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GAS CYLINDER HOLDER

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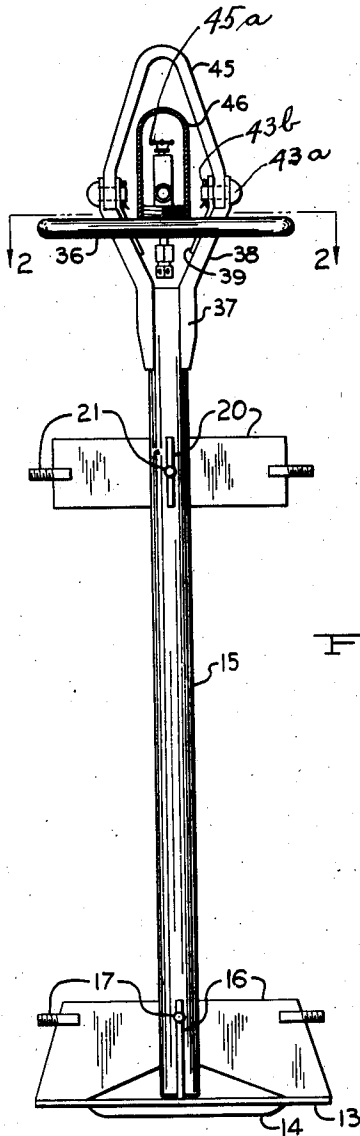


FIG. 1-

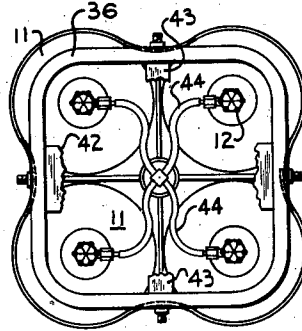


FIG. 2-

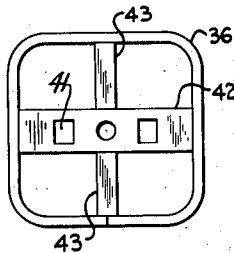


FIG. 4-

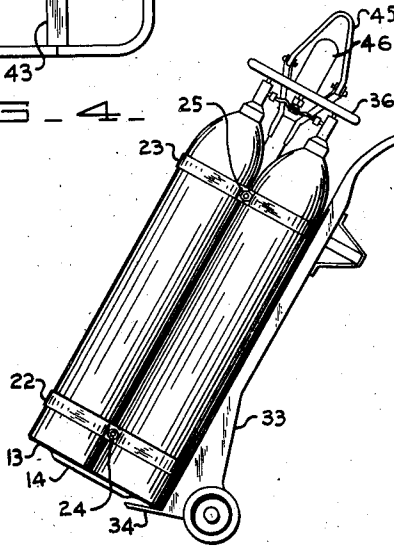


FIG. 3-

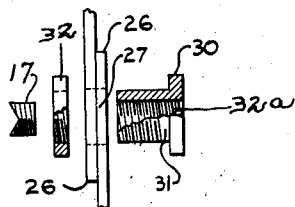


FIG. 5-

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GAS CYLINDER HOLDER

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6 Claims. (Cl. 211-71)

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This invention relates to devices for assembling a plurality of gas tanks so that the assembly can be used, maintained, and manually moved as a unit.

Large amounts of gases are often required for various operations, and such gases are conventionally supplied in portable, elongated metal tanks. Such gases are often under pressures of the order of about 2000 pounds per square inch, which necessitates thick walled tanks which are consequently quite heavy. A single tank frequently contains an unsufficient supply where the gases are used extensively, necessitating the use of a plurality of such tanks.

Objects of this invention are, to provide devices for assembling groups of such tanks, which will make it easy to handle the groups as units, provide raised portions to accommodate the flanges of hand trucks and the like, bind the tanks firmly and safely into units, and afford safe hand holds for the workmen and protection for the valves and appurtenant parts used with such tanks, and other objects will be apparent after reading this specification.

A preferred exemplification of the invention is illustrated on the accompanying drawing forming a part hereof, on which the different figures are not necessarily drawn to the same scale. On such drawing

Figure 1 is a front elevation of the holder;

Figure 2 is a horizontal section on the line 2-2 on Figure 1, with parts removed and with tanks in place;

Figure 3 is a side view of a hand truck carrying a unit of assembled tanks;

Figure 4 is a plan view of a detail; and

Figure 5 is an exploded view of another detail.

The invention is illustrated as for handling four tanks 11. They ordinarily are each equipped with a valve 12 for controlling the exit of compressed gas therefrom. The tank holder comprises a bottom member 13 conveniently formed of a metal plate upon which the assembled tanks are to rest and which is dished downwardly inwardly from the periphery, as at 14. This provides a downwardly protruding part upon which the holder, either with or without tanks thereon, can stand upright with the outer portion of the bottom 13 raised above the floor or other support. Carried by the bottom member is an upright member 15 which may conveniently be a metal pipe. Four plates 16 comprising arms are fixedly attached to the upright 15 to project radially therefrom at ninety degrees apart, and also to the undished peripheral part of the bottom 13. Bolts 17 are

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attached to the plates 16 and project radially of the upright 15. Plates 20 are fixedly attached to the upright 15 above the plates 16 at angles of ninety degrees apart, and project radially therefrom similarly to the plates 16, each of the plates 20 being directly over a corresponding plate 16 and projecting in the same direction. Bolts 21, similarly to the bolts 17, are attached to the plates 20.

The tanks 11 are assembled, preferably one within each angle formed by the plates 16 and 20, whereupon straps 22, 23 are placed about the group of tanks with the bolts 17 extending through perforations in the strap 22 and the bolts 21 extending through perforations in the strap 23. Nuts 24 and 25 are then placed on the bolts 17 and 21, respectively, and turned to draw the straps tightly about the tanks.

If the straps used are not endless, a special holding means is preferred for the two ends thereof, as shown on Figure 5. The two ends 26 of a strap have each a perforation 27, and are slipped over a bolt 30 which is exteriorly unthreaded and smooth at 31 adjacent its head, but is otherwise threaded exteriorly. The strap ends are positioned on such smooth part 31, and a nut 32 is turned on the bolt to hold the strap ends at such smooth part while permitting turning of the bolt. The bolt 30 is hollow and has interior threads 32a which fit on the threads of the bolts 17 (and 21). Turning the bolt 30 after fitting it onto the end of the bolt 17 (or 21) results in tightening the straps, in the same manner as when the bolts 24 or 25 are tightened.

With the unit standing upright on the dished portion 14, a hand truck 33 or the like can be used to transport it. The lip or flange 34 of the truck is run under the raised outer portion of the bottom 13, whereupon the unit is pulled into the position on the truck shown on Figure 3. The loaded truck is then moved to the desired place, and tilted upwardly to contact the downwardly projecting bottom portion 14 with the floor and the truck removed. A rail 35 is provided which can be grasped by the workman to aid in loading and unloading the assembly onto and off the truck. This rail does not extend in any direction as far outwardly as the tanks as seen on Figure 2, as a matter of safety, to avoid any possibility of the workman's hand being crushed between the rail and a wall or other object adjacent to which the assembly is being positioned. Such rail will remain far enough away from such wall to prevent his hand being crushed between the wall and the rail. The handrail 36 is at the level of

the valves 12, to serve, not only as a safe means for handling the unit, but also to protect the valves from injury by striking a wall or other object during handling. Injury to the bolts 17 and 21 and to the threads thereon, and to the bolt 30, is similarly prevented by having such bolts stop short of the plane connecting the outermost parts of adjacent cylinders.

At the upper end of the upright 15 is attached a Y-shaped member 37 preferably formed of two bent members 38 having bent flanges 39 and attached oppositely to each other at the top of the upright 15. The divergent parts and the flanges 39 extend through and fit perforations 41 in a diametrically extending plate 42 which is attached at its ends to the hand rail 36. Plates 43 are attached at their ends to the hand rail and the plate 42, and extend diametrically and at right angles to the plate 42. The described construction holds the rail 36 firmly in place. An eye 45 is connected to the upper parts of the flanges 39 by any suitable means; for example, by rivets 43a passing through the ends of the eye and through the flanges 39, the rivets being held in place by cotter pins 43b. The eye can serve for lifting the holder either with or without tanks assembled thereon.

It is generally preferred that connections or pigtailed 44 lead from the valves on each tank to a master valve 45a which can control the outflow of gas from any number or all of the tanks of an assembled unit. The valve 45a is ordinarily protected by a screw cap 46 when gas is not being used and is removed when gas is to be used. For using the gas, the valve 45a is opened, as is the individual valve 12 of a cylinder or tank 11, and when the pressure drops below a desired amount the individual valve of another tank is opened; or if desired, several or all of the individual valves can be opened at the same time.

The invention is useful for tanks, containing oxygen, hydrogen, acetylene or any other desired gas, and also for assembling into units articles which are not necessarily containers. While the invention has been illustrated for assembling into units of four tanks each, it is to be understood that it can be used for any plurality of tanks or other articles by having the proper number of plates 16 and 20 attached to the upright 15 with the proper angles between adjacent plates. Certain other details have been referred to merely as illustrative and may be varied without departing from the spirit of the invention.

The invention claimed is:

1. In a holder comprising an upright, arms extending outwardly from said upright at different angles to points short of a straight line between outermost parts of adjacent articles which are adapted to be held by said holder, a strap connected to said arms and adapted to pass around the outside of an assembly of articles adapted to be held, and means to draw said strap toward an arm into position to hold an assembly of articles on said holder.

2. In a holder comprising an upright, arms extending outwardly from said upright at different angles to accommodate articles to be held between them, said arms extending to a distance less than the outermost parts of the articles adapted to be held, a strap connected to said arms and adapted to pass around said articles, and means to draw said strap in between said articles into position to hold said articles on said holder.

3. A holder for elongated articles, comprising a bottom plate having a central downwardly dished portion and a relatively raised peripheral portion, radially extending vertical plates attached to the raised portion, an upright attached to the inner ends of the plates, vertical plates above and spaced from said first mentioned plates attached to the upright and extending radially therefrom in the same directions as the first mentioned plates, outwardly extending bolts on the plates, straps adapted to pass around articles between the plates at the levels of upper and lower bolts, the straps having holes to permit slipping them over the bolts, the bolts extending to points short of lines connecting outermost parts of adjacent articles when positioned between the plates, and nuts on the said bolts to retain the straps.

4. A holder for elongated articles, comprising a bottom plate having a central downwardly dished portion and a relatively raised portion, radially extending vertical plates attached to the raised portion, an upright attached to the inner ends of the vertical plates, vertical plates above and spaced from the first mentioned plates attached to the upright and extending radially therefrom in the same directions as the first mentioned plates, outwardly extending bolts on the plates, straps adapted to pass around articles when between plates at the levels of upper and lower bolts, the straps having holes to permit slipping them over the bolts, the bolts extending to points short of lines connecting outermost parts of adjacent articles when between plates, and nuts on said bolts to retain the straps, at least one of said bolts at each level having a smooth portion to accommodate perforated ends of said straps.

5. A holder for gas cylinders having valves, comprising a bottom plate having a central downwardly dished portion and a planar peripheral portion, radially extending vertical plates attached to the planar portion, an upright attached to the inner ends of the vertical plates, second vertical plates above and spaced from the first mentioned plates attached to the upright and extending radially therefrom in the same directions as the first mentioned plates, outwardly extending bolts on the plates, straps adapted to pass around cylinders when between plates at the levels of upper and lower bolts, the straps having holes to permit slipping them over the bolts, the bolts extending to points short of lines connecting outermost parts of adjacent cylinders when between plates, nuts on said bolts to retain the straps, a support on the upper part of the upright, a hand rail on the support for manipulating the holder, the hand rail being at the level of the valves to protect them and being completely within projections of straight lines between outermost parts of the cylinders when between plates.

6. In a holder adapted to receive a plurality of heavy gas cylinders, which cylinders are provided with projecting valve assemblies at their upper ends; the combination of an upright, means on the upright for retaining a plurality of such cylinders in fixed relation with respect to said upright, and an annular horizontal hand-rail carried by said upright at its upper end in a position adapted to enclose the projecting valve assemblies of cylinders held by said retaining means.

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