

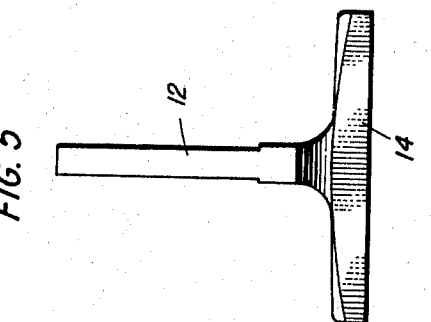
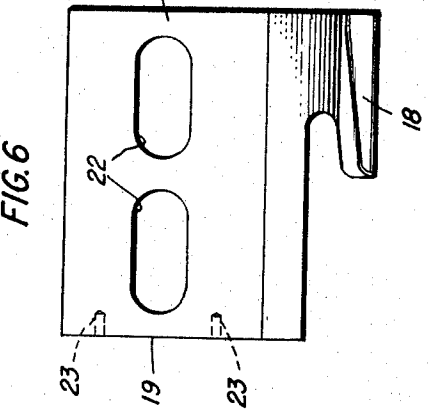
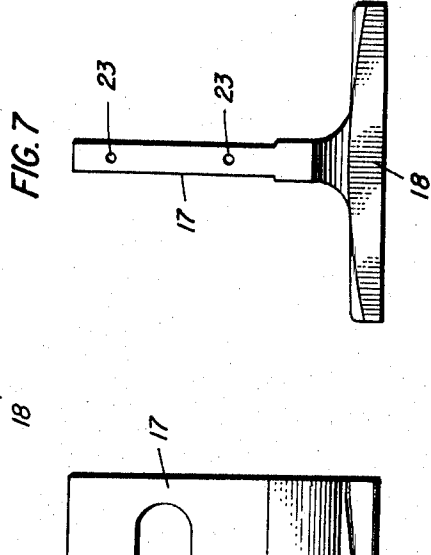
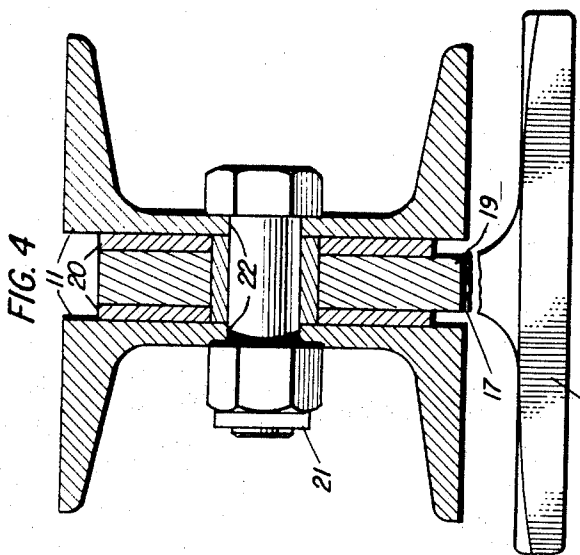
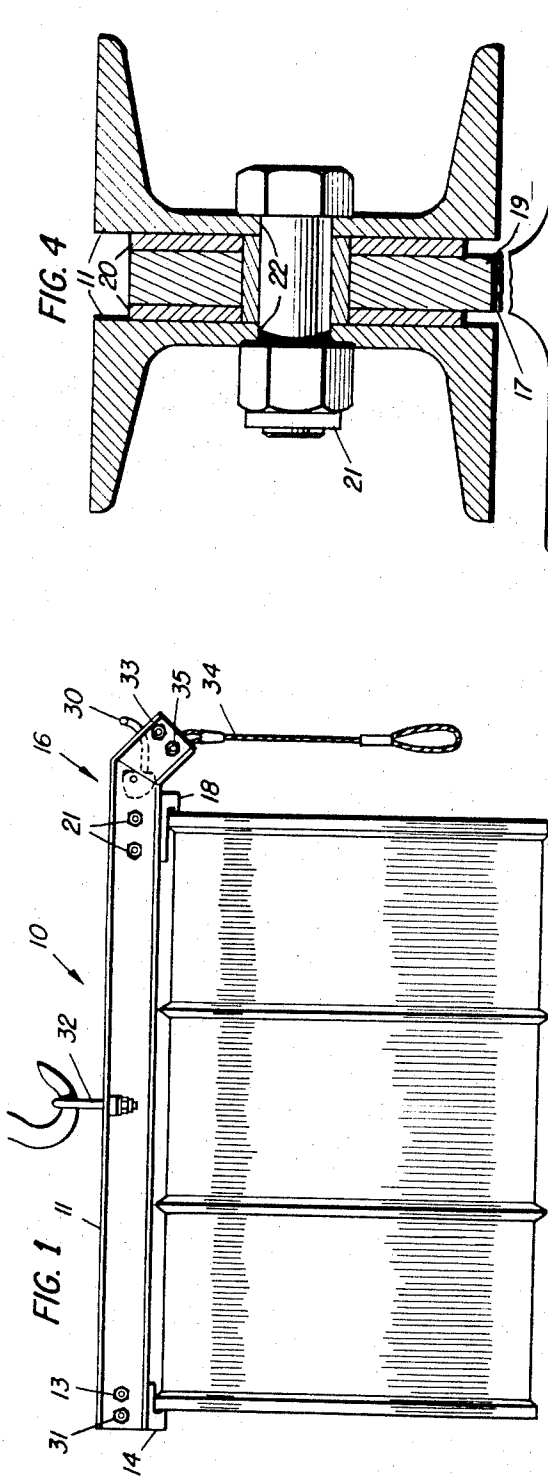
Dec. 10, 1968

C. D. CHILDERS  
DRUM HOISTING BEAM

3,415,564

Filed Dec. 16, 1966

2 Sheets-Sheet 1



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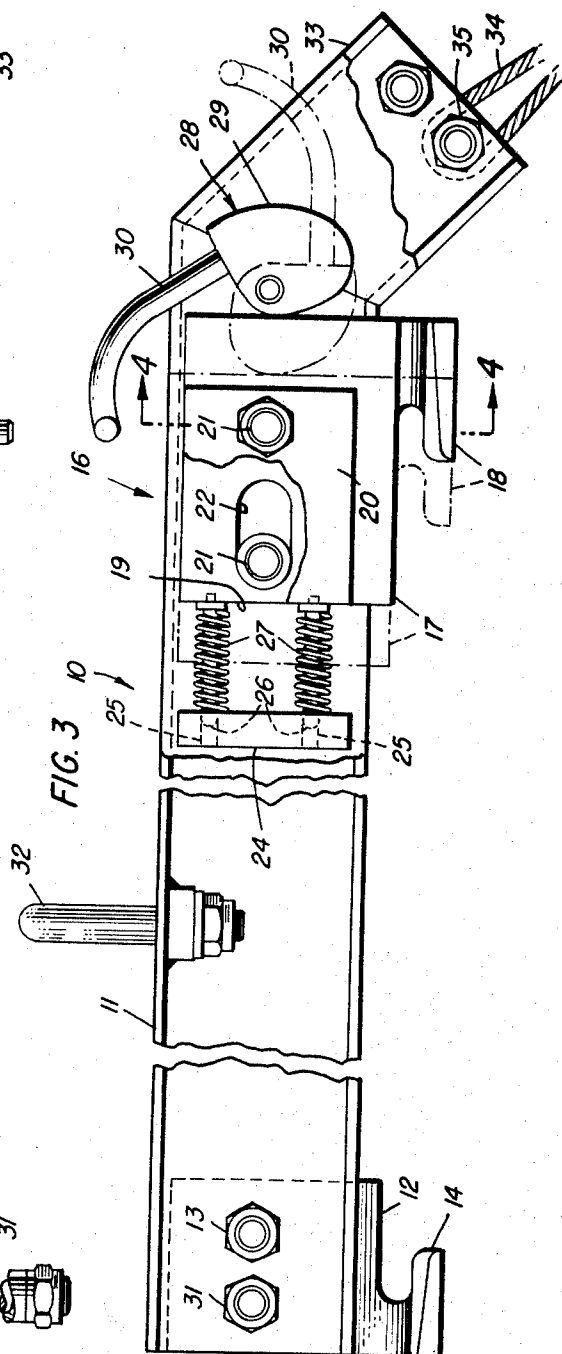
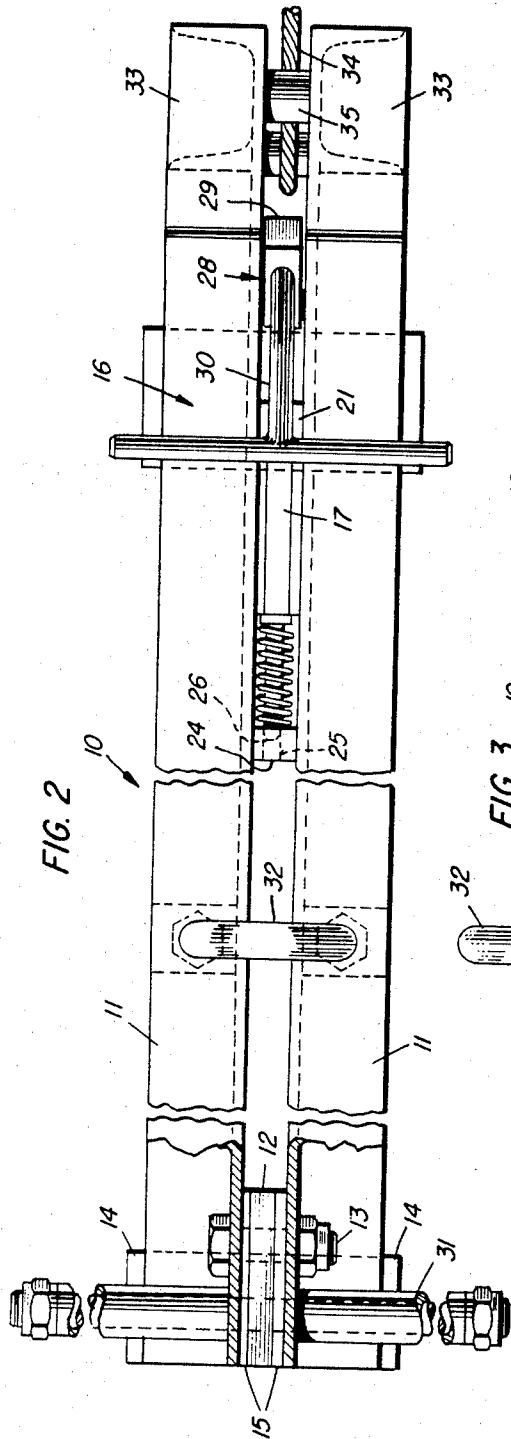
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2 Sheets-Sheet 2



3,415,564

**DRUM HOISTING BEAM**

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9 Claims. (Cl. 294-103)

**ABSTRACT OF THE DISCLOSURE**

A strongback is provided with a fixed jaw at one end and a movable jaw at the other end which is slidable axially of the strongback. Springs on the strongback normally urge the movable jaw to the open or drum releasing position. An over center cam mechanism is provided for camming the movable jaw toward the fixed jaw to engage the rims of a drum and clamp it to the strongback.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

The present invention relates generally to a means for handling drums and, more particularly, to a hoist beam attachable to a drum whereby easier emptying, transporting, etc., of the drum may be facilitated.

In the prior art hoisting means commercially available, it has been customary for these devices to comprise some type of main support member having a fixed drum engaging means at one end and a pivotable or otherwise movable drum engaging means at its opposite end. Such a hoist attachment, however, has been found to be limiting from the standpoint of its poor adaptability for use, for example, in the mixing together of drum contents in situ or the tilting of drums for pouring or the emptying of drums without the need for additional complex and bulky equipment.

It is therefore an object of the present invention to provide a simple means for the transporting and handling of drums of any size, and, in addition, for the mixing or emptying of drum contents in the field without the need for massive, complex devices normally used for this purpose.

Another object of the present invention is to provide a drum hoist beam in which requirements of high strength-to-weight ratio, ease of operation and handling, and cost are met.

A further object of the present invention is to provide a drum hoist beam comprising substantially a strongback easily attachable and removable from the drum by means of a hand-manipulated, slidable, positively locking drum engaging means.

A still further object of the present invention is to provide a strongback type drum attachment having on one end thereof a fixed drum engaging means and on its opposite end a slidable, cam-actuated, locking drum engaging means.

Other objects, advantages and novel features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings wherein:

FIG. 1 shows the drum hoist beam according to the invention attached to a drum;

FIG. 2 shows in plan the assembled drum hoist beam according to the invention;

FIG. 3 is a side view of the device of FIG. 2;

FIG. 4 is a cross-sectional view taken at line 4-4 of FIG. 3 showing the slidable drum engaging clamp in relation to the strongback;

FIG. 5 is an end view illustrating the fixed clamp of the device;

FIG. 6 is a side view of the slidable clamp of the device; and

FIG. 7 is an end view of the FIG. 6 clamp.

Referring now to the drawings wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in FIGS. 1, 2 and 3 a drum hoist beam 10 comprising essentially a strongback in the form of a pair of channel beams 11 in substantially back-to-back relation and of a length sufficient to extend completely across the upright length of a drum or cask as clearly shown in FIG. 1. Of course, a box beam or other polygonal type would suffice in lieu of strongback 11 without departing from the teachings of the invention. At one end of the strongback is fixedly attached as at 13 a drum clamp 12, clearly shown in FIG. 5 to be T-shaped in cross-section and having an inwardly extending drum engaging lip or jaw 14 thereon. The vertical leg of clamp 12 is disposed between the backs of channels 11 sandwiched in between bearing plates 15 which may be provided for strengthening the rigid attachment of the clamp. Channels 11 are maintained in such a spaced-apart relation in order to accommodate the slidable drum engaging clamp means to be described hereinafter.

In order to facilitate easy drum attachment and removal of the instant drum hoist beam, a slidable, locking, drum gripping clamp means 16 is provided at the strongback end opposite that of the fixed clamp. Such a clamp means includes a T-shaped clamp 17, as clearly shown in FIGS. 6 and 7, similar in cross-section to clamp 12 but of a length greater than the fixed clamp for sliding allowance to and from the drum or cask. A drum engaging lip or jaw 18, similar to jaw 14, is also provided on the locking clamp 17. The vertical leg 19 thereof is disposed between channels 11, see FIG. 4, and is sandwiched in between bearing plates 20 provided for aiding in sliding movement of clamp 17 between beams 11. The locking clamp 17 is secured to the strongback by means of a nut and bolt attachment, as at 21, extending through a pair of longitudinally extending apertures 22 provided in vertical leg 19. The length of each aperture 22 is equal to the length of travel intended for the clamp plus bolt shank diameter. At the inner side of vertical leg 19, FIGS. 6 and 7, is provided a pair of drilled holes 23. Coplanar with leg 19 and at a predetermined distance inwardly therefrom, is fixedly located a guide block 24 of a thickness equal to the spaced distance of channels 11 and having provided axially therethrough, a pair of drilled holes 25 in vertical alignment with holes 23. A guidepin 26 is horizontally disposed between aligned holes 23, 25 with a coil spring 27 arranged about the pins 26 for urging locking clamp 17 to its farthest outward extension of the device as depicted in FIGS. 2, 3.

Adjacent the outward side of leg 19 is pivotally secured between channels 11 a pass-over center cam device 28 comprising a cam disc 29 with a handle means 30 attached thereto. Disc 29 is initially oriented as shown in FIG. 3, such that its smallest radial edge is in contiguity with the outer side of leg 19 when clamp 17 is at its greatest distance from clamp 12. In this position, handle means 30 is directed upwardly and inwardly as shown in FIG. 3 of the drawings.

To attach the drum hoist device 10 to the drum, the cam handle means 30 is placed in its unlocked or up position. Stationary hook 12 is engaged in the lip of the drum and the strongback 11 is allowed to lie on the drum's outer side. The movable hook 17 is then engaged by pushing cam handle 30 to its locked or down position

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shown in phantom in FIG. 3. As a result of so manipulating handle 30, the largest radial edge of disc 29 is swung into contiguity with leg 19, shown in phantom, thereby sliding clamp 17 inwardly, against springs 27, a distance sufficient for arms 18 to engage the lip of the drum. The device may be installed as described above while the drum is lying on its side or while standing on its end by merely tilting the drum.

A handle bolt 31 may be provided at the fixed clamp 12 end for manually tilting or moving the drum after the device 10 is attached.

For hoisting the drum, as in FIG. 1, a U-bolt 32 is provided along strongback 11 in any conventional manner as by bolt and nut attachment shown. Of course, any number of U-bolts may be positioned along strongback 11 to provide a plurality of lifting points. In addition thereto, a cable-type lifting point may be provided outboard of movable clamp 17 through the provision of an extension, as at 33, of strongback 11 of similar cross-section. This extension is downwardly disposed, as appears in FIGS. 1, 3, so as not to interfere with handle 30 as it is pushed to its downward locking position. At the end of extension 33, provision is made as at 35 for attachment of a cable means 34 thereby providing a second lifting point for the drum hoist beam.

From the foregoing description it becomes apparent that an extremely compact, versatile, easy to handle and inexpensive drum handler has been devised which employs the use of a simple, hand manipulated, pass-over-center cam to lock the drum to the handler. Furthermore, the instant drum hoist facilitates safe handling and pouring of many of the unsalutary materials such as toxic agents since no adjustment need be made for attachment after the cam handle is depressed for locking the device to the drum. In this way, handling personnel are less likely to come in contact with such materials during the pouring and transporting operation.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. A drum hoist beam comprising in combination:
  - a strongback;
  - a fixed drum rim engaging hook at one end thereof;
  - a movable drum rim engaging hook means slidably mounted on the opposite end of said strongback;
  - guide means on the strongback and engaging said movable hook means for limiting the movement of said movable hook means to sliding movement longitudinal of the strongback; and
  - cam means disposed outboard of said movable hook for movement thereof toward said fixed hook whereby said hooks will engage the rims of a drum and clamp the drum to said strongback,

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2. The drum hoist beam of claim 1 wherein said strongback comprises a pair of channel beams disposed in substantially back-to-back relation.

3. The drum hoist beam of claim 2 wherein said clamp means includes a clamp, T-shaped in cross-section, said fixed drum engaging means also being T-shaped in cross-section, the vertical legs of both said clamp and said drum engaging means being disposed between the backs of said channel beams.

4. The drum hoist beam of claim 3 wherein said clamp is provided with at least a pair of longitudinally elongated apertures in its vertical leg for allowing a longitudinal sliding of said clamp toward and away from said fixed drum engaging means.

5. The drum hoist beam of claim 4 wherein said clamp means further includes a guide block and spring means, said guide block being secured between the backs of said channel beams at a predetermined distance inward of said clamp, and said spring means interconnecting said block and said clamp to thereby effect a movement of said clamp away from said fixed drum engaging means after being moved toward said fixed drum engaging means by said cam means.

6. The drum hoist beam of claim 5 wherein said cam means includes a cam disc and a handle wherein a rotation of said disc by said handle will rotate said cam and move said clamp toward said fixed drum engaging means.

7. The drum hoist beam of claim 6 wherein said strongback is provided with at least one lifting point means between said fixed drum engaging means and said clamp and another lifting point means outward of said clamp.

8. The drum hoist beam of claim 7 wherein said one lifting point means comprises a U-bolt with one leg thereof being secured to a flange of each of said channel beams.

9. The drum hoist beam of claim 8 wherein said other lifting point means comprises a cable attached to said opposite end of said strongback.

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