

Jan. 19, 1954

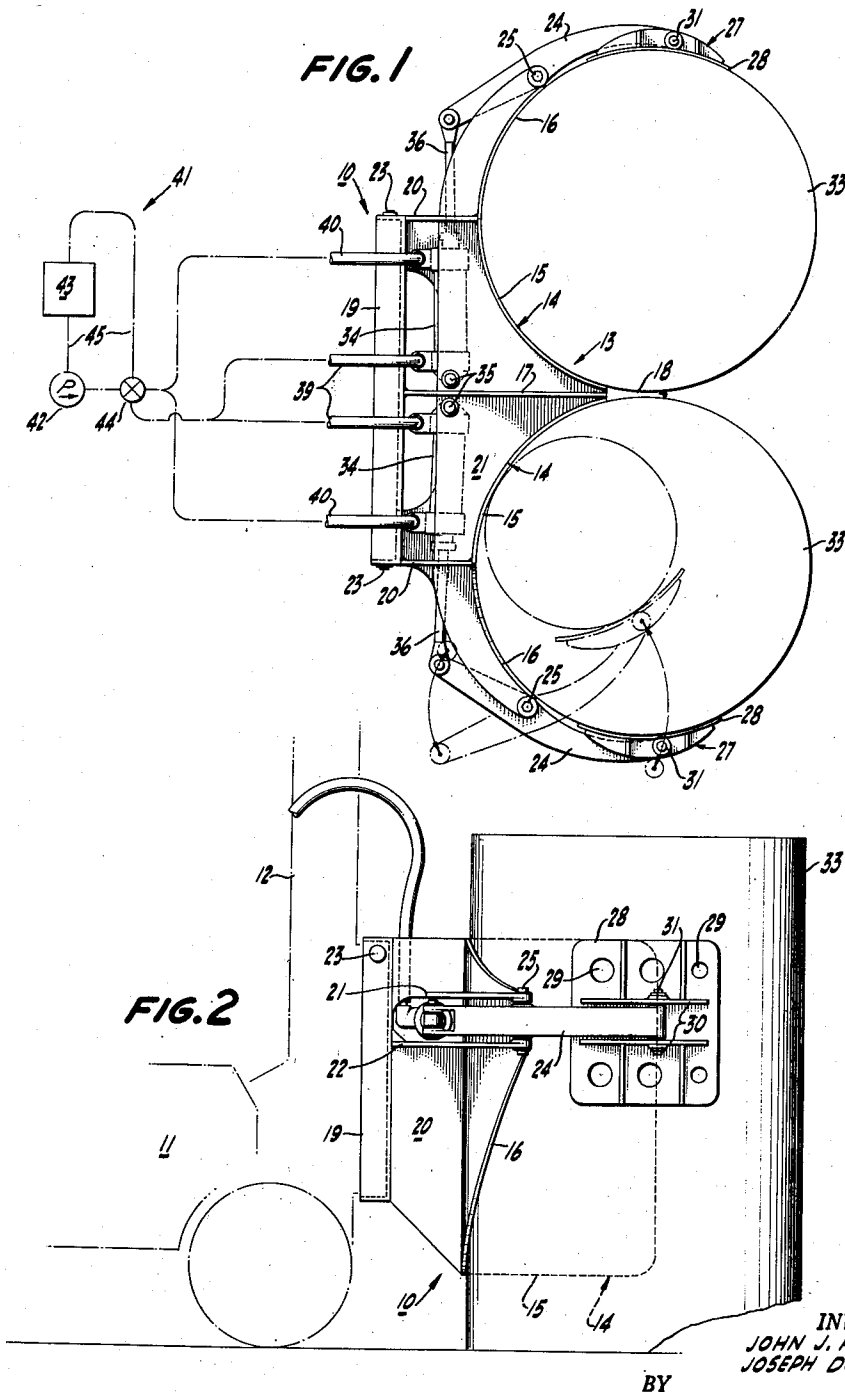
J. J. FERRARIO ET AL

2,666,541

APPARATUS FOR LIFTING CYLINDRICAL OBJECTS

Filed Jan. 6, 1950

2 Sheets-Sheet 1



INVENTORS
JOHN J. FERRARIO
JOSEPH DONDERO

BY

Mellin & Hansson
ATTORNEYS

Jan. 19, 1954

J. J. FERRARIO ET AL

2,666,541

APPARATUS FOR LIFTING CYLINDRICAL OBJECTS

Filed Jan. 6, 1950

2 Sheets-Sheet 2

FIG. 3

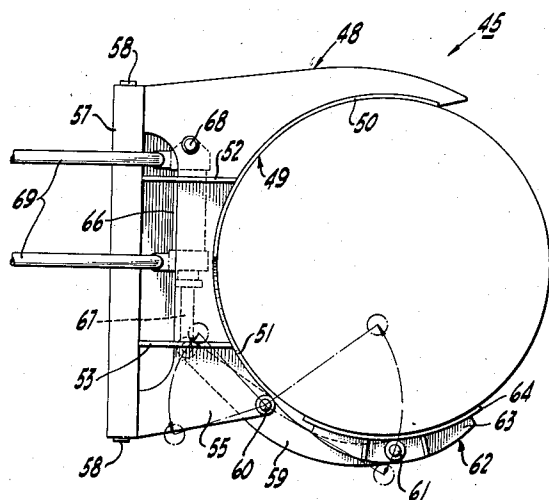
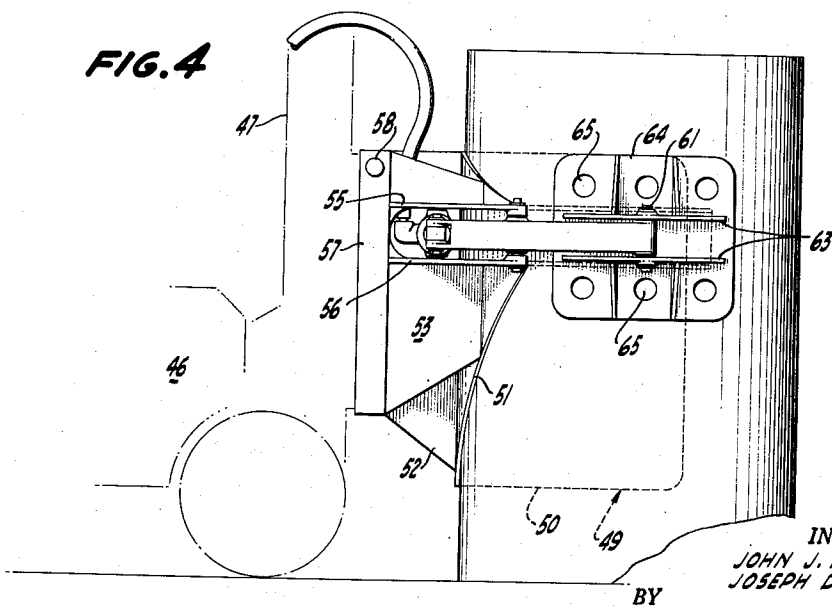


FIG. 4



INVENTORS
JOHN J. FERRARIO
JOSEPH DONDERO

BY

Mellin & Hanser
ATTORNEYS

UNITED STATES PATENT OFFICE

2,666,541

APPARATUS FOR LIFTING CYLINDRICAL OBJECTS

John J. Ferrario, San Francisco, and Joseph Dondero, San Anselmo, Calif.

Application January 6, 1950, Serial No. 137,218

1 Claim. (Cl. 214—655)

1

This invention relates to an apparatus for lifting cylindrical objects. More particularly, it relates to a lifting device adapted to be mounted on a standard lift truck as an accessory thereto and which is operable to lift and transport rolls of paper or other heavy cylindrical objects.

This application is a continuation-in-part of our copending application Serial No. 749,312, filed May 20, 1947, now Patent No. 2,497,118, granted February 14, 1950, entitled "Apparatus for Lifting Cylindrical Objects."

It is an object of this invention to provide apparatus of the character and for the purpose described, which is simple in its operation and which is also flexible, being capable of handling rolls of paper of different diameters.

It is a further object of the invention to provide apparatus of the character and for the purpose described, which is easily mounted on the boom of a standard lift truck and which is capable of lifting and transporting heavy rolls of paper or other heavy cylindrical objects.

It is a still further object of the invention to provide apparatus of the character and for the purpose described which is operable hydraulically.

These and other objects of the invention will be apparent from the ensuing description and the appended claim.

Certain forms which the invention may assume are exemplified in the following description and illustrated by way of example in the accompanying drawings in which:

Fig. 1 is a top plan view of one form of apparatus adapted to lift and transport a pair of paper rolls.

Fig. 2 is a side elevation of the same.

Fig. 3 is a top plan view of a modified form of apparatus adapted to lift and transport a single paper roll.

Fig. 4 is a side elevation of the same.

Referring now to Figs. 1 and 2 of the drawings, the device there shown is designated generally as 10 and it is shown mounted on a standard lift truck designated as 11 and having the usual telescoping boom 12. The apparatus comprises a centrally located, fixed double jaw 13 which is formed by two identical curved plates or sheets 14 of circular radius, each having an inner portion 15 of relatively large area and an outer tapered portion 16 of lesser area. A center plate 17 is provided which is disposed centrally between the plates 14, and a shoe 18 is welded to the outer end of the center plate 17 and to the plates 14. The plates 14 are mounted on and firmly fixed to a rectangular frame 19 by means

2

of vertical side plates or brackets 20, the center plate 17 and horizontal brackets 21 and 22. The frame 19 is adapted to be mounted on the boom 12 of a lift truck, as by means of pins or bolts 23.

Outer, movable jaws are provided by means of arms or levers 24, each of which is pivotally supported on a vertical pivot pin 25 carried by the brackets 21 and 22, and at its outer end each arm 24 is provided with a shoe 27 formed of a curved plate 28 having holes 29 and a web 30. The shoe 27 is mounted on a vertical pivot pin 31. The plate 28 preferably has a circular radius and the purpose of the holes 29 is to break suction between the shoe and a roll of paper indicated at 33, whenever it is desired to release the roll of paper.

For the purpose of operating the arms 25 a pair of double acting cylinders 34 are provided, one for each of the arms 25. Each cylinder 34 is pivotally mounted upon a pivot pin 35 and is connected to its arm by means of a rod 36. Fluid pressure lines 39 and 40 are provided for operating the cylinders 34. An hydraulic circuit indicated generally at 41 is provided, comprising a pump 42, a reservoir 43, a valve 44 and communicating lines 45.

In operation, the lift truck 11 is manipulated so that the central fixed jaws approach and contact a pair of paper rolls or the like with the shoe 18 disposed therebetween. It will be seen that the smooth, wedge-shaped contour of the shoe 18 will guide the central jaws between a pair of adjacent rolls without the necessity of moving them apart. Meanwhile, of course, by appropriate control of the valve 44 the arms 25 will be pivoted outwardly so that they and the shoes 27 will clear the rolls. Thereafter the valve 44 will be manipulated to pivot the arms 25 inwardly and to bring the shoes 27 into firm contact with the rolls. Hydraulic pressure is then held in the cylinders 34 while the lift truck is operated to elevate or lower the rolls as desired and to transport the rolls.

Referring now to Figs. 3 and 4, there is shown a simple form of apparatus adapted to handle a single roll. The apparatus is generally designated as 45, and it is shown as being mounted on a lift truck 46 having a boom 47. The apparatus comprises a single fixed jaw 48 formed by a plate 49 of cylindrical contour comprising an outer section 50 of greater area and an inner tapered section 51 of lesser area. The plate 49 is fixed by means of vertical brackets 52 and 53 and horizontal brackets 55 and 56 to a rectangular frame 57 which may be mounted on the boom 47, as by means of bolts or coupling pins 58.

3

A movable jaw is provided by means of an arm 59 which is pivotally mounted on a pivot pin 60 extending through the arm and through the brackets 55 and 56. At its outer end the arm 59 is pivotally connected by a pivot pin 61 to a shoe 62 formed by a web 63 and a curved plate 64. The plate 64 is formed with suction-breaking openings 65, as illustrated.

At its inner end the arm 59 is connected to a double acting cylinder 66 by means of a rod 67. The cylinder 66 is pivotally mounted on a pin 68 and is provided with fluid pressure lines 69.

In operation, this form of apparatus is employed similarly to that of Figs. 1 and 2. A detailed description of operation is unnecessary in view of the description of operation of the apparatus of Figs. 1 and 2.

It will be apparent that most of the advantages provided by the apparatus of Figs. 1 and 2 are also provided by that of Figs. 3 and 4. The apparatus of Figs. 3 and 4 is adapted to handle only a single roll, but in many instances this is sufficient and the device is of lighter, simpler construction.

It will therefore be apparent that a novel form of lifting device is provided which is readily mounted upon a standard lift truck and which constitutes an accessory therefor. In one of its forms, the apparatus is adapted to handle a pair of rolls and in another form, a single roll. Both embodiments are hydraulically operable to firmly grip and support a roll of paper or the like, and they are flexible, being operable to handle rolls of greatly varying diameter.

While we have shown the preferred form of our invention, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claim.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

Lifting apparatus of the character described,

4

comprising a pair of cylindrical plates arranged in side-by-side relationship and constituting a pair of fixed, inner jaws each adapted to encompass and grip one side of a roll of paper, a frame adapted to be mounted on the boom of a lift truck, spaced outer plates each extending between and fixed to the central portion of one of the cylindrical plates and to one side of the frame, a central, vertical plate disposed symmetrically between said cylindrical plates fixed at one end thereto and at the other end to said frame, a wedge-shaped shoe fixed to the outer end of said central plate and to the adjacent ends of said cylindrical plates, a pair of spaced, horizontal brackets supported rearwardly of each said cylindrical plate, an arm mounted on a vertical fulcrum between each pair of horizontal brackets, a shoe pivotally mounted at the outer end of each said arm adapted to encompass and grip the opposite side of a roll of paper, a double-acting hydraulic cylinder pivotally mounted between each pair of horizontal brackets, and means operatively connecting each said cylinder with an arm to operate the latter.

JOHN J. FERRARIO.
JOSEPH DONDERO.

References Cited in the file of this patent UNITED STATES PATENTS

Number	Name	Date
1,346,160	Barlow	July 13, 1920
1,490,235	Smith et al.	Apr. 15, 1924
1,717,194	Daoust	June 11, 1929
1,900,569	Lederer	Mar. 7, 1933
2,178,369	Dunham	Oct. 31, 1939
2,412,845	Stevens	Dec. 17, 1946
2,475,367	Avery	July 5, 1949
2,497,118	Ferrario et al.	Feb. 14, 1950
2,509,023	Vogel et al.	May 23, 1950
2,512,409	Adde	June 20, 1950
2,554,433	Warren	May 22, 1951
2,596,477	Frischmann et al. --	May 13, 1952