Jan. 1, 1924 1,479,767

J. J. WOLF

SHIFTING APPARATUS

Filed Nov. 15, 1921. 2 Sheets-Sheet 1

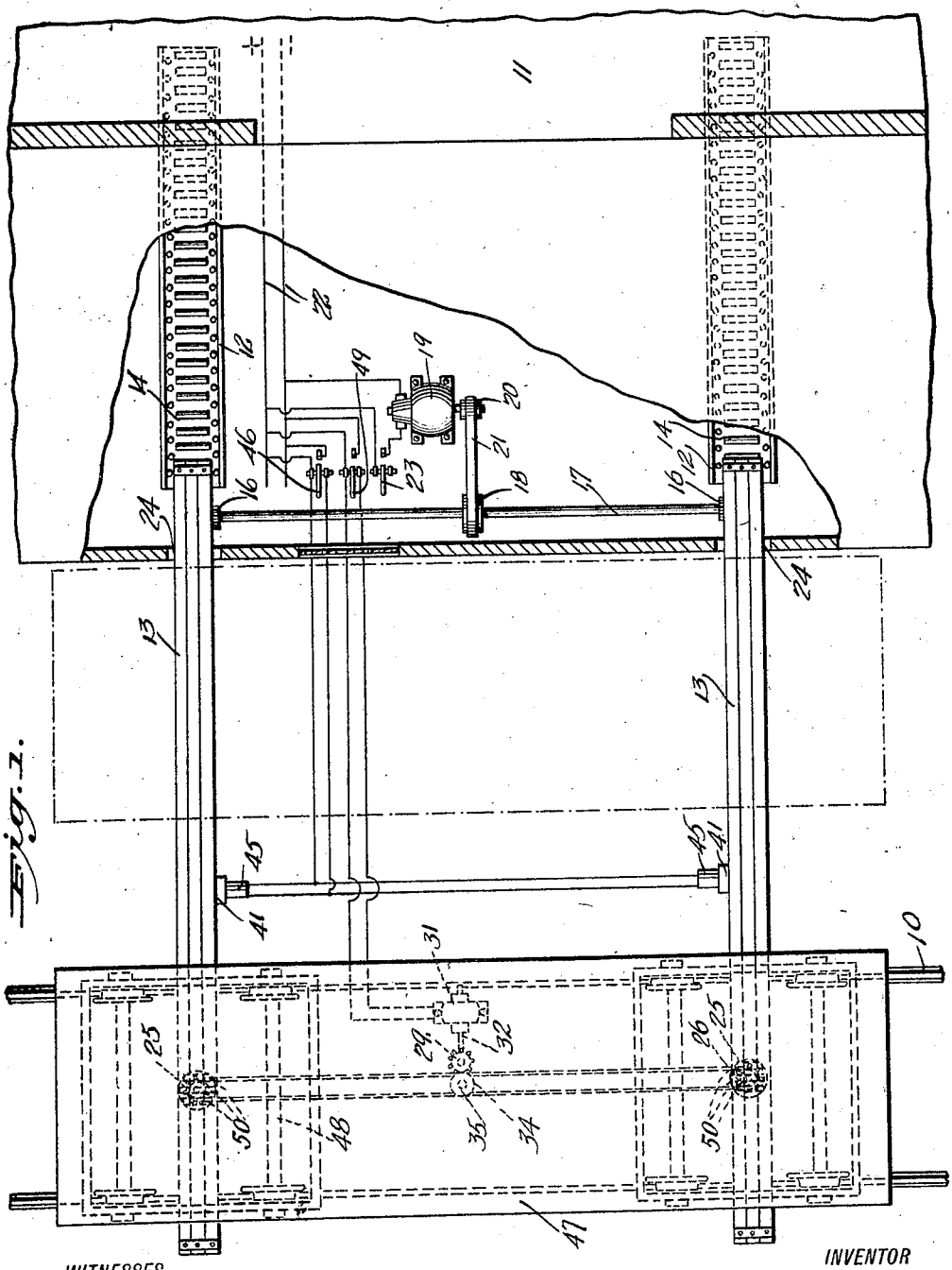

Fig. 1.

WITNESSES

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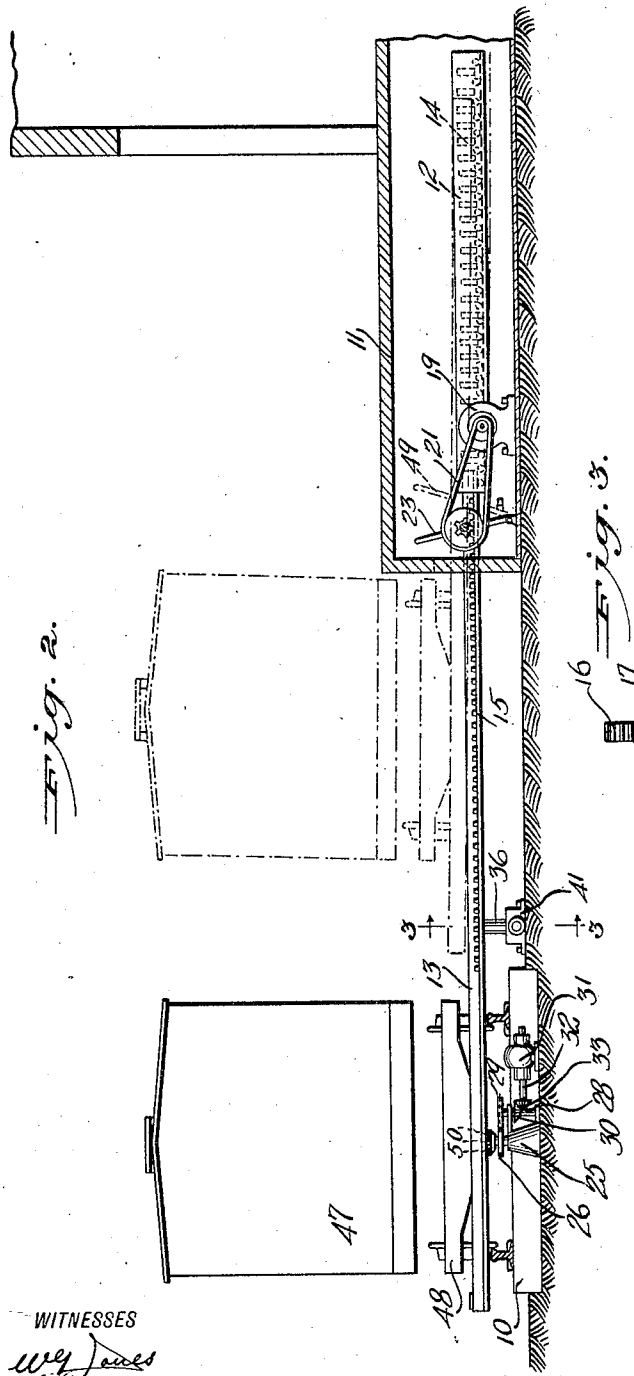

Fig. 2.

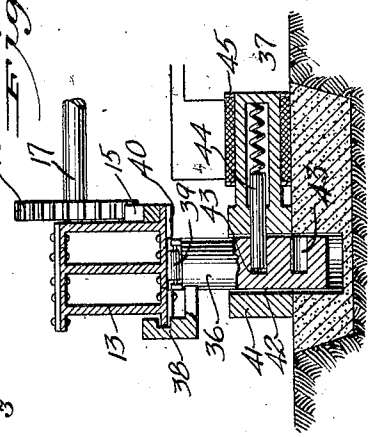

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN JACOB WOLF, OF BOONTON, NEW JERSEY.

SHIFTING APPARATUS.

Application filed November 15, 1921. Serial No. 515,232.

To all whom it may concern:

Be it known that I, JOHN J. WOLF, a citizen of the United States, and a resident of Boonton, in the county of Morris and State of New Jersey, have invented new and useful Improvements in Shifting Apparatus, of which the following is a full, clear, and exact description.

This invention relates to improvements in shifting apparatus primarily designed for shifting railway cars.

The general object of the invention is the provision of efficient and durable apparatus for the shifting of loads which may be provided in conjunction with roads of all kinds without interfering with traffic.

A further object is the provision of apparatus which may be used for removing a car or other load from a line of traffic, making the work of shifting the cars, so as to place the car or load at the unloading platform, unnecessary.

This object is accomplished by providing means that may be projected under the car or load and associated with means for lifting the latter from its support and then moved in a horizontal plane carrying the car or load therewith into position at the unloading platform.

These and other objects of the invention will be more clearly understood from the following detailed description and accompanying drawings, in which—

Figure 1 is a top plan view of the apparatus;

Figure 2 is a side elevation of the apparatus;

Figure 3 is a section along the line 3—3 of Figure 2.

Referring to the above-mentioned drawings, the shifting apparatus is shown in conjunction with a roller track 10 and a loading and unloading platform 11. The apparatus consists of a plurality of runways 12 in which the beams 13 are mounted. These runways 12 are provided with rollers 14 on which the beams 13 travel. These beams are preferably made from a number of I-beams fixed together by means of plates. Located on the lower flange of each beam is a rack 15 with which the pinions 16 mounted on the shaft 17 mesh. A pulley 18 is fixed to the shaft 17 and driven by the electric motor 19 which is connected thereto through a pulley 20 carried on the motor shaft and a belt 21. A source of electrical energy is connected to the motor by means of the line 22, and the supply of current to the motor is controlled by a switch 23. The apparatus so far described is located underneath the loading or unloading platform. Openings 24 are provided in the front wall of the platform and the beams 13 may be projected through these openings.

Located beneath the railway track are a plurality of jacks 25; a jack being provided for each beam. A plurality of rollers 50 are carried by each jack 25 to allow the beams 13 to be drawn across the top of the jack. Mounted on each jack shaft is a gear 26, and a chain belt 27 is provided to connect the said gears so that they will all be driven at the same speed. A shaft 28 which carries a gear 29 and a bevel gear 30 is mounted between a pair of jacks in such a position that the gear 29 engages the chain belt 27. The shaft 28 is driven by means of a motor 31 through a shaft 32 and a bevel gear 33 carried thereby and meshing with the bevel gear 30. The motor 31 is connected to the line 22 by means of a switch 49 located beneath the platform 11. A wheel 34 carried by a shaft 35 is located between the runs of the chain belt 27 and in alinement with the gear 29 so as to cause a positive engagement between the chain belt and said gear.

Associated with each beam 13 is a supporting post 36. These posts are carried by foundations 37 mounted between the railway track and the platform. Each post is loosely connected to the beam with which it is associated by means of a hook 38 so that as the beam is moved up or down the post will also be moved. Rollers 39 are mounted on the posts 36 and interposed between the posts and beams. Guides 40 are carried by the beams to retain them in engagement with the rollers 39. Blocks 41 supported on the foundations 37 have openings 42 therethrough, in which the posts 36 slide. Slots 43 are provided in each post and spring-controlled bolts 44 slidably mounted in the blocks 41 engage in the slots to retain the posts in the different positions to which they are moved. Solenoids 45 are provided in conjunction with each bolt and are energized by means of a switch 46 which serves to connect them to the line 22. These solenoids when energized withdraw the bolts from the slots 43 thus leaving the posts 36 free to move.

A car comprising a car box 47 and a truck

48 is shown positioned over the beams 13 and jacks 25.

The operation of this device is as follows:

When it is desired to move a car from a line of cars at a particular loading platform, the car is moved to position in front of the loading platform. The motor 19 is then operated by means of switch 23 to project the beams 13 outward over the jacks 25 and underneath the car box 47. The switch 46 is then closed, energizing the solenoids 45 to withdraw the bolts 44 from the slots 43 in the posts 36. Then the switch 49 is closed to set the motor 31 in operation. The motor 31 operates the jacks 25 through a series of gears and a chain belt, raising the beams 15 into engagement with the car truck 48, lifting it clear of the track 10. Switch 46 is then opened, releasing the spring-controlled bolts 44 which engage in the slots 43 serving to lock the posts 36 in their raised positions, at the same time the switch 49 is opened or reversed thus stopping the operation of the jacks or reversing the direction of operation so that the jacks are returned to their normal position, shown in Figure 2. Switch 23 is then operated to draw the beams 13 inward, carrying the car box 47 into position beside the platform. The line of cars may then be moved in either direction to position another car.

I would state in conclusion that while the illustrated example constitutes a practical embodiment of my invention I do not limit myself strictly to the exact details herein illustrated since manifestly the same can be considerably varied without departing from the spirit of the invention as defined in the appended claims.

Claims:

1. A transfer apparatus for shifting loads, comprising load receiving members, means for moving the load receiving members, means, over which the load may be positioned, for raising the load receiving members to lift the load, and means for supporting the load receiving members after they have been withdrawn from the raising means, said supporting means permitting movement of the load receiving members thereon.

2. A transfer apparatus for shifting loads, comprising runways, load receiving members movably mounted in the runways, means for operating the load receiving members to lift the load, means for supporting the load receiving members when they have been operated to lift the load, and means for giving the load receiving members a movement to shift the load.

3. A transfer apparatus for shifting loads, comprising load receiving members, a stationary support for the load receiving members, means for raising the load receiving members when they have been positioned to lift the load, means for retaining the load receiving members in their raised positions when they have been released by the raising means, and means for giving the load receiving members a movement to shift the load after they have been released by the raising means.

4. A transfer apparatus for shifting loads, comprising load receiving members, a stationary support for the load receiving members, means for giving the load receiving members a movement on said stationary support, means for raising the load receiving members when positioned for receiving the load, and means for supporting the load receiving members at different levels when released by said raising means.

5. A transfer apparatus for shifting loads, comprising load receiving members, a support for said load receiving members, means for moving the load receiving members relative to the support, means for raising the load receiving members when positioned to receive the load, and means for supporting the load receiving members in their raised positions when released by said raising means.

6. In a load transfer apparatus including a plurality of load receiving members and means for raising said load receiving members to lift the load, means for supporting the load receiving members at different levels when released by said raising means, comprising a plurality of supporting members associated with said load receiving members, said supporting members being adapted to permit the movement of the load receiving members thereon, means for compelling the movement of the supporting members with the beams as they are raised and lowered, and means for locking the supporting members in different positions.

7. In combination with a road over which loads may be drawn, a transfer apparatus for shifting the loads, comprising a lifting unit positioned in the road so that loads may be located above the same, load receiving members, a mounting carrying said load receiving members, means for giving a movement to said load receiving members to project them over and withdraw them from the lifting unit, and means for supporting said load receiving members when not in engagement with the lifting unit, said supporting means being adapted for permitting movement of the load receiving members thereon.

8. A transfer apparatus of the class described, comprising a plurality of spaced beams, means for moving the beams endwise, means for raising the beams into engagement with the load to raise the latter from its support, a supporting post associated with each beam and raised by the upward movement of the latter, slots cut in each

supporting post, a spring-controlled bolt in conjunction with each post for engaging in the slots to retain them in any desired position, a solenoid associated with each bolt for withdrawing the latter from the slots to release the supporting post, and roller means interposed between the posts and beams.

9. A transfer apparatus for shifting loads, comprising a stationary lifting unit over which the load may be positioned, a plurality of spaced beams for receiving the load, a mounting for said spaced beams, means for giving said beams a movement in said mounting to project them over and withdraw them from said stationary lifting unit, means for supporting said load receiving beams when out of engagement with said lifting unit, said supporting means being adapted for permitting the movement of said beams thereon, and means for controlling the operation of the means for moving said load receiving beams.

10. A transfer apparatus of the class described, comprising a pair of laterally spaced beams mounted on roller runways, a rack carried by each beam, a pinion meshing with each rack, electrically controlled means for operating the pinions to move the beams endwise, means for moving the outer ends of the beams in a vertical plane to raise the load from its support, supporting posts associated with the beams for retaining them in their raised positions, and electrically controlled means for releasing the supporting posts.

11. A car shifting apparatus of the class described, comprising a plurality of laterally spaced beams mounted in runways provided with rollers on which the beams may move, racks carried by the beams, pinions meshing with said racks, electrically operated means for driving the pinions to move the beams endwise, jacks located under the car tracks for raising the beams to lift the cars from the trucks, electrically controlled means for operating the jacks, supporting posts associated with the beams and raised by the upward movement of the latter, slots in each supporting post, spring-controlled bolts for engaging in the slots to retain the supporting posts in any position, and solenoids associated with the spring-controlled bolts for withdrawing them from the slots to release the supporting posts.

JOHN JACOB WOLF.