

1,319,833.

Patented Oct. 28, 1919.

5 SHEETS—SHEET 1.

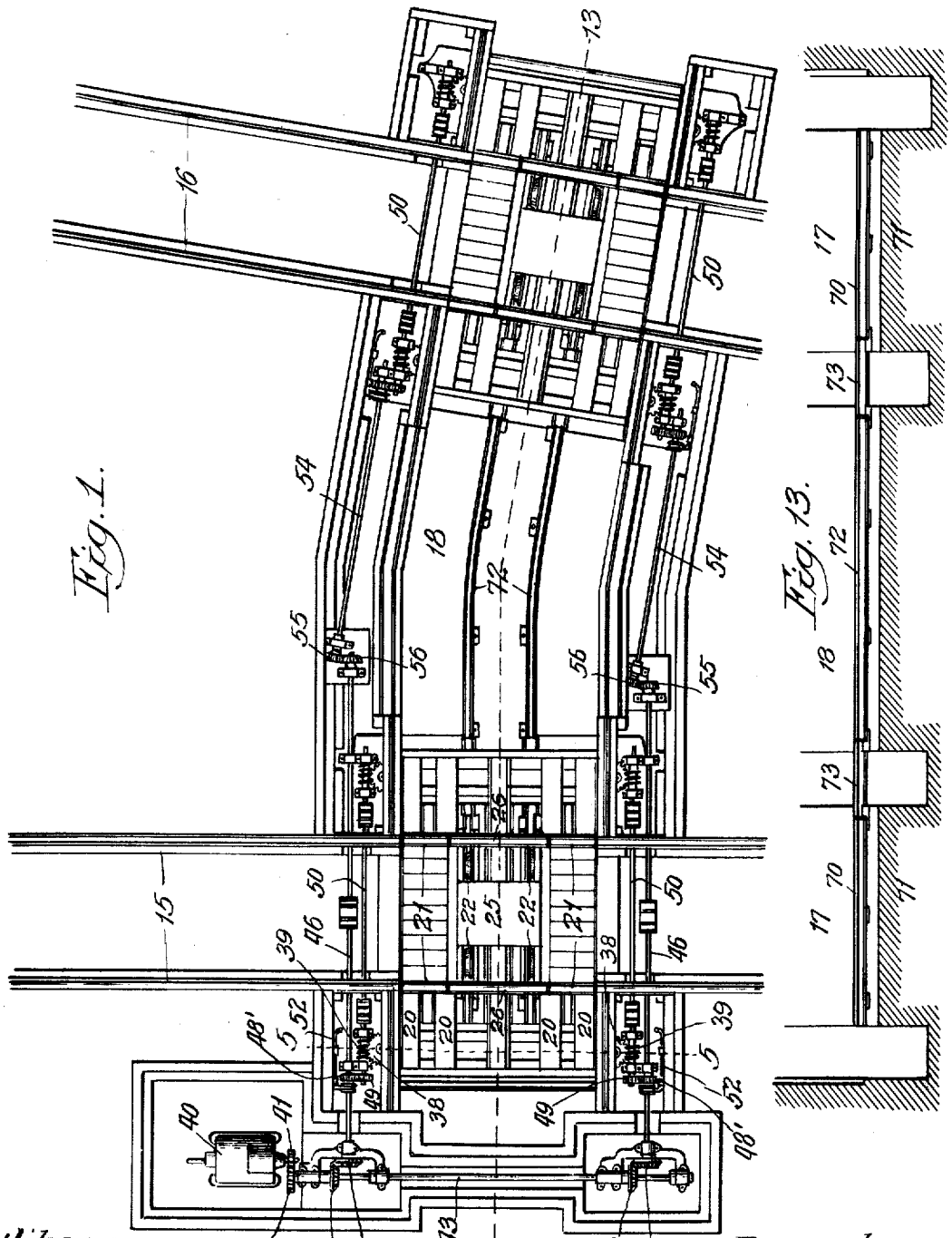


Fig. 1.

Fig. 13.

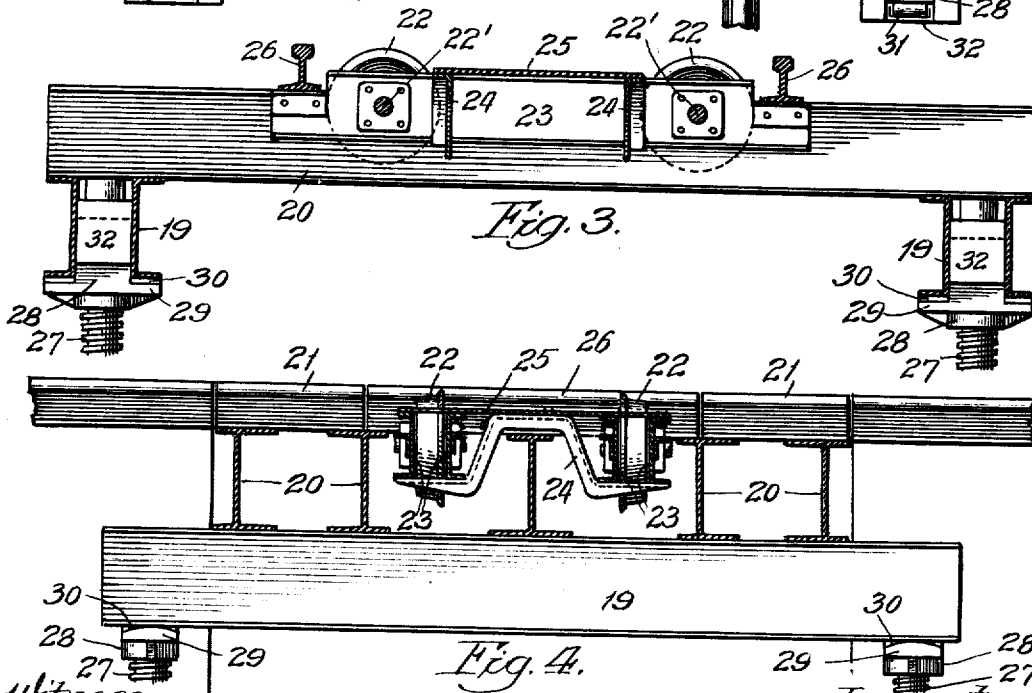
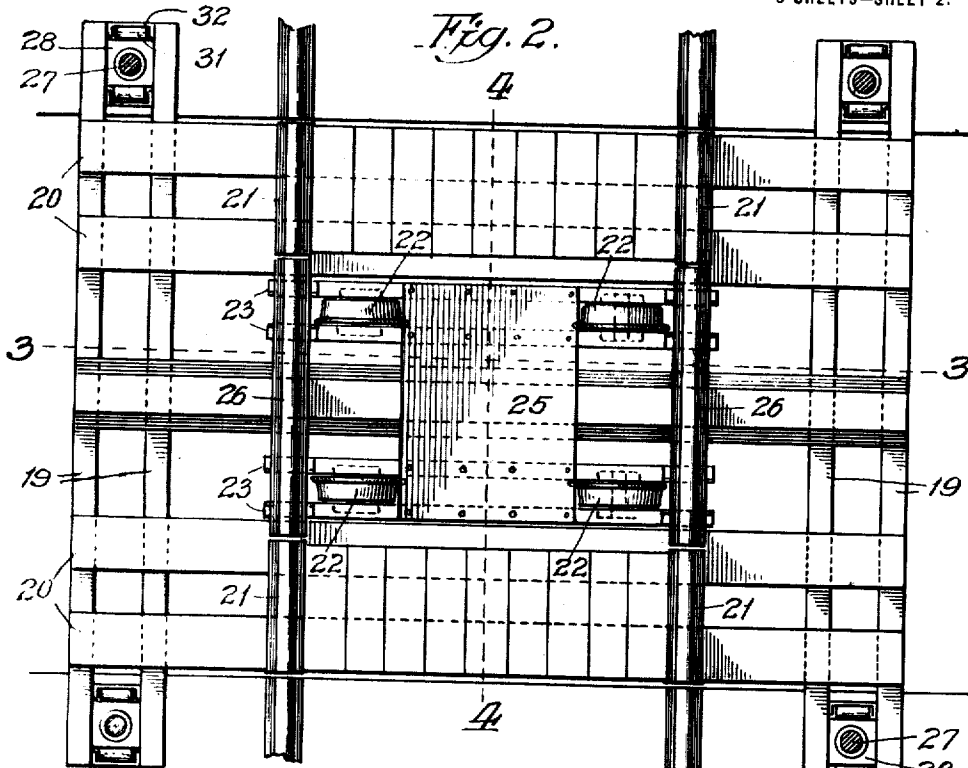
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Inventor:
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 his Atty.

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5 SHEETS—SHEET 2.



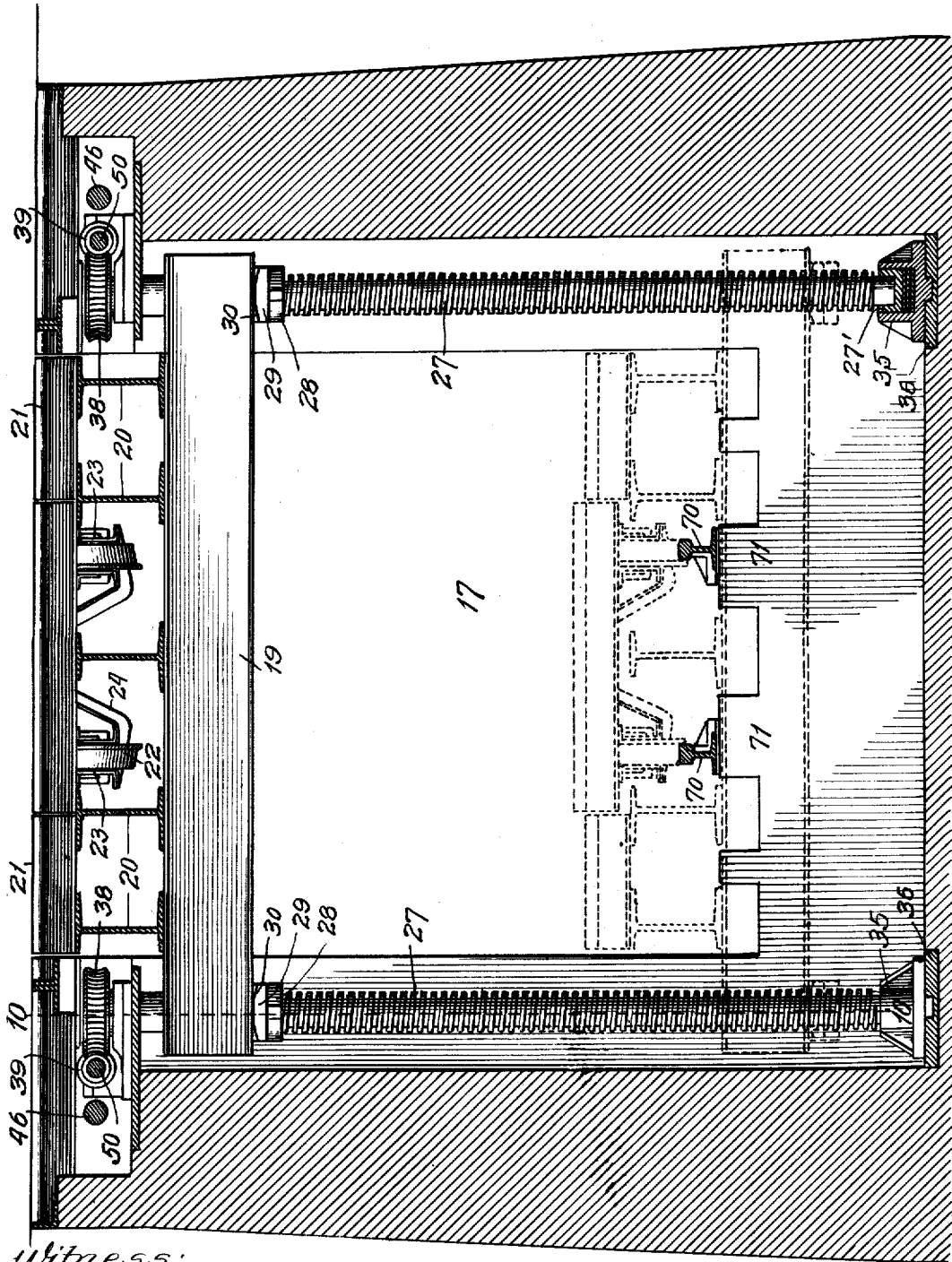
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LOCOMOTIVE SHOP EQUIPMENT.
APPLICATION FILED JAN. 27, 1919.

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5 SHEETS—SHEET 3.



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Fig. 5.

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5 SHEETS—SHEET 4.

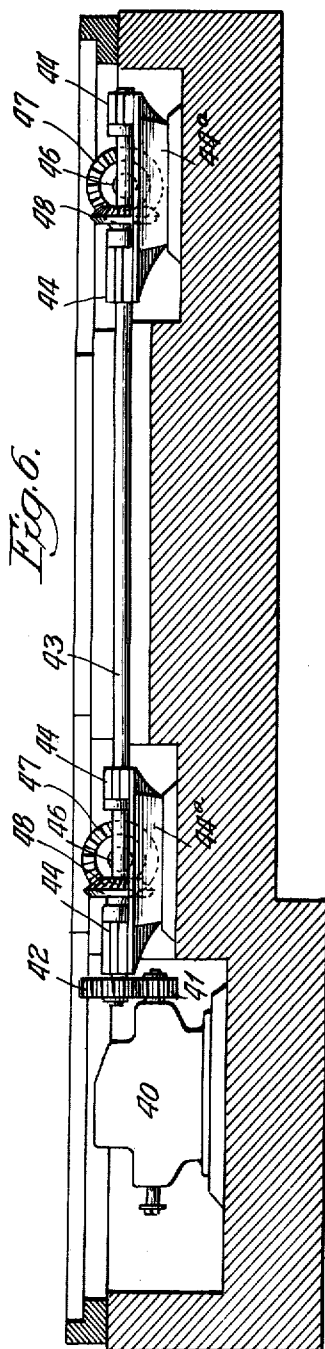


Fig. 6.

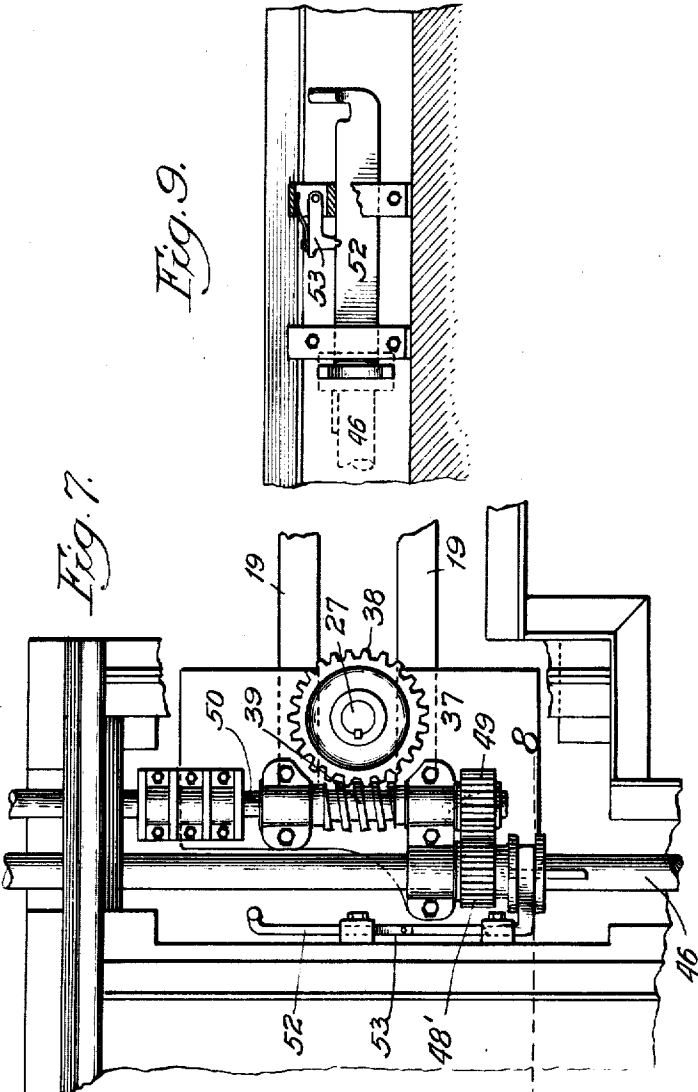


Fig. 7.

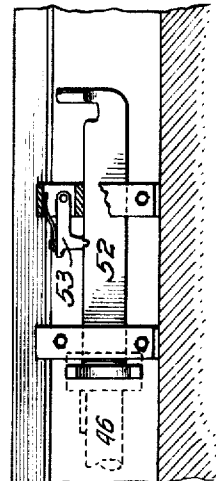


Fig. 9.

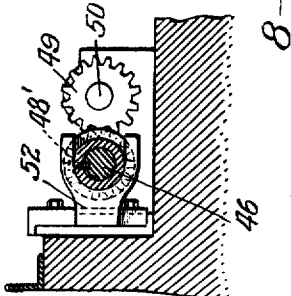


Fig. 8.

Witness:
 John Anders

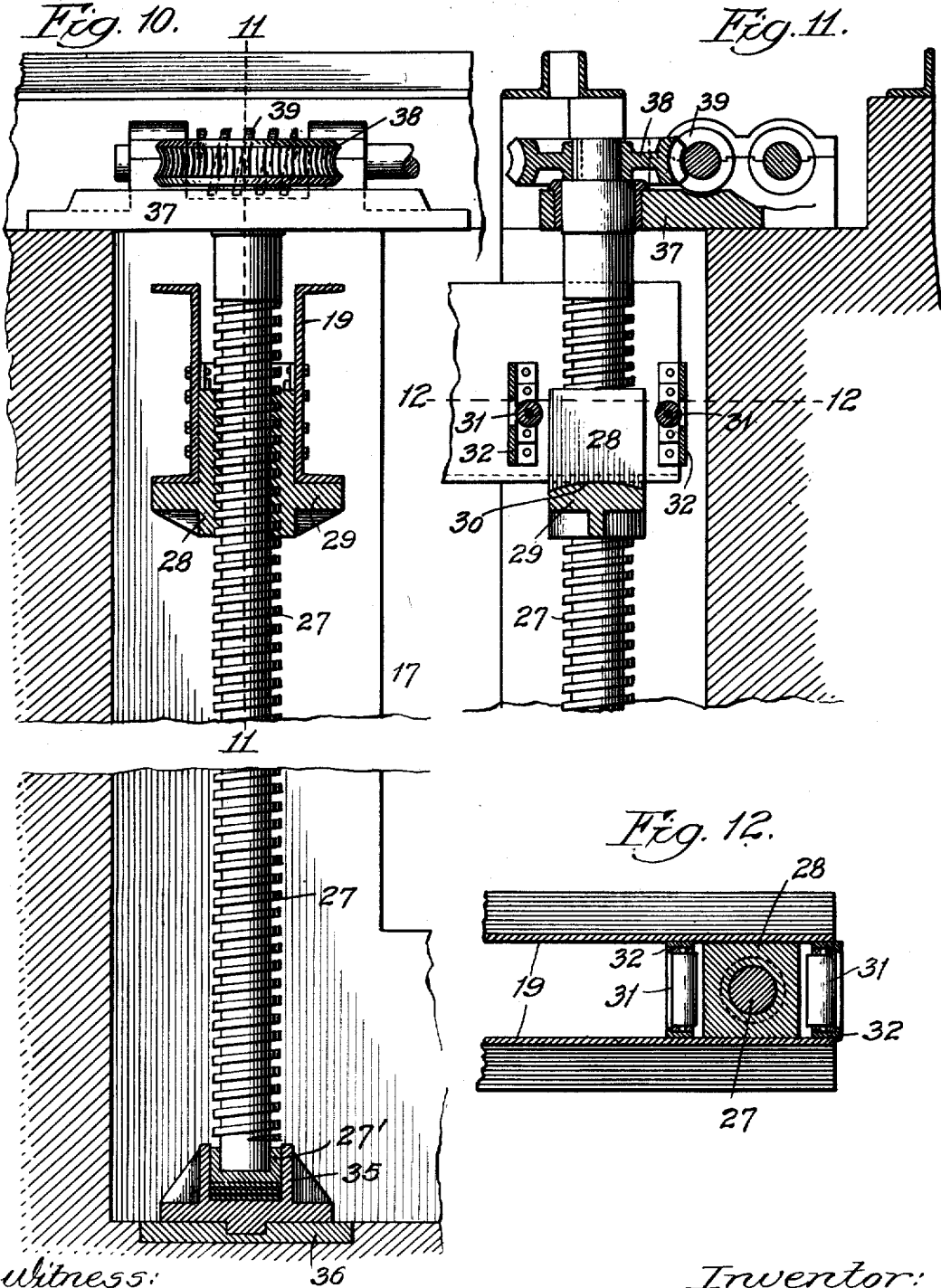
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5 SHEETS—SHEET 5.



Witness:
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UNITED STATES PATENT OFFICE.

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LOCOMOTIVE-SHOP EQUIPMENT.

1,319,833.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES A. BINGAMAN, a citizen of the United States, and a resident of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Locomotive-Shop Equipments, of which the following is a full, clear, and exact description.

10 The invention relates to equipments for locomotive shops or round houses and more particularly to mechanism for facilitating the removal or replacement of the driving or truck wheels of a locomotive or tender.

15 In locomotive practice, a desideratum is to effect repairs or replacement in the shortest possible time and also at the lowest cost, but with the equipment heretofore used, it has required from 4 to 5 hours to replace a driving or truck wheel and with the present invention it is possible to renew the driving boxes and replace the wheels in about one hour.

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

In the drawings: Figure 1 is a plan view of a round house or shop embodying the invention, the pit covers being removed to illustrate the mechanism contained therein. Fig. 2 is a plan of one of the drop tables. Fig. 3 is a section taken on line 3—3 of Fig. 2. Fig. 4 is a section taken on line 4—4 of Fig. 2. Fig. 5 is a section taken on line 5—5 of Fig. 1, the drop table being shown, by dotted lines, in lowered position and raised in full lines. Fig. 6 is a detail of the driving connections between the motor and the shafts for operating the lifting screws at the opposite sides of the pit. Fig. 7 is a detail of the mechanism for operating one of the vertical screw shafts. Fig. 8 is a section taken on line 8—8 of Fig. 7. Fig. 9 is a detail of the controller for one of the mechanisms for operating the mechanism for raising and lowering the drop-table. Fig. 10 is a section taken on line 10—10 of Fig. 5. Fig. 11 is a section taken on line 11—11 of Fig. 10. Fig. 12 is a section taken on line 12—12 of Fig. 11. Fig. 13 is a longitudinal section taken on line 13—13 of Fig. 1.

The invention is illustrated as applied to a locomotive-shop or round-house containing radial or convergent tracks 15 and 16. A pit 17 is disposed below each track and a vertically movable drop table is provided for each pit. The drop-table pits for adjacent tracks communicate with each other by a connecting pit 18.

Each drop-table is built up of a pair of girders 19, each comprising a pair of outwardly facing channeled members and a series of I-beams 20 secured to and extending between the girders. Each table comprises a pair of rail sections 21 at each end, which, when the table is raised, are alined with, and form a part of, the locomotive-track. Rail sections 21 are rigidly secured to beams 20. A truck comprises a frame consisting of channeled sills 23, brackets 24 and a plate 25, all rigidly secured, rail sections 26 which are adapted to bridge the gap between the rail sections 21 on the drop table and are fixed to sills 23, and flanged wheels 22 on axles 22', adapted to run on a cross-track. When the drop table is raised, the ends of rail sections 26 rest on the beams 20 which extend beneath them, and the rail-sections 26 will be alined with rail-sections 21 and the rails of the fixed track in the shop. The purpose of providing a wheeled truck supporting rail sections on the drop table will presently appear.

Each drop table is supported by a series of four screw-posts 27, to each of which is threaded a nut 28, which is provided with supporting lugs 29 having curved upper surfaces 30 on which the girders 19 bear. The purpose of providing these curved surfaces is to prevent the table from binding the nuts on the posts, if the table or the nuts should become out of horizontal alinement. Each nut 28 fits between the members of one of the beams 19, so that it will be held against rotation and cause it to be raised or lowered as the screw-standard 27, to which it is connected, is rotated. Rollers 31 mounted in brackets 32 fixed between the members of beam 19 are adapted to engage the ends of the nuts 28 to confine the table against excessive lateral play on the lugs 29, while permitting measurable self-adjustment of the drop-table in event of irregularity in

the table or nuts. The lower end of each screw standard 27 is capped by a bronze bearing 27', pressed and keyed to screw standard 27, and revolving with same, and 5 sustained by a series of alternate thin bronze and steel plate washers in a socket 35, which rests on a plate 36 embedded in the bottom of the pit. The upper end of each screw stand- 10 ard 27 is journaled in a bearing-plate 37 which is secured to the structure surrounding the pit. A worm-wheel 38 is fixed to the upper end of each screw-standard 27 and is adapted to mesh with a worm 39 whereby the shaft may be turned to raise or lower the 15 drop-table and the truck thereon.

A motor 40 operates the gearing for raising and lowering the drop-tables. A pinion 41 on the shaft of said motor meshes with a gear 42 on a cross-shaft 43 at one side 20 of one of the tracks. Shaft 43 is mounted in bearings 44 on brackets 44^a which are supported on the concrete bottom of a recess containing the motor and the gearing driven thereby. Shafts 46 adjacent the ends 25 of the drop-tables are each provided with a gear 47 meshing with a beveled gear 48 on shaft 43. Pinions 48' slidable on and rotatable with shafts 46 are adapted to mesh with pinions 49 on the shafts 50 to which 30 the worms 39 for driving the worm-wheel 38 on screw-standards 27 are secured. Each pinion 48' is controlled by a lever 52 so that it may be shifted into or out of engagement with one of the pinions 49. A latch 53 is 35 adapted to hold said lever against displacement. Similar gearing is provided for each drop table. Shafts 46, which are driven from the motor, and are adapted to drive the drop-table for the track 15 under control of clutch levers 52; and are also connected to drive the shafts 50 for operating the drop-table for the track 16 through shafts 54 which are respectively connected 40 to shafts 54 by gears 55 and 56. Shafts 54 serve, in effect, as sections of shaft 46 and adapt the gearing for conjointly operating the drop-tables for the two convergent tracks. When the adjacent tracks are parallel, shafts 46 can be directly extended to drive the shafts 50 for the second 50 drop-table.

The operation of the mechanism for operating the drop-tables will be as follows: When the drop tables for either of the 55 tracks is to be lowered, the motor 40 will be operated in the proper direction to drive shaft 43 and shafts 46 through gears 48 and 47. When the clutches are set to connect the shafts 50 for the drop table for the track 60 15, to the shafts 46, the screw-posts adjacent the corners of said drop table will be synchronously rotated to lower the drop table. Reverse operation of the motor will raise the table. In like manner, the drop 65 table for the track 16 may be raised or low-

ered by connecting the shafts 54 to the shafts 50 for the operating mechanism for said table.

In practice, the locomotive is driven so that the pair of wheels to be removed or 70 repaired will pass onto the rail sections 26 which are on the wheeled truck on the drop-table. In such position, the drop-table may be manipulated to facilitate the 75 removal of the bearings or other parts to which the wheels and their axles are connected. When the connecting parts for the axle and wheels attached thereto have been removed, the drop table can be lowered to the bottom of the pit, the wheels remaining 80 supported by the rail sections 26 of the truck.

For the purpose of automatically lifting the truck off the drop-table, so that the truck can be run into the connecting pit 18 or laterally away from the drop-table pit, so 85 that the locomotive or truck wheels can be lifted out of the pit by a suitable hoist, if desired, rail sections 70 are supported upon the concrete structure 71 at the bottom of 90 the pit and between the girders 20 and beams 19. These rail sections 70 are adapted to arrest the lowering of the truck before the drop-table reaches its lowermost position, so that the truck will be automatically 95 lifted off the table by the continued lowering of the table. Rail sections 70 are alined with rails 72 which extend between the pits, and short rail-sections 73 are adapted to bridge the gap between sections 100 70 and rails 72 necessary to receive one of the beams 19, so that the truck, with its load, can be pushed into the connecting pit 18 where the wheels can be conveniently lifted out of the pit by a suitable hoist or, 105 if desired, over onto the drop-table for an adjacent pit.

The wheels for replacement or the removed wheels, after they have been repaired, are placed on the truck while it is in the 110 connecting pit 18 or on other drop-table. It will then be moved on the rails in the bottom of the pits until the rail-sections 26 are lined with the rail-sections 21 on the drop-table. The table will be lifted and 115 this will first cause the table to lift the truck off the rail sections on the bottom of the drop-table pit and then rail-sections 21 and 26 will be raised conjointly into alinement with the rails of the locomotive track and 120 into position for reconnection to the locomotive.

The invention exemplifies improved equipment in which the drop-table is provided with a truck which can be moved laterally 125 into a position where it can be raised while the locomotive remains in position on the track; also equipment in which the truck is automatically disconnected from the table, so it can be run off into the connecting 130

pit; and also equipment which is adapted to operate the drop-tables for a plurality of adjacent pits from a single motor.

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 apparatus of the character described, the combination of a track, a drop table provided with rail-sections adapted to form a continuation of said track, mechanism for raising and lowering the table, and a truck supported on said table and movable laterally relatively to the table.

2. In apparatus of the character described, the combination of a track, a drop table provided with rail-sections adapted to form a continuation of said track, mechanism for raising and lowering the table, and a wheeled truck supported on and adapted to be raised and lowered with said table and movable laterally relatively to the table.

3. In apparatus of the character described, the combination of a track, a drop table provided with rail sections adapted to form a continuation of said track, mechanism for raising and lowering the table, and a truck supported on said table and provided with wheels to render it movable transversely to said track and relatively to the table.

4. In apparatus of the character described, the combination of a track, a drop-table provided with rail-sections adapted to form a continuation of said track, mechanism for raising and lowering the table, and a truck movable relatively to the table and provided with rail sections also adapted to form a continuation of the track.

5. In apparatus of the character described, the combination of a track, a drop table provided with rail sections adapted to form a continuation of said track, mechanism for raising and lowering the table, and a movable truck also provided with rail-sections adapted to form a continuation of the track and provided with wheels by which it may be run off the table transversely to the track.

6. In apparatus of the character described, the combination of a track, a drop-table provided with rail sections adapted to form a continuation of said track, mechanism for raising and lowering the table, a wheeled truck supported on the drop table, and means to automatically separate the truck from the table to facilitate the removal of the truck.

7. In apparatus of the character described, the combination of a track, a drop table provided with rail sections adapted to form a continuation of said track, mechanism for

raising and lowering the table, a wheeled truck supported on the drop table, provided with rail sections adapted to form a continuation of the track, and means to automatically lift the truck from the table to facilitate the removal of the truck.

8. In apparatus of the character described, the combination of a track, a drop table provided with rail sections adapted to form a part of said track, mechanism for raising and lowering the table, and a wheeled truck supported on the drop table, and a support to automatically lift the truck from the table to facilitate the removal of the truck when the table is lowered.

9. In an apparatus of the character described, the combination of a plurality of tracks, drop tables for the tracks respectively, a motor, and gearing between the motor and both of said drop tables for raising or lowering them.

10. In an apparatus of the character described, the combination of a plurality of tracks, drop-tables for the tracks respectively, a motor, mechanisms for raising or lowering the tables, and gearing between both of said mechanisms and the motor.

11. In an apparatus of the character described, the combination of a plurality of tracks, drop-tables for the tracks respectively, a motor, and mechanisms for raising and lowering the tables respectively, shafts driven by said motor and for operating said mechanisms respectively, and means for separately controlling the operation of said mechanisms from said shafts.

12. In apparatus of the character described, the combination of a track, a drop-table provided with rail-sections, screw-posts for raising and lowering the table, mechanism for rotating the posts, and supports for the table which permit lateral self-adjustment of the table without causing binding on the posts.

13. In apparatus of the character described, the combination of a track, a drop table provided with rail sections, screw-posts for raising and lowering the table, mechanism for rotating the posts, means for securing the posts against vertical movement at all times, and supports between the table and the posts and movable vertically by the posts to operate the table.

14. In apparatus of the character described, the combination of a track, a drop table, screw-posts for raising and lowering the drop table, mechanism for operating the posts, means holding the posts against vertical movement at all times and nuts on and operated vertically by the posts provided with bearings for the drop-table, the latter being movable relatively to the bearings.

15. In apparatus of the character described, the combination of a track, a drop

table, screw-posts for raising and lowering the drop-table, mechanism for operating the posts and nuts on the posts provided with curved bearings for the drop table.

5 16. In apparatus of the character described, the combination of a track, a drop-table, screw-posts for raising and lowering the drop-table, mechanism for operating the posts, nuts on the posts provided with supports for the drop-table, the latter being 10 movable on said supports, and rollers for limiting the movement of said table on said supports.

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