

[54] HOLDER FOR PRESSURE CYLINDERS

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[51] Int. Cl. ....A47b 73/00

[58] Field of Search .....211/75, 8; 232/41 E; 248/312, 248/313

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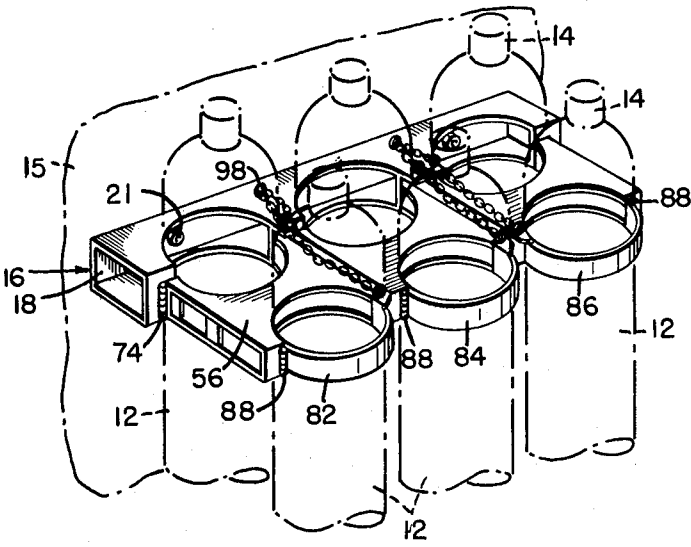
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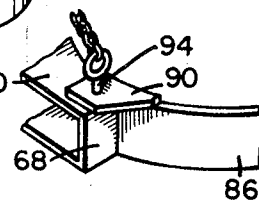
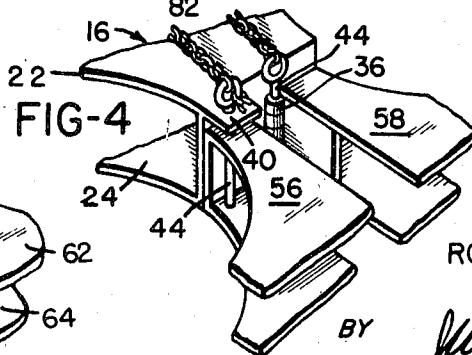
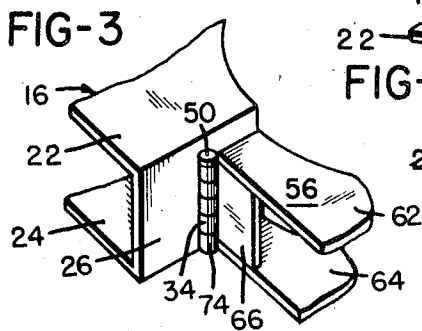
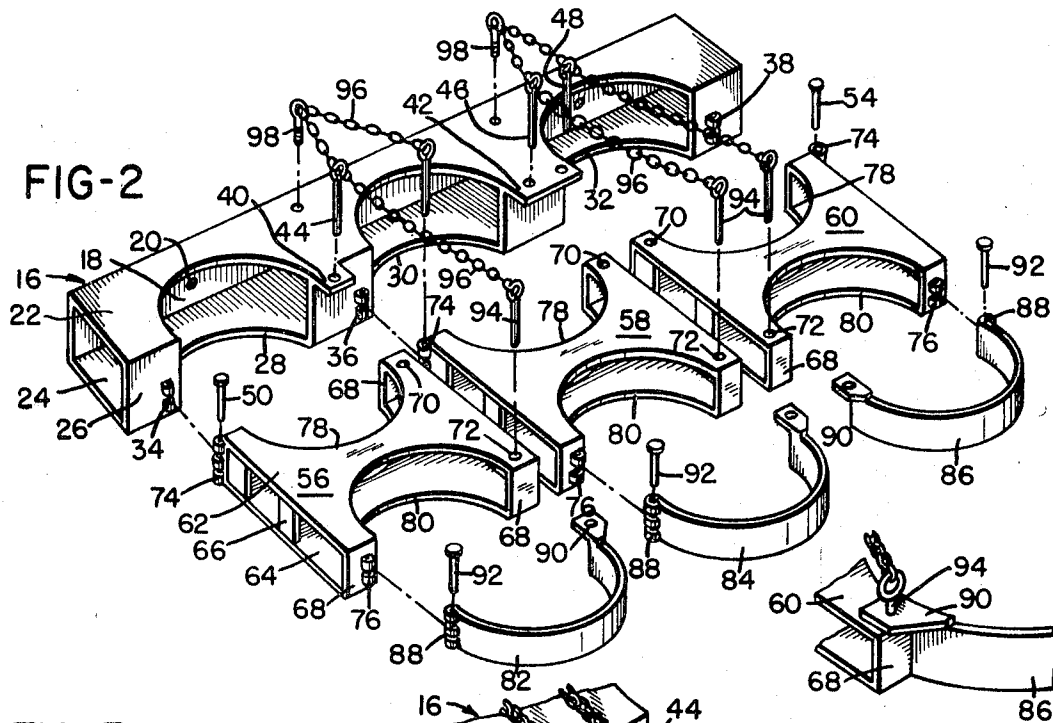
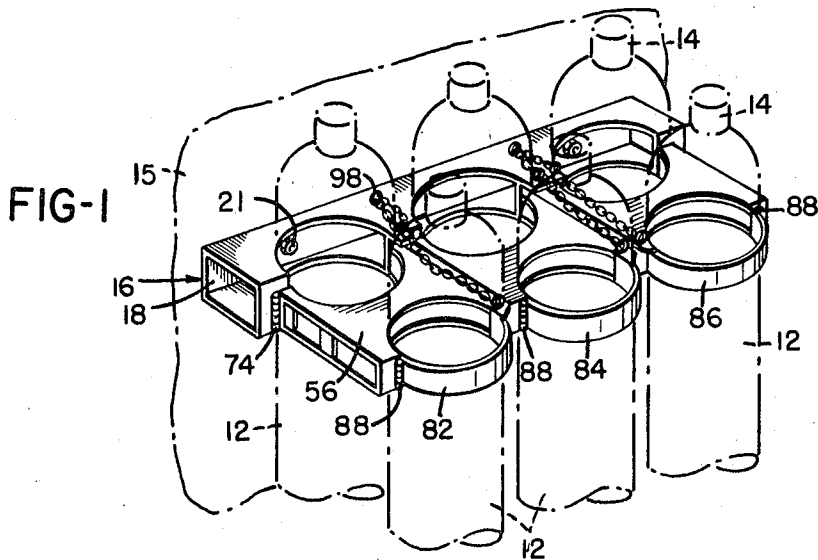
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[57] ABSTRACT

The holder for pressure cylinders comprises a series of pocket-forming elements which are hinged to one another and swingable relative to a fixed base member, so as to enable quick and easy release of spent cylinders for replacement with charged cylinders.

14 Claims, 10 Drawing Figures





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FIG-6

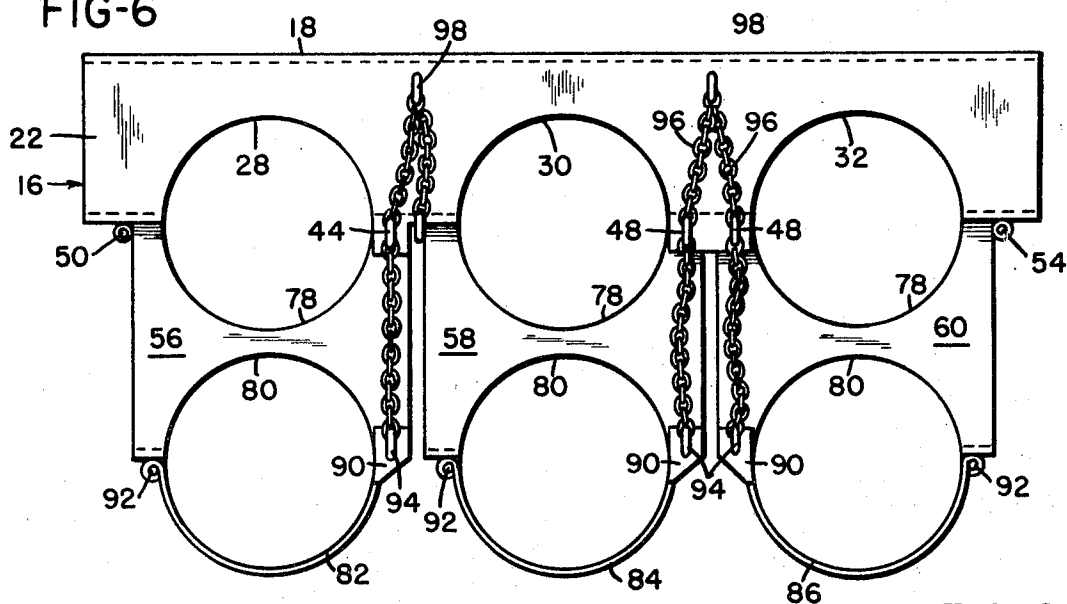


FIG-7

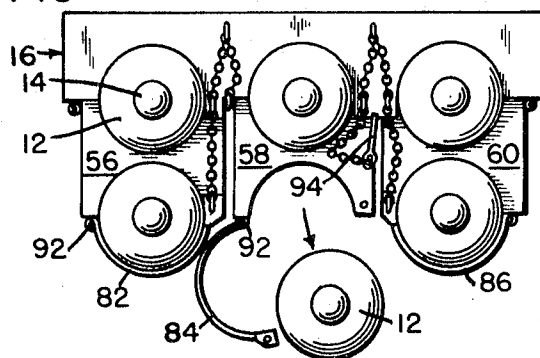


FIG-8

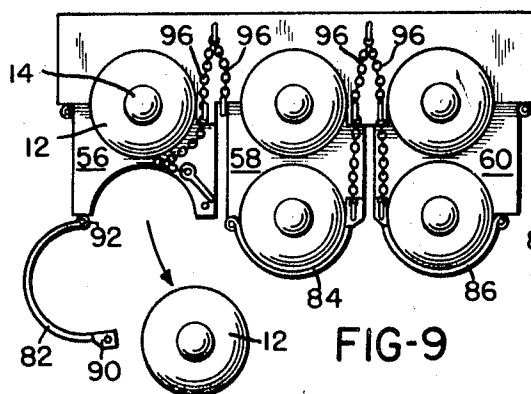
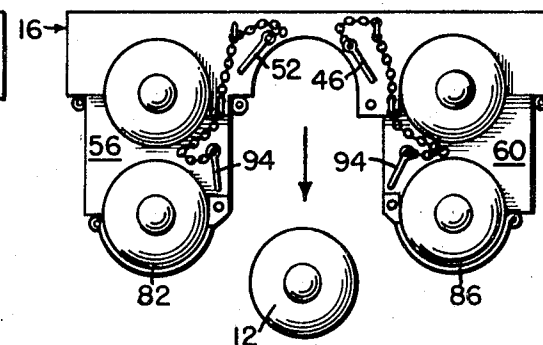


FIG-9

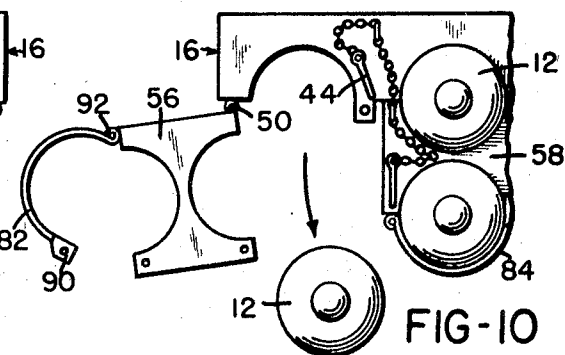


FIG-10

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## HOLDER FOR PRESSURE CYLINDERS

This invention relates to a holder for pressure cylinders, such as are used in various industries as a convenient source of carbonating gas, oxygen, acetylene and other gases, as well as certain liquids under pressure. The pressure cylinders usually are quite long, and are very often stood on end when in use. When stood on end, the cylinder can easily be accidentally toppled or overturned, sometimes with disastrous results, depending on the nature of their contents and the location of the cylinders, and particularly if the overturning results in fracturing tubing or hoses used in connecting them in a distribution system.

In view of the danger mentioned, laws have been passed in various territories requiring that pressure cylinders which stand on end must be lashed together and properly supported in order to preclude the likelihood of overturning. To comply with such laws, the users of pressure cylinders commonly lash them together with suitable chains, cables and the like, thereby to minimize the danger of overturning.

In many instances, pressure cylinders are placed in service in batteries of two to six, or more, and at proper intervals the empty cylinders of the battery are removed, and replaced with others which have been recharged. Usually, the discharge valves of the cylinders are so connected in a distribution system that the cylinders are exhausted in succession, rather than all together, so that replacements are usually fewer in number than the number of cylinders in a battery or group. That is, at any given servicing period, one or more of the cylinders may be found unused, and will not require replacement. Then the usual chains or cables must be removed, the spent cylinders replaced, and the chains or cables reapplied about the cylinder group.

The removal and replacement of the restraining chains or cables has always entailed the expenditure of much time and labor, and was awkward of accomplishment in most cases. In addition, the manipulation of the lashing means often left some of the cylinders of a battery temporarily unsupported, thereby increasing the danger of toppling, and risking breakage, injury, or leakage of the distribution system.

An object of this invention is to provide an effective holder for pressure cylinders, which facilitates and expedites the exchanging or replacement of cylinders in a group or battery.

Another object of the invention is to minimize the risk of injury, breakage, or leakage of a distribution system in which the pressure cylinders are incorporated from time to time, and to relieve the cylinders and their accessories of undue harsh treatment or handling when making exchanges or replacements of cylinders in a group or battery.

Another object is to enhance the safety of handling pressure cylinders when substituting cylinders in a group or battery, thereby to avoid personal injury.

A further object of the invention is to provide an improved holder for pressure cylinders which is inexpensive to manufacture and simple to install and manipulate.

The foregoing and other objects are attained by the means described herein and illustrated upon the accompanying drawings in which:

FIG. 1 is a fragmental perspective view showing a group of pressure cylinders supported by the holder of the present invention.

FIG. 2 is a perspective view of the improved holder in partly disassembled condition.

FIG. 3 is a fragmentary detail of a hinge connection.

FIG. 4 is a fragmentary detail of a hinge and pintle connection.

FIG. 5 is a fragmentary detail of a pintle connection.

FIG. 6 is a top plan view of FIG. 1, with cylinders omitted.

FIGS. 7 through 10 are views similar to FIG. 6, but on a reduced scale, showing how various pressure cylinders may be removed from the holder.

In the drawings, the reference numeral 12 denotes in every instance an elongate pressure cylinder containing a fluid under high pressure, which may be either a gas or a liquid.

Such cylinders usually are tall and slender, with a base of limited size not very effective to preclude toppling of the cylinders when standing upright and unsupported laterally near their upper ends. The cylinders usually include a bonnet portion 14 where there is provided a valve, tubing attachment fittings, and very often a pressure gauge to indicate the pressure of fluid within the cylinder. The tubing attachment fittings, not shown, are customarily employed for connecting the cylinders into a fluid distribution system comprising an arrangement of tubes or pipes, the fittings being separable when necessary to permit a substitution of charged cylinders for spent cylinders in a battery or group.

The holder of the present invention serves to support laterally a plurality of pressure cylinders resting upon a floor or other surface in upright position, so that none of the cylinders may tend to topple over after one or more are displaced from a group or battery of cylinders. The holder moreover may be secured to a wall or other upright support means, denoted 15, FIG. 1.

In the embodiment shown, the holder comprises a base member 16 having a rear wall 18 perforated as at 20 to accommodate screws or other fasteners 21 whereby the base member may be rigidly mounted on a wall or other upright support 15. The base member may be formed as a tubular element comprising the rear wall 18, a top wall 22, a bottom wall 24, and a front wall 26. The walls 22, 24, 26 may be cut away to provide substantially semicircular pockets 28, 30, 32 each shaped and dimensioned to embrace approximately half of the circumference of a pressure cylinder 12 as shown.

The front wall 26 adjacent to each pocket 28, 30, 32, carries one or more extending hinge eye means 34, 36, 38. Also adjacent to each pocket is a perforate lug 40, 42, which if desired may be an integral part of top wall 22. The perforations of said lugs are adapted to receive removable latch pins such as 44, 46, 48, whereas the hinge eye means 34, 36, 38 are receptive of removable hinge pins 50, 52, 54.

The numerals 56, 58, 60 denote each a double-pocket gate element, each of which may comprise a top wall 62 and a bottom wall 64 spaced therefrom by means of suitable spacers such as 66. Spacer walls 68 are provided at the four corners of each gate element, and the top and bottom walls near two of the corners are provided with aligned vertical perforations 70 and 72. The remaining two corners carry extending hinge eye means 74 and 76.

Each double-pocket gate element 56, 58, 60 is cut away at its top and bottom walls to provide an inside pocket 78 and an outside pocket 80, both corresponding in size with the similar semicircular pockets of base member 16.

The outside pockets 80 are adapted to be closed by substantially semicircular end caps 82, 84, 86. Each end cap may be in the form of a curved metallic strap having at one end a hinge eye means 88 and a perforate lug 90. The end caps are mountable upon the gate elements 56, 58, 60 by means of removable hinge pins 92 passed through the hinge eye means 88, and by means of removable latch pins 94 passed through the perforations at 72, 90. The several latch pins may be held captive by means of chains or the like 96 anchored to the base member by means of screw eyes or similar fasteners 98, to preclude loss or misplacement thereof.

From the foregoing explanation, it will be apparent that pressure cylinders may be placed in and removed from the several pockets of the holder, by merely removing and replacing the latch pins which normally hold the gate elements against the base member, and the end caps against the gate elements. For example, as in FIG. 7, a latch element 94 is removable to free the end cap 84 for swinging movement about a hinge pin 92, so that a cylinder 12 might be released for replacement with a similar cylinder in recharged condition. Should it be desirable to remove the cylinder directly behind the cylinder released in FIG. 7, the procedure of FIG. 8 may be restored to involving bodily removal of gate element 58 by removing its holding pins 52 and 46.

FIG. 9 shows how a pressure cylinder may be replaced by simply hinging the end cap 82 outwardly about pivot pin 92, after removing the cooperative latch pin 94. FIG. 10 illustrates how in FIG. 9 the cylinder behind the one removed in FIG. 9 may be removed and replaced by swinging the gate element 56 outwardly about a hinge pin 50, after removal of the latch pin 44.

It will be understood from the foregoing explanation, that any of the pressure cylinders constituting the battery or group within the capacity of the holder, may quickly and easily be removed from the holder and replaced with charged cylinders, with minimal risk of toppling the cylinders and possibly injuring persons in the vicinity. The holders also maintain the cylinders under maximum control to avoid any rocking of the cylinders while connected with the piping or tubing of a fluid distribution system, thereby minimizing the risk of loosening or breaking the pipe connections.

While the holder as illustrated by way of example has a capacity of six cylinders, it will be understood that the capacity of the holder may be increased or decreased as desired, by merely adding pockets or omitting pockets accommodating the cylinders. The holder is seen to involve inexpensive manufacturing procedure, and simple installation and manipulation in use.

What is claimed is:

1. A holder for a plurality of substantially identical pressure containers arranged in parallel relationship with one another, said holder comprising in combination: a base member having a front wall cut away at intervals to provide a plurality of spaced pockets each dimensioned to accommodate approximately one-half the periphery of one of the pressure containers of the plurality of containers; a plurality of gate elements each having a hinge connection with the base member about which the gate elements may be swung, said gate elements each including a pocket dimensioned substantially similarly to each of the pockets of the base member; displaceable means for selectively fixing the gate elements relative to the base member, with the pockets of the base member each aligned with a pocket of a gate element to substantially surround and embrace each container of the plurality of containers, and additional means on said gate elements for removably securing additional containers thereto.

2. The holder as defined by claim 1, wherein the plurality of containers are cylindrical and are adapted to stand endwise in a group upon a substantially horizontal supporting surface, and the pockets of the base member and the pockets of the several gate elements are substantially semicircular, with a diametral dimension slightly in excess of the diameter of a cylinder aforesaid, and wherein said base member includes means for fixing the base member against a support with the

hinge connection disposed substantially vertically.

3. The holder as defined by claim 2, wherein said additional means includes an additional cylinder-receptive pocket disposed in opposition to a gate element pocket first mentioned; and selectively displaceable means for releasably embracing a cylinder of the group within each of said additional cylinder-receptive pockets.

4. The holder as defined by claim 2, wherein said hinge connections include hinge pins removable at said connections to effect bodily dismounting of the gate elements relative to the base member.

5. The holder as defined by claim 4, wherein said additional means includes an additional cylinder-receptive pocket disposed oppositely to a gate element pocket first mentioned; and selectively displaceable means for releasably embracing a cylinder of the group within each of said additional cylinder-receptive pockets.

6. The holder as defined claim 5, wherein said means last mentioned includes a pocket to align with one of said additional cylinder-receptive pockets of each gate element.

7. The holder as defined by claim 6, wherein said last-mentioned selectively displaceable means comprises a curved metallic strap of semicircular form having opposite ends detachably mounted upon a gate element.

8. The holder as defined by claim 8, wherein one of said opposite ends includes a separable hinge connection with the gate element.

9. The holder as defined by claim 8, wherein the remaining one of said opposite ends includes a separable latch connection with said gate element.

10. The holder as defined by claim 1, wherein said additional means includes an additional container-receptive pocket disposed oppositely to a gate element pocket first mentioned; and selectively displaceable means for releasably securing a container of the plurality of containers within each of said additional container-receptive pockets.

11. The holder as defined by claim 10, wherein said containers are cylindrical and said means last mentioned includes a substantially semicircular pocket to align with one of said additional cylinder-receptive pockets of each gate element.

12. The holder as defined by claim 11, wherein said means last mentioned comprises a curved metallic strap of semicircular form having opposite ends detachably mounted upon a gate element.

13. The holder as defined by claim 12, wherein one of said opposite ends includes a separable hinge connection providing for swinging of the curved strap relative to said gate element.

14. The holder as defined by claim 13, wherein the remaining one of said opposite ends includes a separable latch connection with said gate element.

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