M. MAURER.

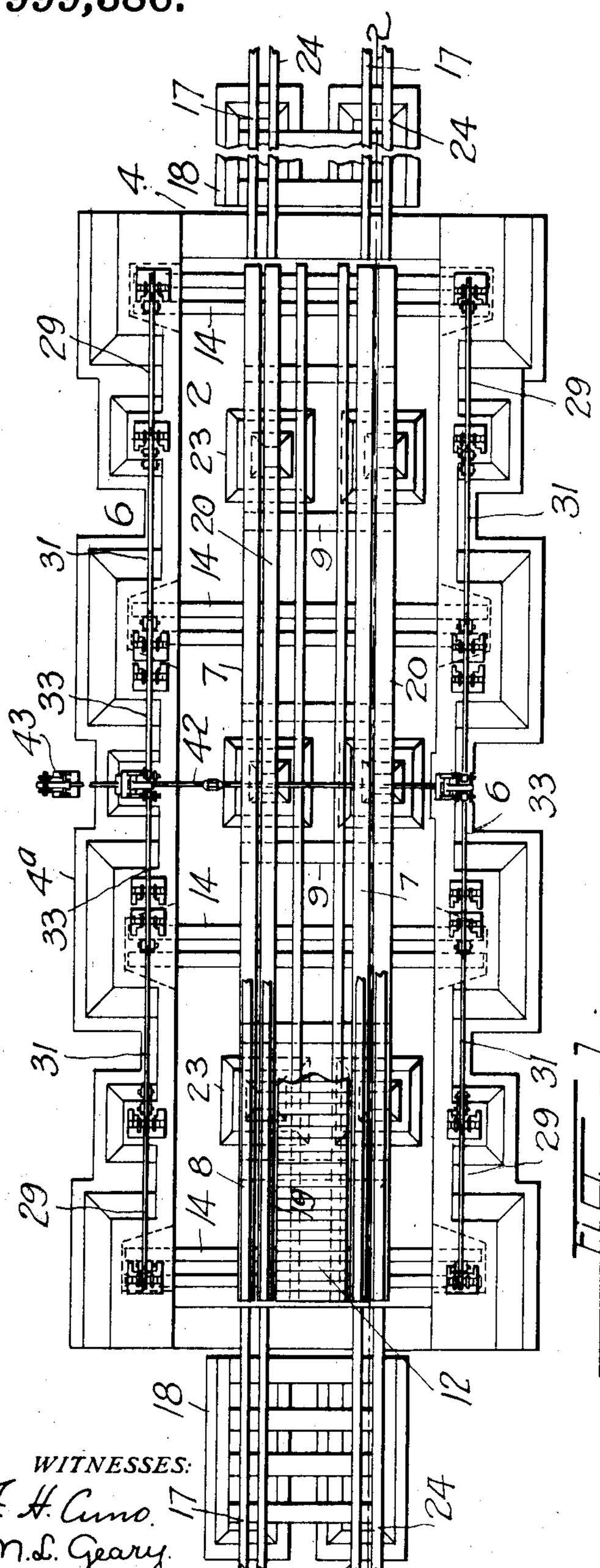
RAILROAD TRACK SCALE.

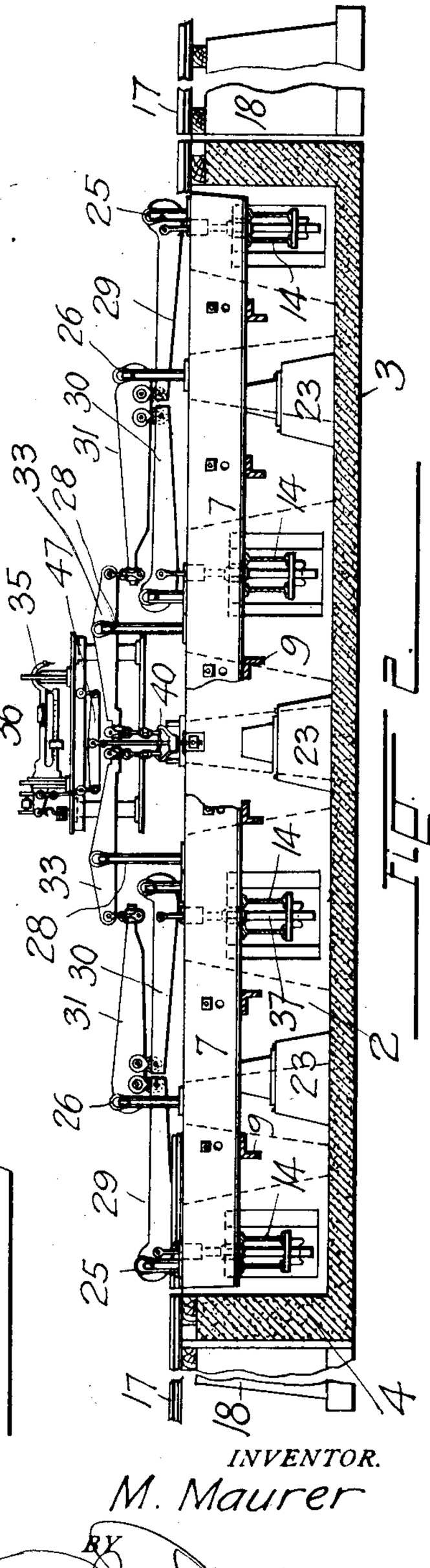
APPLICATION FILED NOV. 30, 1909.

999,386.

Patented Aug. 1, 1911.

5 SHEETS—SHEET 1.





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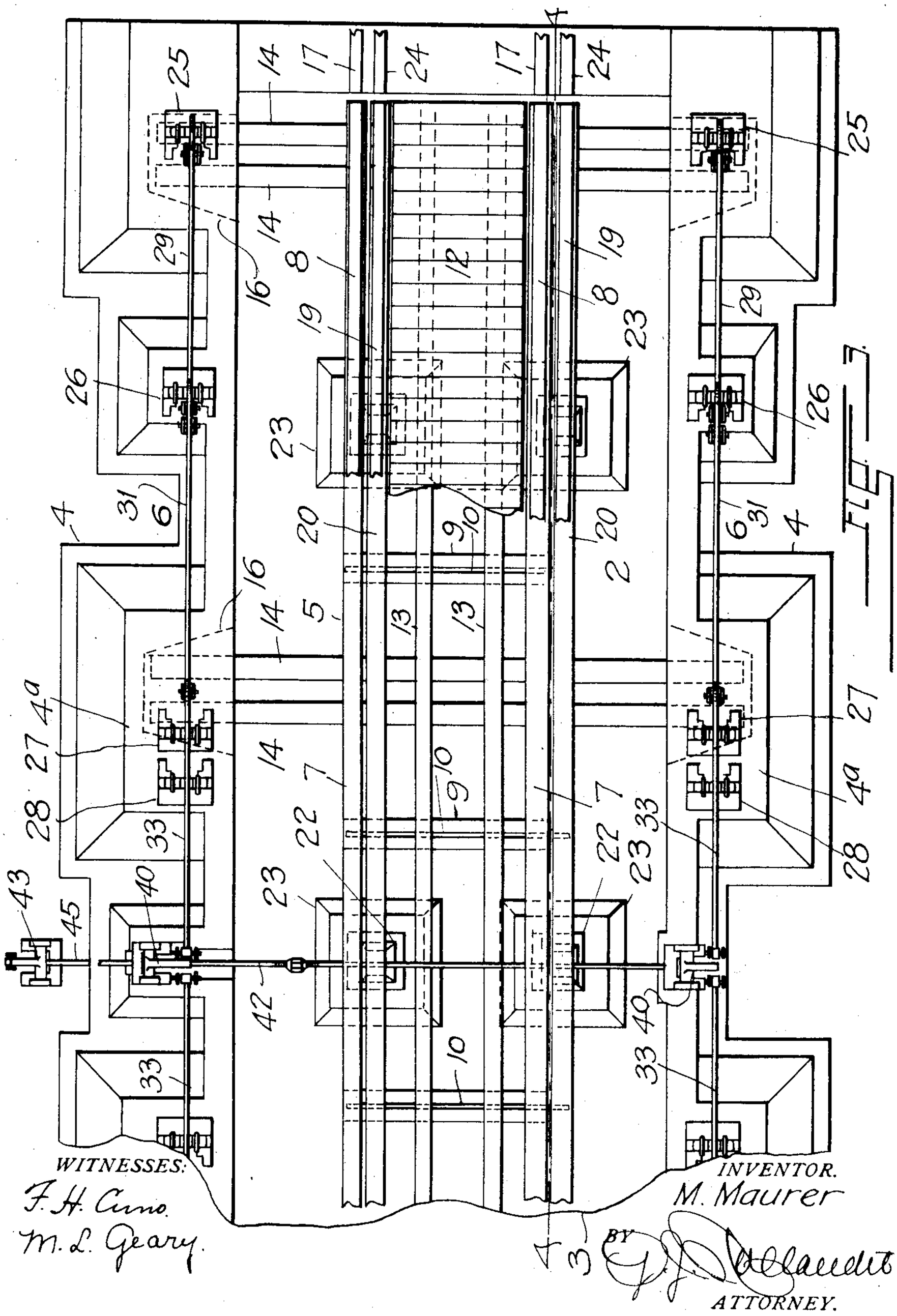

FIG. 3.

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5 SHEETS—SHEET 3

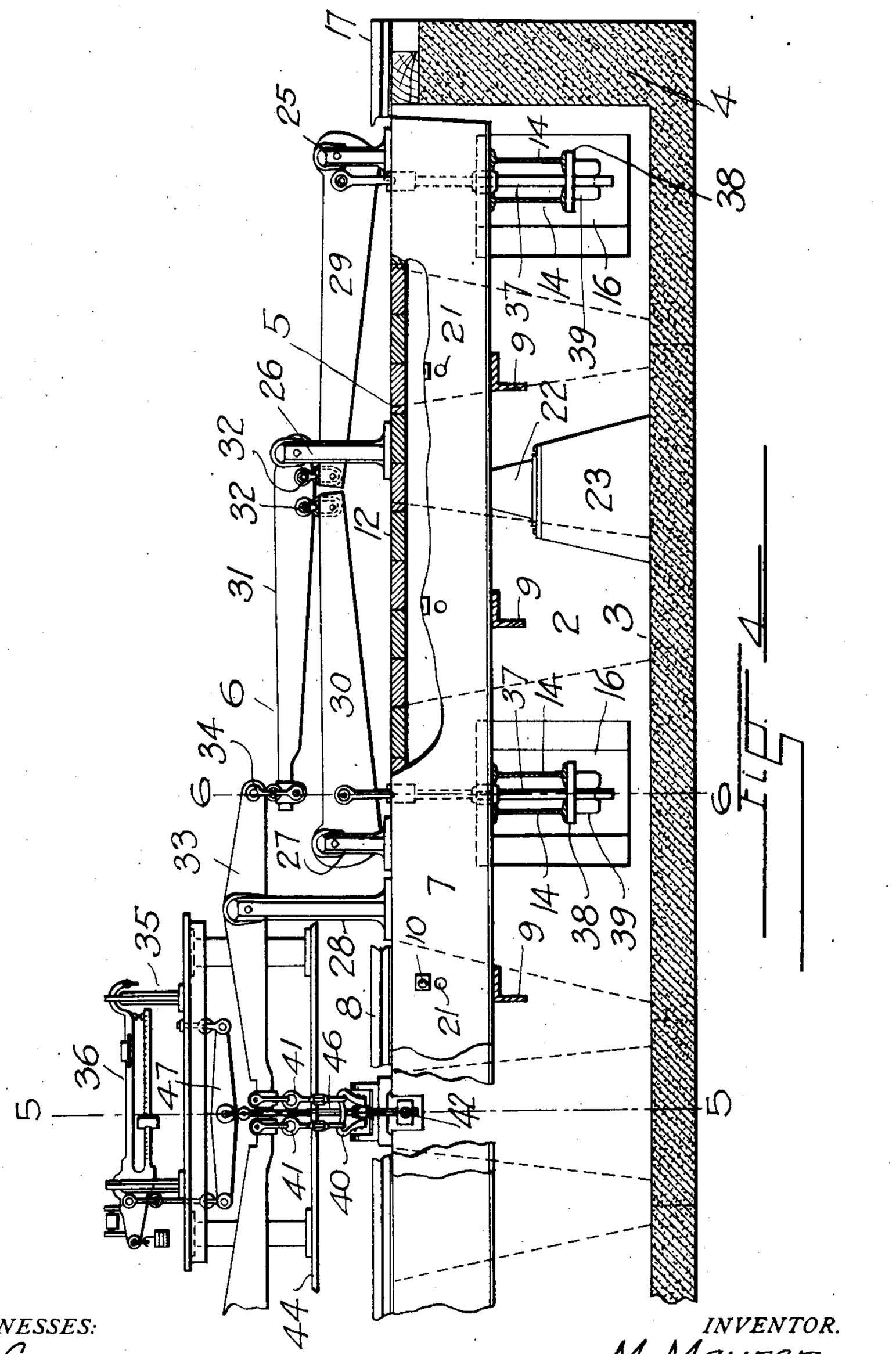

FIG. 4

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5 SHEETS—SHEET 4.

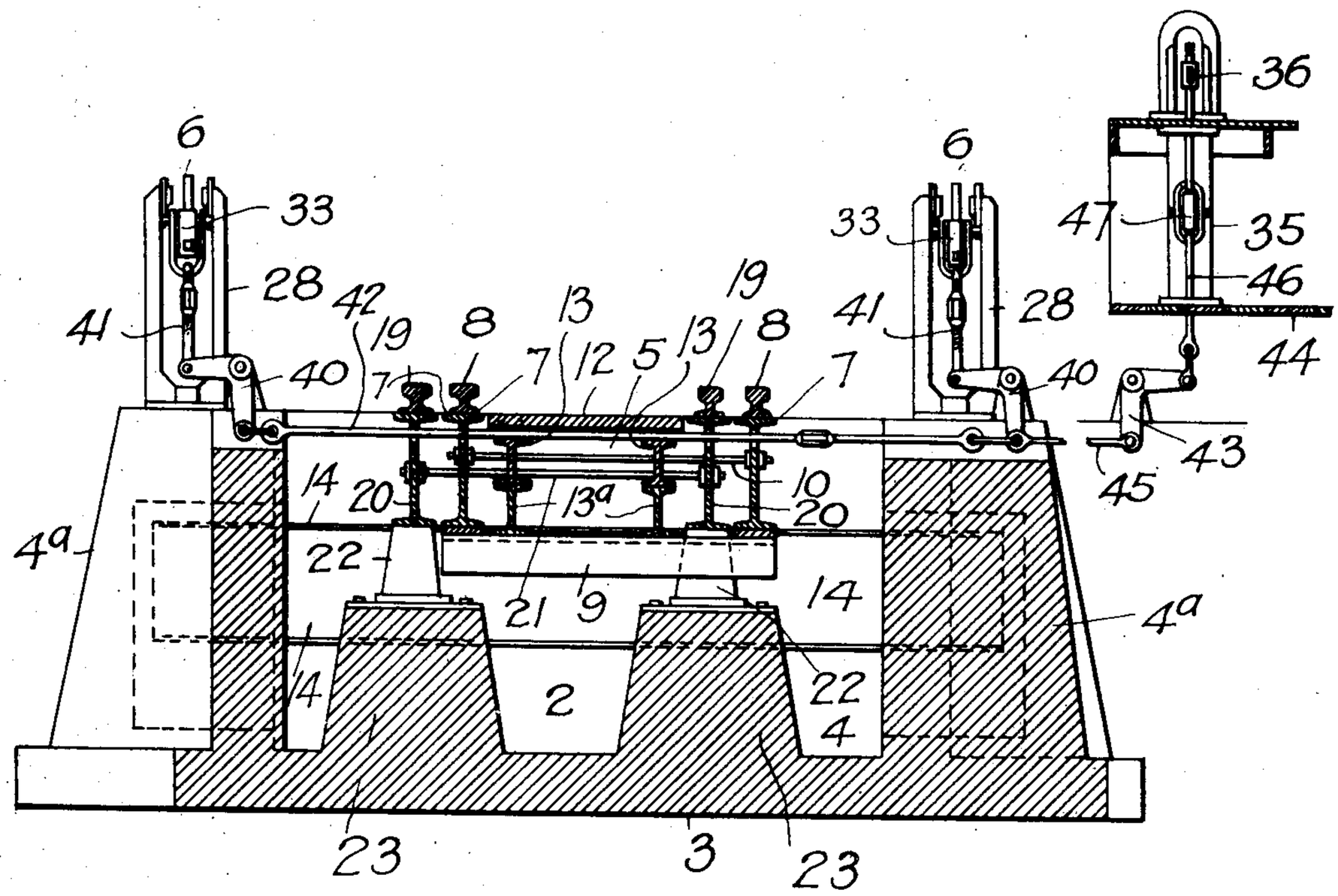

Fig. 5.

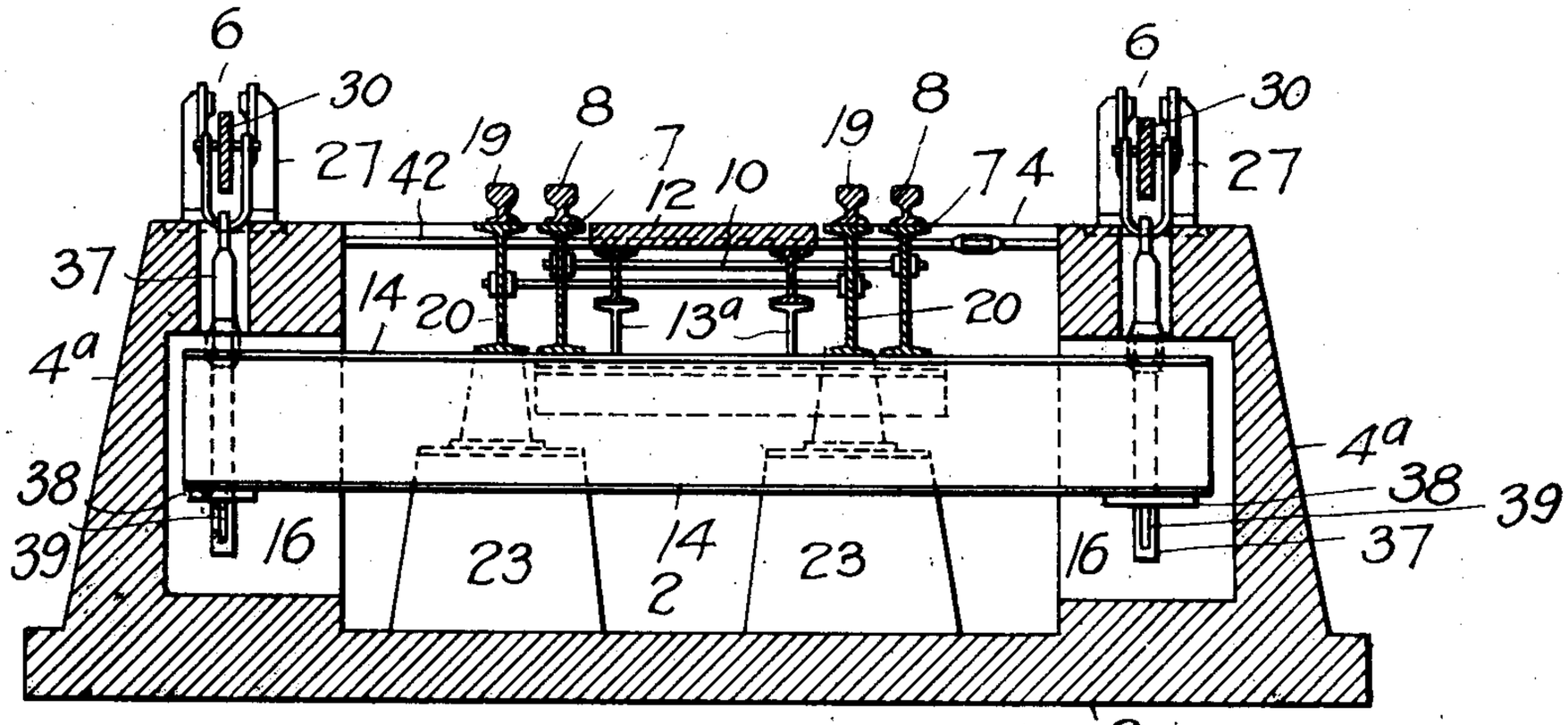

Fig. 6.

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5 SHEETS—SHEET 5.

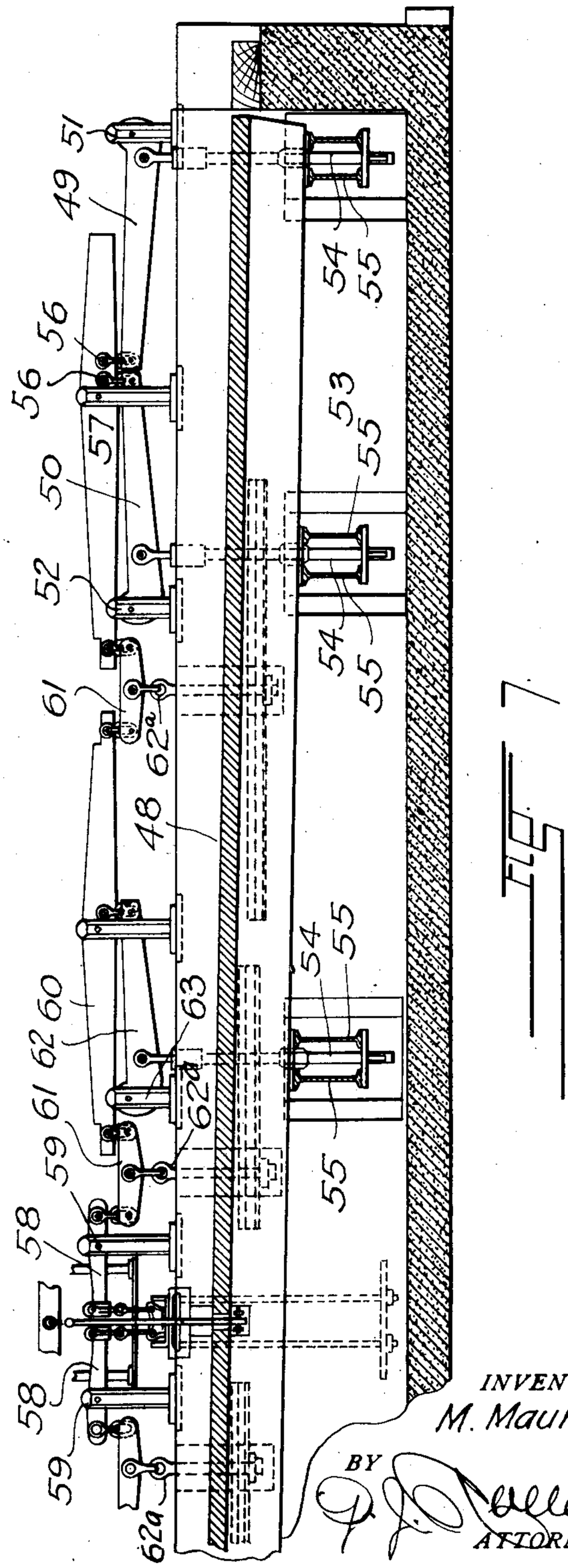

FIG. 7.

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UNITED STATES PATENT OFFICE

MARTIN MAURER, OF PUEBLO, COLORADO.

RAILROAD-TRACK SCALE.

999,386. Specification of Letters Patent. **Patented Aug. 1, 1911.**

Application filed November 30, 1909. Serial No. 530,545.

To all whom it may concern:

Be it known that I, MARTIN MAURER, a citizen of the United States of America, residing at Pueblo, in the county of Pueblo and State of Colorado, have invented certain new and useful Improvements in Railroad-Track Scales, of which the following is a specification.

This invention relates to new and useful improvements in railroad track scales and more particularly in scales of the suspension type in which the rolling stock to be weighed is supported on a vertically movable platform hung from levers above.

The object of the invention resides in the provision of a simple but highly effective mechanism which being disposed upon a solid foundation at opposite sides of the pit in which the platform moves, obviates the use of transverse levers, the installation of overhead structures or the disposition of operating parts below the surface of the ground.

The mechanism above referred to includes a system of levers mounted at opposite sides of the pit, from which the platform is suspended, and a scale beam of the usual construction which is operatively connected with the said system of levers by simple transmission means.

The arrangement of the levers without the scale pit avoids their being subject to the corrosive and demolishing influences of the water and mud, which, especially during heavy rains, collect therein, while the absence of an overhead structure for the support of the levers, eliminates vibration and greatly reduces the expense of installation and maintenance. The operative parts of the mechanism are at all times accessible for inspection and repairs and they may, if so desired, be inclosed in a housing which protects them from rain, snow, frost, and other detrimental influences of the weather. An additional advantage derived from the improved construction of the scale is the fact that it may be installed on scales already in use without materially affecting their operation.

The above, and other, minor, objects are attained by the mechanism shown in the accompanying drawings in the various views of which like parts are similarly designated and in which—

Figure 1, represents a plan view of the apparatus, Fig. 2, a longitudinal section taken along the line 2—2, Fig. 1, Fig. 3, an enlarged, fragmentary view similar to Fig. 1, Fig. 4, a longitudinal section taken along the line 4—4 Fig. 3, Fig. 5, a transverse section along the line 5—5 Fig. 4, Fig. 6, a cross-section taken along the line 6—6, Fig. 4, and Fig. 7, a fragmentary view similar to Fig. 2, showing a modified construction of the lever system used in scales of more than ordinary length.

Referring to the drawings by numerical reference characters, let the numeral 2 designate the scale-pit whose floor 3 and surrounding wall 4 are preferably composed of concrete and in which the vertically movable platform 5 is suspended from a system of levers composed of two identical series 6 which are mounted upon the said wall at opposite sides of the pit. The platform 5 is composed of two longitudinally disposed parallel I-beams 7, which carry the railway rails 8 and which are connected at intervals by means of transverse angle-bars 9 and tie-bolts 10. A floor 12 disposed between the rails, is supported on the angle bars 9 by means of interposed longitudinally disposed I-beams 13 and therewith connected cast-iron stands 13ª.

The I-beams 7 are rigidly secured upon a series of subjacent cross-beams 14 of similar construction which are arranged in equidistant pairs and have their ends projecting into recesses 16 in the side walls 4ª, to connect with the superposed system of levers as will hereinafter be described.

The rails 8 are disposed in alinement with the rails 17 of the stationary portions of the railroad track, the ends of which are supported upon piers 18 which are formed below the surface of the ground in adjacency to the end-walls of the pit.

To permit the passage of engines or cars over the pit without effecting the platform or the therewith associated weighing mechanism, so-called dead rails 19 are supported in close proximity to the rails 8 upon longitudinally disposed I-beams 20 which are connected at intervals by means of tie-bolts 21. The I-beams 20 are mounted upon cast-iron stands 22 which are erected upon concrete piers 23 formed integral with the floor 3 of the pit, and the rails 19 are alined with stationary rails 24 the terminal portions of which are supported upon the before mentioned piers 18 in parallel relation to the rails 17.

The lever-system above referred to, comprises two perfectly similar series 6, the members of which are fulcrumed respectively, in metal stands 25, 26, 27 and 28 whose foundation-plates are laid in the concrete of the side-walls 4ª of the pit 2. Each series of levers is composed of two identical sets, reversely disposed at opposite sides of the centers of the walls 4ª and each of these sets comprises first, the main suspension levers 29 and 30 which are respectively fulcrumed in the stands 25 and 27 and from which the platform is suspended; second, the extension lever 31 which is connected with the long arms of the levers 29 and 30 by means of links 32 and third; the connecting lever 33 which is fulcrumed on the stand 28 and whose arms are respectively connected with the long arm of the lever 31 by means of a link 34, and with the beam 36 of the scale 35 which may be disposed at any desired distance from the pit 2.

The connection between the main levers 29 and 30 and the subjacent extremities of the cross-beams 14 of the platform, which as hereinbefore explained, project into recesses 16 of the side walls 4ª, is established by means of rods 37 the upper ends of which are pivotally connected with the respective levers, while the lower ends project in between the two cross-beams 14 comprised in the subjacent pairs, and through apertures of thereto attached plates 38, and they are provided with transversely disposed keys 39 which by engagement with the lower surface of the respective plates 38, support the platform.

The means by which the juxtaposed ends of the two levers 33 comprised in the two sets of each of the series 6, are connected with the scale, consist of bell-cranks 40 which are operatively mounted in suitable supports upon the walls 4ª at opposite sides of the pit, links 41 which connect the normally horizontal arms of the cranks with the extremities of the respective levers 33, a rod 42 which extends transversely of the pit through slots in the I-beams 7 and 20 and the floor 12 and which connects the opposite, normally perpendicular arms of the two bell cranks at opposite sides thereof, a bell crank 43 mounted below the floor 44 upon which the scale 35 is supported, a rod 45 which connects the normally vertical arm of the last named crank with the corresponding arm of the adjacent one of the connected bell-cranks 40 and a rod 46 which connects the bell crank 43 with the scale beam 36, preferably through the instrumentality of a lever 47.

It will be understood that the joints between the various movable parts of the mechanism hereinabove described, may be of the knife-edge type or of any one of the many constructions commonly employed in weighing-apparatus to avoid friction and insure accuracy and sensitiveness in their operation.

In the modification illustrated in Fig. 7, of the drawings, the lever system associated with the movable platform 48 is further compounded by the addition of other members which permit the extension of the said platform to any desired length. Main suspension levers 49 and 50 are, as in the first described construction, fulcrumed in stands 51 and 52 in proximity to the ends of the pit 53 and connected, by means of rods 54, with the cross beams 55 of the platform, and by means of links 56, to an extension lever 57 which, in this instance, is of the first-class type. The scale beam, which is not shown in the illustration, is, by means of a mechanism identical with or similar to that hereinabove described, connected with the juxtaposed ends of the connecting levers 58 which are fulcrumed in the stands 59. By the interposition of an additional extension lever 60 between the end extension lever 57 and the connecting lever 58 and by connecting the respective ends thereof with the said levers through the instrumentality of even levers 61 fulcrumed upon the protruding extremities of eye-bolts 62ª which are secured in the wall of the pit, the platform 48 may also be suspended from supplemental suspension levers 62 fulcrumed in stands 63 between those at the ends of the pit and the center of the apparatus and the said platform may thus be extended to any desired length without detriment to its sustaining qualities.

It will be observed that but one member of the mechanism, viz:—the connecting rod 42 between the bell-cranks 40, is disposed transversely of the pit and that no parts are within the latter. No overhead structure such as is commonly used in scales of the suspension type, is therefore required, all parts and joints are accessible for inspection at any time, vibration commonly due to the elevated position of all or part of the lever system is reduced to the minimum, and by inclosing the operative parts of the apparatus in a suitable housing, they may be protected from dirt, moisture, frost, etc., without interference with their operation.

Although the various levers comprised in the lever system may be fulcrumed in any desirable manner, I preferably employ the stands shown and described in my United States Patent No. 873,879, issued December 17, 1907.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. In a railway track scale, a movable platform composed of longitudinal beams, cross-beams supporting the same, rails upon the said longitudinal beams, longitudinal supports upon said cross-beams and a floor

between the said rails and upon the said supports.

2. In a railway track scale, the combination with a movable platform and a scale beam, of a system of levers adapted to transmit a movement of the one to the other, and comprising two series disposed at opposite sides of the said platform and each composed of two identical reversely arranged sets, each set including suspension levers, an extension lever operatively connected therewith and a connecting lever operatively connected with the extension lever, means for suspending the platform from the said suspension levers, bell cranks mounted respectively below the connecting-levers comprised in each series and operatively connected therewith, a rod connecting the opposite arms of the said cranks and extending below the surface of the said platform, and a transmission mechanism connecting one of the said cranks with the said beam.

3. In a railway track scale, the combination with a movable platform and a scale beam, of a system of levers adapted to transmit a movement of the one to the other, and comprising two series disposed at opposite sides of the said platform and each composed of two identical reversely arranged sets, each set including suspension levers an extension lever operatively connected therewith and a connecting lever operatively connected with the extension lever, means for suspending the platform from the said suspension levers, bell-cranks mounted respectively below the connecting-levers comprised in each series and operatively connected therewith, a rod connecting the opposite arms of the said cranks and extending below the surface of the said platform, a bell-crank operatively connected with the said beam, and a rod connecting the last named crank with one of those associated with the said connecting levers.

4. In a railway track-scale, the combination with a movable platform and a scale-beam, of a system of levers adapted to transmit a movement of the one to the other and comprising two series disposed at opposite sides of the said platform, and each composed of two identical reversely arranged sets, each set including end suspension levers, an extension lever operatively connected therewith, a supplemental suspension lever, a supplemental extension lever with which the supplemental suspension lever is operatively connected, a connecting lever and even levers respectively connecting the extension levers to each other and the supplemental extension lever with the connecting lever, means for suspending the platform from the various suspension levers, an equalizing means, extending below the surface of the platform and connecting the connecting levers of the four sets, and a transmission mechanism between the said equalizing means and the said beam.

5. In a railroad track scale, the combination with a movable platform and a scale-beam, of a system of levers adapted to transmit a movement of the one to the other, and comprising two series disposed at opposite sides of the said platform, each of said series consisting of two identical reversely arranged sets of levers, each set including a plurality of suspension levers, a pair of which have their long arms extending toward each other, coöperatively connected extension levers operatively connected with the respective suspension levers, and a connecting lever operatively connected with one of the said extension levers, means for suspending the platform from all of said suspension levers, and equalizing means located below the surface of the platform and connecting the connecting levers of the four sets, and a transmission mechanism between the said equalizing means and the said beam.

In testimony whereof I have affixed my signature in presence of two witnesses.

MARTIN MAURER.

Witnesses:
G. J. ROLLANDET,
M. L. GEARY.