June 14, 1949. A. J. BEVEVINO 2,473,410

DEVICE FOR LIFTING AND TRANSPORTING OBJECTS

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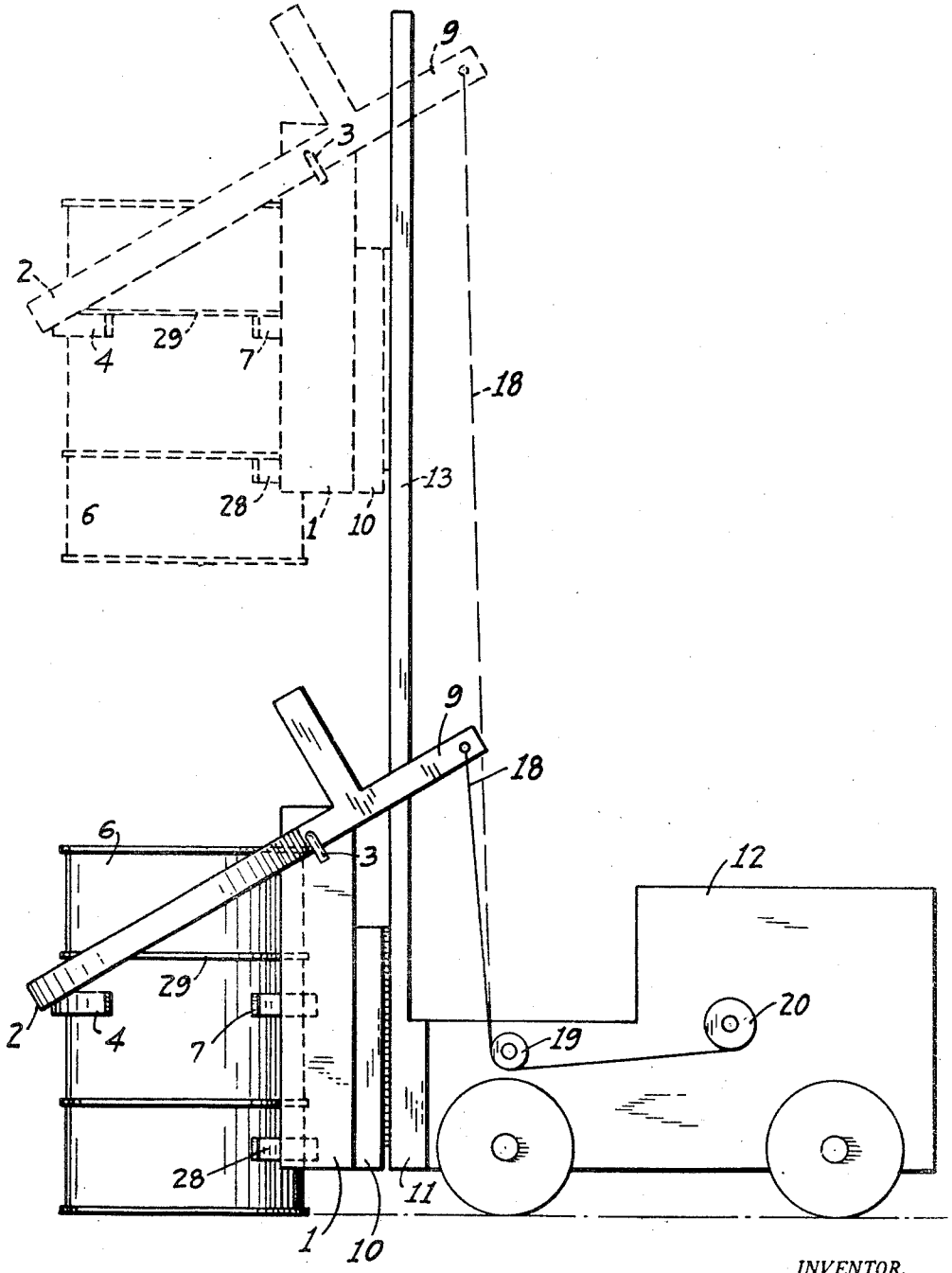


Fig. 1

INVENTOR.
Angelo J. Bevevino
BY
Burgess and Dinklage
Attorneys

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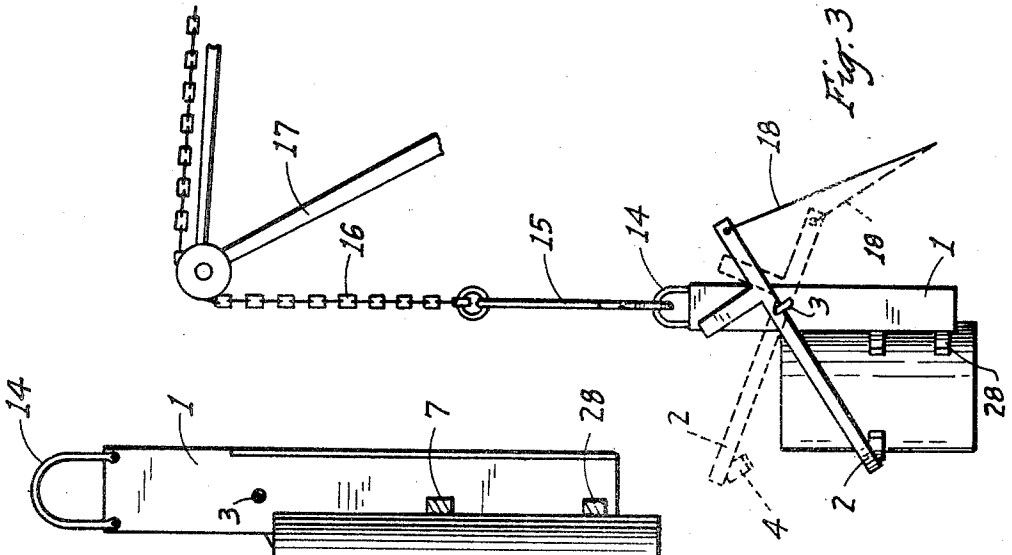


Fig. 3

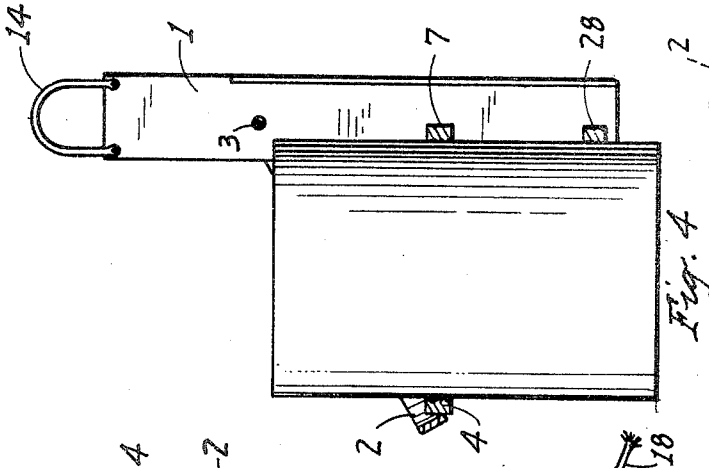


Fig. 4

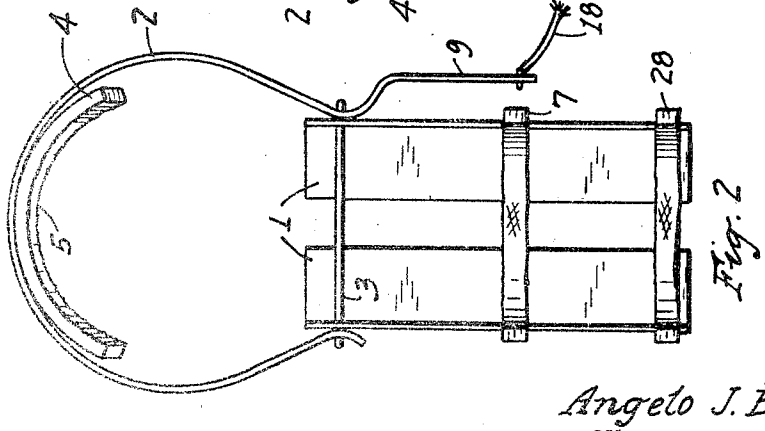


Fig. 2

INVENTOR.
Angelo J. Bevevino
BY
Burgess and Dinkley
Attorneys

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UNITED STATES PATENT OFFICE

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DEVICE FOR LIFTING AND TRANSPORTING OBJECTS

Angelo J. Bevevino, Petrolia, Pa., assignor to L. Sonneborn Sons, Inc., a corporation of Delaware

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8 Claims. (Cl. 214—66)

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This invention relates to new and useful improvements in device for lifting and transporting objects.

One object of the invention comprises, inter alia, a "grab" device useful in connection with the lifting and transporting of objects and particularly the loading and storing of drums.

This and further objects of the invention will appear from the following description read in conjunction with the drawings in which:

Fig. 1 represents a side view illustration of one embodiment of the invention;

Fig. 2 represents a front view of the grab device in accordance with the invention;

Fig. 3 shows an illustration of an alternative embodiment of the invention, and

Fig. 4 is a side view with parts cut away illustrating part of the construction shown in Fig. 3.

Referring to the drawings, 1 indicates a frame carrying an arm 2 in the form of a hoop attached to the frame by way of the pivot 3. A hoop section 4 is carried by the arm or hoop 2 and fittedly supports with its inner surface 5 the drum or other suitable object 6. Frame 1 carries a hoop section 7 which also supports, and preferably fittedly, one side of the drum or object 6 with its inner surface 8. The hoop 2 carries an extension 9 beyond pivot 3. The grab device may be suitably provided with means for attachment to a lifting device. This is for instance illustrated in Fig. 1 by the attachment plug 10 carried by the lifting frame 11 of a lifting and transport truck 12 having a lift extension 13. Alternatively the attachment is illustrated in Figs. 3 and 4 by the hoop arrangement 14 by which the grab device in accordance with the invention is suspended by way of the cable arrangement 15 and chain 16 operable by way of crane arrangement 17 (only partially shown).

In the practical operation of the invention as illustrated, for instance, in Figs. 1 and 2, hoop 2 is raised by way of the line 18 passing over guide roll 19 by the operator by for instance manual pull on the line. Drum 20 is an excess wind-up drum and takes care of whatever slack there may be in the line at any time. Where the difference between the lowest and highest level of the lift is not appreciable, the hoop may be raised and lowered by manual operation of its arm or lever extension, making in such case the line guide drum and winding drum unnecessary. When hoop 2 is raised to the open position as indicated, for instance, in Fig. 2, the truck is brought against the drum 6 or other object to be transported and/or

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lifted so that hoop section 7 fits, with its inner surface, against one side portion of the surface of the drum. An additional hoop section 28 is provided essentially as a guide and also substantially fittedly supports with its inside the drum or other object 6. The operator then lowers hoop 2 by releasing the line 18, the hoop being carried down by its own weight. The hoop section 4 will then, with its inner surface, engage the drum surface substantially opposite to that engaged by the hoop section 7. In this manner a pincer or wedging action occurs. If the operator then actuates the lift portion 11 of the truck, such as a conventional hydraulic lift portion, to thereby move the same to the top of the lift frame or ladder 13, the grab device secured to the lift frame 11 by the attachment block 10 will be transported up the lift ladder 13 and will carry with it the drum or other article 6. The raised position of the grab device and drum is, for instance, indicated in dotted outline in Fig. 1. In order to facilitate movement of the hoop lever 9 the same is preferably substantially counter-balanced against the weight of the hoop 2. If the drum surface is essentially smooth and if the inner surface fit of the hoop sections 4 and 7 respectively is not sufficiently tight, the drum will be grabbed and held beneath its rolling hoops or rings 29. The truck can then transport the lifted drum to any desired location and then deposit the same either at the raised level or at the bottom level, or at any intermediate level, by the mere expedient of lifting the grab hoop 2 by pulling on line 18, thereby releasing the drum.

In the event that the object to be lifted is substantially smooth and has no projections of the type for instance as rolling hoops 29 of the drum, the wedging action between the hoop sections 4 and 7 accentuated by the weight of the drum as it is lifted, can be utilized. It is then, however, desirable to interpose at least on the inside of one of hoop sections 4 and 7, a friction surface which may be either a roughened surface or a surface provided with a suitable friction material.

As will be seen from the foregoing, the invention broadly embraces a device for lifting and transporting objects which comprises first means for supporting one side portion of an object, second means for supporting at least one substantially opposing side portion of such object and secured freely pivotable relative said first means between an object-engaging and an object non-engaging position, third means carried by said first means for attachment to a lifting device, and means for pivoting said second means from one said position to the other said position.

The foregoing description is for purposes of illustration and not of limitation and it is therefore my intention that the invention be limited only by the appended claims or their equivalents wherein I have endeavored to claim broadly all inherent novelty.

I claim:

1. Improvement in device for lifting and transporting objects, which comprises first means for supporting one side portion of an object, second means for supporting at least one substantially opposing side portion of such object and secured freely pivotable relative said first means between an object-engaging and an object non-engaging position, third means carried by said first means for attachment to a lifting device, and means for pivoting said second means from one said position to the other said position.

2. Improvement according to claim 1 in which said first and second means are dimensioned to support substantially opposing side portions of a substantially cylindrical object.

3. Improvement in device for lifting and transporting objects which comprises a frame, at least one first hoop section carried by said frame for fittedly supporting a side portion of a substantially cylindrical object, at least one second hoop section for supporting at least one substantially opposing side portion of said object and secured to at least one arm freely pivotable relative said first hoop section between an object-engaging and object non-engaging position of said second hoop section, means carried by said frame for attachment to a lifting device and means for pivoting said arm from one said position to the other said position.

4. Improvement according to claim 3 in which said first and second hoop sections are, with their upper surfaces, in substantially horizontal plane alignment when said second hoop section is substantially in the engaged position.

5. Improvement according to claim 3 in which at least one of said first and second hoop sections is provided with a friction surface.

6. Improvement in device for lifting and transporting objects, which comprises a frame, at least one first hoop section carried by said frame for fittedly supporting a side portion of a drum, at least one second hoop section for fittedly supporting at least one opposing side portion of such drum, at least one arm carrying said second hoop section and substantially freely pivotable on said frame between a drum-engaging and a drum non-engaging position, means carried by said drum for attachment to the lift of a lift truck, and means for pivoting said arm from one said position to the other said position.

7. Improvement according to claim 6 in which said arm is substantially a hoop and in which said last mentioned means is defined by an extension of said hoop beyond the pivot on said frame forming a lever for lowering and raising said hoop from one to the other said position.

8. Improvement according to claim 7 in which said first and second hoop sections are, with their upper surfaces, in substantially horizontal plane alignment when said second hoop section is substantially in the engaged position and in which a further hoop section is provided on said frame beneath said first hoop section for fittedly supporting the side portion of a drum together with said first hoop section.

ANGELO J. BEVEVINO.

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