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APPARATUS FOR HANDLING CARBOYS

Filed Feb. 7, 1958

Fig. 1

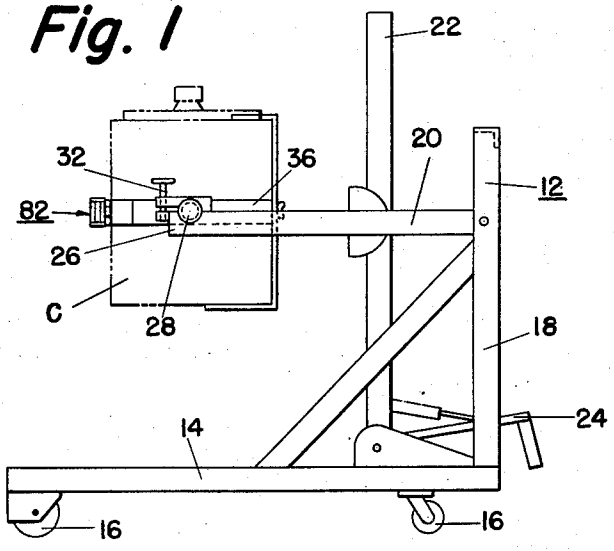
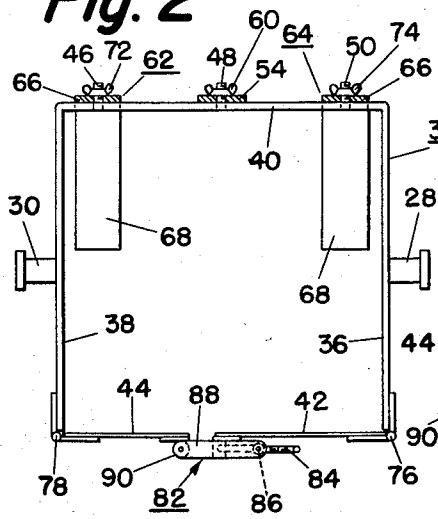


Fig. 2



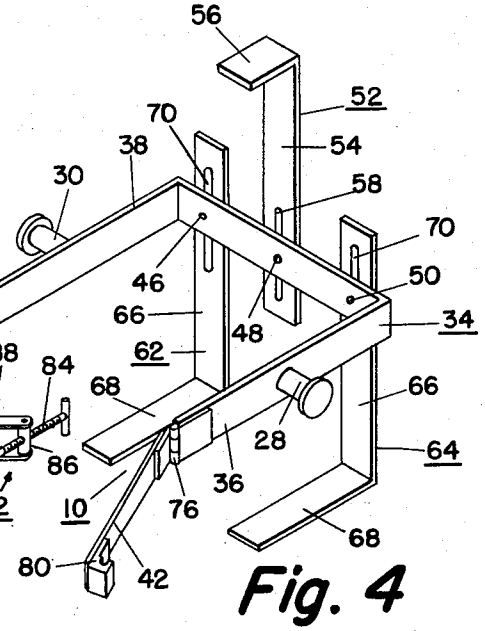
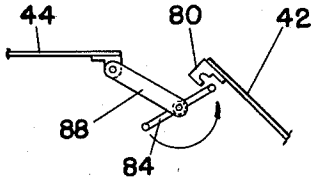


Fig. 4

Fig. 3



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APPARATUS FOR HANDLING CARBOYS

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The present invention relates to apparatus for handling carboys.

Acid carboys have always been dangerous to handle. When full of concentrated aqueous acids of high density these thirteen gallon carboys tax the strength of even two men and render the pouring of such acids by unskilled labor a dangerous operation.

Experience has shown that not only are the cleats of conventional carboys positioned at different locations depending on the carboy manufacturer, but also that such cleats are relatively unreliable as supporting means, particularly when the carboy has been used for any length of time. Thus, the acid discharged from such carboys is prone to attack the nails and other securement means joining the cleats to the carboys, resulting in disengagement of the cleats from the carboys upon stress being applied to the cleats. Moreover, the bottom of the carboy is prone to become disengaged due to acid attack.

This invention has as an object the provision of apparatus for handling carboys, which apparatus may be used to safely handle such carboys even though the carboy is in poor condition.

This invention has as another object the provision of apparatus for handling carboys of different outside dimensions, which apparatus can accommodate to carboys of such different outside dimensions.

This invention has as yet another object the provision of apparatus which will enable a single individual to safely manipulate conventional thirteen gallon acid carboys loaded with noxious liquids.

Other objects will appear hereinafter.

For the purpose of illustrating the invention there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

Referring to the drawings wherein like reference characters refer to like parts:

Figure 1 is a side elevational view of the apparatus for handling carboys of the present invention carried on a conventional one-man drum lift.

Figure 2 is a sectional view showing the locking means in closed disposition.

Figure 3 is a fragmentary view showing the locking means in open disposition.

Figure 4 is a perspective view of the apparatus of the present invention.

The apparatus of the present invention for handling a conventional acid carboy (designated C) comprises the girdle designated as **10**. Such girdle is intended for use in a conventional one-man operated drum lift **12**.

The drum lift **12** in the illustrated embodiment (no claim to invention is made in the present application for the drum lift) comprises horizontal frame members **14** which are spaced from each other and mounted on casters **16**. The distance between the frame members **14** is

sufficiently great to enable such frame members **14** to straddle the acid carboy C.

Uprights **18** are provided at the ends of frame members **14**. The arms **20** for the drum lift **12** are pivotably secured to the uprights **18**. The pivoting of the arms **20** in respect to the uprights **18** is effected by the hydraulic jack **22** which is actuated by the pedal **24**, the hydraulic jack **22** being engaged with a cross-bar connecting the arms **20**.

The free end of each of the arms **20** is provided with a clamp **26**. Trunnion **28** of girdle **10** is received within the clamp **26** of one of the arms **20**, and trunnion **30** of girdle **10** is received in the clamp **26** of the other of arms **20**. Each of the clamps **26** is provided with threaded securement means **32** for locking the clamps **26** onto their respective trunnions **28** and **30**.

Trunnions **28** and **30** are oppositely positioned and extend outwardly from the strap **34**. The strap **34** is generally rectangularly shaped and formed of sheet metal or flat bar. Strap **34** includes the side members **36** and **38**, the back member **40** and front members **42** and **44**. The trunnion **28** projects outwardly from the middle portion of side member **36** and the trunnion **30** projects outwardly from the middle portion of side member **38**.

The back member **40** is provided with three evenly spaced outwardly projecting threaded studs **46**, **48**, and **50**.

The central threaded stud **48** carries the upwardly projecting angle-shaped jaw **52** which includes the straight element **54** whose uppermost end portion comprises the inwardly directed projection **56**. Element **54** is provided with the elliptical slot **58** through which the threaded stud **48** extends. Wing nut **60** carried on threaded stud **48** may be used to selectively engage the element **54** so that the same may be locked in any desired position in respect to back member **40**.

The threaded studs **46** and **50** carry the downwardly projecting angle-shaped jaws **62** and **64**. Each of these jaws includes the straight element **66** whose end portion comprises the inwardly directed projection **68** for supporting the bottom of the carboy C. The elements **66** of angle-shaped jaws **62** and **64** are each provided with elliptical slots **70** for permitting vertical adjustment of the angle-shaped jaws **62** and **64** in respect to the back member **40**. Wing nuts **72** and **74** are provided on threaded studs **46** and **50** for locking the angle-shaped jaws **62** and **64** in a predetermined disposition.

Front member **42** is hinged by means of hinge **76** to the front end of side member **36** and front member **44** is hinged by means of hinge **78** to the front end of side member **38**.

Front member **42** is provided with the keeper **80** of locking means **82**.

Front member **44** includes the locking lever **84** of locking means **82**. Locking lever **84** is threadably secured through upright **86** which is secured intermediate the connecting members **88** of the portion of locking means **82** carried by front member **44**. The connecting members **88** are secured to front member **44** by upright **90** which is pivotably joined to both front member **44** and to connecting members **88**.

The operation of the girdle **10** of the present invention is as follows:

The girdle **10** is retained by the drum lift **12** with the projections **68** resting on the ground. Such projections **68** of the jaws **62** and **64** of girdle **10** are slipped under the bottom of the acid carboy C intermediate the cleats which are conventionally secured to the bottom of an acid carboy. The strap **34** embraces the sides of the acid carboy.

The operator then adjusts the wing nuts **72** and **74** so

that the strap **34** is disposed beneath a cleat on the sides of the acid carboy. The operator also adjusts the wing nut **60** so that the projection **56** thereof engages the top of the carboy C.

The locking means **82** is then closed, in the manner shown in Figures 2 and 3. Thus, the locking lever **84** is engaged with the keeper **80** and then pivoted to effect locking. Since the locking lever **84** is threaded, it provides for accommodation to acid carboys of different girths.

Pouring of the noxious liquid contents from the carboy C can be accomplished when the same is mounted on the lift **12** with ease by a single operator. Thus, the trunnions **28** and **30** may be pivoted in respect to their supporting clamps **26** so that the carboy C assumes the desired position, and the arms **20** may be raised or lowered by the hydraulic jack **22**.

The girdle **10** of the present invention permits positive securement to acid carboys C even though the same are in poor condition, as in the case of carboys whose cleats and/or bottom have either separated from the sides of the carboy or are loosely attached to the sides of the carboy.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. A girdle for a carboy including a rectangularly shaped girdling member, one side of said girdling member having ends hinged to opposed sides of said girdling member and free ends intermediate its hinged ends, locking means on the free ends of said one side, opposed trunnions projecting outwardly from said opposed sides, three angle-shaped elements extending perpendicularly across and secured to the side of said girdling member opposite the side having hinged ends so as to be selectively movable in respect to said girdling member, and means for securing each of said angle-shaped elements in a predetermnied disposition in respect to said girdling member, two of said angle-shaped elements extending below and one element extending above said girdling member, with the offset projection of each of said elements extending inwardly.

2. A girdle for a carboy in accordance with claim 1 in which the angle-shaped element which extends above the girdling member is secured to the center of the side of the girdling member, and the two angle-shaped elements which extend below the girdling member are secured to the side of the girdling member on opposite sides of said upwardly extending element.

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