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R. J. CARPENTER
PAPER ROLL HANDLING ATTACHMENT FOR
INDUSTRIAL ELEVATING TRUCKS

2,775,359

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2 Sheets-Sheet 1

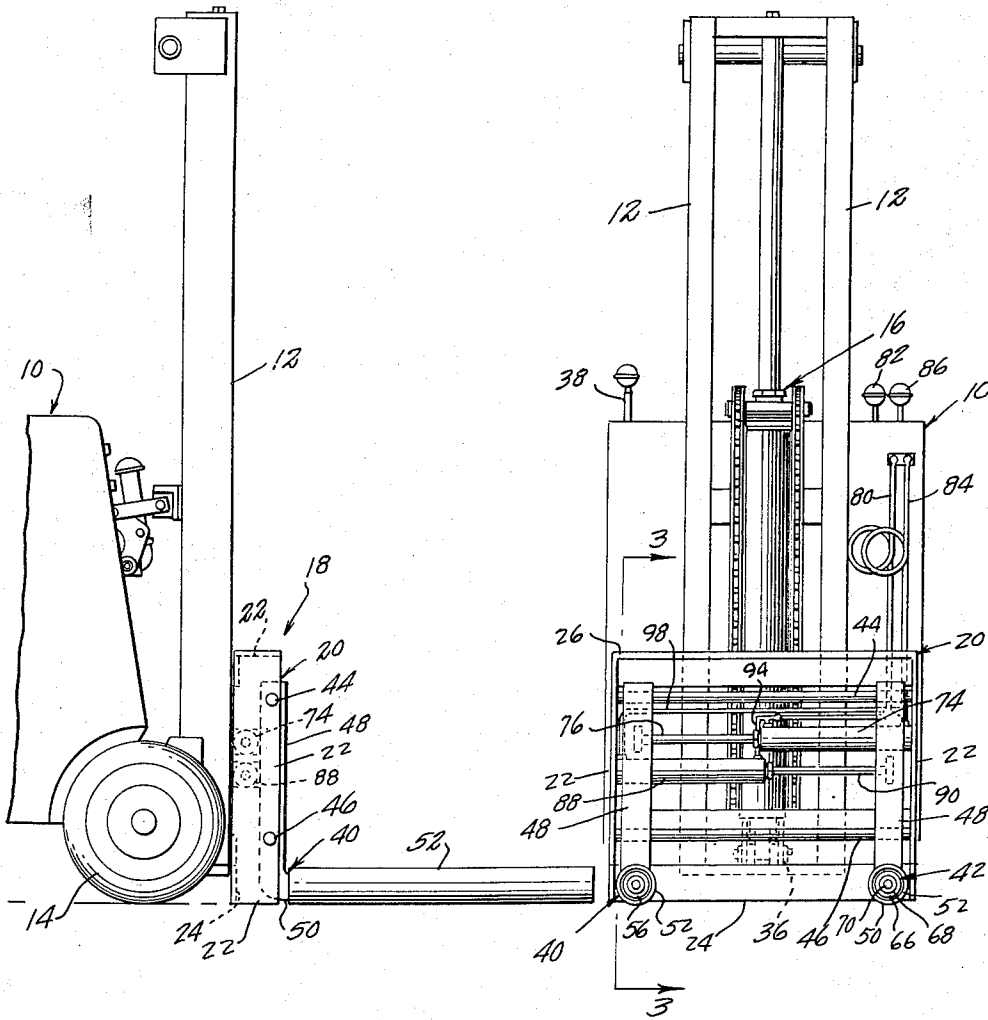


FIG. 1.

FIG. 2.

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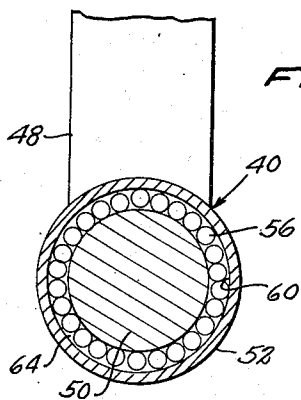
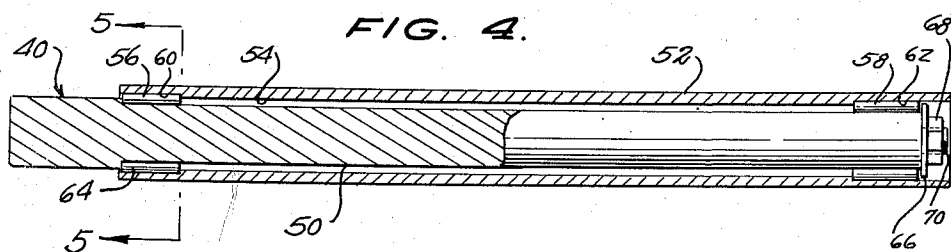
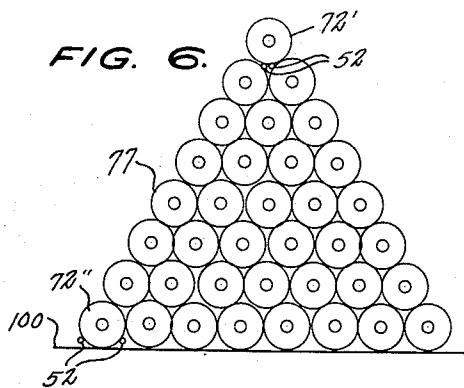
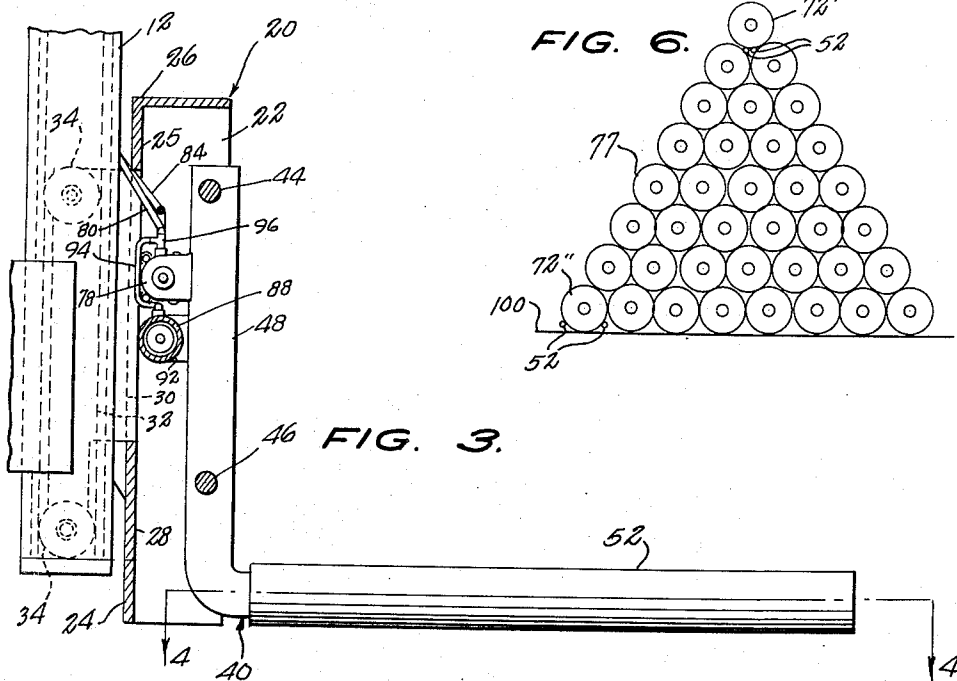
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PAPER ROLL HANDLING ATTACHMENT FOR INDUSTRIAL ELEVATING TRUCKS

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Application July 22, 1955, Serial No. 523,654

1 Claim. (Cl. 214—653)

This invention relates to industrial elevating trucks of the fork lift type used for picking up loads transporting loads at elevated levels and stacking the loads in a selected manner, and more particularly to an attachment for such trucks particularly adapted for handling large paper rolls.

It is the principal object of this invention to provide an attachment of the character indicated above for handling paper rolls which may be readily installed with a minimum of modification of the truck structure and which will effectively and safely grip large rolls of paper so as to transport the same without damage thereto, from one place to another, stack the rolls in a prescribed manner, and remove the rolls from the stacks.

The above and other objects are attained by employing this invention which embodies among its features, an attachment for handling paper rolls for use with an industrial elevating truck of the type having spaced upstanding elevator guides and an elevating means associated with the guides, the attachment comprising an upstanding elevator mounted on the guides for vertical movement therealong and operatively connected to the elevating means, paper roll supporting rollers mounted on the elevator for movement toward and away from each other to grip paper rolls therebetween when moved toward each other and to release rolls when moved away from each other, and means on the elevator and operatively connected to the rollers to move them toward and away from each other.

Other objects and advantages will become apparent from a consideration of the following detailed description, forming the specification, and taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a fragmentary side elevational view of the forward portion of an industrial elevating truck showing an attachment embodying this invention installed thereon;

Figure 2 is a front elevational view thereof;

Figure 3 is an enlarged cross sectional view taken substantially along line 3—3 of Figure 2 and looking in the direction of the arrows;

Figure 4 is an enlarged cross sectional view through one of the rollers taken substantially along line 4—4 of Figure 3;

Figure 5 is an enlarged cross sectional view taken along line 5—5 of Figure 4 and looking in the direction of the arrows; and

Figure 6 is an end elevational view of a stack of paper rolls showing the manner in which the paper roll supporting rollers may be associated with the paper rolls in the stack.

With continued reference to the drawings, the forward portion of an industrial elevating truck of the fork lift type, generally indicated 10, has a pair of spaced, vertical elevator guides 12 at the front end thereof and between the front steerable wheels 14 of the truck. The truck has a conventional elevating means, generally indicated at 16, which is shown as of the hydraulically

operated type, and which is associated with the elevator guides.

The illustrated attachment embodying this invention is generally indicated at 18, and comprises an upstanding frame 20 of rectangular form. The frame 20 has spaced parallel side plates 22, a vertical bottom plate 24 extending therebetween and connected to plates 22 at their rear edges and an angle iron top bar 26 connected at its opposite to the top ends of the side plates 22 and extending therebetween.

As shown in Figure 3, an intermediate vertical plate 28 extends between the side plates with its lower longitudinal edge engaged with the upper edge of the bottom plate 24, and is secured thereto by any suitable means.

A vertical plate 30 extends between the sideplates 22 and between the lower edge of the vertical flange 25 of the top bar 26 and the upper edge of the intermediate plate 28 and has side flanges 32 extending perpendicularly and rearwardly therefrom toward the guides 12 at opposite ends of the support plate 30. Vertically spaced pairs of upper and lower wheels 34 and 35 are rotatably mounted on the outer sides of the side flanges 32 and ride in the channels of the elevator guides 12. The elevating means 16 is operatively connected to the frame 20 adjacent the lower end thereof and to the bottom plate 24, as at 36, so that upon operation of the elevating means 16, the frame 20 will be raised or lowered, through the operation of a conveniently disposed operating handle 38 on the truck 10.

A pair of L-shaped arms, generally indicated at 40 and 42 respectively are mounted on the frame 20 for movement crosswise of the frame and are mounted on vertically spaced transverse guide rods 44 and 45 extending between the side plates and passing through the vertical portions 48 of the arms 40 and 42. As shown in Figure 4, the horizontally extending portion 50 of each of the arms 40 and 42 projects forwardly. Tubular rollers 52 are bored longitudinally to rotatably engage on the horizontal portions 50. Anti-friction bearings 56 and 58 are interposed between the roller 52 and the horizontal portion of each arm adjacent opposite ends of the roller to permit free rotation of the roller about the horizontal portions 50. It will be noted that the bores 54 of the rollers 52 are provided with annular recesses 60 and 62 adjacent opposite ends thereof in which the bearings 56 and 58 are seated. Also, the portion 50, as shown in Figure 4, is reduced in diameter from a point adjacent to the vertical portion 48 to a point adjacent to its free end so as to provide a stop shoulder 64 against which the anti-friction bearing 56 is engaged against endwise movement and maintained in its recess 60.

At the free ends of the horizontal portions 50, are bearing stop washers 66 secured to the free end of the horizontal portion by a nut 68 bearing thereagainst and threadedly received upon a reduced diameter stud 70. This washer 66 bears against one end of the anti-friction bearing 58 to prevent endwise movement thereof and to maintain the bearing 58 in its recess 62.

Means are provided on the frame 20 for moving the arms 40 and 42 and consequently the rollers 52, crosswise of the frame 20 toward and away from each other whereby a large roll 72 of paper may be gripped between the rollers as they move toward each other, and released therefrom as the rollers are moved away from each other.

The means whereby the rollers 52 are moved toward and away from each other comprises an upper horizontal hydraulic cylinder 74 of the double acting type having one end secured to one of the side plates 22 and having a piston rod 76 secured at its free end to a rearwardly projecting ear 78 formed on the vertical portion 48 of the arm

40. A hydraulic fluid conducting line 80 leads from a source of hydraulic pressure commonly associated with the truck 10 to the end of the cylinder remote from the end secured upon the side plate 22 and, selectively operable valve handle 82 is mounted at a convenient location on the truck 10. A second hydraulic fluid conducting line 84 is also operatively associated with the source of hydraulic fluid pressure (not shown) normally associated with the truck 10 and leads to the opposite end of the hydraulic cylinder 74, so as to be in communication with the interior thereof. The line 84 is selectively controllable by a conveniently disposed valve handle 86 mounted on the truck 10 adjacent the handle 82. Hence, by selective operation of the handles 82 and 86, the arm 40 may be moved transversely of the frame 20 along the guide rods 44 and 46.

Similarly, a lower horizontal hydraulic cylinder 88 has one end thereof secured to the side plate 22 opposite to the side plate on which the cylinder 74 is mounted and extends perpendicularly therefrom toward the opposite side of the frame 20. The operating piston rod 90 of the cylinder 88 projects longitudinally therefrom and has its free end secured to the upstanding or vertical portion 48 of the arm 42 intermediate its ends and below the cylinder 74 by attachment to a rearwardly projecting ear 92 carried on the upstanding portion 48, as shown in Figure 3. The hydraulic fluid line 80 is interconnected with the interior of the cylinder 88 by a flexible hose connection 94 extending between a suitable connecting member 96 on the forward end of the cylinder 74 and communicating with the interior of the cylinder 88 through a suitable fitting thereon adjacent its end remote from the end secured upon the side plate 22. Thus, the cylinders 74 and 88 may be simultaneously operated by selective operation of the handle 82. The end of the cylinder 88 remote from the end having the connection with the hose 94 is interconnected into the line 84 by a flexible hose 98 which is in communication at its opposite ends with the line 84 through a suitable fitting and with the interior of the cylinder 88 adjacent its end secured to the side plate 22 at its other end. Therefore, by actuation of the handle 86, the arms 40 and 42 may be moved simultaneously in the opposite directions.

In operation, the truck 10 having been moved to a location at which it is desired to pick up a roll 72 of paper, and to transport the roll to another location, and the frame 20 being in a depressed position, the arms 40 and 42 are moved away from each other so that the rollers thereon will straddle opposite longitudinal sides of the roll. The hydraulic cylinders 74 and 88 are then actuated by means of the valve handles to move toward each other and into contact with the opposite sides of the paper roll adjacent the floor or other surface upon which the paper roll rests. As soon as the rollers 52 make contact with opposite sides of the paper roll to be lifted, the elevating mechanism 16 can be actuated and the paper roll lifted to the desired height along the elevator guides 12. The paper roll can then be transported to the desired location, the elevator means actuated to lower the frame 20, and the rollers 52 separated to deposit the roll at the desired location.

As shown in Figure 6, if it is desired to remove a paper roll 72 from the top of a stack of paper rolls, the rollers 52 are brought into close side by side relation and elevated to the required height so that upon forward movement of the truck, the rollers will move into the spaces between the bottom of the top roll 72'. The rollers are then moved

toward each other and thereby lift the paper roll 72. It will be noted that the rollers can accomplish this since they are free to rotate about their longitudinal axes without causing damage to the paper rolls therebeneath.

When the rollers 52 have been separated to the extent that the paper roll 72' is cradled in the space therebetween and supported on the rollers, the elevating mechanism of the truck can be actuated to lift the paper roll 72 from the stack and remove it therefrom. Thereafter the paper roll 72' can be transported to any other desired location.

Also, as shown in Figure 6, where it is desired to stack paper rolls 72, the endmost paper roll 72' of the stack is placed upon the floor 100 or other similar supporting surface, in the manner hereinbefore set forth and the rollers 52 withdrawn by moving the truck rearwardly so that the paper roll will be deposited at the location desired. Subsequent paper rolls 72 may then be placed by continued operation of the truck and 10 and the frame 20 and with the rollers on the arms 40 and 42 to complete the positioning of the other paper rolls.

In placing subsequent layers of paper rolls 72 upon a lower layer, it will be noted that the rollers 72 may be withdrawn from the stack through the spaces between upper rolls and lower rolls in the stack.

While there is shown and described the preferred embodiment of the invention, it is to be understood that the structure is susceptible to change and modification within the practicability of the invention and therefore should be limited only by the scope of the claim appended hereto.

What is claimed is:

In a lift truck, a truck body having a forward end, a pair of laterally spaced vertical guides fixed on said forward end, elevating means on said body extending forwardly therefrom, a vertical frame in front of and extending between said guides and operatively connected to said elevating means for vertical movement along said guides, said frame having laterally spaced vertical side plates, upper and lower guide engaging means on said side plates supportably engaging said guides, a pair of L-shaped arms having vertical portions and horizontal portions extending forwardly from said vertical portions, upper and lower guide rods in said frame extending between and secured to said side plates, said vertical arm portions being slidably supported on said guide rods for movement therealong, a pair of horizontal hydraulic cylinders each fixed at one end thereof to a related frame side plate and having a piston rod extending from its other end and secured to the vertical portion of one of said arms, and hydraulic actuating means severally connected to the hydraulic cylinders and operable to move said arms individually crosswise of the frame and toward and away from each other, said horizontal portions of the arms having rotatable tubular cylindrical rollers journaled longitudinally thereon.

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