W. U. APPLETON & G. E. McCOY.

APPARATUS FOR REMOVING AND REPLACING CAR WHEELS.

APPLICATION FILED MAR. 7, 1911.

**1,002,797.**

Patented Sept. 5, 1911.

5 SHEETS—SHEET 1.

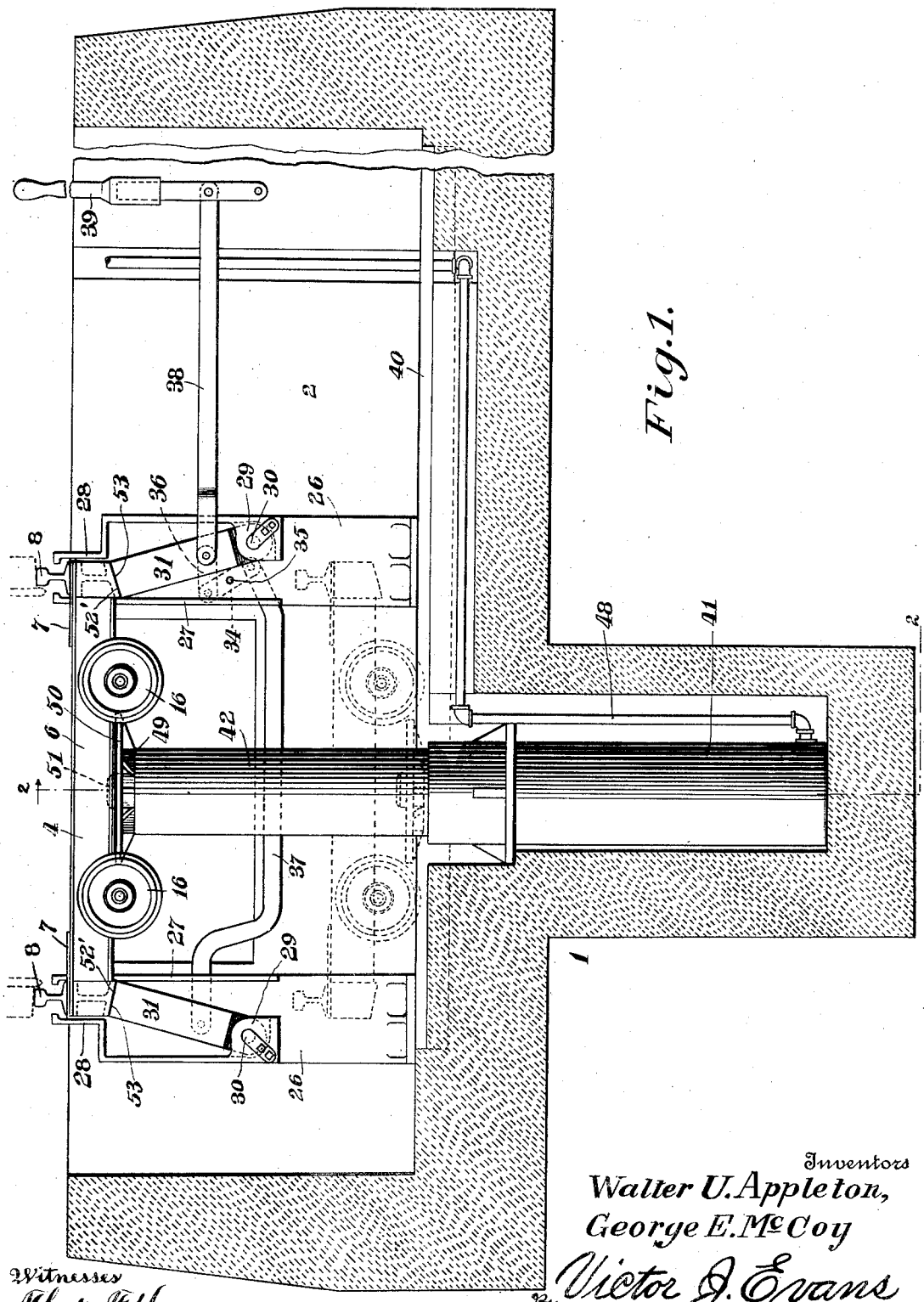


Fig. 1.

Witnesses
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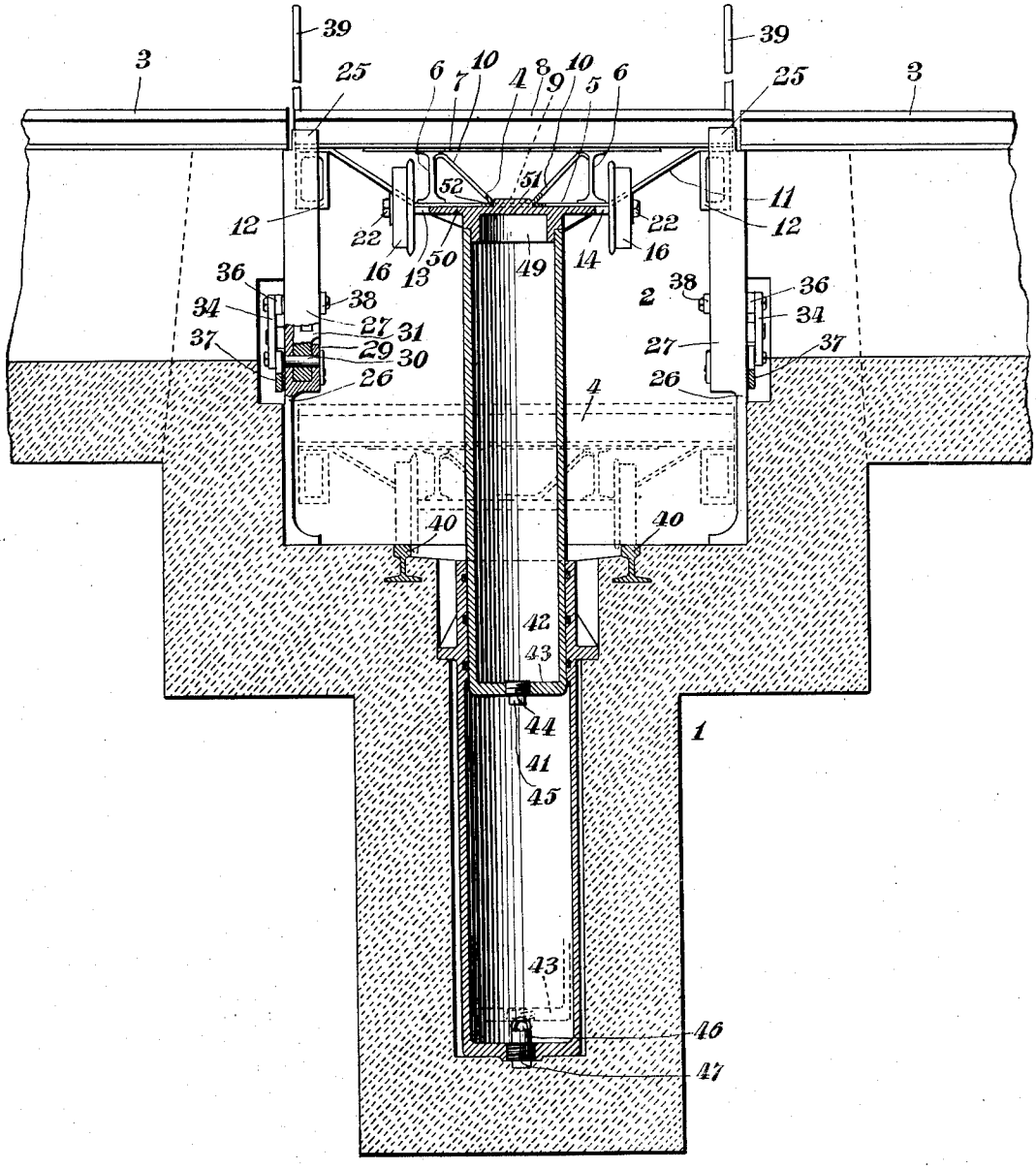


Fig. 2.

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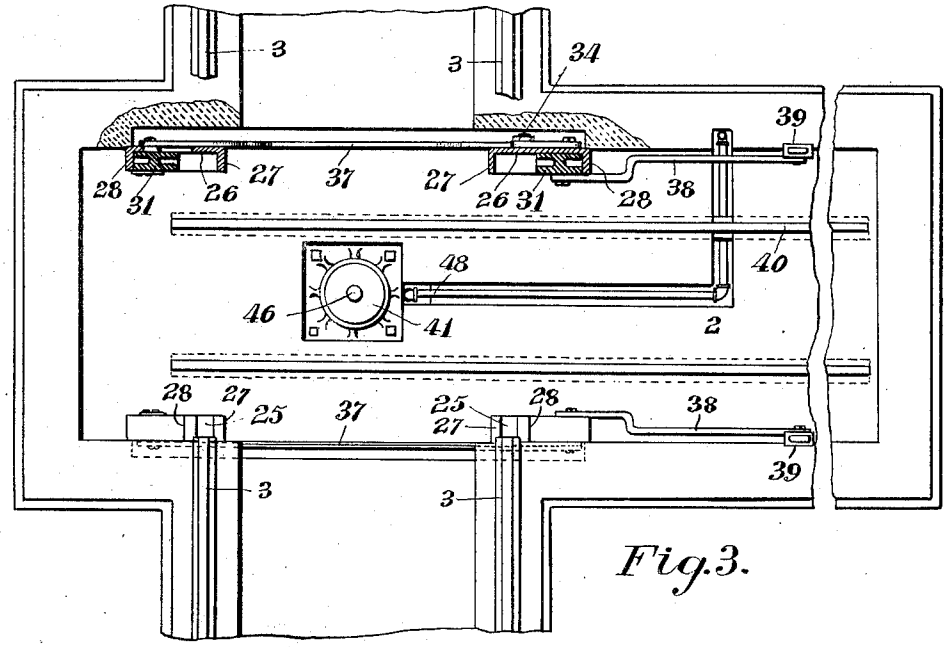


Fig. 3.

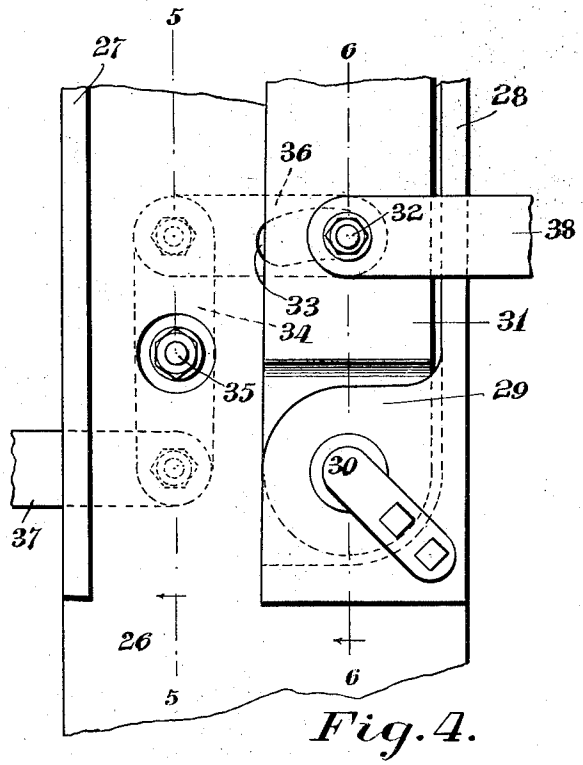


Fig. 4.

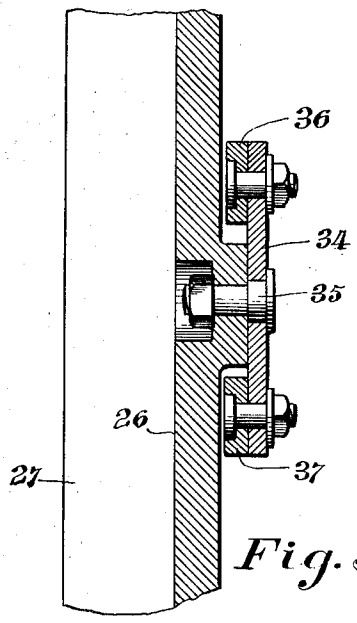


Fig. 5.

Witnesses

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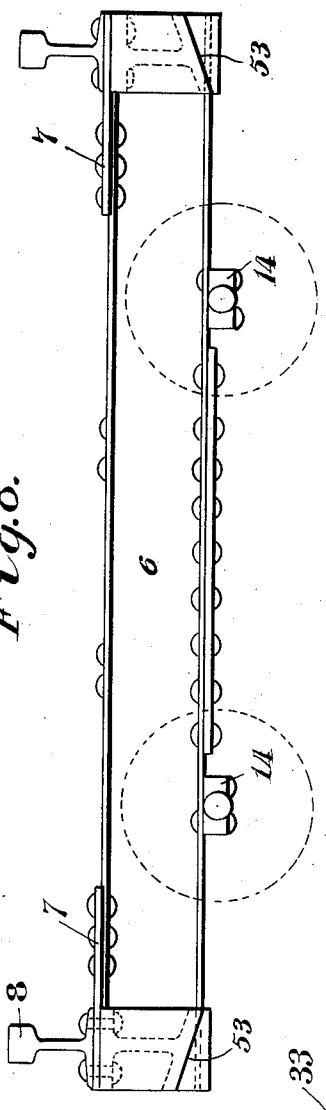


Fig. 8.

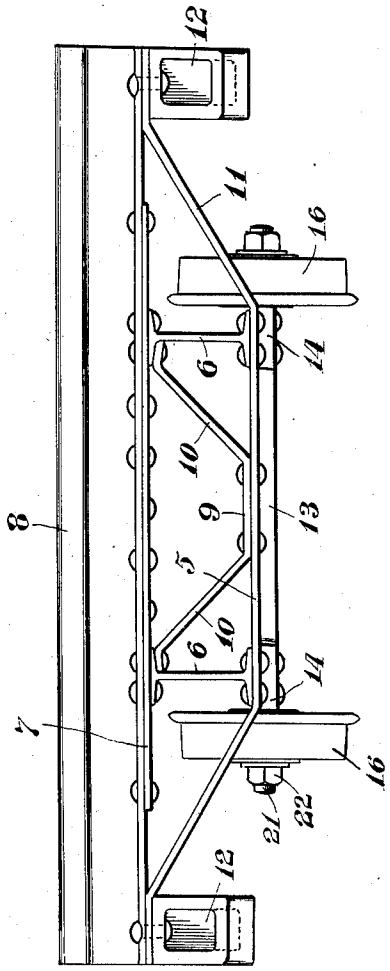


Fig. 9.

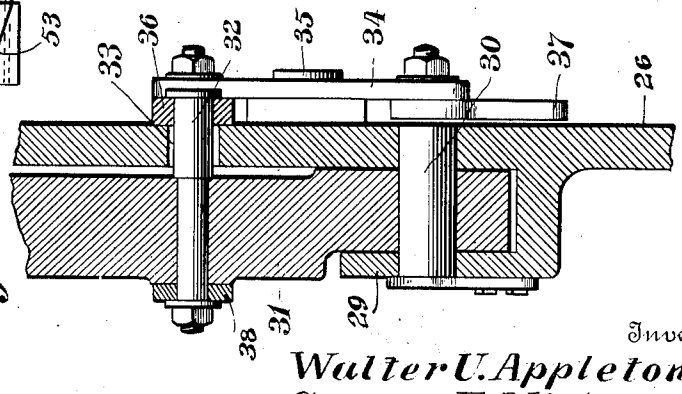


Fig. 6.

Witnesses

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6 SHEETS—SHEET 5.

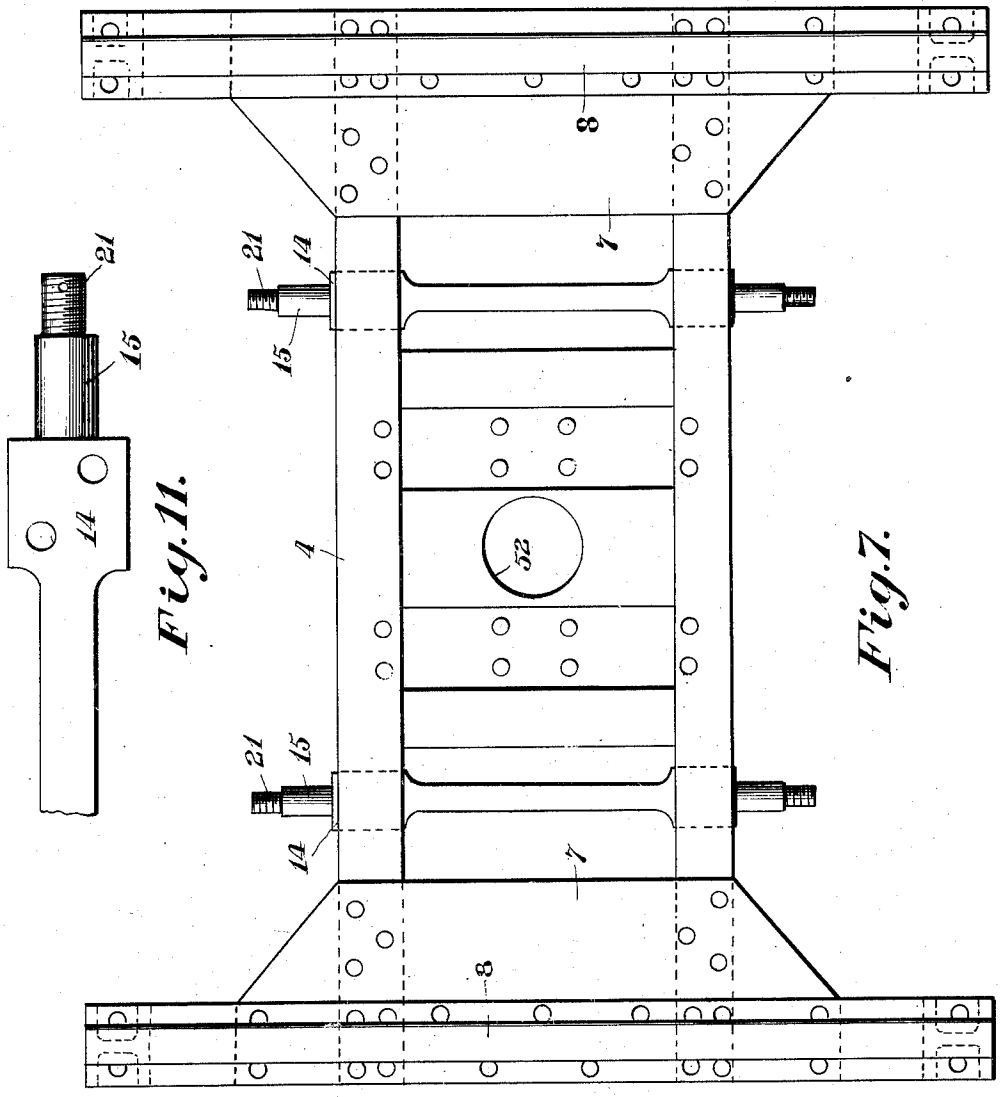


Fig. 11.

Fig. 7.

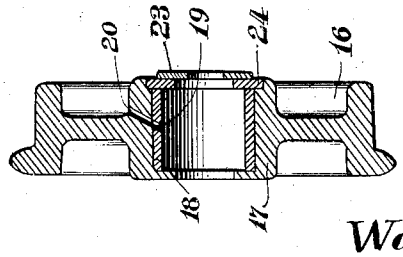


Fig. 10.

Witnesses

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# UNITED STATES PATENT OFFICE.

WALTER U. APPLETON AND GEORGE E. McCOY, OF MONCTON, NEW BRUNSWICK, CANADA.

## APPARATUS FOR REMOVING AND REPLACING CAR-WHEELS.

1,002,797. Specification of Letters Patent. Patented Sept. 5, 1911.

Application filed March 7, 1911. Serial No. 612,734.

*To all whom it may concern:*

Be it known that we, WALTER U. APPLETON and GEORGE E. McCOY, subjects of the King of Great Britain, residing at Moncton, in the Province of New Brunswick, Dominion of Canada, have invented new and useful Improvements in Apparatus for Removing and Replacing Car-Wheels, of which the following is a specification.

This invention relates to apparatus for removing and replacing car and locomotive wheels or similar heavy bodies, the object of the invention being to provide means whereby the wheels may be quickly removed from the car body or truck and repaired or new wheels substituted without necessitating the removal of rail sections of the track on which the car is mounted.

Another object of the invention is to provide in said apparatus a portable truck adapted to be moved vertically and carrying rail sections adapted to form a portion of the shop track on which the car to be repaired is mounted to travel; furthermore, the provision of a pit in which the truck is adapted to travel after it has received the wheels, and further, the provision of a lifting and lowering mechanism operating to move the truck vertically to receiving position and to lower the truck to discharge position, and the construction of the truck and the said raising and lowering mechanism, whereby they are detachably connected with each other so as to permit the truck to be readily and freely moved in the pit after the lowered position of the lowering and lifting mechanism.

Another object of the invention is to provide novel locking mechanism operating to hold the truck in an elevated position, whereby the rails of the truck form a continuous part of the shop track so as to permit of the passage of the rolling stock over the truck rails when the truck is not used for the purpose to which it is primarily intended.

Another object is to provide efficient means for vertically guiding the truck to its work and for insuring accuracy in alining the truck rails with the permanent track rails.

In the drawings, forming a portion of this specification and in which like numerals of reference indicate similar parts in the several views:—Figure 1 is a vertical section through our improved apparatus showing the truck in full lines with respect to the car wheels to be removed and showing in dotted lines its lowered position. Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is a plan view of the same with parts in section. Fig. 4 is a side view of the supporting bracket for one of the locking elements. Fig. 5 is a section on line 5—5 of Fig. 4. Fig. 6 is a section on line 6—6 of Fig. 4. Fig. 7 is a plan view of the truck, the wheels thereof being removed. Fig. 8 is a side view thereof. Fig. 9 is an end view of the same. Fig. 10 is a section through one of the truck wheels. Fig. 11 is a plan view of a portion of one of the truck wheels.

The apparatus includes a pit 1 which is formed in the ground or in the shop beneath the track structure on which the rolling stock is adapted to travel, the pit in the present instance being preferably constructed of concrete or the like and being formed so as to provide a longitudinally extending passageway 2 which extends transversely to the plane of the rails 3 of the shop track structure, the pit opening vertically at one end directly between the rails 3 for a purpose to be hereinafter described.

A truck 4 for the transportation of the car wheels is designed to travel vertically and horizontally in the pit, and as illustrated, the truck embodies a base plate 5 on which the longitudinally extending eye beams 6 are secured. Rail rest supporting plates 7 are suitably secured to the I beams 6 near the ends thereof, each plate having mounted thereon a rail section 8. Braces 9 are secured to the base plate 5 and they are formed to provide branch portions 10 which are secured in any well known manner to the upper flanges of the I beams 6, as clearly shown in Fig. 9 of the drawings. Similar braces 11 extend outwardly from the base plate 5 and are secured to the ends of the rails 8 and to guide blocks 12 at the ends of the rails beneath the rails, as shown. The truck is provided with a pair of axles 13, each having identically constructed flat head portions 14 fixedly secured to the un-

derside of the base plate 5. The spindle portions 15 of the axles extend outwardly from the heads 14 for the reception of the wheels 16, each wheel being identical in construction, being provided with a hub 17 in which is mounted a metal bushing 18. The bushing 18 is formed with a passage 19 which is arranged in coincidence with a passage 20 in the hub. The spindle of the axle extends through the hub, and as shown, the spindle is formed with a threaded extremity 21 to which is fitted a retaining nut 22 and a washer 23, the latter frictionally bearing against a washer 24 in one side of the hub when the retaining nut is in its adjusted position. The ends of the rails 8 extend beyond the sides of the truck so that the guide blocks 12 may be operatively positioned in guides 25 which are arranged vertically in the pit and transversely to the plane of the rails 3 forming the shop track structure.

The guides 25 are preferably formed in brackets 26, each comprising a vertical plate which is substantially coextensive in height with the depth of the opening of the pit, being formed with spaced vertical walls 27 and 28, the latter having its major portion offset from the wall 27 and formed to provide an ear 29. The ear of each bracket supports a bearing pin 30 which is extended through the lower reduced end of a locking element 31. Similar pins 32 extend through the locking element and through arcuate slots 33 in the brackets. The brackets are arranged, preferably, in pairs, two pairs being shown in the present instance, and as shown, the locking elements of each pair of guide brackets are adapted to be simultaneously moved through the provision of a controlling mechanism. This mechanism preferably comprises a rock lever 34 which is mounted on the bearing pin 35 which is supported on the bracket shown at the right in Fig. 1 of the drawings. At one end, the rock lever is pivotally connected to the locking element through the link 36. At the opposite end, the rock lever is connected by a link 37 to the locking element 31 shown at the left in Fig. 1 of the drawings. The locking element shown at the right in Fig. 1 is preferably operatively connected with an actuating bar 38, one end of the bar having pivotal connection with a controlling lever 39. The lower end of the lever is suitably pivoted on one of the walls of the passageway 2 in the pit. The opposite end of the lever extends outwardly from the pit to a point where it may be conveniently reached for manipulation, it being understood when the lever is manipulated the companion locking elements will be moved to their operative or inoperative positions.

The bottom wall of the pit has suitably mounted thereon a track structure embodying parallel spaced rails 40 which extend substantially the full length of the pit. These rails are so spaced from each other as to permit the truck 4 to travel thereon in a manner to be hereinafter described.

Raising and lowering mechanism is employed for moving the truck 4 vertically in the pit. This mechanism, as herein shown, comprises a fluid cylinder 41 which is mounted in any suitable manner in the bottom of the pit. The cylinder is provided with a relatively long vertically sliding piston 42, the lower end being closed by a head 43 in which is fitted a plug 44. The plug is provided with a depending portion 45 which extends below the plane of the head 43 and which is adapted to contact with an upwardly extending contacting portion 46 on the plug 47 in the bottom of the cylinder. The portions 45 and 46 when in contacting engagement serve to hold the bottom of the piston spaced from the bottom of the fluid cylinder so as to provide for the effective introduction of the fluid into the cylinder and beneath the piston. A conduit 48 is connected at one end with the fluid cylinder near the bottom thereof. This conduit may be arranged in communication with any suitable source of supply, such as steam or air. In either instance the conduit may be provided with any suitable well known form of controlling valve to permit of the introduction of the fluid to the cylinder or the exhausting of the fluid therefrom as the occasion may demand. At the upper end, the piston is closed by a cap 49. This cap is provided with a head 50 on which is formed an upwardly extending boss or lug 51 which is designed to fit in a correspondingly formed passage 52 in the base plate of the truck 4.

In operation of the apparatus herein specifically described, it can be stated that when it is desired to move the truck 4 upwardly in a receiving position with respect to the wheels of the car to be removed the truck is moved longitudinally on the track in the bottom of the pit to a position where the opening 52 in the base plate will receive the boss or projection 51 on the head 50 of the piston cap 49. The introduction of fluid to the cylinder 41 will operate to move the piston 42 in an upward direction so as to carry therewith the truck 4. After the truck has been adjusted to its full elevated position the rails 8 thereon will be in exact alinement with the rails 3 forming the permanent track structure. The guides 25 will operate to retain the rails 8 in alinement with the rails 3.

After the piston 42 has been raised for the purpose above named, the motive fluid may be cut off and the levers 39 may be operated so as to move the locking elements beneath the guide blocks 12 on the truck.

When the locking elements are in locked positions they are arranged at an angle with respect to their supporting brackets, the supporting surfaces 52′ of the said locking elements being inclined downwardly from the top of the pit and having effective contact with the correspondingly downwardly inclined contacting surfaces 53 on the bottom of the guide blocks. When the locking elements are in their released positions they are disposed vertically with respect to their supporting brackets and they are extended into the offset portions in the walls 28 of the brackets so as to lie out of the path of movement of the guide blocks so as to not interfere with the movement of the truck and plunger respectively during the lowering operation. After the wheels of the locomotive or car are disposed immediately above and operatively associated with the rails 8 on the truck 4 the fastenings on the car truck are removed from the axle so as to permit the axle to be lowered with the wheels on the downward movement of the truck 4. When the truck 4 is down in the pit to the full limit of its movement the wheels 16 of the truck will be operatively associated with the rails 40 in the bottom of the pit. When the piston is down in the fluid cylinder to the full extent of its movement the projection 51 on the cap 49 will be disposed below the plane of the base plate of the truck 4 so as to not act as an obstruction when moving the truck longitudinally in the bottom of the pit.

When the truck 4 is lowered as just described, it will be moved to the opposite end of the pit and the wheels to be repaired may be removed from the pit in any suitable well known manner which may be found most suitable for this purpose. When it is not desired to use the truck 4 for the purpose primarily intended herein the truck may be raised to a position where the rails thereof will aline with the rails 3 so that the rails 8 will form therewith a continuous portion of the shop track. At this time the locking elements 31 are operatively engaged with the guide blocks of the truck 4 so as to hold the truck against downward movement in the pit.

While the mechanism illustrated herein includes means for moving the truck vertically, it is obvious that the pit can be so constructed that the truck can be moved horizontally to a position where the track section of the pit will close the gap in the permanent track structure, the said gap being formed through the omission of sections or portions of the rails of the said permanent track structure.

We claim:—

1. In an apparatus of the character described, a longitudinally and vertically moving member, means for moving the member vertically, means for guiding the member in its vertical movement, and movable locking means carried by the guiding means and adapted for locking engagement with the member to hold the same against movement.

2. In apparatus of the class described, a vertically movable truck, elevating means for moving the truck vertically, and means for holding the truck against movement on disengagement therefrom of the elevating means.

3. In an apparatus of the class described superimposed track structures, a truck movable on the lower structure, a track section on the truck, means having detachable engagement with the truck, and operating to elevate the same from the lower track structure and toward the upper track structure to a position with relation thereto to cause the track section of the truck to aline with the upper track structure, and means for holding said truck in its elevated position upon the release of said elevating means.

4. In apparatus of the class described, a member formed to provide a pit, a track structure located above the pit, a truck movable horizontally and vertically in the pit, means for moving the truck vertically to a position to cause the same to aline with the track structure, and means for engaging the track and locking the same against movement.

5. In apparatus of the class described, a structure having a pit formed therein, a track structure disposed above the plane of the pit, a track structure located in the bottom of the pit, a truck mounted to travel on the track structure in the pit and adapted for vertical movement away from the track structure in the pit and toward the track structure above the pit, and mechanism located below the track and having detachable engagement therewith and operating to move the truck upwardly to cause the same to aline with the track structure above the pit, and manually controlled means for locking said truck in its elevated or upward position upon said mechanism being detached from said truck.

6. In apparatus of the class described, a structure having a pit formed therein, a track structure extending longitudinally on the bottom of the pit, a track structure extending transversely to the first track structure and disposed above the plane of the pit, a truck movable on the first track structure and adapted for vertical movement in the pit, a track structure supported by the truck, and means disposed below the truck and having detachable engagement therewith and operating to move the truck away from the first track structure and toward the second track structure to a position where the track structure of the truck will aline with the second track structure.

7. In apparatus of the character described, a structure having a pit formed therein, a track structure located in the bottom of the pit, a wheeled truck movable on the track structure, a track disposed above the pit, a track supported by the truck, the said truck including a base plate having an opening therein, and elevating mechanism for moving the truck vertically and including a member removably fitted in the opening in the base plate of the truck.

8. In apparatus of the character described, a structure formed to provide a pit, a vertically movable member located in the pit and formed to provide an opening, and elevating mechanism including a member fitting in the opening in the truck and operating to hold the truck operatively positioned on the elevating mechanism.

9. Apparatus of the class described comprising a vertically movable member, means having detachable engagement with the member and operating to move the same, lock mechanism normally disposed out of the path of movement of the said member, and means for actuating the mechanism to cause the same to be engaged with the member to hold the same against vertical movement.

10. Apparatus of the class described comprising a movable member, means for guiding the member in its movement, guide blocks supported by the member, and locking mechanism having detachable engagement with the guide blocks so as to hold the movable member against movement.

11. Apparatus of the character described comprising a movable member supporting a track section, and mechanism including a cylinder and a fluid actuated piston, the said piston having detachable engagement with the member and operating to move the member toward or away from its work.

12. In apparatus for removing and replacing car wheels or the like, a track structure having a gap therein, a movable member supporting a track structure adapted to close the gap in the first structure on one position of the member, and mechanism including a vertical movable portion detachably engaged with the member and operating to move the member to gap closing or opening position on operation of the mechanism and means for holding said member in gap closing position upon the release of said vertically movable portion.

In testimony whereof we affix our signatures in presence of two witnesses.

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GEORGE McCOY.

Witnesses:
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S. L. TILLEY HARRISON.