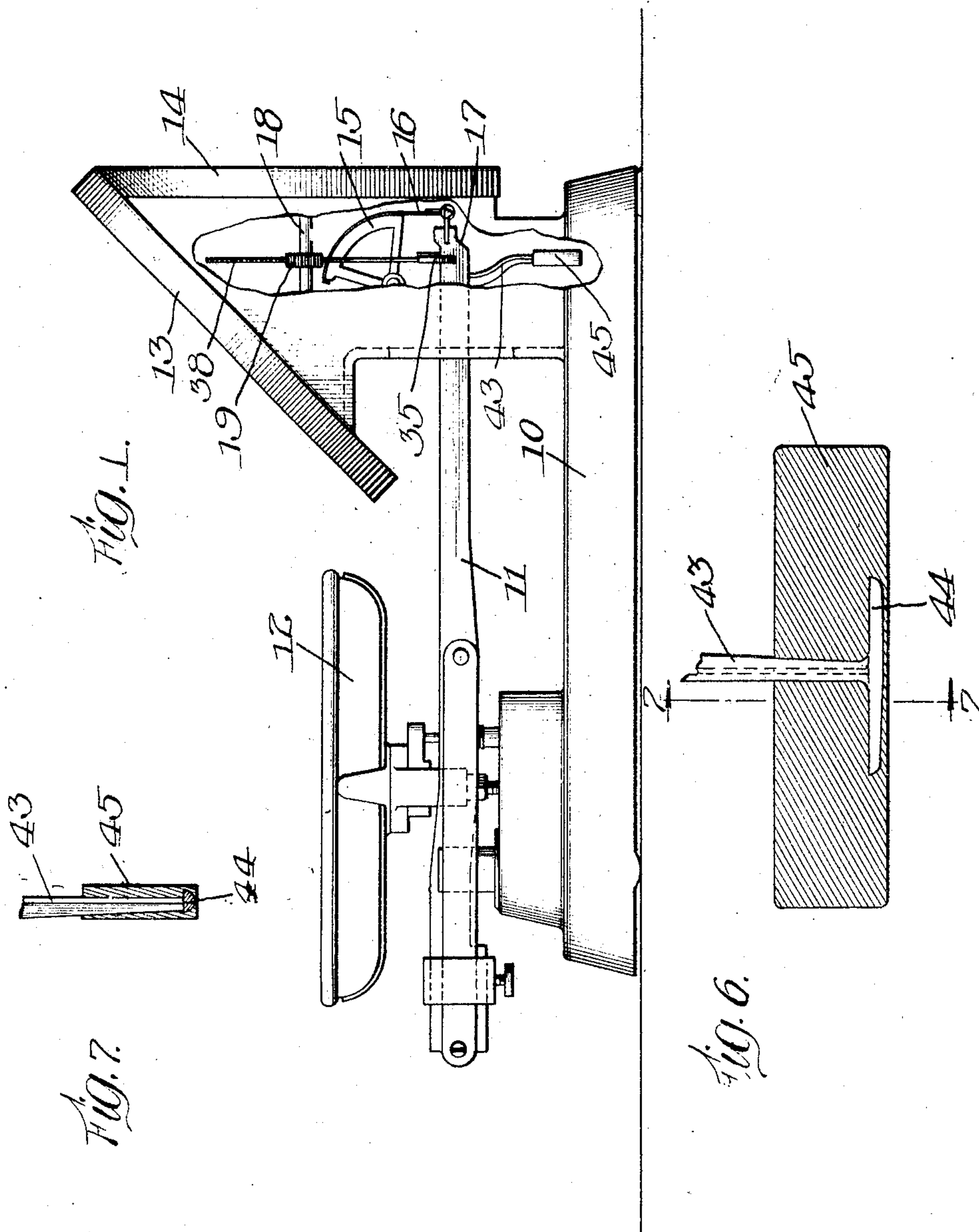


G. M. MAYER.
WEIGHING SCALE.
APPLICATION FILED MAR. 18, 1907.

983,385.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.



Witnesses:
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J. F. Johnson, Jr.

Inventor:
G. M. Mayer
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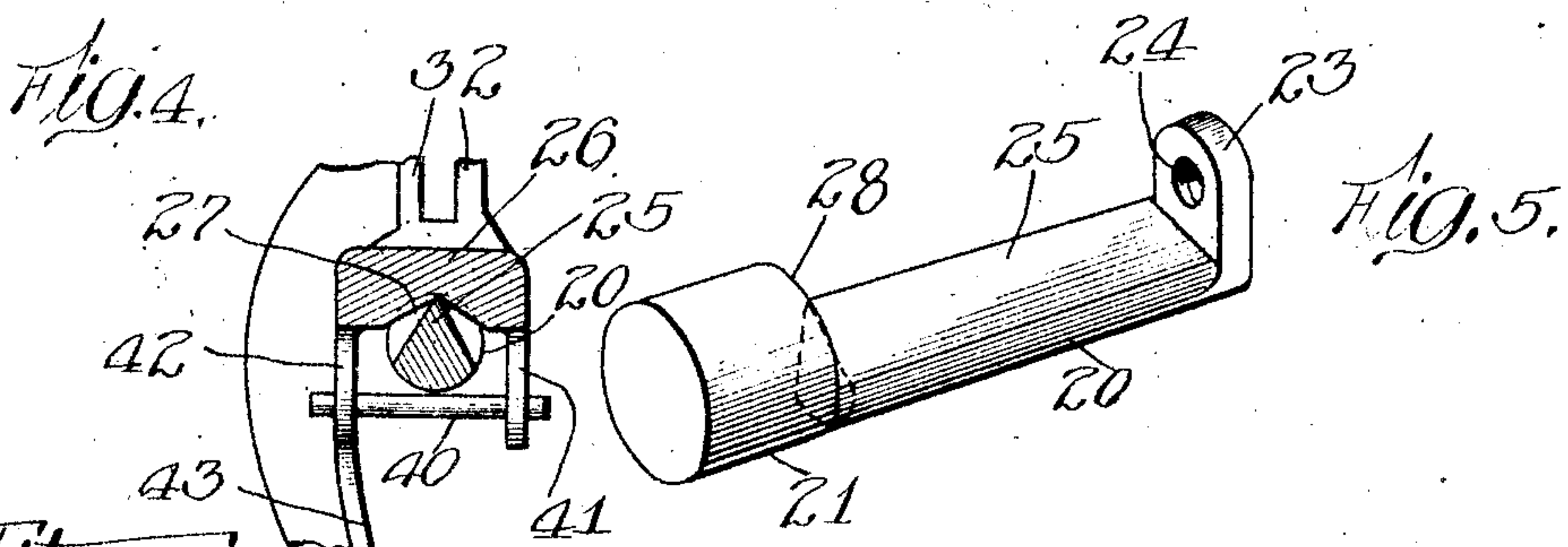
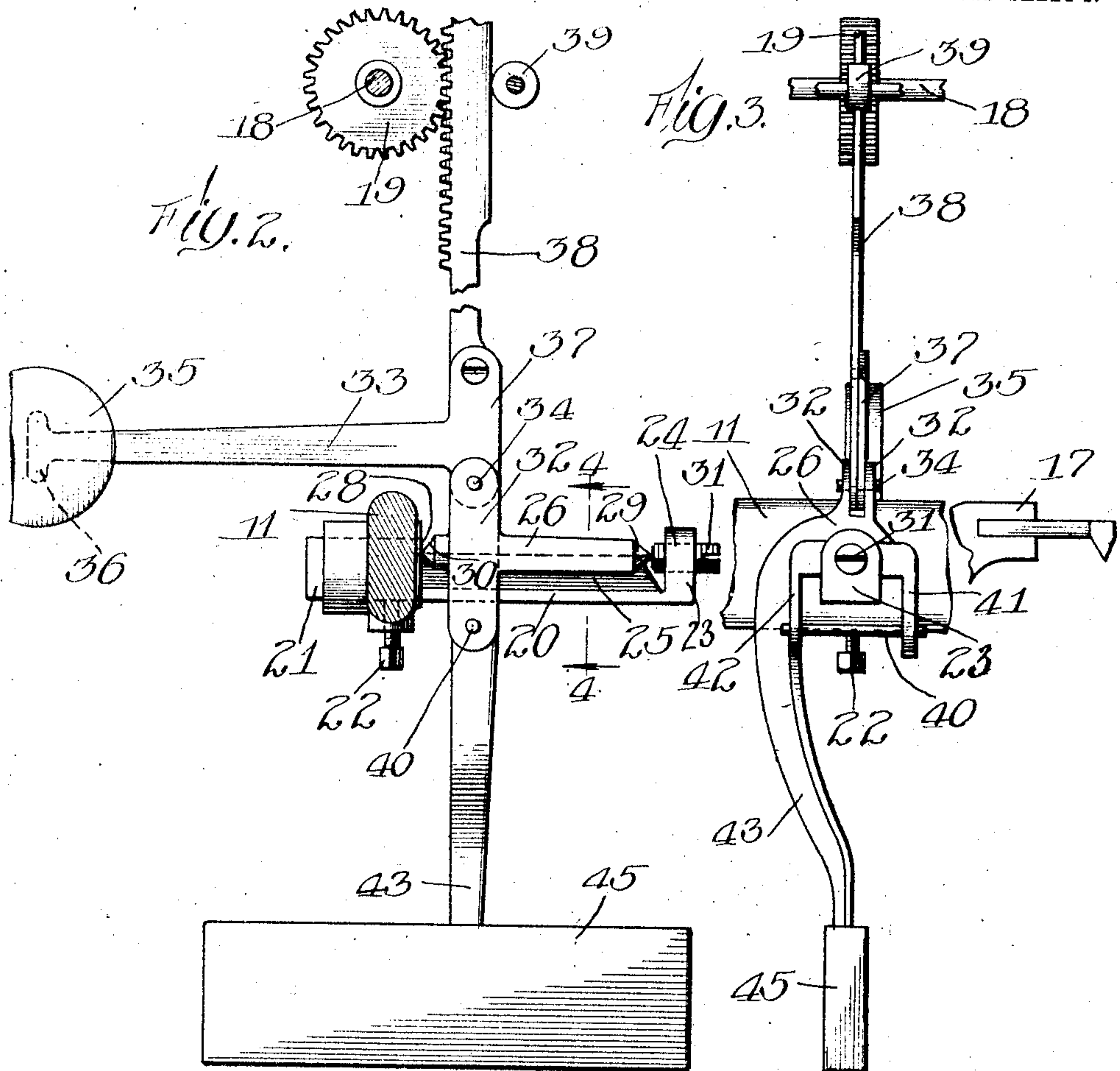
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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE M. MAYER, OF ELKHART, INDIANA, ASSIGNOR TO JOSEPH E. COCHRAN, OF ELKHART, INDIANA.

WEIGHING-SCALE.

983,385.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed March 13, 1907. Serial No. 362,793.

To all whom it may concern:

Be it known that I, GEORGE M. MAYER, a citizen of the United States, residing at Elkhart, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Weighing-Scales, of which the following is a specification.

In Patent No. 777,602, issued December 13, 1904, to Joseph E. Cochran, and also in application for Letters-Patent filed by Joseph E. Cochran, on or about the 19th of February, 1906, Serial Number 301,719, there is shown and described an improved construction of weighing scales in which the depression of the pan or platform is respectively resisted by a spring and a weighted pendulum, and in which are employed two dials, one arranged in an inclined position; the pan or platform being located to one side of the inclined dial, and the hands of the dials being operated by means of a gear and rack connection, operatively related to the end of the scale-beam, so that the beam will swing in a vertical plane at right angles to the vertical plane of the hand operating gear shaft.

The present invention relates to an improved scale of this character, in which the platform or pan is arranged in front of the inclined dial, and the object of the same is to provide an improved device of this character in which the beam will swing in the same vertical plane as the gear on the hand-operating shaft.

A further object is to provide an improved knife edge joint or swivel for mounting and balancing the hand operating rack.

A further object is to provide improved means for balancing and preventing the vibration of the rack around its pivotal support, and for maintaining the same in its operative position.

To the attainment of these ends and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination, and arrangement of the several parts hereinafter more fully described and claimed, and shown in the accompanying drawings, illustrating an exemplification of the invention, and in which:—

Figure 1 is a side elevation partly broken away, of a scale constructed in accordance with the principles of this invention; Fig.

2 is an enlarged detail elevation of the dial hand operating rack, and the balancing and supporting means therefor; Fig. 3 is an end elevation of Fig. 2; Fig. 4 is a sectional view on line 4—4 of Fig. 2. Fig. 5 is a detail perspective view of the supporting knife edge for the operating rack; Fig. 6 is a detail view, partly in section, of the balancing weight; and Fig. 7 is a sectional view on line 7—7 of Fig. 6.

Referring more particularly to the drawings, and in which the same reference characters designate similar parts throughout the several views, in this exemplification of the invention the numeral 10 designates a supporting base, 11 a pivotally supported scale-beam, 12 a pan or supporting platform operatively related to the scale beam, 13, 14, dials, one of which, preferably the dial 13, is arranged in an inclined position, and 15 designates a weighted cam to which the free end of the scale beam 11 is connected by a suitable flexible connection 16, all of the above parts being of any desired construction and forming no part of the present invention.

The free end 17 of the beam 11 projects into a suitable casing which is preferably formed between the dials 13 and 14, and journaled across the casing is a suitable shaft 18 to which is secured one dial hand, as set forth in the patent and the application above referred to. A gear-wheel 19 is secured to the shaft 18, and is preferably located at a point intermediate the two dials. Projecting laterally from the forward end of the scale beam 11 is a bracket 20, which is secured to the beam 11 in any desired manner, preferably by means of one end 21 thereof projecting through the beam 11; and said bracket is held in position in any desired manner, preferably by means of a screw or bolt 22, which passes transversely through the beam 11 and engages the bracket 20 near one end. This bracket projects for some distance beyond the side of the beam 11, and is provided adjacent its free extremity with an upwardly projecting ear or jaw 23, and passing transversely through this jaw or ear 23 is a suitable threaded aperture 24. The upper edge of the face of the bracket 20 is reduced or beveled as at 25 at points intermediate its ends, and to form an upwardly projecting knife edge.

A suitable bracket 26 is provided, with recessed portion 27 to form a bearing for the reception of the knife edge 24. This bracket 26 is of a length to substantially fill the space between the jaw 24 and the shouldered portion 28 of the bracket 20, and the extremities 29, 30 thereof are tapered or pointed. The extremity 30 is adapted to rest and form a bearing against the shouldered portion 28, and the tapered extremity 29 is adapted to rest and form a bearing against the end of a suitable screw or bolt 31 which passes through the transverse aperture 24, and into a position to be engaged by the end 29. When in position, and with the bracket 26 resting upon the knife edge 25, so that said edge will enter the bearing 27, the screw or bolt 31 may be adjusted to prevent lateral movement or regulate the end play of the bracket 26.

Projecting upwardly from the top of the bracket 26, preferably adjacent the end in proximity to the beam 11, are parallel ears or projections 32, which are provided with suitable apertures adapted to register with each other.

A suitable arm 33 is pivoted by one end between the ears or projections 32 by means of a transverse pin 34, which passes through the apertures in the gears and a suitable aperture in the arm 33, and said arm is adapted to preferably project or extend transversely across the beam 11. Secured to the free end of the arm is a suitable weight 35, which is preferably in the form of a disk cast or otherwise secured on the end of the arm. If desired, the extremity 36 of the arm may be flattened or widened so as to form an extended surface for the weight 35. The arm 33 is also provided with an upwardly projecting portion or ear 37 located preferably in line with its point of pivotal support 34. Secured to said ear or projection and by one end thereof is a suitable operating rack 38, the teeth of which are adapted to engage and mesh with the teeth of the gear 19 on the dial hand shaft 18. It will be seen that the weight 35 on the free end of the arm 33 is disposed in such relation with the point of pivotal support of the arm 33 and the rack 38, that the normal tendency of said weight is to depress the free end of the arm 33 to cause the rack 38 to always remain in engagement with the gear 19.

If desired, a suitable rotatable member 39 may be provided and arranged in close proximity to the rear face of the rack 38, and at a point preferably adjacent the gear 19, so as to prevent the rack 38 from jumping out of engagement with the pinion 19 when a weight is suddenly placed upon or removed from the platform or support 12 of the scale. The bracket 26 may be held from accidental displacement upon the

knife edge 25 in any suitable manner, preferably by means of a transverse pin or member 40 which passes through apertures in suitable depending portions 41, 42, of the bracket 26, and which stand on each side of the bracket 20. The bracket 26 is also provided with a vertically downwardly projecting extension or arm 43, which is preferably formed as a continuation of the depending portion 42, and said arm or extension is so shaped that the free extremity thereof will project slightly under the bracket 20, and normally stand approximately beneath the rack 38. The free extremity 44 of the arm or extension 43 is preferably enlarged or deflected laterally on both sides of the arm, so as to form an extended surface, and cast or otherwise secured to said extended end so as to surround the same, so that said end and the adjacent extremity of the arm 43 will be embedded in the weight, is a suitable weight or member 45. This weight or member 45 is preferably thin in cross-section, and of some length and width so as to form an extended surface, which will act in the nature of a fan, to act upon the air to check the vibration of the bracket 26 around its point of pivotal support, or the knife edge 25, to always maintain the rack 38 in a vertical or operative position, so that the same will not become disengaged from the gear wheel 19.

It is thought that from the above description the operation of this improvement will be fully understood, and it will be noted that when the free end 17 of the beam 11 is depressed by the placing of an article upon the pan, or platform 12, the brackets 20 and 26 will be lowered, and as the beam descends the weight or member 45 will cause the bracket 26 to move about the knife edge 25 to maintain the rack 38 in a proper position, and the weight 35 on the free end of the arm 33 will also act upon the rack 38 to keep the same in mesh with the gear 19. It will also be noted that the weight or member 45 is so arranged that its extended faces offer a large surface to the air to prevent vibrations of the bracket 26 about the knife edge 25.

In order that the invention might be fully understood by those skilled in the art, the details of the foregoing embodiment thereof have been thus specifically described, but

What I claim as new and desire to secure by Letters Patent is—

1. In combination in a scale, a dial, an indicator movable over the dial, an operating shaft for the indicator, a pivoted scale beam, one end of which is movable in the same vertical plane as the operating shaft, a rack pivotally supported by the beam, a gear on the shaft adapted to be engaged and rotated by the rack to move the indicator, when the beam is moved about its

pivot, and means for balancing the rack upon the beam and for automatically maintaining said rack always in a vertical position.

5 2. In combination in a scale, a dial, an indicator movable over the dial, an operating shaft for the indicator, a pivoted scale beam, one end of which is movable in the same vertical plane as the operating shaft,
10 a rack pivotally supported by the beam, a gear on the shaft adapted to be engaged and rotated by the rack to move the indicator, when the beam is moved about its pivot, means for balancing the rack upon the beam
15 and for always maintaining said rack in a vertical position while the beam is being moved, and means for holding said rack in engagement with the said gear.

3. In combination in a scale, a dial, an indicator movable over the dial, a gear for
20 operating the indicator, a pivoted scale beam, one end of which is movable in the same vertical plane as the operating shaft, a rack pivoted to the beam and engaging
25 the gear for rotating the latter when the beam is moved about its pivot, and means for balancing the rack upon the beam and for maintaining the rack in a vertical position, said means also serving to prevent
30 oscillation of said rack about its point of pivotal support when the beam is being moved.

4. In combination in a scale, a dial, an indicator movable over the dial, a gear for
35 operating the indicator, a pivoted scale beam, a rack pivoted to said beam, a weighted arm operatively related to the rack and adapted to hold said rack in engagement
40 with the gear, and means for balancing the rack upon the beam and for maintaining said rack in a vertical position, said means also serving to prevent oscillation of said rack about its point of pivotal support when the beam is moved.

45 5. In combination in a scale, a dial, an indicator movable over the dial, a gear for operating the indicator, a pivoted scale beam, a rack pivotally supported by the beam, and engaging the gear for operating
50 the indicator, and means for maintaining said rack in a vertical position, said means being provided with an enlarged surface exposed to the air and against which surface
55 the air forms a resistance to prevent vibration of the rack about its point of pivotal support.

6. In combination in a scale, a dial, an indicator movable over the dial, an operating
60 shaft for the indicator, a gear for operating the shaft, a pivoted scale beam, a rack pivotally supported by the beam, and engaging the gear for operating the indicator, means for holding the rack in engagement with the gear, additional means for preventing
65 disengagement of the rack and gear, and

means for maintaining said rack in a vertical position, said means being provided with an enlarged surface exposed to the air and against which surface the air forms a resistance to prevent vibration of the rack
70 about its point of pivotal support.

7. In combination in a scale, a dial, an indicator movable over the dial, an operating
75 gear for the indicator, a pivoted scale beam, a member supported by the beam for pivotal movement longitudinal of the beam, a rack pivotally supported by the member, means for holding said rack in engagement
80 with the gear, and means operatively related to the said member for balancing the rack on the beam and for maintaining said rack in a vertical position.

8. In combination in a scale, a dial, an indicator movable over the dial, an operating
85 gear for the indicator, a pivoted scale beam, a laterally projecting knife edge bearing on the beam, a member mounted for pivotal movement on said bearing, a rack pivotally supported by the member and movable in a
90 plane transverse to the plane of movement of the member, said rack being adapted to engage the said gear, and means for maintaining the rack in a vertical position when the beam is moved about its point of
95 pivotal support.

9. In combination in a scale, a dial, an indicator movable over the dial, an operating
100 gear for the indicator, a pivoted scale beam, a laterally projecting knife edge bearing on the beam, a member mounted for pivotal movement on said bearing, a rack pivotally supported by the member and movable in a
105 plane transverse to the plane of movement of the member, said rack being adapted to engage the said gear, and means for maintaining the rack in a vertical position and for preventing said rack and member from vibrating about the point of pivotal support of the latter when the beam is moved.

10. In combination in a scale, a dial, an
110 indicator movable over the dial, an operating gear for the indicator, a pivoted scale beam, a laterally projecting knife edge bearing on the beam, a member mounted for pivotal movement on said bearing, a rack pivotally supported by the member and movable
115 in a plane transverse to the plane of movement of the member, said rack being adapted to engage the said gear, and means operatively related to the member and against which the air is adapted to offer a resistance
120 to prevent the rack and member from vibrating about the pivot of the latter, said means being also adapted to maintain the rack in a vertical position when the beam is moved.
125

11. In combination in a scale, a dial, an indicator movable over the dial, an operating
130 gear for the indicator, a pivoted scale beam, a laterally projecting knife edge bearing secured to the beam, a member provided

with a seat adapted to receive said knife edge and about which the member is movable, a rack pivoted to the member and movable in a plane transverse to the plane of movement of the member, means for maintaining said rack in engagement with the gear, and means depending from and projecting below the member for maintaining the rack in a vertical position, and for preventing said member from vibrating about its point of pivotal support.

12. In combination in a scale, a dial, an indicator movable over the dial, a gear for operating the indicator, a pivoted scale beam, a laterally projecting bracket secured to the beam and being provided with a knife edge, a member pivotally supported by the knife edge, a rack pivoted to the member and movable in a plane transverse to the plane of movement of the member, said rack engaging the gear, a weighted arm operatively related to the rack for holding the same in engagement with the gear, and a weighted arm depending from the member for maintaining said rack in a vertical position.

13. In combination in a scale, a dial, an indicator movable over the dial, a gear for operating the indicator, a pivoted scale beam, a laterally projecting bracket secured to the beam, and being provided with a knife edge, a member pivotally supported by the knife edge, a rack pivoted to the member and movable in a plane transverse to the plane of movement of the member, said rack engaging the gear, a weighted arm operatively related to the rack for holding the same in engagement with the gear, a weighted arm depending from the member for maintaining said rack in a vertical position, and means for preventing endwise movement of the member.

14. In combination in a scale, a dial, an indicator movable over the dial, a gear for operating the indicator, a pivoted scale beam, a laterally projecting knife edge bearing secured to the beam, a member pivotally supported by the bearing, a rack pivoted to the member and movable in a plane transverse to the plane of movement of the member, said rack engaging with the gear, means for maintaining the rack in operative position with relation to the gear, a depending weighted arm operatively related to the member for maintaining the rack in a vertical position, and means for preventing displacement of the member with relation to the knife edge bearing.

15. In combination in a scale, a dial, an indicator movable over the dial, a gear for operating the indicator, a pivoted scale beam, a laterally projecting knife edge bearing secured to the beam, a member supported for pivotal movement on the knife edge, a rack pivoted to the member and movable in

a plane transverse to the plane of movement of the member, means for holding said rack in engagement with the gear, said member being provided with downwardly projecting portions on each side of the bearing, a transverse member engaging the said portions below the bearing, one of said portions being extended to form an arm, and a weight secured to said arm for maintaining the rack in a vertical position.

16. In combination in a scale, a dial, an indicator movable over the dial, a gear for operating the indicator, a knife edge bearing projecting laterally from the beam, a member mounted for pivotal movement on said bearing, a rack pivotally secured by one end to the member, and adapted to engage the gear, a weighted arm operatively related to the rack and extending across the beam for holding the rack in operative position, and a weighted arm depending from the member and adapted to maintain said rack in a vertical position when the beam is in any of its positions.

17. In combination in a scale, a dial, an indicator for the dial, a gear for operating the indicator, a pivoted scale beam, a bracket projecting laterally from the beam, and provided with a projecting ear at its free end, said bracket being also provided with a knife edge bearing between the ear and the beam, a member supported for pivotal movement on said knife edge, a transverse member passing through the ear and adapted to engage one end of the member to prevent endwise movement thereof, a rack pivoted to the member and movable in a plane transverse to the plane of movement of the member, means for holding the rack in engagement with the gear, and means for maintaining said rack in a vertical position and for preventing vibration of said rack and member about the point of pivotal support of the latter.

18. In combination in a scale, a dial, an indicator movable over the dial, a gear for operating the indicator, a pivoted scale beam, a bracket projecting laterally from the beam and provided with a projecting portion at one end, said bracket being also provided with a knife edge between said projecting portion and the beam, a member mounted for pivotal movement on said knife edge, the extremities of said member being tapered, an adjustable member passing through the projection on the bracket and engaging one extremity of the member, for preventing endwise movement of said member, a rack pivoted to the member and engaging the gear, and means operatively related to the member for maintaining the rack in a vertical position and for preventing vibration of the rack and member about the point of pivotal support of the latter.

19. In combination in a scale, an indi-

cator, a gear for operating the indicator, a pivoted scale beam, a support secured to the beam, a member having a pivotal bearing on the support, a rack pivoted to the member and movable in a plane transverse to the plane of movement of the member, said rack having engagement with the gear, means for maintaining the rack in engagement with the gear and balancing means operatively related to the member for maintaining the rack in a vertical position, said means being also adapted to prevent vibration of the rack and member about the pivot of the latter by the resistance of the air against the face of the said means.

20. In combination in a scale, a dial, an indicator movable over the dial, an operating shaft for the indicator, a pivoted scale beam, one end of which is movable in the same vertical plane as the operating shaft, a rack pivotally supported by the beam, a gear on the shaft adapted to be engaged and rotated by the rack to move the indicator when the beam is moved about its pivot, and gravity means for balancing the rack upon the beam and for always maintaining said rack in a vertical position.

21. In combination in a scale, an indicator, a gear for operating the indicator, a pivoted scale beam, a rack supported by the beam for pivotal movement in a plane transverse to the plane of movement of the beam,

and also for pivotal movement in a plane lengthwise with respect to the beam, means for maintaining the rack in engagement with the gear and means operatively related to the rack for maintaining the rack in a vertical position, said last named means being movable in a plane lengthwise with respect to the beam.

22. In combination in a scale, an indicator, a gear for operating the indicator, a pivoted scale beam, a rack supported by the beam for pivotal movement in a plane transverse to the plane of movement of the beam, and also for pivotal movement in a plane lengthwise with respect to the beam, means for maintaining the rack in engagement with the gear, and gravity means operatively related to the rack for maintaining the rack in a vertical position, said gravity means being movable in a plane lengthwise with respect to the beam, and being adapted to prevent vibration of the rack by the resistance of the air against the face of said gravity means.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 14th day of March A. D. 1907.

GEO. M. MAYER.

Witnesses:

FRANCIS A. HOPKINS,
J. H. JOCHUM, Jr.