July 12, 1932. H. K. CHRISTIE 1,866,798

DROP PIT MECHANISM

Filed Aug. 17, 1931 2 Sheets-Sheet 1

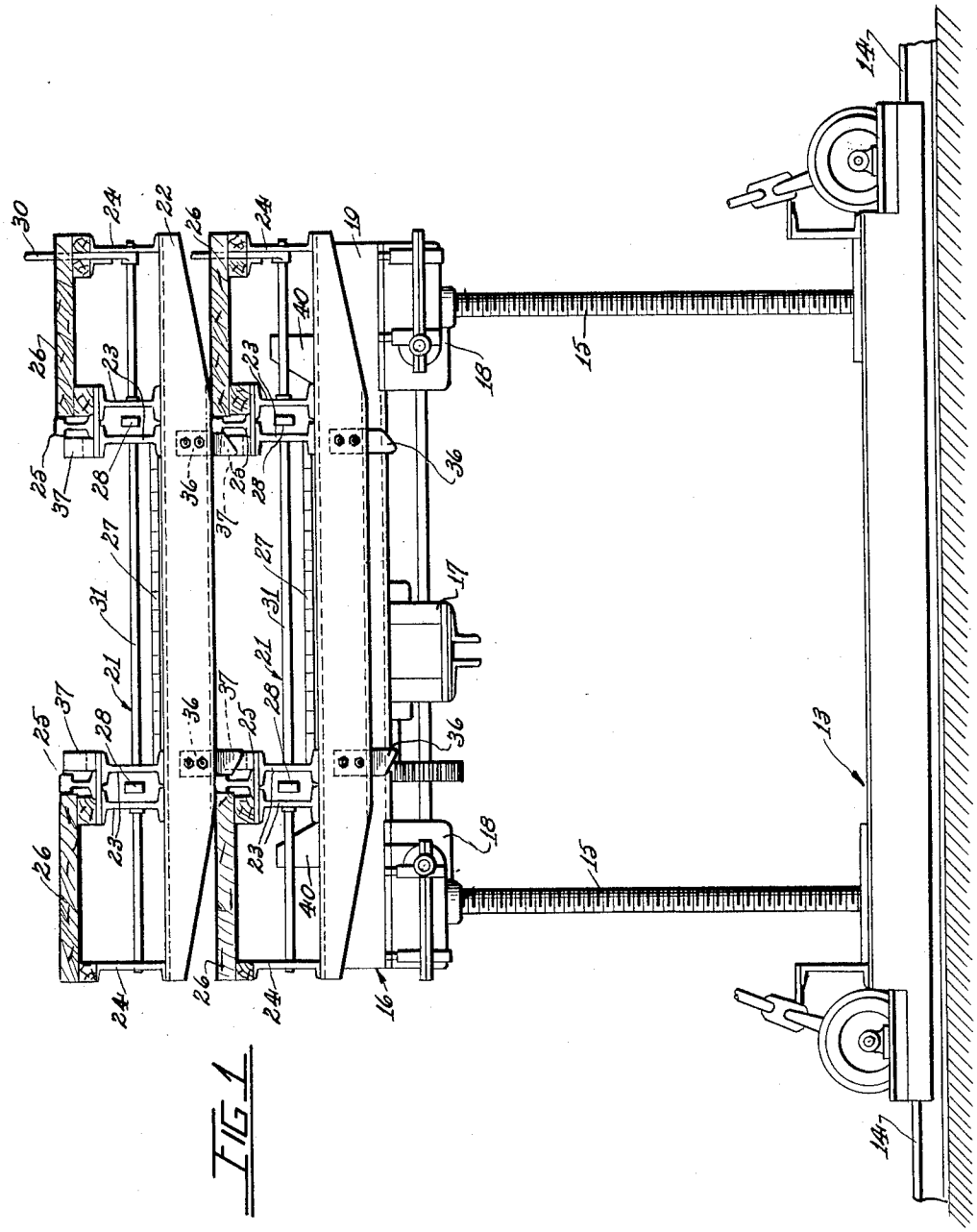


FIG 1

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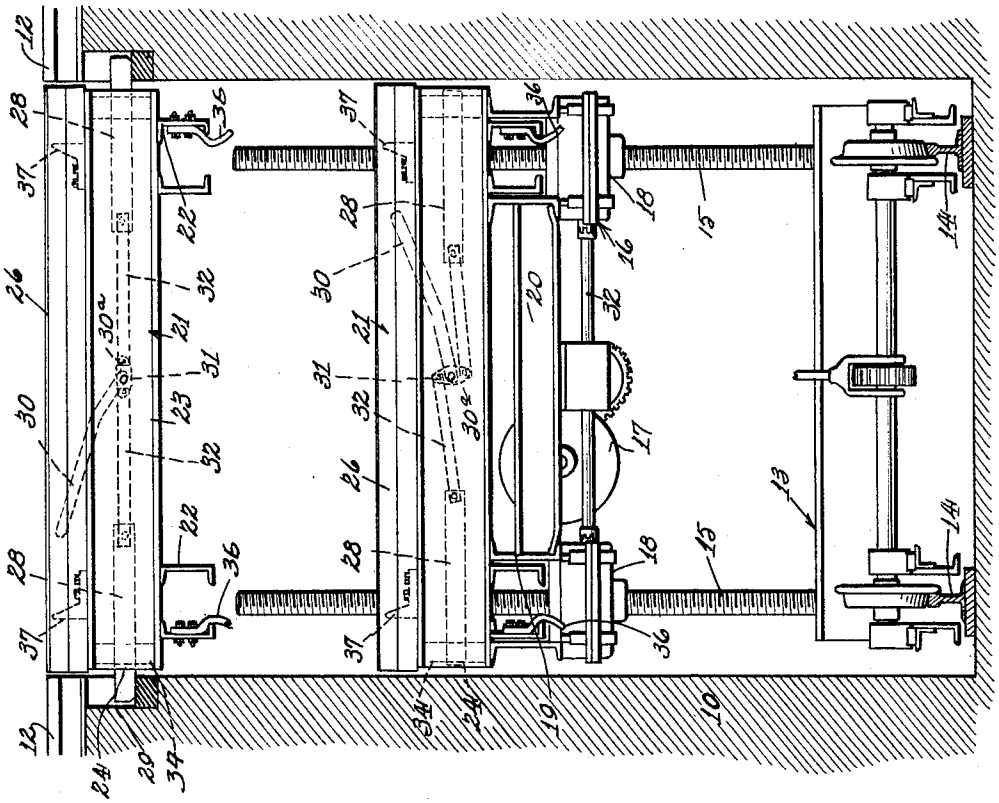


FIG 2

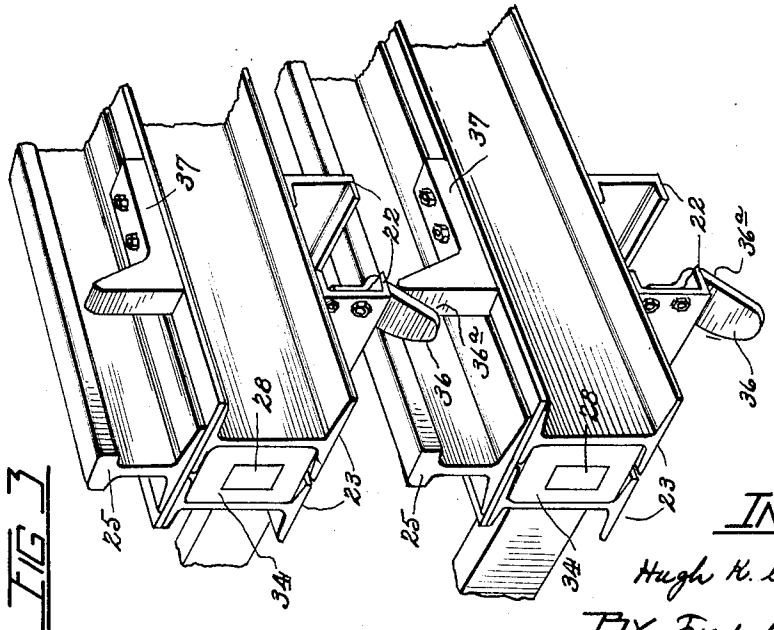


FIG 3

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1,866,798

UNITED STATES PATENT OFFICE

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DROP PIT MECHANISM

Application filed August 17, 1931. Serial No. 557,551.

In the use of drop pit mechanism for removing and replacing locomotive or other vehicle wheels of the type exemplified in reissue Patent No. 17,116, it has been found desirable to simultaneously transport a pair of drop-tables, superimposed one upon the other, so that the lower table will be immediately available to replace the table carrying the uncoupled wheels, and to provide workroom in making repairs to the locomotive or to bridge the pit so that the locomotive with one pair of wheels removed can be driven off the pit. When a table is kept under the locomotive from which the wheels have been removed, it is necessary to first remove the drop-table under the locomotive, so it can be replaced by the table, carrying the repaired wheels, and the wheels can be brought into position to be coupled to the locomotive. By superimposing a pair of tables, the removal and replacing operations are expedited, because it is not necessary, in replacing the wheels, to transport the table under the locomotive to another track or remove it from the truck before the table carrying the repaired wheels is transported to the locomotive. Nor is it necessary to go after another table from another track, after the table carrying a pair of wheels removed from the locomotive has been disposed of before placing the empty table under the locomotive from which the wheels have been removed. In the use of two superimposed tables, it is also advantageous to support one directly upon the other to avoid substantial increase in the depth of the pit for the necessary clearances. It has also been found necessary to provide means for interlocking the tables against lateral displacement so they can be conjointly transported by the truck or trolley carrying the raising and lowering mechanism.

The object of the invention is to provide improved drop pit mechanism which comprises tables which can be superimposed directly one upon the other, and in close relation, so as to avoid excessive increase in the depth of the pit, necessary for raising and lowering of the tables and wheels carried thereby. Another object is to provide efficient means for preventing lateral displacement of the superimposed table so the tables can be conjointly transported in the pit and raised or lowered.

Another object is to provide means for insuring true vertical alignment of the superimposed tables to facilitate the raising and lowering of the superimposed table into pit-bridging position. Other objects of the invention will appear from the description.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Fig. 1 is a section taken longitudinally through the drop pit, illustrating mechanism embodying the invention. Fig. 2 is a section taken transversely through the pit. Fig. 3 is a perspective illustrating the interlocking devices between superimposed tables.

In the modification of the invention illustrated, the pit 10 extends transversely of and intersects a plurality or series of tracks formed of rails 12 on the floor of the round house or repair shop, as well understood in the art. The tracks are interrupted at the pit and adapted to be bridged by the drop tables hereinafter described.

A wheeled truck or trolley 13 of suitable construction is adapted to run on rails 14 on the bottom of the pit to transport the drop tables from one track to another, and is equipped with mechanism for raising and lowering the tables so the latter may be raised and locked in pit-bridging position and lowered with a load or pair of wheels thereon to clear the locomotive or tables in operative position at other tracks at the top of the pit. The lifting mechanism is adapted to separably engage the tables so it may be lowered to clear them after the tables have been locked in their pit-bridging position. This lifting mechanism may consist of four standards 15 having their lower ends fixed in the frame of truck 12, a carriage 16 which is movable vertically on the standards, and carries a locomotive motor 17 and gearing for driving worm gears in housings 18 which are screw-threaded to the standards, and are adapted by rotation in opposite directions to raise or

lower the carriage. This raising and lowering mechanism may be, and as shown is, of the construction more fully illustrated in reissue Patent No. 17,116. The lifting carriage 16 comprises a frame composed of a spaced pair of girders 19 at either side, housings 18 and cross-members 20, all secured together to form a rigid construction.

A drop table 21 is provided for each track to bridge the top of the pit. Each table comprises a pair of beams 22 at either side, two pairs of girders 23 extending crosswise of beams 22 and end beams 24, all rigidly secured together. Each pair of girders 23 has fixed thereon a plate 24 which carries a rail-section 25. These rail-sections 25 are adapted to bridge the space between the ends of rails 12 of the tracks on the floor 11. Side platforms 26 are provided on the girders 23 and beams 24, and a floor 27 is laid on beams 22 between the inside girders 23. Each table is equipped with a set of four horizontally slidable bolts 28 which are adapted to enter sockets 29 in the sides of the pits to support the table in pit-bridging position. The entire set of bolts is adapted to be shifted by a lever 30 fixed on a cross-shaft 31 which is journalled in bearings on the table and arms 32 which are connected by links 33 to the bolts respectively, as more fully set forth in reissue Patent No. 17,116. A lever 30^a is fixed to shaft 31 to rock the shaft, and conjointly operate arms 32 to shift the bolts 28. Said bolts are slidably mounted in blocks 34 rigidly secured between the girders 23. When these bolts are retracted into blocks 30, the table will be released so it can be supported on the truck and raised or lowered and transported in the pit.

Each pair of beams 22 of each table is adapted to interfit with one spaced pair of girders 19 on carriage 16 to prevent lateral displacement of the table longitudinally while it is supported on the carriage 16. Guide plates 40 are secured to the carriage 16 to engage the girders 23 and hold the table against transverse displacement on the carriage 16.

Each table is provided adjacent its bottom with four shoes or devices which consist of bent bars bolted to the inner faces of, and projecting below, the beams 22, and with four correspondingly arranged lugs 37 which are secured to the plates 24 inwardly of the rail sections 25. The shoes 36 on one table are adapted to engage the lugs 37 on a subjacent table to lock the superimposed table against lateral displacement longitudinally of the rail sections 25 relatively to the lower table. The lower ends of shoes 36 are curved outwardly to guide the upper table into engagement with lugs 37 when the table on the carriage is raised into position to engage a table locked in pit-bridging position. The inner edges 36^a of shoes 36 are adapted to engage the sides of the heads of rail-sections 25 to lock or secure the upper table against lateral movement transversely of the rail sections 25 and relatively to the subjacent table. The lower ends of edges 36^a are curved to guide the tables into vertical alignment as they are brought together. The lower beams 22 of each table are adapted to rest directly on the rail sections 25 of a subjacent table, so the tables will pass into close vertical relation, and to avoid excessive depth of the pit, to provide the necessary clearance for the movements of the table and the load thereon in raising and lowering the tables and transporting them in the pit. These shoes and lugs exemplify means for securing a plurality of tables directly superimposed one on the other against lateral displacement in all directions so they can be conjointly raised, lowered, and transported in the pit while the lower table is supported by the lifting mechanism on the truck or trolley. The tables are constructed so that the upper table will rest and be supported on the rail sections on the lower table, and resultantly the upper table will be solidly supported and held against displacement on the lower table which is held on the lifting carriage 16.

In the operation, when a pair of wheels is to be uncoupled from a locomotive over the pit, one table thereon will be positioned and locked in the pit under the wheels of the locomotive rest. The truck, with another drop table thereon, will then be brought into position beneath the locked table at the top of the pit. The lifting mechanism will then be operated to raise the table on the carriage 16 so it will interlock with the table in the pit-bridging position, and will lift the upper table sufficiently to permit the bolts 28 to be retracted and to lift the wheels so they can be uncoupled from the locomotive. As the tables, during this lifting movement, pass into engaging relation, the shoes 36 on the upper table and the lugs 37 on the lower table will be brought together, and shoes 36 on the upper table will engage the rail sections 25 on the lower table, so the upper table will be locked against lateral displacement in any direction relatively to the lower table. The beams 22 of the upper table will rest on the rail-sections 25 of the lower table, so the upper table will be solidly supported by the rigid framework of the lower table and so these tables will be in close vertical relation. Next, the lifting mechanism will be operated to lower both tables together and the wheels on the upper table sufficiently to clear the locomotive. The truck will then be operated to transfer the tables and load to a vacant track. The lifting mechanism will then be operated to bring the upper table into pit-bridging position where it will be locked so the wheels thereon can be removed to the repair shop. The carriage 16 will then be

operated to lower the table away from and clear the locked table. The truck will then be transported with a single table thereon into position beneath the locomotive from which the wheels have been removed. Then the lifting mechanism will be operated to bring the table into pit-bridging position where it will be locked to provide a work-space under the locomotive or to permit the locomotive to be run off, if desired. When the wheels are ready for replacement, the truck and lifting mechanism are operated to pick up the table under the locomotive. The truck is then transported to the table having the wheels thereon in an adjacent track. The latter table is then superimposed on the table on the carriage 16 and transported across the pit and into position directly under the locomotive. Both of the tables are then raised so the wheels on the upper table will be shifted into position for replacement on the locomotive. Then the superimposed table is locked in place so the locomotive can be run off the single pit.

The invention exemplifies improved drop pit mechanism which is adapted to handle a plurality of drop tables in close vertical and superimposed relation; in which simple and efficient devices are provided for interlocking the tables to prevent relative lateral displacement, in which one table is adapted to be supported directly on the rails of a subjacent table; and by which the placement and removal of the tables will be greatly expedited.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, the tables being adapted to be superimposed one upon the other in close relation, and provided with interengaging means for preventing lateral displacement of one table while it is superimposed on the other, when the tables are in close relation.

2. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, the tables being adapted to be superimposed one upon the other in close relation, and provided with interengaging means for guiding one table into vertical alignment with the other as they pass into close relation.

3. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, said tables being adapted to be superimposed one upon the other in close relation, and provided with means for preventing relative lateral displacement of one table relatively to the other while they are in, and for guiding the tables into vertical alignment as they pass into, close relation.

4. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, said tables being adapted to be superimposed one upon the other in close relation, and carrying elements fixed on the tables adapted to interengage and hold the superimposed table on the subjacent table.

5. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, said tables being adapted to be superimposed one upon the other in close relation, and carrying elements fixed on the tables adapted to interengage and guide the tables into vertical alignment as they pass into close relation.

6. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, said tables being adapted to be superimposed one upon the other in close relation and guided into vertical alignment and secured against relative lateral displacement.

7. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit and provided with rails, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables, and separable therefrom, one table being adapted to be supported on the rails of another table, the table being provided with means for securing a superimposed table against lateral displacement, while it is supported on the rails of a subjacent table.

8. In equipment of the character described,

the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit and provided with rails, means for securing the tables in pit bridging position, and mechanism in the pit for raising and lowering the tables, and separable therefrom, the tables being adapted to be supported on the rails of another table, the tables being provided with means for guiding them into vertical alignment as they pass into close relation.

9. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit and provided with rails, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables, and separable therefrom, one table being adapted to be supported on the rails of another table, the tables being provided with means for guiding them into vertical alignment as they pass into, and securing the superimposed table against lateral displacement while in, close relation.

10. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge, and to be lowered in, the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, the tables being adapted to be superimposed one upon the other in close relation, and provided with inter-engaging devices fixedly secured on the tables for holding a superimposed table.

11. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, the tables being adapted to be superimposed one upon the other in close relation, and provided with devices fixedly secured on the tables, and for guiding a superimposed table into vertical alignment with a subjacent table.

12. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, the tables being adapted to be superimposed one upon the other in close relation, and provided with devices fixedly secured on the tables for guiding them into vertical alignment and preventing lateral displacement of the superimposed table.

13. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, the tables being adapted to be superimposed one upon the other in close relation and provided with fixed shoes to engage a subjacent table and hold the superimposed table thereon.

14. In equipment of the character described, the combination with a pit, of a plurality of drop tables each adapted to bridge and to be lowered in the pit and provided with rails, means for securing the tables in pit-bridging position, mechanism in the pit for raising and lowering the tables, and separable therefrom, one of the tables being adapted to be supported on the rails of the other table, and provided with fixed shoes to engage the rails of a subjacent table.

15. In equipment of the character described, the combination with a pit, of a plurality of drop tables, each adapted to bridge and to be lowered in the pit, means for securing the tables in pit-bridging position, and mechanism in the pit for raising and lowering the tables and separable from the tables, the tables being adapted to be superimposed one upon the other in close relation and provided with fixed shoes to engage a subjacent table and hold the superimposed table thereon and with fixed lugs for engagement with the shoes of the superimposed table.

Signed at Harvey, Illinois, this 4th day of August, 1931.

HUGH K. CHRISTIE.