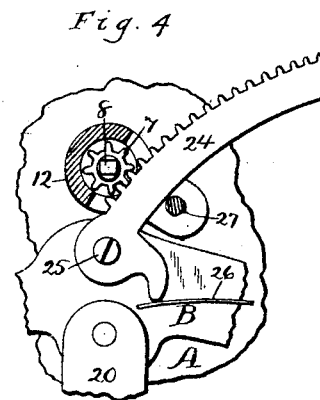
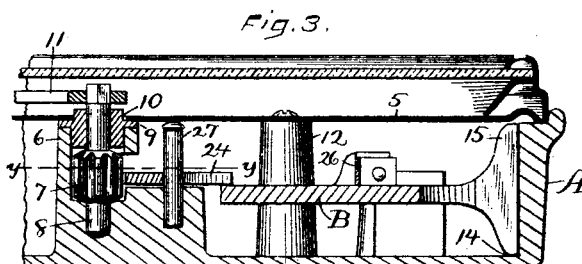
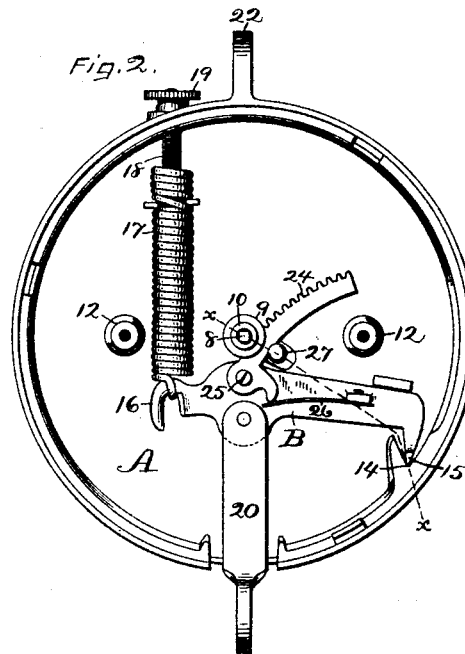
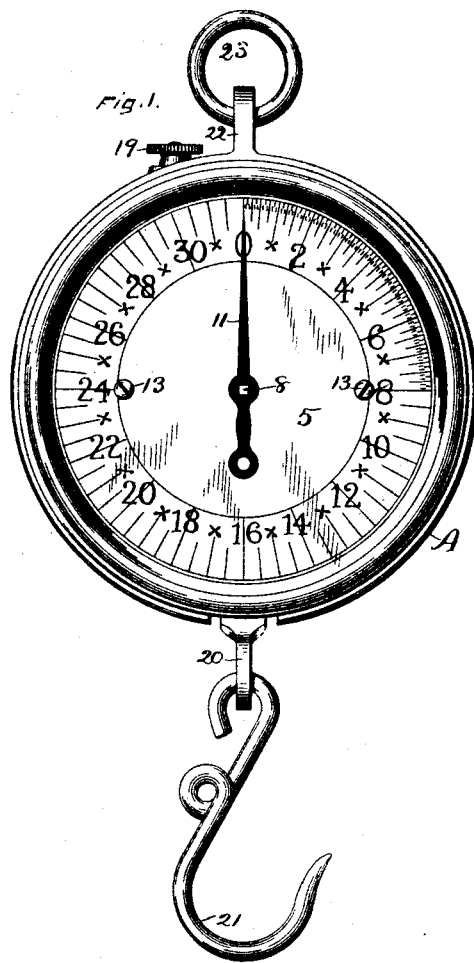


(No Model.)

J. GÉRARD.
SPRING SCALE.

No. 459,108.

Patented Sept. 8, 1891.



Witnesses,
John Edwards Jr.,
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UNITED STATES PATENT OFFICE.

JOHN GÉRARD, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO LANDERS,
FRARY & CLARK, OF SAME PLACE.

SPRING-SCALE.

SPECIFICATION forming part of Letters Patent No. 459,108, dated September 8, 1891.

Application filed January 26, 1891. Serial No. 379,006. (No model.)

To all whom it may concern:

Be it known that I, JOHN GÉRARD, 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 simplicity and economy in construction and general efficiency of the finished article.

In the accompanying drawings, Figure 1 is a front elevation of my scale. Fig. 2 is a like view with the cap, the hook, and ring removed. Fig. 3 is an enlarged sectional view of a portion of my scales on line *xx* of Fig. 2; and Fig. 4 is a vertical section of the middle portion of my scales upon the line *yy* of Fig. 3, the pinion being shown in elevation.

A designates the case, which is circular in outline and provided with an annular seat at its front side for the reception of a suitable dial 5. This dial may be graduated in any ordinary manner. As illustrated, the finer graduation-marks are made only upon one-quarter of the circle of the dial; but in practice the dial will be graduated uniformly throughout its circle. In the center of the case A is a hollow post 6, the bore in the front end of which is of a size to receive the pinion 7, while toward the rear end of the post the bore is of a size to form a proper bearing for the rear end of the pinion-shaft 8. This hollow post is a trifle shorter than the distance from the back of the case to the dial 5 and the flange 9 of the bushing 10 is of a thickness to make up for the shortness of this post, as shown in Fig. 3. The bushing 10 has a hub on one side that fits the bore in the front end of the central post and a hub upon its other side that fits a central hole in the dial 5. This bushing is also bored centrally to receive the front end of the pinion-shaft 8 and form a proper bearing therefor, the usual pointer 11 being secured to the projecting end of said shaft. I also form on the case two posts 12, which are drilled and threaded to receive the screws 13 for holding the dial in place. The case is also provided at one side with a V-shaped socket 14 for the reception of the knife-

edge 15 of the lever B. This lever is provided at the end opposite the knife-edge with a suitable hook or projection 16, by which to attach one end of the spring 17. The other end of said spring is attached to the T-screw 18, that extends through the case, and is provided with an adjusting-nut 19 on the outside for the purpose of adjusting the tension of the spring as in other scales. The lever B is also provided with a pivoted strap or link 20, that extends to the outside of the case and to which the hook 21 is attached. This strap or link 20 projects from the case on the under side diametrically opposite the suspension-lug 22, to which the ring 23 is attached. The central hollow post of the case is slotted upon one side to admit the curved rack-bar 24, whose teeth engage those of the pinion 7. This rack is pivoted to the lever B, as at 25, and provided with a shoulder or arm near its pivoted end that is pressed upon by the spring 26, with a constant tendency to draw the teeth of the rack against the pinion. This spring is secured to the lever B. The rack 24 is held in engagement with the pinion by means of the pin 27, which is received in a suitable socket formed in a lug or projection on the case. This pin is of such length that when dropped into its socket the outer end of its head is nearly flush with the inner face of the dial. The knife-edge 15 of the lever B is also of such length from front to rear as to substantially fill the space between the back of the case and the dial. A weight hung upon the hook, the case being suspended by the ring 23, will expand the spring, depress the left-hand end of the lever, and draw the rack with it, thereby causing the pinion to revolve, when the pointer on the end of the pinion-shaft will indicate the weight, all substantially as in other scales.

By my improvement I arrange the lever, spring, rack, and pinion within a circular case that is suspended in use after the manner of a spring-balance. The parts are assembled by slipping the lever into the case, connecting it with the spring, dropping the pinion and bushing into the central post, putting the pin 27 into place to hold the rack in engagement with the pinion, and then securing the dial, thus holding all the parts in place. By this construction the parts are cheaply and quickly

assembled and operate with the greatest efficiency when assembled.

I am aware that platform and pan scales are shown in prior patents which have a
5 spring, lever, rack, and pinion, and the same are hereby disclaimed.

I claim as my invention—

1. The combination of a portable circular case having a suspension-lug, the spring 17,
10 the lever B, rack 24, and pinion 7 inside said circular case, and a strap or link pivoted to said lever and extending from said case at a point diametrically opposite said suspension-lug, substantially as described, and for the
15 purpose specified.

2. In weighing-scales, the case having the central post bored to receive the pinion and pinion-shaft, in combination with the pinion 7, pinion-shaft 8, bushing 10, and dial 5, substantially as described, and for the purpose
20 specified.

3. In weighing-scales, the combination of the case, the lever B, pivoted therein, the rack pivoted to said lever, the pinion with which
25 said rack engages, the pin 27 for holding said

rack in engagement with said pinion, and the dial 5 for holding said pin in place, substantially as described, and for the purpose specified.

4. In weighing-scales, the combination of 30 the case having socket 14 for a knife-edge, the lever 26, having knife-edge 15 within said socket 14, and the dial 5 for securing said lever in place, substantially as described, and for the purpose specified. 35

5. The combination of a case, the lever B, having a knife-edge 15 resting in an open socket in the case, the spring 17, the rack 24, the pinion 7, and its shaft 8, resting in a hollow central post of the case, the loose pin 27 40 on the opposite side of said rack, the bushing 10 at the front end of the central post, and the dial 5, secured to the front of the case, substantially as described, and for the purpose specified.

JOHN GÉRARD.

Witnesses:

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R. L. WEBB.