioned or stretched as best shown in the view of FIG. 2. This causes the spring dividers to engage the neck portion of the respective tanks with a moderate biasing force, whereby the tank 22 closest to the surface of wall 14 is biased by the spring action toward the wall, and successive abutting tanks in the row of tanks are biased toward each other in the direction of wall 14.

In using the tank holding device 10 of the invention, the loop 21 defined by the chains 16a—16b and the divider 20a, for example, is slipped over the top of the tank 22 nearest the wall 14, with the spring divider engaging the reduced neck portion of the tank. In a similar manner, the other loops of the holder 10 may be engaged with two additional tanks which are aligned in a row with the for-mentioned tank. Each holder device 10 shown in the drawing is made of sufficient length, and is provided with a number of loops sufficient to hold a row of three aligned tanks. However, obviously, the chains 16a, 16b could be made longer and could be provided with additional spring dividers to accommodate a row having more than three tanks therein. In the embodiment of FIG. 1, a total of six holding devices 10 are shown, each holding device being adapted to securely hold three tanks in upright position. Obviously, a given installation could include a greater or a lesser number of holding devices 10, and each individual holder 10 could be adapted to receive a greater or lesser number of tanks in a given row.
removed. The tank to be removed from the holder normally would be the tank farthest from the wall.

While the tank holding device of the invention in the preferred embodiment has been described and illustrated as being constructed of chains with cross dividers formed of spiral spring members, it would be within the scope of the invention to use other types of flexible connectors in place of the chains, and to use other types of elastic cross members or dividers in place of the spring dividers.

The holding device of the invention has great utility since it securely retains a plurality of gas tanks or cylinders, such as oxygen cylinders or the like, in upright position, whether the cylinders are full or empty, and yet permits individual tanks to be removed without any danger of the remaining tanks in the holder from being knocked over.

The tank holding device of the invention is economical to manufacture, can be sold at a moderate price, and can be easily installed.

While there has been shown and described a particular embodiment of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is aimed to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A device for holding at least one upstanding container having a reduced neck at its upper end in substantially upright position, comprising: flexible connector means and stretchable spring-like means connected to each other to form at least one circuit, means for attaching said circuit at its ends to a wall or the like at a height above a supporting surface corresponding to the height of the reduced neck of a container, said attaching means being spaced apart to provide two-point support for said circuit, said circuit being capable of passing partially around the neck of the container, said circuit being sufficiently short so that when said circuit is engaged partially around the neck of a container said spring-like means is in the stretched condition to hold the container in a substantially upright position.

2. A device for holding elongated containers having reduced necks in upstanding position, comprising: a first circuit including a first flexible connector and a first spring connected to each other, means for attaching spaced apart ends of said first circuit to a wall or the like at a height above a supporting surface corresponding to the height of the reduced necks, and a second circuit secured at spaced apart locations to said first circuit, said second circuit including a second flexible connector and a second spring connected to each other, said first circuit being sufficiently short so that when said first circuit is engaged partially around the neck of a first elongated container said first spring is stretched to hold said first container in substantially upstanding position, said second circuit being sufficiently short so that when said second circuit is engaged partially around the reduced neck of a second elongated container said second spring is stretched to hold said second container in substantially upstanding position.

3. A device for holding elongated containers having reduced necks in upstanding position, comprising: a first circuit including a first chain and a first spring connected to each other, means for attaching spaced apart ends of said first circuit to a wall or the like at a height above a supporting surface corresponding to the height of the reduced necks, a second circuit secured at spaced apart locations to said first circuit, said second circuit including a second chain and a second spring connected to each other, said first circuit being sufficiently short so that when said first circuit is engaged partially around the neck of a first elongated container said first spring is stretched to hold the first container in substantially upstanding position and against the wall, said second circuit being sufficiently short so that when said second circuit is engaged partially around the neck of a second elongated container said second spring is stretched to hold the second container in substantially upstanding position and against the first container.

4. A device for holding elongated containers having reduced necks in upstanding position, comprising: a retaining bar, means for attaching said retaining bar to a wall or the like at a height above a supporting surface corresponding to the height of the reduced necks, a plurality of holding devices attached to said retaining bar in spaced apart relation to each other along said retaining bar, each holding device comprising a pair of flexible connectors, each connector of a given holding device being anchored to the retaining bar in spaced relation to the other connector of the given holding device, springs connected between the pair of flexible connectors of each holding device at spaced intervals along the length of each pair of connectors to define individual circuits each of which is capable of being stretched to fit partially around the reduced neck of an elongated container, so that each holding device may secure a plurality of upstanding tanks in aligned relation with each other in row-like formation.

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