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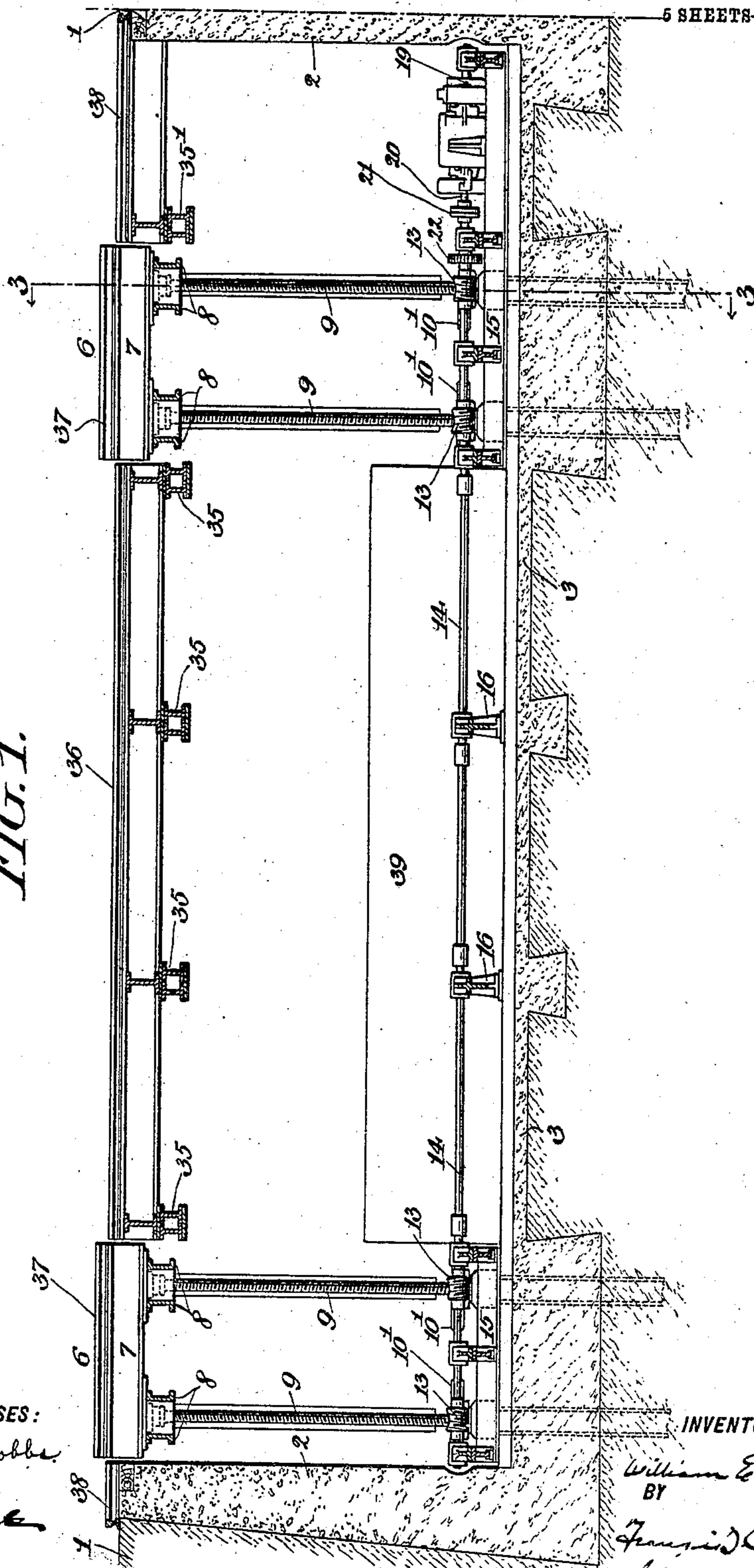
PATENTED MAR. 26, 1907.

W. ELMER, JR.  
DROP TABLE.

APPLICATION FILED AUG. 18, 1906.

5 SHEETS—SHEET 1.

FIG. 1.



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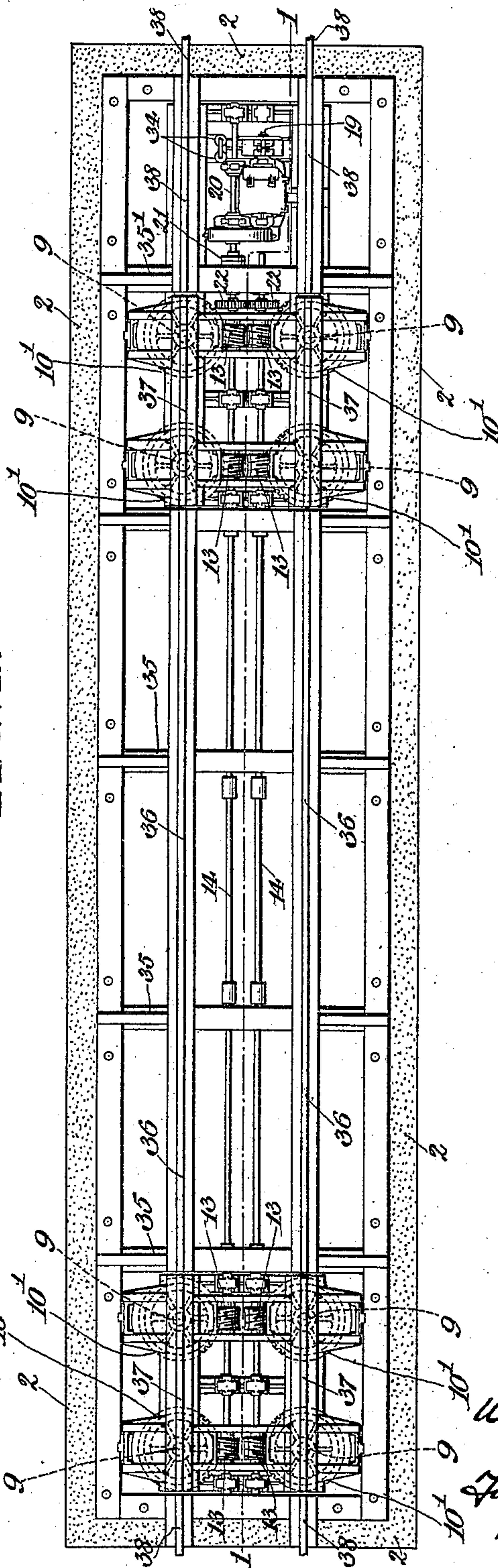
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5 SHEETS—SHEET 2.

FIG. 2.



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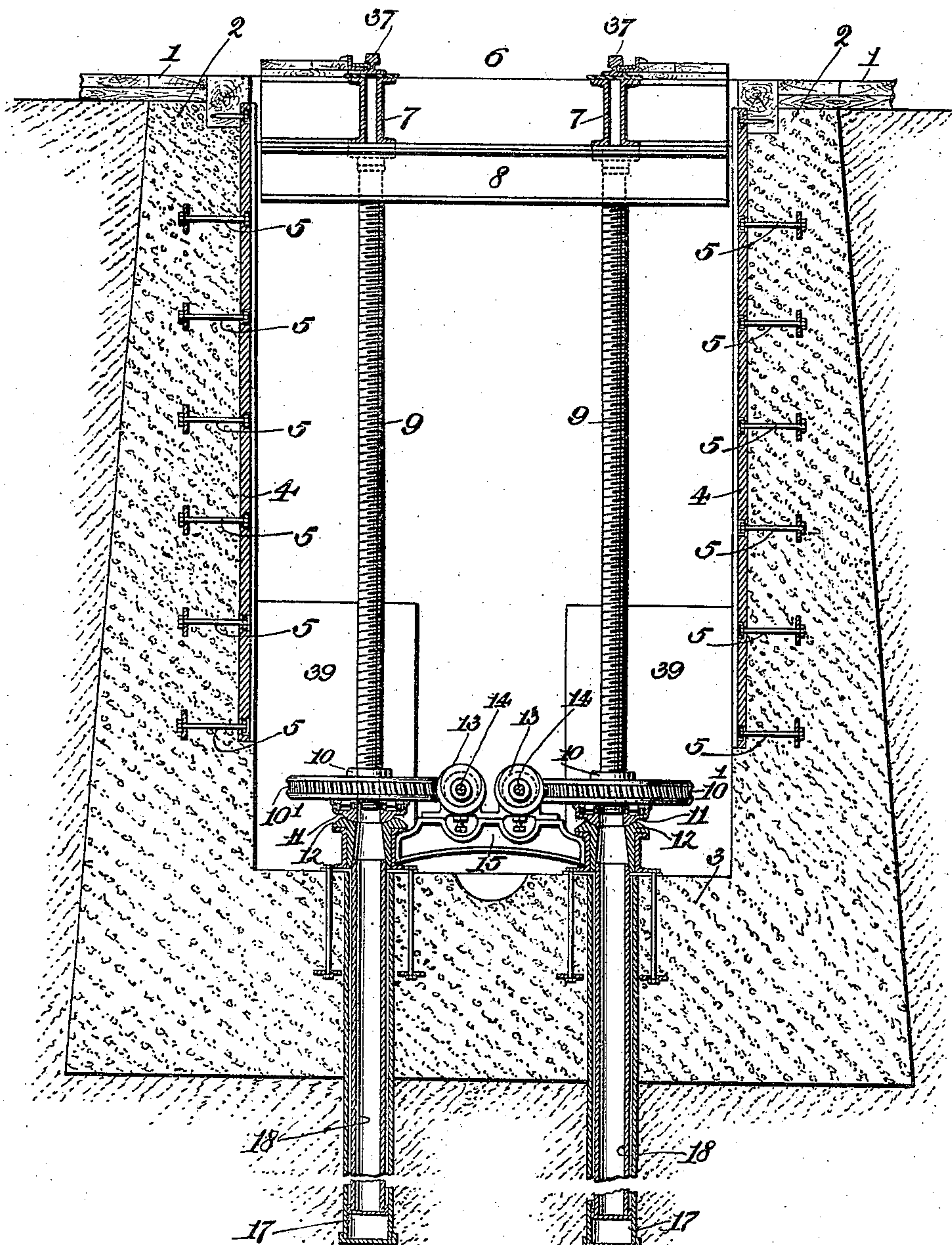
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5 SHEETS—SHEET 3.

FIG. 3.



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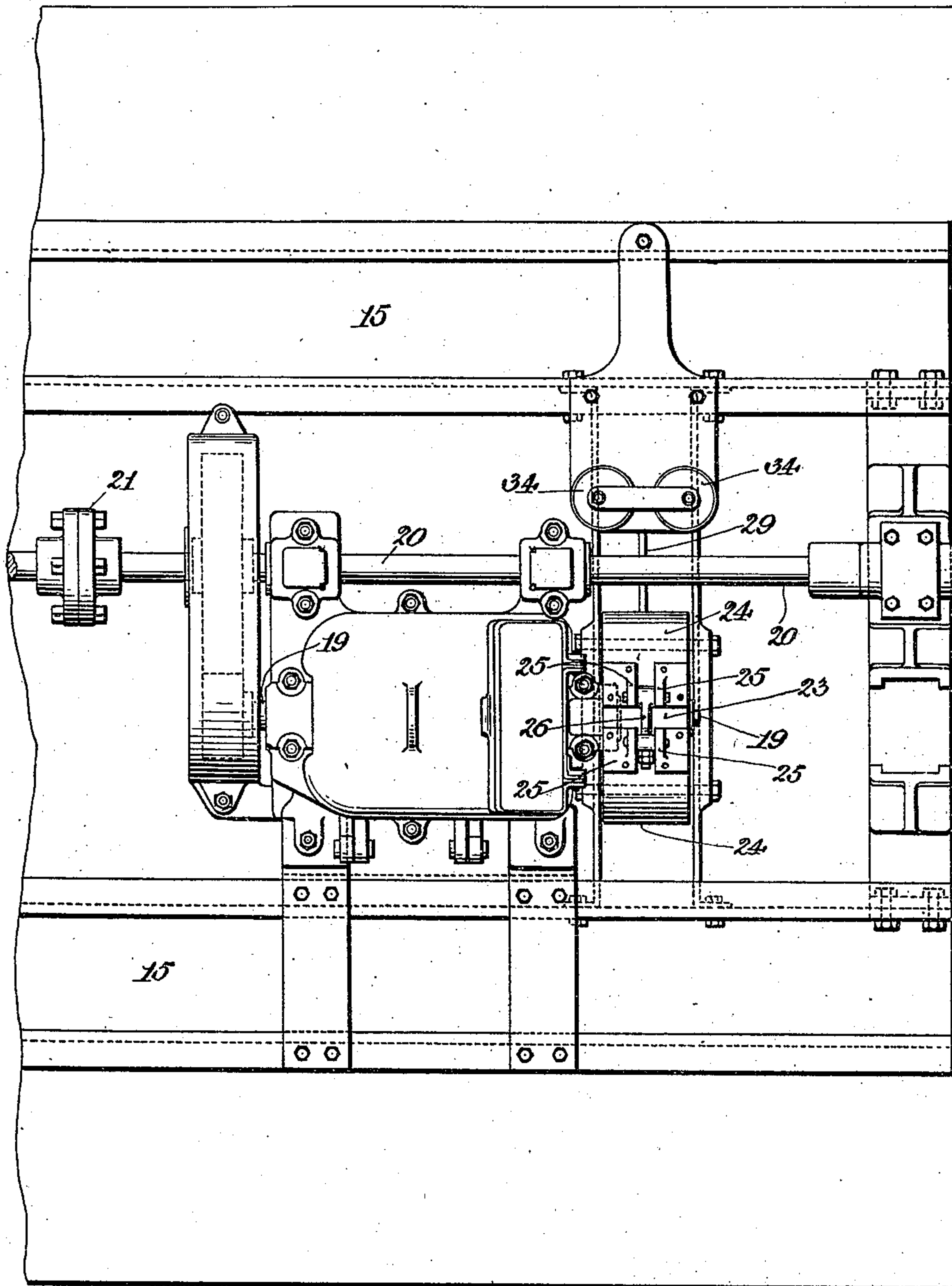
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5 SHEETS—SHEET 4.

FIG. 4.



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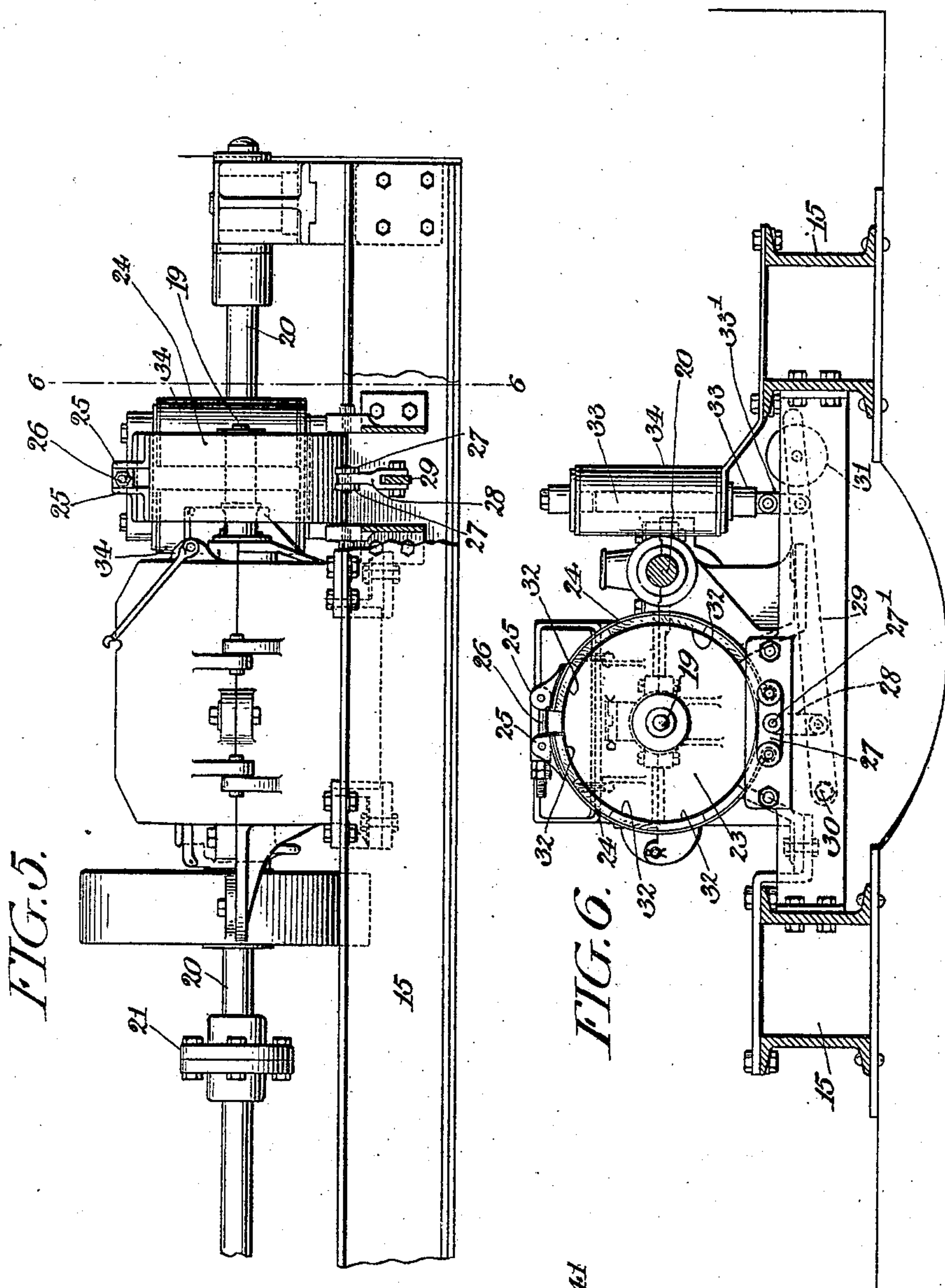
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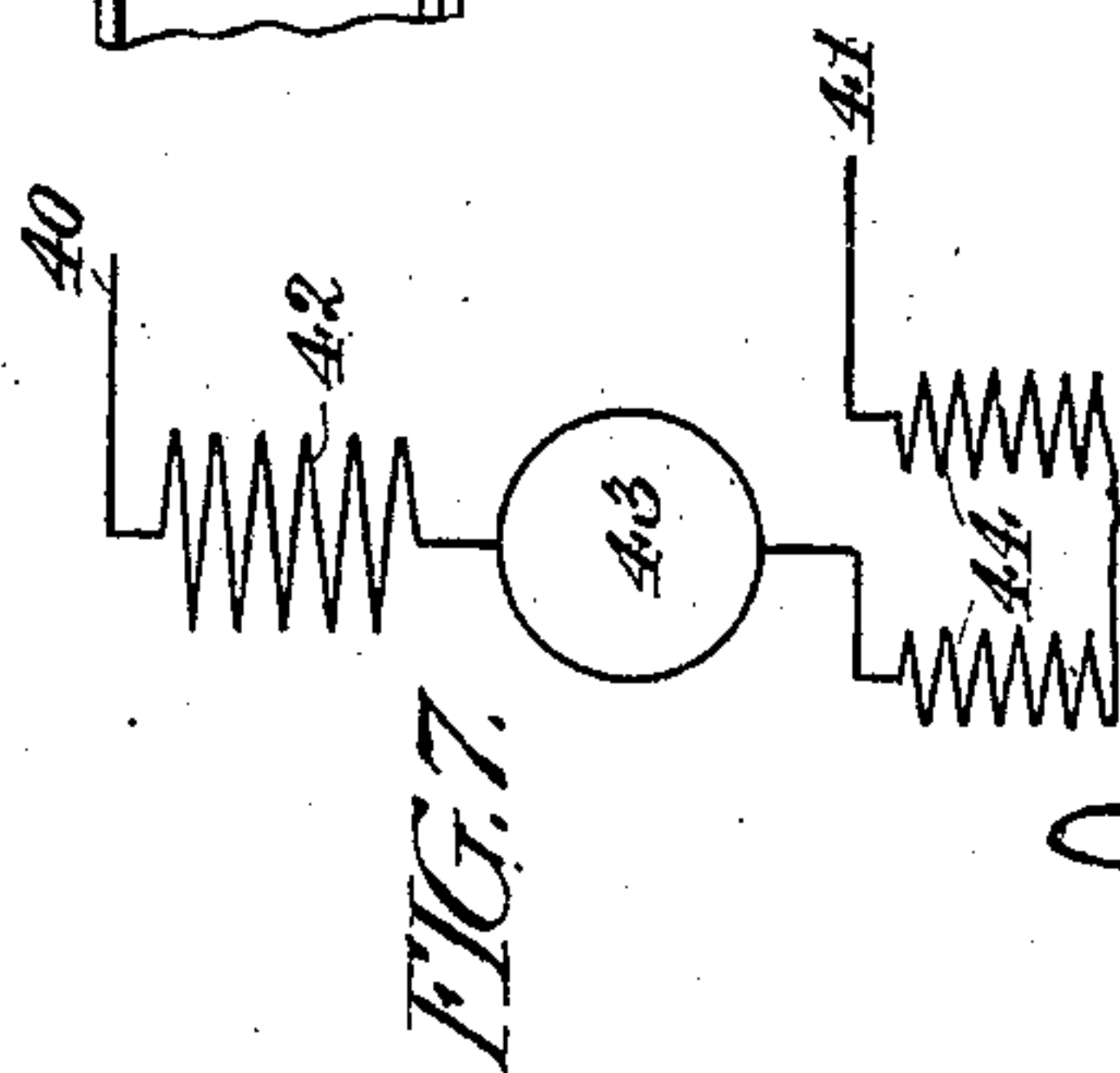
APPLICATION FILED AUG. 18, 1906.

5 SHEETS--SHEET 5.



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# UNITED STATES PATENT OFFICE.

WILLIAM ELMER, JR., OF ALTOONA, PENNSYLVANIA.

## DROP-TABLE.

No. 848,353.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed August 18, 1906. Serial No. 331,208.

*To all whom it may concern:*

Be it known that I, WILLIAM ELMER, Jr., a citizen of the United States of America, residing in Altoona, in the county of Blair, in the State of Pennsylvania, have invented a certain new and useful Improvement in Drop-Tables, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My present invention is particularly designed for removing and replacing the wheels of steam-locomotives, one or more pairs of wheels being ordinarily removed or replaced at a time, though my invention is generally applicable for removing objects from beneath heavy structures and for putting objects under such structures whenever desirable.

In the form of my invention disclosed I have provided a well or pit in the main working floor, over a portion of which the locomotive or other heavy structure to be operated upon is located. A platform is arranged in the portion of the pit beneath the structure to be operated upon, and means are provided for dropping this platform down into the pit and raising it again when desired. A similar platform or table is located in a portion of the pit not covered by the structure to be operated upon. Means are provided for also dropping this platform down into the pit and for raising it. The two platforms may advantageously be operated by a single prime mover, and in the embodiment of my invention disclosed this prime mover comprises an electric motor arranged to simultaneously raise and lower the two platforms. A passage or runway is formed in the pit, which extends between the two platforms. In operation the structure to be operated upon is so located that the object to be removed may rest upon one platform and when freed from the structure is dropped down into the pit. The object is then moved through the runway or passage onto the other platform, by which it is raised to permit its removal from the pit. An analogous method of operation is followed when it is desired to replace the object thus removed or generally to put any object in place under the structure.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of my specification.

For a better understanding of my invention and the advantages possessed by it reference

may be had to the accompanying drawings and descriptive matter, in which I have illustrated and described somewhat in detail one of the forms in which my invention may be carried out.

Of the drawings, Figure 1 is a sectional elevation of my apparatus. Fig. 2 is a plan view of the apparatus shown in Fig. 1. Fig. 3 is a sectional elevation on the line 3 3 of Fig. 1, but on a larger scale than Fig. 1. Fig. 4 is a plan view on a larger scale than Fig. 2, showing the arrangement of the operating-motor and its braking mechanism. Fig. 5 is an elevation of the same, and Fig. 6 is a section on the line 6 6 of Fig. 5. Fig. 7 is a diagram of circuit connections which may be employed.

In the drawings, 1 represents the floor-level of a repair-shop or the like in which my invention is employed. The upper edges of the side walls 2 of an elongated well or pit are flush with the floor 1. The side walls 2 of the well and the bottom walls 3 may advantageously be formed of concrete. The elongated sides of the well are, in the form disclosed, lined by metal plates 4, secured in place by anchor-bolts 5.

Adjacent each end of the well is located a platform or table 6, comprising beams 7, extending parallel to the length of the well, and beams 8, extending transversely thereto. To the under side of each platform are secured the upper ends of four vertical threaded rods 9. These rods pass through threaded nuts 10, suitably journaled in bearings at the bottom of the well. The bearings proper for the nuts 10, which may be of any well-known form and advantageously may be of the roller or ball type, each comprises a bottom member 11, having a spherical under portion, which is seated in the upper end of a tubular member 12. The periphery of each nut 10, which is circular in outline, is provided with teeth 10', which mesh with a corresponding worm-gear 13, carried by one or the other of a pair of parallel shafts 14, which extend along the bottom of the well parallel to its length. As shown, each shaft 14 carries two worm-gears 13, which cooperate with two of the threaded posts 9, connected to one platform, and two gears 13, which cooperate with two of the threaded posts secured to the other platform. The gears 13, carried by one shaft and cooperating with the threaded posts connected to a single platform, are reversely threaded, as



are the cooperating posts, so that while a rotation in one direction of the shaft 14 tends to similarly move all the posts 9 engaged by its gears the end thrust exerted on each gear 13 is balanced by the end thrust exerted on the other gear for the same table. As shown, a suitable framework 15 is provided at each end of the pit for securing in place the supports 11 and for supporting bearings for the corresponding end of the shafts 14. Intermediate bearings for the shafts 14 may be carried by frame members 16. The supporting-frames 15 and 16 may be secured in place by suitable anchor-bolts, as desired.

Vertical passages are formed in the bottom of the well proper to receive the ends of the bolts or posts 9 when the latter are lowered. These passages may be lined by tubular members 17. Tubular guides 18 for the posts may be secured to the lower ends of the members 12 by threaded connections, as shown. The guides 18 extend down in the tubular members 17.

The framework for supporting the bearings for the threaded posts of the right-hand platform, as viewed in Fig. 1, is extended to support a prime mover, which in the form shown is an electric motor having its armature-shaft 19 geared to a counter-shaft 20, which is connected to one of the shafts 14 by a coupling 21. The shafts 14 are geared together by gears 22 of equal diameter. One end of the armature-shaft 19 carries a brake-drum 23. Surrounding the brake-drum 23 is a braking member comprising two substantially semicircular metal members 24, having ears 25 at their upper ends, which are adjustably secured together by a bolt 26. The lower ends of the members 24 are connected to links 27, pivotally connected together, and to a link 28 by a pin 27'. The link 28 is connected to a lever 29, pivoted at 30 to the framework supporting the motor and carrying at its other end a counterweight 31. The members 24 may be lined with segments 32 in the form of wooden blocks.

It will be understood that the counterweight 31 normally pulls the lever 29 down about its pivotal point 30 with a force sufficiently great to cause the brake-drum to be held stationary by the members 24. Adjacent the counterweight 31 the lever 29 is secured to the yoke of a U-shaped armature 33 by a link 33'. Each leg of the armature 33 passes axially into the corresponding one of a pair of coils 34 of the solenoid type. When suitable current is passed through the windings of solenoids 34, the armature is attracted and moves upward the end of the lever 29, connected to it. This releases the brake-drum from the braking members 24 and allows the motor-armature shaft to be rotated.

Transverse deck or floor beams 35 extend across the top of the pit at intervals between the platforms. These support rails 36,

which extend parallel with the length of the well. Each platform carries a pair of rails 37 in alinement with the rails 36. Track irons or rails 38, carried by the floor 1 at opposite ends of the pit, extend to the ends of the rails 37. As shown in Figs. 1 and 2, the rails 38 at the right-hand end of the well extend over the motor and are supported by deck-beams 35'.

In the normal operation of the device the platforms are adjusted vertically, so that the rails 37 are at the same level with the rails 36 and 38, and the rails 36, 37, and 38 then form a continuous track.

In Figs. 1 and 3 the platforms are shown at the extreme upward limits of their respective movements, and the rails 37 are slightly above the rails 36 and 38; but normally the rails 37 are never raised above the rails 36 and 38.

In the use of my invention to remove a pair of wheels from a locomotive the locomotive is run onto the rails 38, 37, and 36 to bring the pair of wheels to be removed over one of the platforms or drop-tables—as, for instance, the left-hand one shown in Fig. 1. After the wheels are disconnected from the locomotive structure the motor-brake is released and the motor set in operation to drop the platforms down in the well far enough to bring the upper surfaces of the rail-sections 37 in a plane with the upper surface of a pair of abutments 39, which may be formed of concrete and extend parallel to and one at each side of the shafts 14. The wheels are then moved from the platform on which they have been lowered to the other platform, after which the platforms are raised to the floor-level. The wheels are then moved off the rails 37 on that platform onto the rails 38. In replacing the wheels a reverse operation is performed.

A single motor for operating both platforms may readily be employed, since the maximum load on each platform is ordinarily the same and one platform only is loaded at a time. The winding of the electromagnetic brake-releasing device may advantageously be in series with the motor, since such an arrangement insures that the brake is in the holding position except when the motor is operatively energized.

The circuit arrangements which may be employed for the motor and brake-releasing device are shown in Fig. 7, where 40 and 41 represent the conductors supplying current, 42 represents the field-winding of the motor, 43 the armature, and 44 the windings of the coils 34. The braking mechanism thus automatically protects the apparatus in case of interruption of the motor-circuit while the platforms are elevated and loaded.

While the form of my invention hereinbefore described and illustrated has been found to give excellent results, it will be un-



derstood by those skilled in the art that changes may be made without departing from the spirit of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination, a main working floor having a pit formed in it, a pair of vertically-movable platforms or tables located one at each end of said pit, a runway in said pit, means beneath the floor-level for moving said platforms from the main floor-level to the level of the runway and vice versa, rails carried by each platform, rails in alinement therewith carried by the main platform and connecting the adjacent ends of the rails of the different movable platforms when the latter are in their floor-level position.

2. In combination, a working floor having a pit formed in it, a pair of vertically-movable platforms located in said pit and spaced apart from each other; means for moving said platforms from the floor-level to a sublevel beneath the floor-level, a runway between the platforms at the same level therewith when the latter are in their sublevel position, a pair of parallel rails carried by each platform, the rails on each platform being in alinement with the corresponding rails of the other platform, rails carried at the floor-level connecting with the adjacent ends of the rails of the two platforms when the latter are at the floor-level and other rails at the floor-level connecting with the opposite ends of the rails carried by the platforms when the latter are at the floor-level.

3. In combination, a working floor having a pit in it and a runway at the bottom of the pit, a pair of movable platforms or tables located in said pit and spaced apart from each other, and means for simultaneously moving

said platforms from the level of said working floor to the level of the runway and back, said means including a single prime mover for operating both tables.

4. In combination, a working floor having a pit in it and a runway at the bottom of the pit, a pair of movable platforms or tables located in said pit and spaced apart from each other, means for moving said platforms from the level of said working floor to the level of the runway and back, said means including an electric motor for operating both tables, a brake normally holding said motor stationary, and an electromagnetic device for releasing said brake.

5. In combination, a working floor having a pit in it and a runway at the bottom of the pit, a pair of movable platforms or tables located in said pit and spaced apart from each other and means for moving said platforms from the level of said working floor to the level of the runway, said means including an electric motor for operating both tables, a brake normally holding said motor stationary, and an electromagnetic device for releasing said brake, said device including a winding in series with the motor.

6. In combination, a main working floor having a pit formed in it, a pair of movable platforms located in said pit and spaced apart from each other, a pair of abutments spaced apart from each other, located in said pit, and extending between the platforms, means for moving the platforms from the main floor-level to the level of the abutments and back, including a shaft passing between said abutments.

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Witnesses:

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