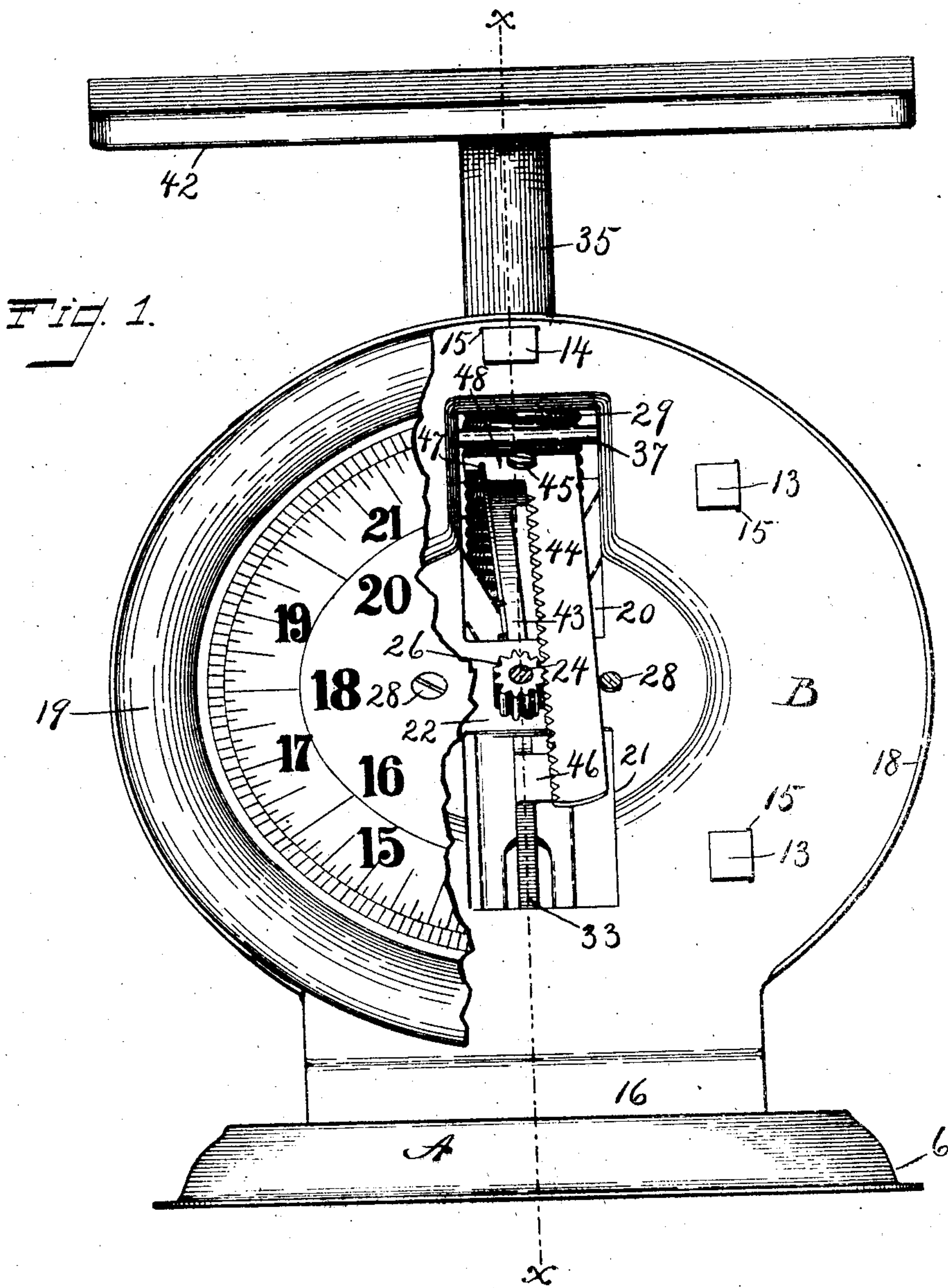


No. 850,508.

PATENTED APR. 16, 1907.

G. WALKER.
WEIGHING SCALE.
APPLICATION FILED SEPT. 17, 1906.

3 SHEETS—SHEET 1.



Witnesses.

S. H. Clarke.
P. J. Egan

Inventor.

George Walker.

By James Shepard
Att.

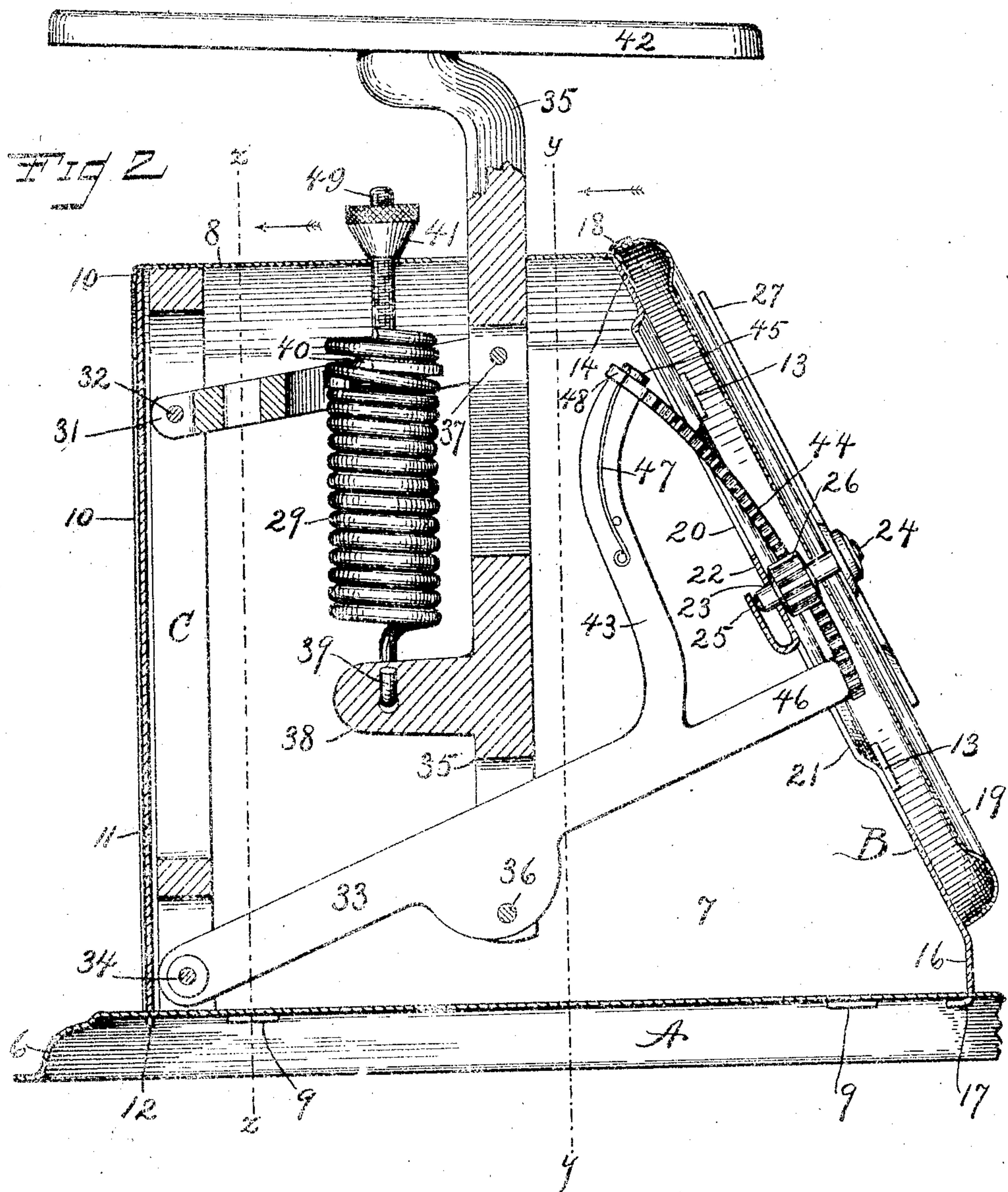
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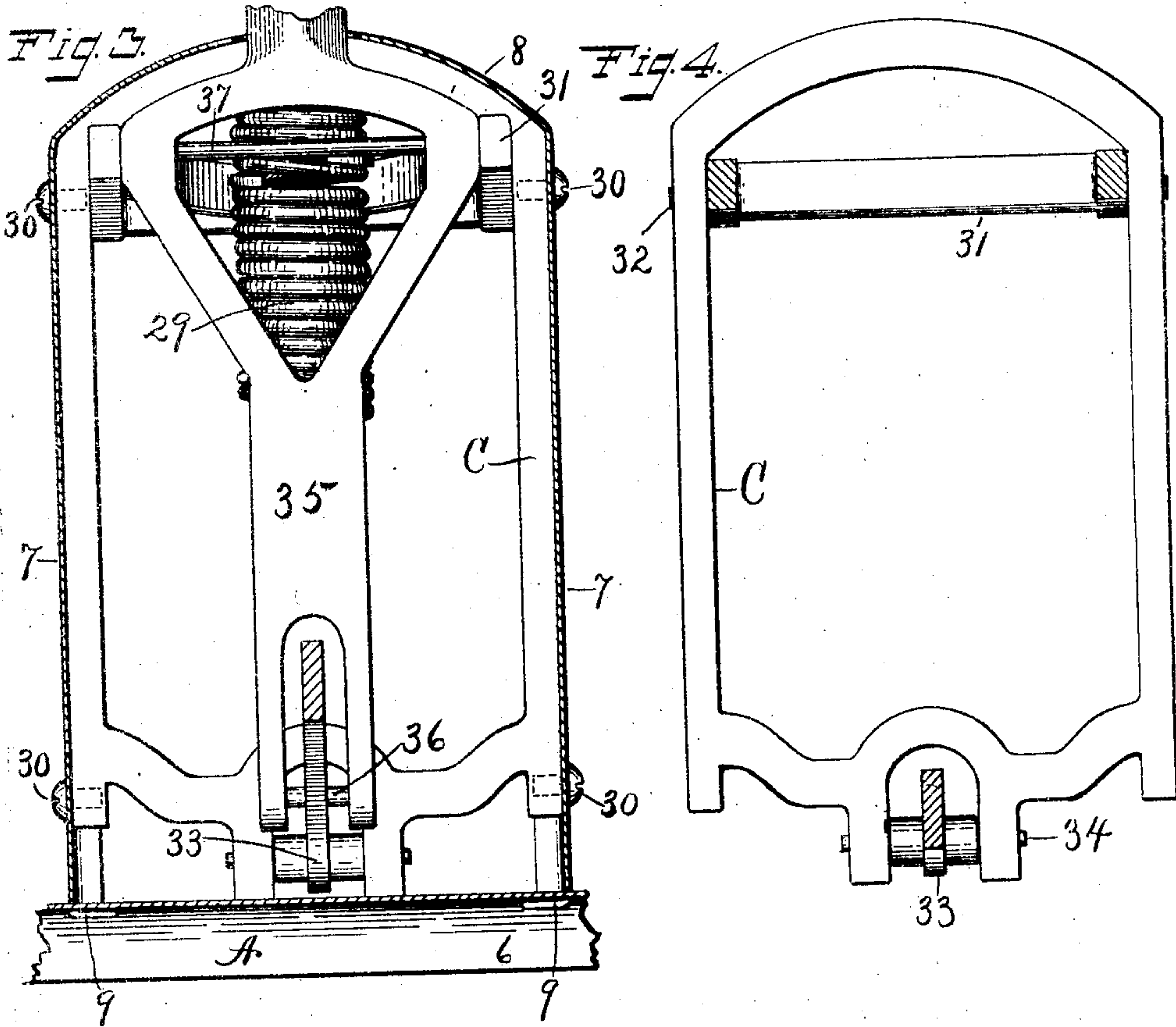
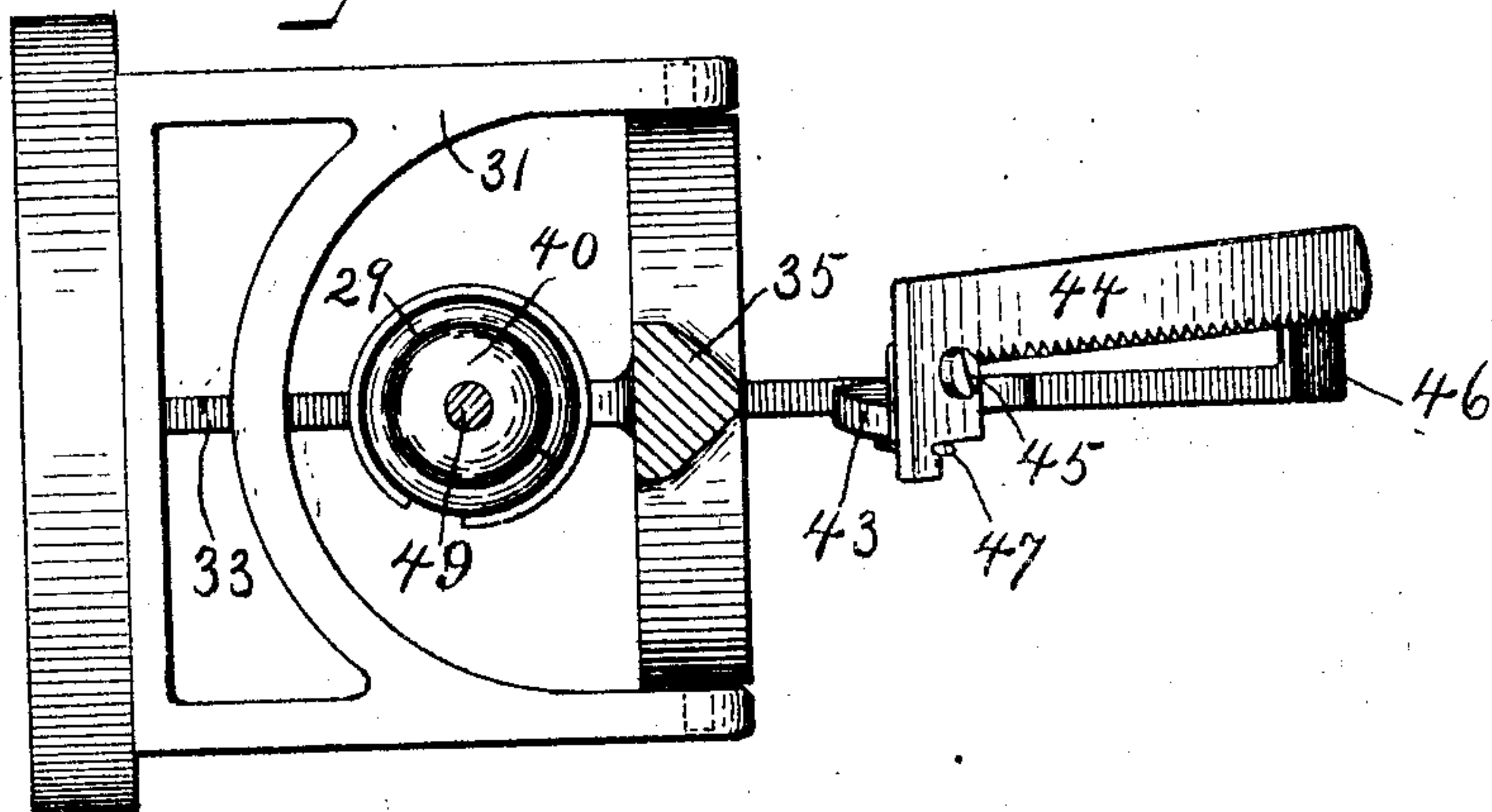


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE WALKER, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO LANDERS, FRARY AND CLARK, OF NEW BRITAIN, CONNECTICUT, A CORPORATION.

WEIGHING-SCALE.

No. 850,508.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed September 17, 1906. Serial No. 335,000.

To all whom it may concern:

Be it known that I, GEORGE WALKER, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Weighing-Scales, of which the following is a specification.

My invention relates to improvements in weighing-scales; and the objects of my improvement are to produce a spring-scale of the rack-and-pinion class that is provided with an inclined dial, to produce the same by a simple and economical construction, and to produce a scale of this class that is efficient and accurate in operation.

In the accompanying drawings, Figure 1 is a broken-out front elevation of my scale with the pinion-shaft and one of the dial holding screws in section. Fig. 2 is a sectional view of the same on the line *x x* of Fig. 1 with some of the central parts in side elevation. Fig. 3 is a sectional front view of the same on the line *y y* of Fig. 2. Fig. 4 is a front view of the main frame, together with a sectional view on the line *z z* of Fig. 2 of the swinging frame and lever. Fig. 5 is a sectional plan of the principal parts less the case, platform, pointer, and pinion.

The base A is struck up of sheet metal with a flange 6, the said base being perforated at suitable points for the reception of fastening-lugs on the other parts of the case, hereinafter described. The sides 7 7 and top 8 of the case are made of one piece of sheet metal bent substantially into the form of an inverted U, the rounding part constituting the top. The sides 7 7 each have fastening-lugs 9 projecting from their lower edge, which lugs after passing through perforations in the base are clenched or bent over to hold the sides and base together, as shown in Figs. 2 and 3. The rear edges of the sides and top are turned over inwardly to form a flange 10, that covers the top and side edges of the back 11, while the lower edge of the said back is provided with lugs 12, that pass into or through suitable perforations in the base A. The front edges of the sides and top are provided with integral lugs 13 and 14, that are received in and pass through perforations 15 in the front B. The front edges of the sides 7 7 are slanted backwardly from near their base toward the top in order to give the front the

inclined position best shown in Fig. 2. This front, which is also of sheet metal, is substantially of a circular form with a downwardly-extended projection 16, the lower edge of which is provided with integral lugs 17, that pass through perforations in the base and are clenched on the under side thereof, as shown, for one of the said lugs in Fig. 2. The lugs 13 and 14 pass through the perforations 15 in the front B and are clenched or bent over on the outside of the front, as shown in Fig. 1. The circular edge of the front B is provided with a forwardly-projecting flange 18 to receive and hold the edge of the dial 19. The said front is also provided with two openings 20 and 21 with a bar 22 between them. This bar is centrally perforated, as at 23, Fig. 1, to receive the inner end of the pinion and pointer shaft 24. A portion of the metal cut from the front to form the opening 21 is turned back in the rear of the central perforation 23 to form a step 25 for the pinion and pointer shaft 24, as shown in Fig. 1. The pinion and pointer shaft 24 has one of its bearings in the central part of the dial 19. The pinion 26 may be formed integral with or rigidly mounted upon the shaft 24. This shaft is passed through the center of the dial with the pinion on the back of the dial, and then the pointer 27 is secured to its outer end in front of the dial, as shown in Fig. 2, whereby the said pinion, shaft, and pointer are mounted on the dial and may be removed therewith. The dial is merely seated inside the circular flange 18 on the front and is detachably secured in place by the screws 28, the said screws entering threaded holes in the metal of the front B. All of the other parts excepting the upper end of the spring 29 and its connections are mounted directly or indirectly on the main frame C. This frame in front view or rear view is substantially of the same contour as the case, as shown in Figs. 3 and 4, within which case it fits snugly and to which it is rigidly secured, preferably by four screws 30, passing through holes in the metal of the case into threaded holes in the sides of the said frame. This frame is set a little distance from the flange 10 at the rear so as to slide the back 11 up into place from the bottom before the sides and front are secured to the base A. A swinging frame 31 is pivoted by its rear end within the upper part of the main frame C by means of the pintle 32. A

lever 33 is pivoted by its rear end within the frame near its base by means of the pintle 34. The load-receiving bar or frame 35 is mounted in an upright position, so as to reciprocate substantially in a vertical plane by being pivoted to the front end of the swinging frame 31 by the pintle 37 and pivoted by its lower end on the pintle 36 to the middle portion of the lever 33. The rear side of the bar or frame 35 is provided with a bracket-arm 38, by which the lower end of the balance-spring 29 is secured through its ordinary hook 39. The upper end of the spring is secured to an ordinary flanged block 40, from the center of which a threaded rod 49 extends up through a hole in the top 8 of the case and receives an adjusting-nut 41, that bears on the said top. A platform or load-support 42 is rigidly mounted on the upper end of the bar or frame 35.

The forward part of the rack-carrying lever 33 has an upwardly-extended arm 43, to the front of which the rack 44 is pivoted by its upper end on the screw 45. The rack is curved flatwise from end to end, on a curve of which the pintle 34 of the lever 33 is the center, and its toothed edge engages the pinion 26. Its lower end rests upon and is supported by the front end 46 of the lever 33. A spring 47 on the arm 43 bears upon a lateral projection 48 on the rack with a constant tendency to force the rack toward the pinion. The openings 20 and 21 in the front B permit the rack to reciprocate by the side of the pinion which is forward of the front B, while the ends of the rack are supported by the oscillating lever, which is mainly in the rear of the said front.

The operation in general is the same as in other spring-scales of the rack-and-pinion class. The special construction of the case, the main frame, and connected parts enables the parts that go within the case to be first mounted on the main frame C, then placed within and secured to the body of the case by means of the said frame, after which the base A is secured to the said body. The dial with the pointer, shaft, and pinion can be secured first by means of the left-hand one of the screws 28. The rack is then free to swing back and let the pinion slip out of gear, so that the pointer may be turned to zero on the dial, no matter what its position was when the dial was first put on. After the pointer is in proper position the right-hand one of the fastening-screws 28 is inserted, the said screw being located to the right of the pinion 26. The width of the rack is so proportioned to the space between the pinion and this screw that the rack may move freely between them, while at the same time the screw will prevent the rack from swinging away from the pinion far enough to be out of proper engagement therewith. This feature is a great convenience in the manu-

facture of the scale, besides enabling the dial to be readily removed at any time and properly replaced. The weighing mechanism is particularly adapted for a case with an inclined dial, and the pointer and dial will indicate the same no matter upon what part of the platform the load is placed. Several prior patents show scales with an inclined dial, and one prior scale with such a dial has been found to indicate a different weight when a given load was placed on the front part of the platform from that indicated when the same load was placed centrally thereon.

I claim as my invention—

1. In a weighing-scale, the combination of a case with a load-receiving bar or frame, the rack-carrying lever and swinging frame pivotally mounted in the case by their rear ends and also pivotally connected with the said load-receiving bar or frame, a spring connected with the said load-receiving bar or frame acting in opposition to the load on the said bar, a rack carried by the forward part of the said rack-carrying lever with a portion of the said rack forward of the front of the case, the said front having a central portion with a bearing for a shaft therein, a detachable dial secured on the front of the said case and having a shaft, pointer and pinion, mounted on the said dial to be removed therewith, and to be placed in position with the inner end of the said shaft in the shaft-bearing of the said central portion of the front and with the pinion in engagement with the said rack.

2. In a weighing-scale, the combination of a case having an inclined front, with the rack-carrying lever of the weighing mechanism pivotally mounted within the said case with its forward part arranged to swing vertically, an upwardly-projecting arm at the forward part of the said lever, a rack pivoted by its upper end to said arm with a portion of the said rack forward of the central portion of the case-front, and a shaft, pinion, and pointer, with the pinion in engagement with the said rack on the outside of the case forward of the said inclined front.

3. In a weighing-scale, the combination of a case having an inclined front with the rack-carrying lever of the weighing mechanism pivotally mounted within the said case with its forward part arranged to swing vertically, an upwardly-projecting arm at the forward part of the said lever, a rack pivoted by its upper end to the said arm on an axis at a right angle to the axis of the said rack-bearing lever, a rack-support 46 on the forward end of the said lever against which the lower end of the said rack rests, and a rotary shaft, pointer, and pinion mounted with the said pinion in engagement with the said rack.

4. In a weighing-scale, the combination of a case having an inclined front with the rack-carrying lever of the weighing mechanism

pivotally mounted within the said case with its forward part arranged to swing vertically, an upwardly-projecting arm at the forward part of the said lever, a plate-like rack pivoted by its upper end to said arm and curved flat-wise from end to end to conform to the arc of a circle described by the front end of the said upwardly-projecting arm, and a rotary shaft, pointer, and pinion mounted with its pinion in engagement with the said rack.

5. In a weighing-scale, the combination of a case having an inclined front with the rack-carrying lever of the weighing mechanism pivotally mounted within the said case with its forward part arranged to swing vertically, an upwardly-projecting arm at the forward part of the said lever, a rack pivoted by its upper end to said arm on an axis at a right angle to the axis of the said lever and with a portion of the said rack forward of the central portion of the case-front, a dial detachably mounted on the said case-front, a rotary shaft, pointer, and pinion mounted on the said dial to be removed therewith, and to be placed in position with the inner end of the said shaft having a bearing in the central

portion of the case-front while the pinion is in engagement with the said rack, and a fastening-screw for the dial located to one side of the pinion with the body of the rack passing through the space between the said screw and pinion.

6. In a weighing-scale, the combination of a base A with the case, sides and top in one piece with themselves, the middle portion of which piece forms the top with a flange at the rear edge, a separately-formed case-front secured to the front edge of the said sides and top, a separately-formed main frame the weighing mechanism with the major part thereof mounted on the said frame, the said frame being secured within the rear part of the case with a space between it and the rear flange of the sides and top, and a back slipped in from below into the space between the said flange and frame, the said sides, front and back being mounted on the top of and secured to the said base.

GEORGE WALKER.

Witnesses:

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ARTHUR J. NORTHROP, Jr.