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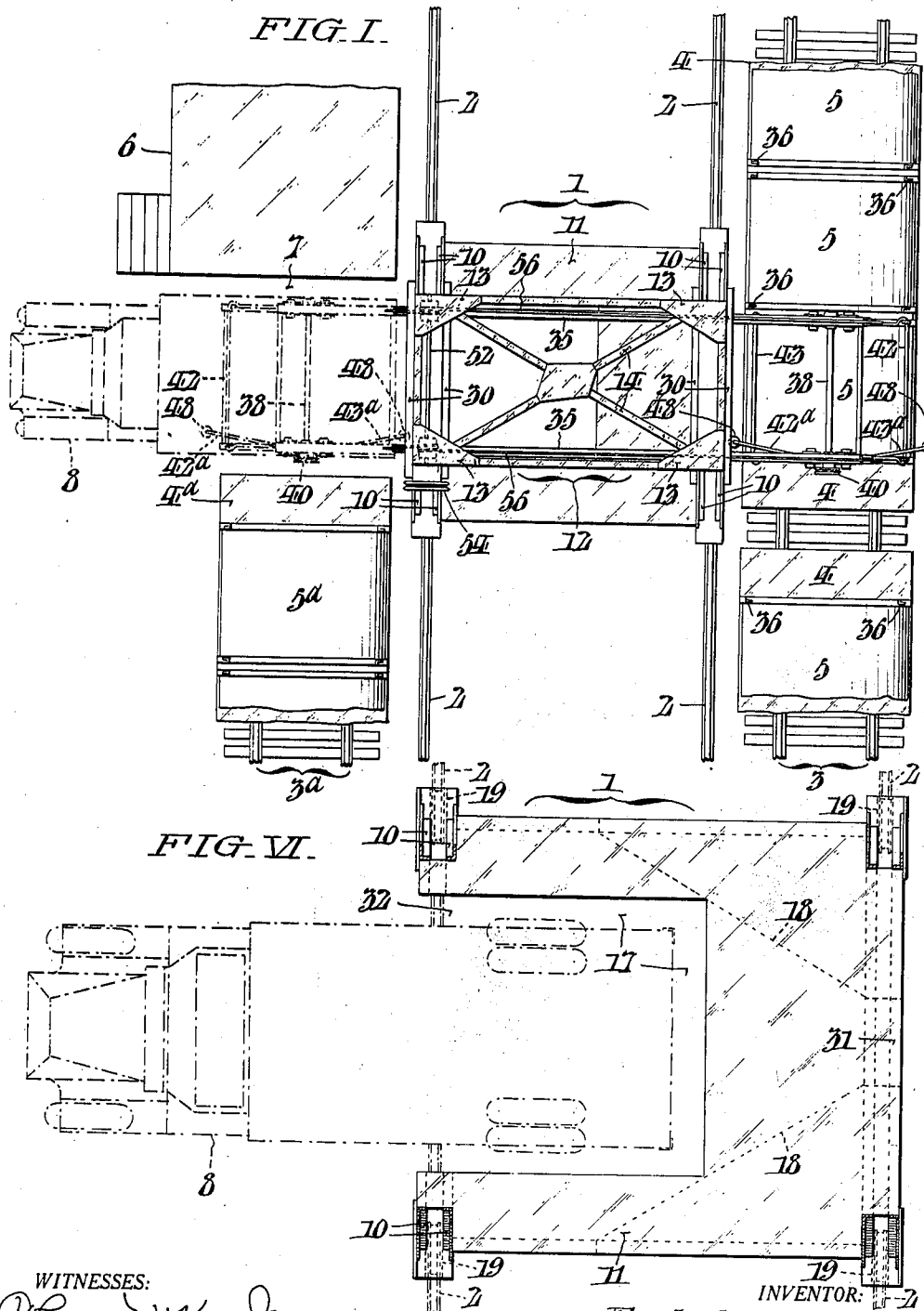
F. K. FILDES

1,990,539

CONTAINER TRANSFER APPARATUS

Filed July 28, 1933

4 Sheets-Sheet 1



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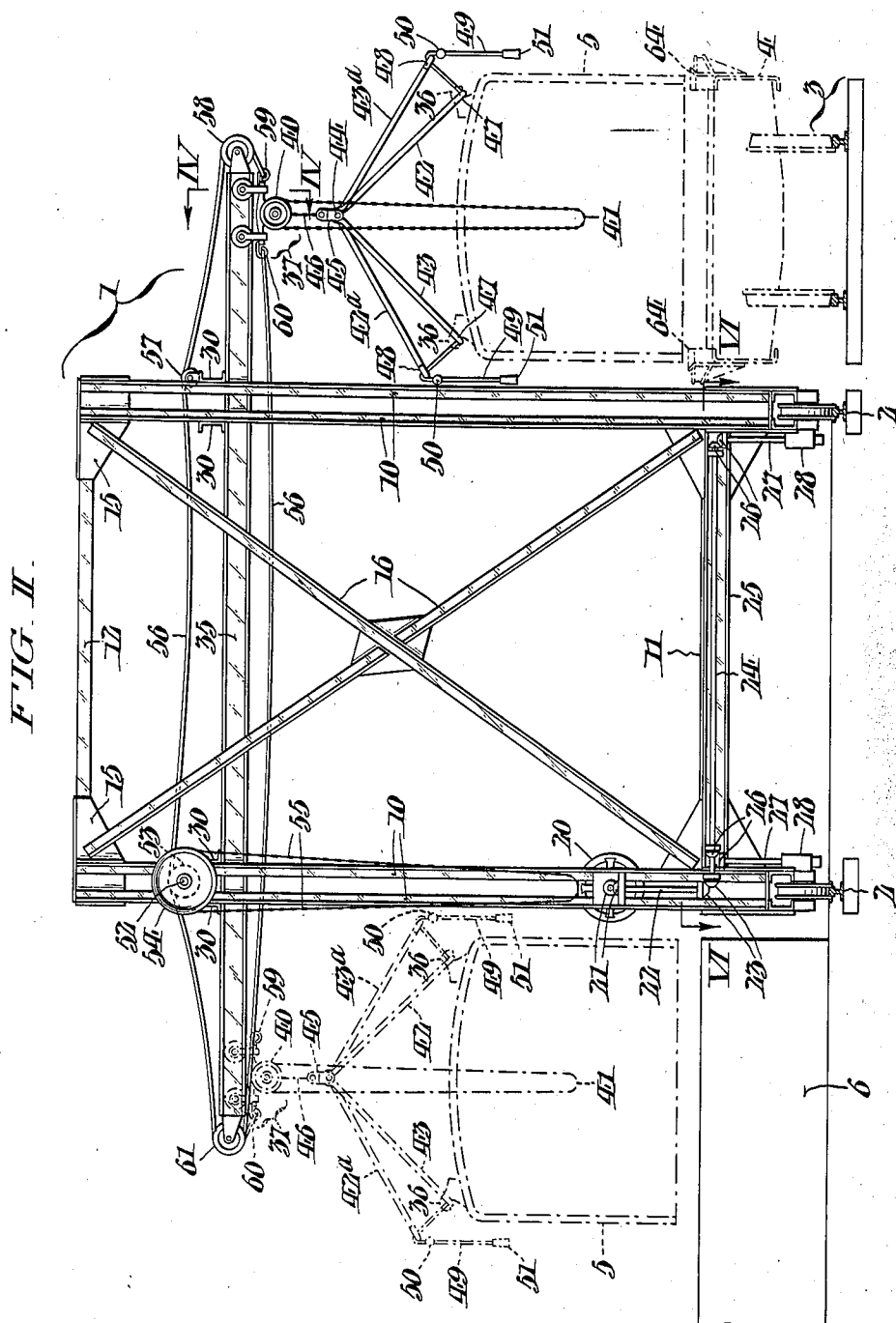
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4 Sheets-Sheet 2



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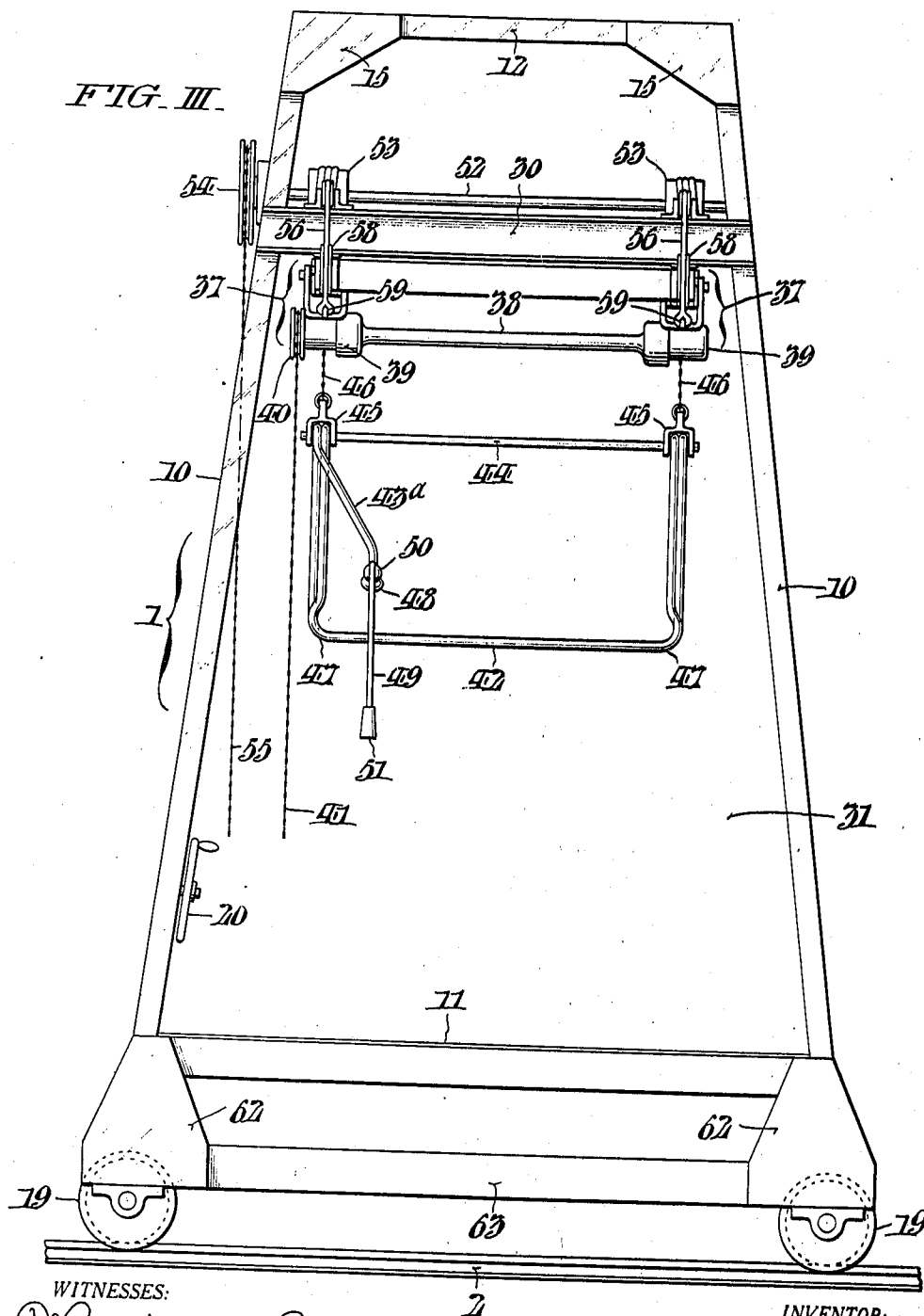
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4 Sheets-Sheet 3



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4 Sheets-Sheet 4

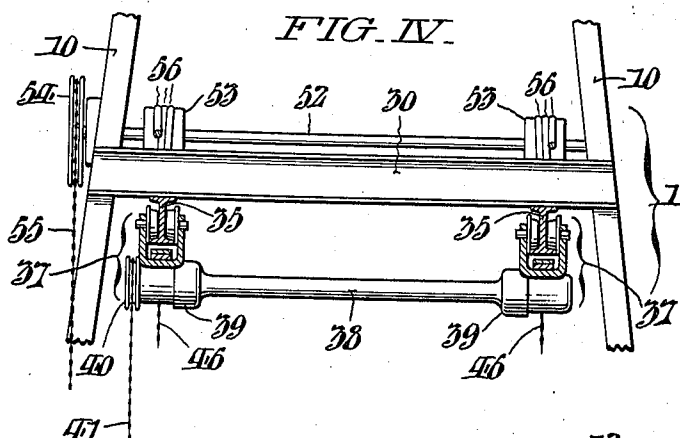
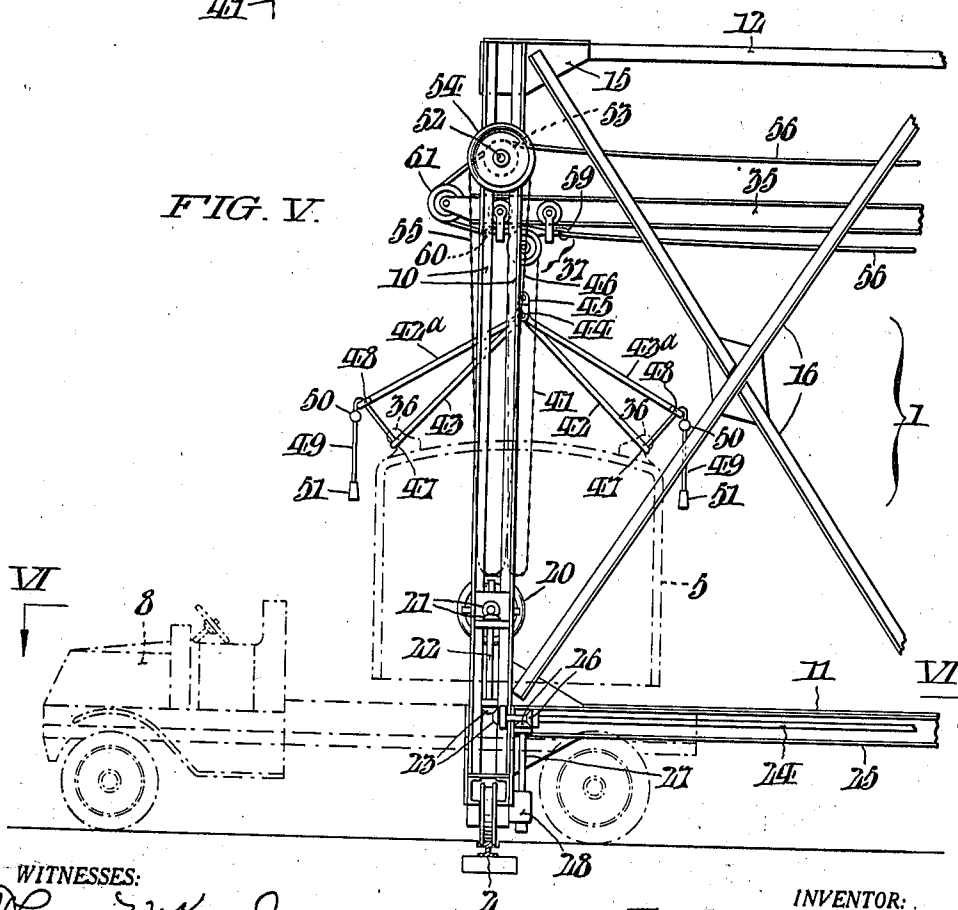


FIG. V.



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UNITED STATES PATENT OFFICE

1,990,539

CONTAINER TRANSFER APPARATUS

Frederick K. Fildes, Altoona, Pa.

Application July 28, 1933, Serial No. 682,638

4 Claims. (Cl. 212—15)

This invention relates to apparatus for transferring railway containers or like objects from one platform to another, as from railway car to railway car, from car to truck, from car to station-
5 ary platform, or vice versa, the invention being particularly useful at stations where cranes or other container handling facilities are not available.

The principal object of the invention is to provide simple and inexpensive means for shifting a container from one platform to another, such transfer means being readily movable to the desired position alongside a container vehicle or a station platform, and constituting a unit complete in itself and not dependent for its operation upon special car, truck, or station platform equipment.

Other more specific objects and advantages characterizing my invention will become more fully apparent from the description hereinafter set forth of one embodiment or example thereof, the description having reference to the accompanying drawings, whereof:

Fig. I represents a plan view of transfer apparatus of my invention showing a typical arrangement of station platform, railway track and truck runway to which the invention is well adapted.

Fig. II represents an enlarged side elevation of the transfer apparatus operating to shift containers between a railway car and a station platform.

Fig. III represents an enlarged end elevation of the transfer apparatus.

Fig. IV represents a cross section of the transfer apparatus, taken as indicated by the arrows IV—IV of Fig. II.

Fig. V represents an enlarged side elevation of the transfer apparatus operating to shift containers between a railway car and motor truck; and,

Fig. VI represents a horizontal cross section of the transfer apparatus, taken as indicated by the lines VI—VI of Fig. V, showing a truck in position for loading.

With particular reference to Fig. I, there is represented in the drawings a typical transfer station arrangement to which my invention may be applied to advantage. The transfer apparatus is comprehensively designated at 1 and moves along a track formed of spaced parallel rails 2. At one side of the rails 2 and parallel therewith, there is shown a section of railway track 3 with cars 4 thereon carrying shipping containers 5. At the other side of the rails 2 and parallel therewith, there is an elevated platform 6 upon which con-

tainers may be temporarily deposited. Adjacent to one end of the platform 6 there is a truck runway 7 in which space I have shown conventionally a motor truck 8. An additional railway track is represented at 3a, having a dead end adjacent to the truck runway 7. On the railway track 3a there is shown a car 4a with containers 5a thereon. It will, of course, be understood that the above transfer station arrangement is simply representative of a typical practice of my invention, and that many other arrangements are embraced within the invention.

The transfer apparatus 1 is illustrated in detail in Figs. II, III and IV. It comprises generally a framework rigidly tied and braced at the top, bottom and sides and having openings in each end thereof. The framework of the transfer apparatus includes corner posts 10 connected near their bottom ends by a base member 11, and joined at their upper ends by a rectangular frame 12 including corner gussets 13 and diagonal braces 14. At the sides the transfer apparatus framework is reinforced by corner gussets 15 and diagonal braces 16. The reference herein to "sides" and "ends" of the transfer apparatus is merely for the purpose of convenient designation, as the particular shape of the box framework admits of considerable variation.

As clearly shown in Fig. VI, the base member 11 is of U-shaped formation defining a truck receiving space 17 and also affording an elevated platform partially surrounding the truck receiving space and upon which the operator may move about freely within the framework. The platform height approximates that of a container car floor. To reinforce the base platform 11, large angle pieces 18 are desirably provided at the two corners remote from the entrance to the truck receiving space 17. The container transfer apparatus 1 has wheels 19 at the four corners of the bottom of the framework, these wheels being disposed transversely and flanged for engagement with the rails 2. As shown in Figs. II and V, the rails 2 are embedded beneath the ground level, thus permitting a truck, such as indicated at 8, to back into the framework without obstruction by the rails. Inasmuch as the framework of the container transfer apparatus 1 is movable along the ground, whether supported on rails or engaging the ground directly, as a unit independent of the container carrying vehicles, I conveniently designate the same as a "ground engaging" framework.

In the illustrated example of my invention, one pair of wheels 19 is interconnected and propelled

by hand operated mechanism readily accessible to an operator standing on the base platform 11. The propelling mechanism includes a hand wheel 20, mounted on one of the corner posts 10 some distance above the base platform 11, and driving through bevel gears 21 a vertical shaft 22. At the bottom end of the shaft 22 there are bevel gears 23 connecting the same to a horizontal shaft 24 which extends across the side of the framework, and which is preferably housed in and protected by a channel beam 25. Each end of the connecting shaft 24 has thereon bevel gears 26 driving vertical shafts 27 which extend downward to the vicinity of the wheels 19 and connect therewith through suitable gearing, such gearing being located within gear casings designated at 28.

Extending horizontally and transversely across each end of the framework of the container transfer apparatus 1 near the top thereof, are cross beams 30 which desirably take the form of channel beams and which support container hoisting and carrying mechanism. The opening 31, defined at one end of the framework between the beam 30 and the base platform 11, is conveniently designated as a "container receiving" opening, for it is essentially of a size sufficient to permit a container to enter therethrough into the interior of the framework. The opening 32 at the opposite end of the framework, defined between the cross beam 30 and the ground, is conveniently designated as a "truck receiving" opening, for it is of sufficient size to permit a truck with a container thereon to back into the interior of the framework.

Suspended from the cross beams 30 there are two I-beams 35 which together constitute a trackway for the container hoisting and carrying mechanism. The I-beams 35 extend endwise across the top of the framework and lead from the vicinity of the opening 32 at one end of the framework through and beyond the opening 31 at the other end thereof and may terminate just beyond the opening as shown in Fig. V. In the apparatus illustrated in Fig. II, however, the I-beams 35 extend outwardly well beyond the framework at the truck receiving end as well as at the container receiving end and the apparatus is otherwise identically the same. With such a construction the transfer apparatus 1 may be used additionally for shifting containers from a railway car to an elevated station platform. The I-beams 35 are spaced apart in parallel relation at a distance corresponding approximately to the center to center distance between each pair of lifting hooks 36 on the containers with which the apparatus is operated.

Supported on the base flange of each I-beam 35 there is a trolley 37. The two trolleys 37 are interconnected by a tubular casing 38 which houses at each end 39 suitable hoisting gear for elevating the containers. The hoisting gear at one end is connected to the hoisting gear at the other end by a shaft which extends through the tubular casing 38. To operate the hoisting gear, there is provided an external sheave 40 with an operating chain 41 hanging down therefrom to within reach of a man standing within the framework, or on the container carrying vehicle alongside the framework.

The particular form of lifting coupler which is suspended from the hoist of the container transfer apparatus 1 forms the subject of my co-pending application for U. S. Letters Patent, Serial No. 682,635, filed July 28, 1933. It comprises two stirrup suspension arms 42, 43 which are pivoted

at their ends about a shaft 44 and which are maintained in angular spread position with capacity for limited relative movement. The shaft 44 passes through and is supported at its ends by yokes 45 which are linked to the hoisting chains 46, one to each hoist. Associated with each U-shaped arm 42, 43 there is an operating rod 42a, 43a, constituting an extension of one end of the arm. At the end of each operating rod 42a, 43a, there is an eye 48 through which passes a control line 49 in the form of a flexible cable. Each control line 49 passes through the eye 48 of one operating rod 42a, 43a, and leads to the heel 47 of the other U-shaped arm 42, 43. Stops 50 in the control lines 49, of a size too large to pass through the eyes 48, hold the U-shaped arms 42, 43 in spread position when they are not engaged with a container. At their ends the control lines 49 terminate in weighted handles 51 which extend downward conveniently within the reach of a man standing on the platform 11 of the transfer apparatus 1, or on the platform of a container vehicle alongside the transfer apparatus. Obviously, the lifting coupler may be operated from either side of the container.

For the purpose of propelling the trolleys 37 simultaneously along the I-beams 35, there is provided a transverse actuating shaft 52 having winding drums 53 spaced thereon above the I-beams 35. The winding drums 53 and actuating shaft 52 are turned by means of a sheave 54 and a hand operated chain 55 which hangs downward within the framework to a position within convenient reach of a man standing on the platform 11. Attached to each winding drum 53 there is a continuous cable 56 which extends over a sheave 57 at the container receiving end of the framework, and then outward over a sheave 58 at the corresponding end of the I-beam 35. The cable 56 then extends beneath the I-beam 35 to one end 59 of the trolley 37. From the opposite end 60 of the trolley 37, the cable 56 passes longitudinally beneath the I-beam 35 to the end thereof at the truck receiving opening of the framework, where it passes over a sheave 61 and extends upward back to the winding drum 53. In an obvious manner movement of the hand operated chain 55, through the winding drums 53 and cables 56, causes the trolleys 37 to be propelled together along the I-beams 35.

The framework of the container transfer apparatus 1 is ballasted near the base thereof to insure balance when handling a container suspended at the extreme ends of the overhanging trackway. The additional weight added to the base of the framework may be applied at the regions designated at 62 and 63 in Fig. III.

A typical example of the operation of the container transfer apparatus 1 is as follows: In the event that it is desired to transfer a container 5 from a car 4 standing on the track 3, to a truck 8 disposed in the truck runway 7, the container transfer apparatus 1 is first moved along the rails 2 to a position abreast of the particular container 5 which it is desired to shift. This movement is accomplished by the operator turning the operating wheel 20, which, through the mechanism hereinbefore described, propels the wheels 19 and drives the transfer apparatus 1. With the container transfer apparatus in position abreast of the container to be transferred, the operator standing on the base platform 11 actuates the hand chain 55 to bring the trolleys 37 and the hoisting mechanism to a point above the container.

At this point, if there is no container adjacent the one to be transferred, the operator may step over onto the car floor to operate the hoisting chain 41; or if there is a container in that position, the chain 41 will hang over the side of that container and be accessible from the platform 11.

The operator then proceeds by means of the hoisting mechanism to lower the lifting coupler onto the top of the container to be transferred to the point where the heels 47 of the arms 42, 43 rest on the surfaces adjacent to the container hooks 36. By manipulation of the control lines 49, the arms 42, 43 may be caused to come to rest within the bight of each hook 36. With the container in readiness for hoisting, the hand chain 41 is operated to lift the container clear of its seat members 64 on the railway car 4. The operator then shifts his position to the truck receiving end of the framework and manipulates the hand chain 55 to bring the container into the interior of the framework.

With the container positioned within the framework of the transfer apparatus, the entire apparatus may, if necessary, be moved along the rails 2 to a position abreast of the truck runway 7. The motor truck 8 which has come to receive the container is then backed into the truck receiving space 17 of the framework to receive the container, and the operator proceeds to lower the container by means of the hoisting mechanism onto the platform of the motor truck 8, and then to uncouple the container. For the purpose of uncoupling, when the hoisting mechanism has been operated to lower the container onto the truck platform, the arms 42, 43 of the lifting coupler are caused to be spread and to disengage the hooks 36. Before again raising the lifting coupler, the operator pulls the handle 51 of the control line 49 and holds the handle with one hand while raising the lifting coupler by means of the hoist operating chains 41 with the other hand. In this manner the lifting coupler clears the container hooks and is readily disengaged.

If it is desired to transfer a container from the railway car 4 to the station platform 6, this movement can be accomplished in a manner similar to the car to truck transfer, except that the container will be propelled outward over the station platform by moving it to the extreme ends of the beams 35 where they extend through the opening 32 of the framework of the container transfer apparatus. Furthermore, containers 5a from the car 4a on the track 3a may obviously be shifted by the apparatus of this invention, to the truck 8, to the car 4, to the platform 6, or to the ground as desired.

It will be observed that the container transfer apparatus of my invention is extremely flexible in its operation and may be employed in many different ways from those particularly described herein to shift containers laterally from one elevated platform to another, or from an elevated platform to the ground or vice versa. While I have described one particular form which the

container transfer apparatus of my invention may take, it will be apparent to those skilled in the art that many changes may be made in the apparatus without departing from the spirit of my invention as defined in the annexed claims.

Having thus described my invention, I claim:

1. Transfer apparatus for railway containers or the like comprising a movable ground-engaging framework adapted to house a container, said framework having a rigid U-shaped base at a railway platform level affording a working platform and defining a truck receiving space and being open at the end corresponding to the opening in the base to receive a truck therein, and said framework having a container receiving opening at the opposite end above said base, a trackway extending endwise across the top of the framework and leading from near the truck receiving opening through and beyond the container receiving opening outwardly beyond the same, and container hoisting and carrying mechanism movable on said trackway.

2. Transfer apparatus for railway containers or the like comprising a movable ground engaging framework adapted to house a container, said framework having a rigid U-shaped base at a truck platform level affording a working platform and defining a truck receiving space, and said framework being open at the end corresponding to the opening in the base to admit a truck therein, a trackway extending endwise across the top of the framework and outwardly beyond the same, and container hoisting and carrying mechanism movable on said trackway to a position above the truck receiving space.

3. Transfer apparatus for railway containers or the like comprising a movable ground-engaging framework adapted to house a container, said framework being open at each end and rigidly braced at its sides and having a rigid U-shaped base affording a working platform, parallel I-beams extending endwise across the top of the framework and outward beyond each end of the same, interconnected trolleys movable on said I-beams through said openings in the ends of the framework, and container hoisting mechanism suspended from said trolleys.

4. Transfer apparatus for railway containers or the like comprising a ground engaging box framework, said framework being open at each end and rigidly braced at its sides and an end by a rigid U-shaped operator's platform, a trackway suspended from the top of the framework and leading from near the opening at one end across the framework through and beyond the opening at the other end, container hoisting and carrying mechanism movable on said trackway, propelling mechanism for said framework including cross-connected wheels disposed transversely thereof, and means for actuating said propelling mechanism, said means being operable from said operator's platform.

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