

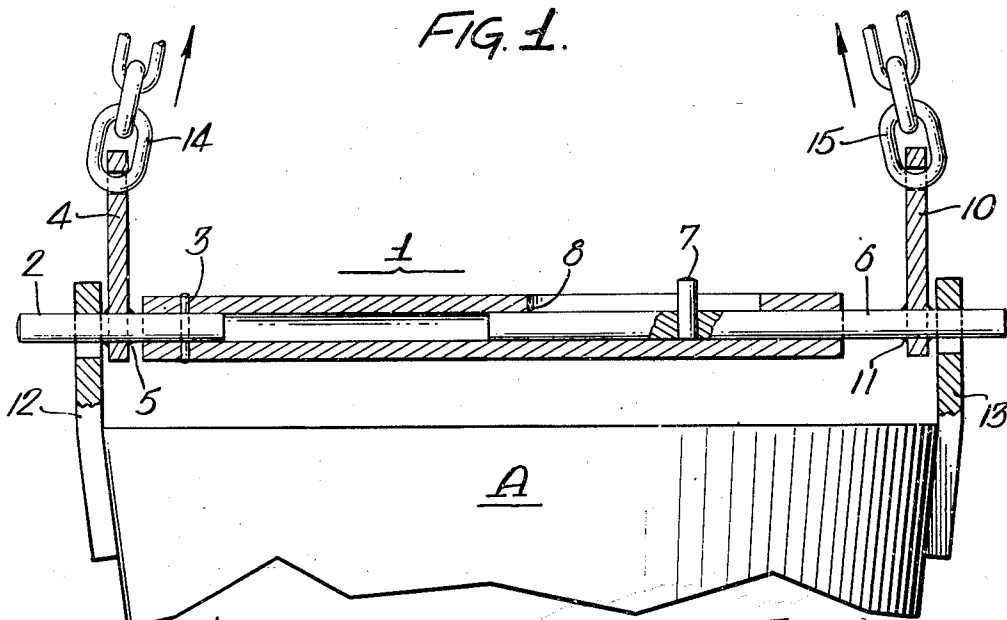
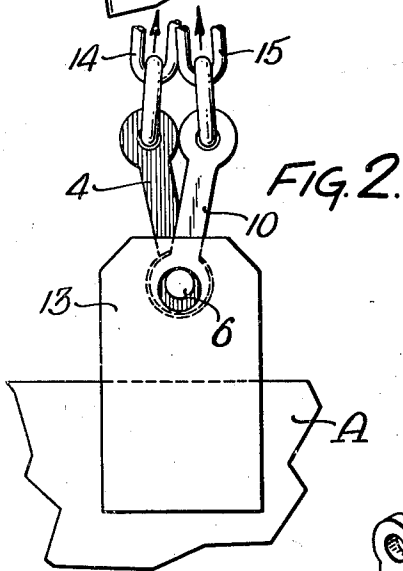
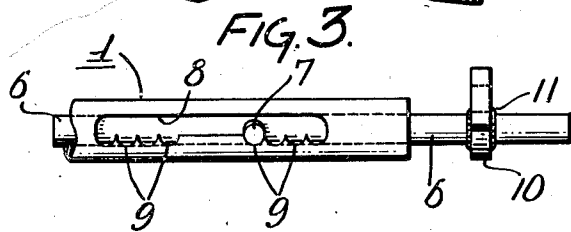
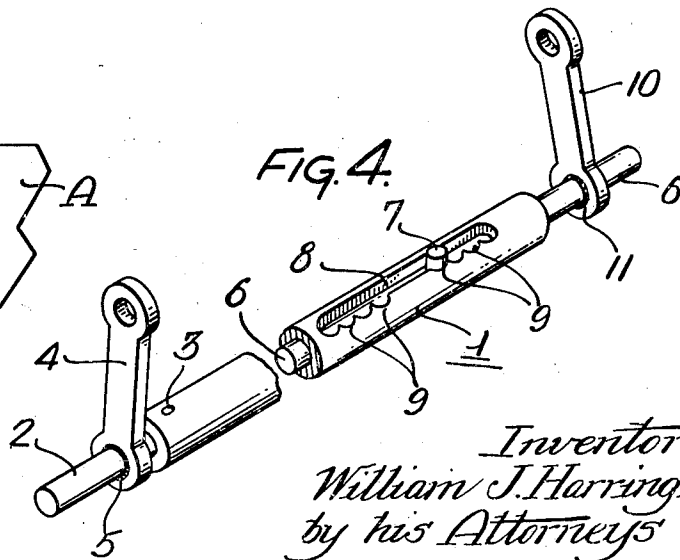
May 24, 1949.

W. J. HARRINGTON

2,471,323

HOISTING AND LIFTING DEVICE

Filed June 25, 1948



Inventor:-
William J. Harrington
by his Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE

2,471,323

HOISTING AND LIFTING DEVICE

William J. Harrington, Coatesville, Pa., assignor
to Lukens Steel Company, Coatesville, Pa., a
corporation of Pennsylvania

Application June 25, 1948, Serial No. 35,273

6 Claims. (Cl. 294—93)

1

This invention relates to new and useful improvements in devices for hoisting or lifting objects, and relates more particularly to an improved lift bar or device which is adjustable according to the size of the object to be lifted or hoisted thereby.

The principal object of the invention is to provide a novel lift device in the form of a bar which is axially extensible or adjustable.

Another object of the invention is to provide a lift device of the type described which embodies novel features of construction operable automatically to lock the device in adjusted position upon the application of lifting forces thereto.

A further object of the invention is to provide an adjustable lift bar device having the features and advantages set forth which is of relatively simplified and inexpensive construction and which is entirely foolproof and efficient in operation and use.

These and other objects of the invention and the various features and details of the construction and operation thereof are hereinafter fully set forth and described with reference to the accompanying drawing, in which:

Fig. 1 is a sectional view showing a lift device made in accordance with the present invention in operative association with a large ladle, mold, bucket or other article being lifted thereby.

Fig. 2 is an end elevational view of the disclosure in Fig. 1 showing the angular relationship of the two support arms of the lift device;

Fig. 3 is a partial view in plan of the lift device showing the manner in which the same is secured in the position to which extensibly adjusted; and

Fig. 4 is a detached view in perspective of the lift bar showing certain details of the construction thereof.

Referring now to the drawing, a lift device made according to the present invention comprises a tubular body member 1. Secured in one end of the tubular body member 1 is a stud 2 which is anchored against endwise displacement from the member 1 by means of a cross-pin 3. The stud 2 projects axially endwise beyond the member 1 a predetermined distance, and secured upon the projecting portion of the stud 2 adjacent the end of the member 1 is an arm or lever 4 which is fixedly secured in a predetermined position circumferentially of the stud 2, for example, by welding 5 or other suitable means.

Telescopically slidable within the other end of the tubular member 1 is a relatively longer bar 6. The bar 6 carries a pin 7 which projects out-

2

wardly through a longitudinal slot 8 in the member 1. The pin 7 is movable longitudinally of the slot 8 and the opposite ends of the latter function as stops to limit the extent of longitudinal movement of the pin 7 and consequently of the bar 6 in which the pin 7 is mounted. One side edge of the slot 8 is provided with a series of recesses 9 of a size and configuration to receive the pin 7 so as to provide an interlock between the bar 6 and tubular member 1 to prevent relative telescopic movement therebetween.

Secured upon the endwise projecting end portion of the bar 6 is an arm or lever 10 which is similar to the arm or lever 4 previously described. The arm or lever 10 is rigidly secured upon the bar 6 in a predetermined position circumferentially thereof, for example, by welding 11 or other suitable means.

An important feature of the invention resides in the disposition of the arms 4 and 10 circumferentially upon the stud 4 and bar 6, respectively, so that the said arms are positioned at an acute angle to one another. Thus, as shown more clearly in Fig. 2 of the drawing, the two arms 4 and 10 are secured upon the stud 2 and bar 6, respectively, so that in the rotational position of the bar 6 in which the pin 7 is disengaged from the recesses 9, the arm 10 will be positioned at an angle of approximately 20° to 25° with respect to the arm 4.

By this construction it will be apparent that upon the application of lifting forces to the arms 4 and 10 the latter, together with its associated bar 6 and pin 7, will be rotated relative to the member 1, stud 2 and its arm 4 to engage and retain the pin 7 in the aligned one of the recesses 9. Furthermore, the angular disposition of the levers 10 and 4, respectively, is such that so long as the pin 7 is engaged in one of the recesses 9 the levers 4 and 10 will be disposed at a small angle with respect to each other so that the lifting forces exerted upon them continuously tend to urge the arms into alignment with the result that a positive force is exerted continuously upon the pin 7 to maintain it engaged within the particular recess 9 of the member 1.

In operation and use of the device, the stud 2 is passed outwardly through the opening in an upstanding ear 12 at one side of a ladle, bucket or other heavy object A to be lifted. The bar 6 is then extended telescopically with respect to the tubular member 1 to engage the outer end portion of said bar 6 through the opening of an oppositely positioned ear 13 of the object A. An upward pull or lifting force is then exerted in the

3

direction of the arrows in Fig. 1 upon chains or the like 14 and 15 connected respectively to the arms 4 and 10, whereupon the arm 10 and its associated bar 6 and pin 7 will be rotated in the counterclockwise direction with respect to Fig. 2 of the drawing relative to the member 1. This causes the pin 7 to be engaged in the aligned one of the recesses 9 so that the bar 6 is effectively and securely locked against axial movement telescopically of the member 1 thus preventing the bar 6 from accidental disengagement from the ear 13 of the object A being lifted.

From the foregoing, it will be apparent that the present invention provides a novel lift device in the form of a bar which is axially extensible or adjustable and which is operable automatically to lock the device in adjusted position upon the application of lifting forces thereto. Furthermore, the invention provides an adjustable lift bar device having the features and advantages set forth which is of relative'y simplified and inexpensive construction and which is entirely foolproof and efficient in operation and use.

While a particular embodiment of the invention has been illustrated and described herein, it is not intended to limit the invention to such disclosure and changes and modifications may be made therein and thereto within the scope of the following claims.

I claim:

1. An adjustable lift device comprising a body member, a stud projecting axially outward from one end thereof, a bar telescopically slidable and rotatable in the other end of the body member and projecting endwise outwardly therefrom, a projection on said bar extending through an elongated longitudinally extending slot in the body member, said slot having recesses therein of a size and configuration to receive said projection for holding said bar against sliding movement, and lift arms fixed on said projection and bar in predetermined positions circumferentially thereof and at an angle with respect to each other whereby lifting forces applied to said arms causes relative rotation thereof toward an in-line position and engages and retains said projection in one of said recesses.

2. An adjustable lift device comprising a body member, a stud projecting axially outward from one end thereof, a bar telescopically slidable and rotatable in the other end of the body member and projecting endwise outwardly therefrom, a projection on said bar extending outwardly through an elongated longitudinally extending slot in the body member, said slot having recesses therein of a size and configuration to receive said projection for holding said bar against sliding movement, and lift arms fixed on said projection and bar in predetermined positions circumferentially thereof and at an angle with respect to each other whereby lifting forces applied to said arms causes relative rotation thereof toward an in-line position and engages and retains said projection in one of said recesses, the angular disposition of said arms in the disengaged position of the projection being greater than the maximum rotational movement of said projection into and out of engagement with a slot recess so that in the engaged position of the projection the arms are angularly disposed with respect to each other and lifting forces exerted thereon tend continuously to exert a positive force upon the projection to maintain it engaged within the slot recess.

4

3. An adjustable lift device comprising a tubular body member, a stud fixedly secured in one end of said member and projecting endwise outwardly therefrom, a bar telescopically slidable and rotatable in the other end of the body member and projecting endwise outwardly therefrom, a pin carried by said bar and projecting radially therefrom outwardly through an elongated slot extending longitudinally in the body member, said slot limiting telescopic sliding movement and rotation of the bar with respect to said body member and having recesses in one side thereof of a size and configuration to receive said pin for holding said bar against sliding movement, and lift arms fixed on said stud and bar in predetermined positions circumferentially thereof at an acute angle with respect to each other whereby lifting forces applied to said arms causes relative rotation thereof toward an in-line position and engages and retains said pin on one of said recesses.

4. An adjustable lift device comprising a tubular body member, a stud fixedly secured in one end of said member and projecting endwise outwardly therefrom, a bar, telescopically slidable and rotatable in the other end of the body member and projecting endwise outwardly therefrom, a pin carried by said bar and projecting radially therefrom outwardly through an elongated slot extending longitudinally in the body member, said slot limiting telescopic sliding movement and rotation of the bar with respect to said body member and having recesses in one side thereof of a size and configuration to receive said pin for holding said bar against sliding movement, and lift arms fixed on said stud and bar in predetermined positions circumferentially thereof at an acute angle with respect to each other whereby lifting forces applied to said arms causes relative rotation thereof toward an in-line position and engages and retains said pin in one of said recesses, the angular disposition of said arms in the disengaged position of the pin being greater than the maximum rotational movement of said pin into and out of engagement with a slot recess so that in the engaged position of the pin the arms are angularly disposed with respect to each other and lifting forces exerted thereon tend continuously to exert a positive force upon the pin to maintain it engaged within the slot recess.

5. In an adjustable lift device, a pair of relatively rotatable and telescopically slidable members, means on one of said members engageable with the other member upon relative rotation of said members in one direction to prevent relative sliding movement of the members, a lift arm associated with one of said members in predetermined relation circumferentially with respect thereto, and a lift arm associated with the other member and disposed at an angle with respect to the first lift arm so that lift forces applied to said arms causes relative rotation thereof toward an in-line position and engages and maintains the means on said one member in engagement with the other member to prevent relative sliding movement of said members.

6. In an adjustable lift device, a pair of relatively rotatable and telescopically slidable members, means to limit relative sliding and relative rotational movement of said members, means on one of said members engageable with the other member upon relative rotation of said members in one direction to prevent relative sliding movement of the members, a lift arm associated with one of said members in predetermined relation

5

circumferentially with respect thereto, and a lift arm associated with the other member and disposed at an angle with respect to the first lift arm so that lift forces applied to said arms causes relative rotation thereof toward an in-line position and engages and maintains the means on said one member in engagement with the other member to prevent relative sliding movement of said members, the angular disposition of said arms in the disengaged position of said means 10 being greater than the maximum rotational

6

movement of said means into and out of engagement with the said other member so that in the engaged position of said means with the other member the arms are angularly disposed with respect to each other and lifting forces thereon tend continuously to exert a positive force upon the means to maintain it engaged with said other member.

WILLIAM J. HARRINGTON.

No references cited