R. EHMER.

Spring-Scales for Weighing.

No. 198,009. Patented Dec. 11, 1877.

Fig: 4

Fig: 1

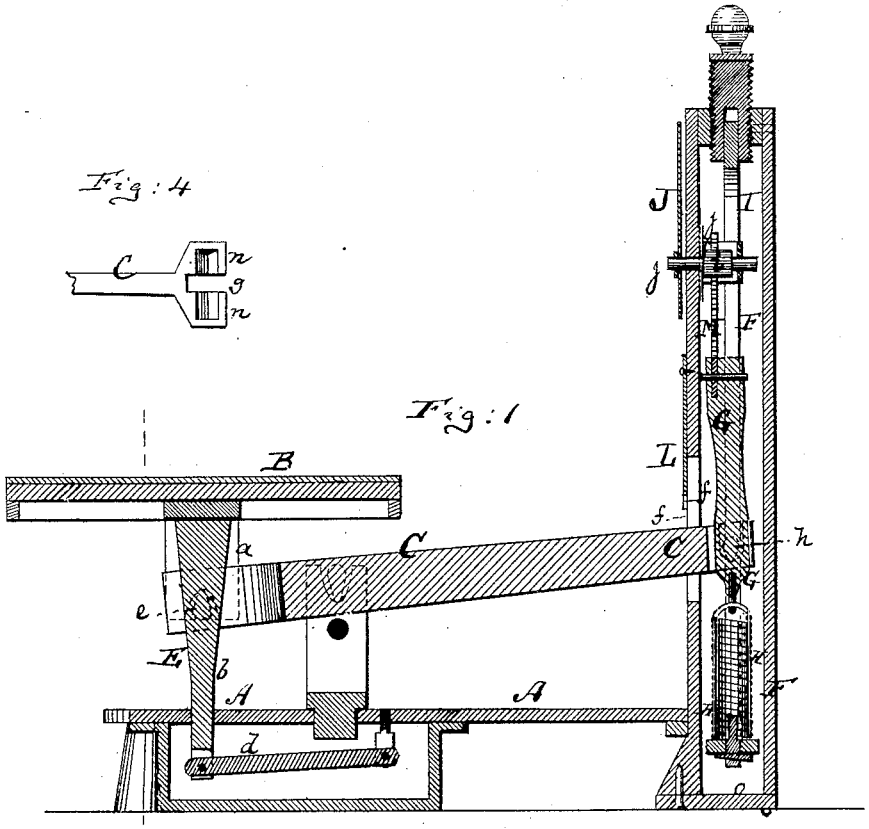


Fig: 2

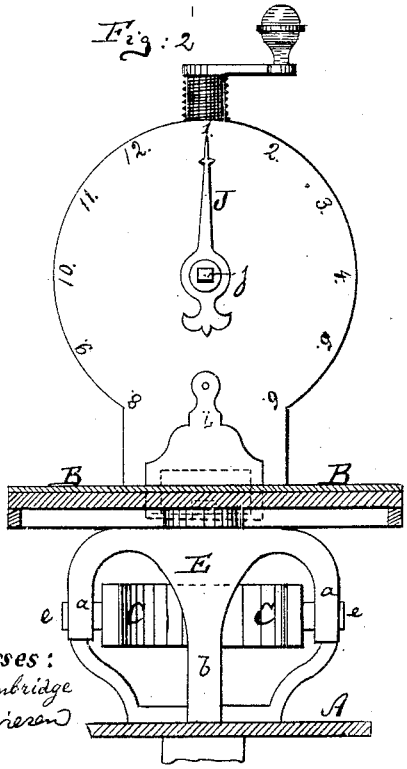
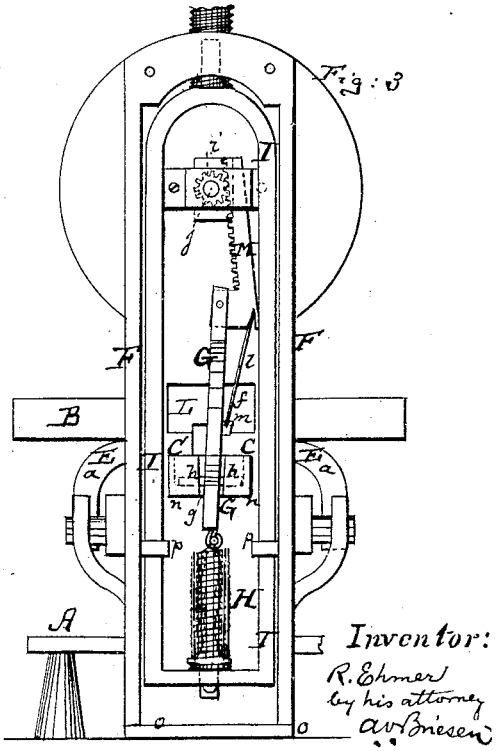


Fig: 3



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UNITED STATES PATENT OFFICE.

RUDOLPH EHMER, OF NEW YORK, N. Y.

IMPROVEMENT IN SPRING-SCALES FOR WEIGHING.

Specification forming part of Letters Patent No. **198,009**, dated December 11, 1877; application filed November 15, 1877.

To all whom it may concern:

Be it known that I, RUDOLPH EHMER, of New York city, in the county and State of New York, have invented a new and useful Improvement in Platform-Scales, of which the following is a specification:

Figure 1 is a vertical longitudinal section of my improved platform-scale; Fig. 2, a front view, partly in section, of the same; Fig. 3, a back view of the same, showing the back plate removed, and Fig. 4 a detail top view of the back end of the lever.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to several improvements on the platform-scale for which Letters Patent No. 192,574 were granted to me July 3, 1877, the principal object of the present invention being to simplify the construction of the mechanism within the back portion of the scale, and to reduce the expense of manufacture.

The invention consists in various details of improvement, which are hereinafter more clearly pointed out.

The letter A in the drawing represents the frame of the scale. B is the scale-platform; C, the lever. The scale-platform is rigidly connected to a standard, E, which has downwardly-projecting arms *a a*, and a central downwardly-projecting pin, *b*, as shown in Fig. 2. The lower end of the pin *b* connects with a small lever, *d*, in the lower part of the frame, as shown in Fig. 1, while the arms *a* rest on knife-edged pivots *e*, that project from the sides of the lever C. I make the entire standard E, with its arms *a* and central pin *b*, in one single piece of metal, as indicated in Fig. 2, thereby greatly simplifying the construction of the scale, which heretofore required the standard to be made of several pieces. The lever C is inserted through a slot, *f*, partly into an upright box, F, and the back end of said lever within said box is shaped, as shown in Fig. 4, to form a box, *n*, at each side of a central slot, *g*. This box serves to support knife-edged pivots *h h*, that project from the sides of a vertical rod, G, as clearly shown in Fig. 3, so that said rod G will be raised and lowered as the back end of the lever C is raised and lowered during the operation of the scale. The lower end of the upright rod G connects with the upper end of a spring, H, and the lower end of this spring H connects with the lower part of a sliding yoke, I, which is placed in the box F. The upper end of the rod G is pivoted to a rack, M, which meshes into a pinion, *i*, that is mounted on the arbor *j* of the index-hand or pointer J. A spring, *l*, is rested into a socket, *m*, formed on the rod G, and bears against the rack M, so as to properly hold it in contact with the pinion *i*, and prevent rattling or loose action during the operation of the scale.

In comparing this mechanism with that described in my aforementioned Patent No. 192,574 it will at once be perceived that I dispense with a large amount of material deemed necessary in said patent, and that by bringing the spring H into direct line with the rod G, and attaching said spring, in fact, to said rod, instead of attaching it to the lever C, as in the former patent, I render the use of the special guide mechanism unnecessary, and obtain, moreover, a more perfect action of the spring H on the scale-lever C and its appendages.

It will also be observed that the yoke I in the present case is placed so as to straddle the spring H, back portion of lever C, and rod G; whereas in the former patent it was placed behind those parts that connect the lever C with the pinion.

By lengthening the yoke, and causing it to straddle the parts mentioned, I economize much room in the box F, and am therefore able to manufacture the scale at much less expense. Expense is also saved by doing away with the guide, deemed to be necessary in the former patent, and friction is saved to a very large extent by dispensing with said guide.

The main object of a good scale is to avoid friction in its operative parts, so as to obtain, as much as possible, a complete response of the pointer to the movements of the pan.

L is a gate, pivoted to the front part of the box F, so as to partly hang over the opening *f*, and close the same above the lever C, to prevent dust from entering into the operative mechanism. This gate is necessary, because the opening *f* must be made large enough to admit the enlarged box-shaped end of the lever C into the box F, and is, after such insertion, larger than necessary for the play of the

lever. The bottom *o* of the box F is removable, to permit the insertion of the yoke from below, as otherwise said yoke could not conveniently be placed in the guides *p* that are provided for it in the box F.

I claim as my invention—

1. The scale-lever C, constructed with the box-shaped back end, and with the central slot *g* between the two boxes *n*, formed at its sides, substantially as herein shown and described.

2. The combination of the lever C, having the box-shaped back end, with the upright rod G, having projecting pivots *h*, that are supported in said boxes, substantially as specified.

3. The combination of the lever C with the upright rod G, spring H, and rack M, the spring H being directly attached to the lower end of the upright rod G, which rod rests in or on the lever C, substantially as specified.

4. The combination of the lever C, rod G, and rack M with the spring *l*, which rests in the socket *m* on the rod G, and with the spring H, which connects directly with the lower end of the rod G, substantially as herein shown and described.

5. The combination of the yoke I with the spring H, that is directly attached to the yoke, lever C, rod G, having pins *h* that rest on the lever C, and with the inclosing-box F, the yoke being constructed to straddle the parts H and G, substantially as specified.

The foregoing description of my invention signed this 13th day of November, A. D. 1877.

RUDOLPH EHMER.

Witnesses:

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