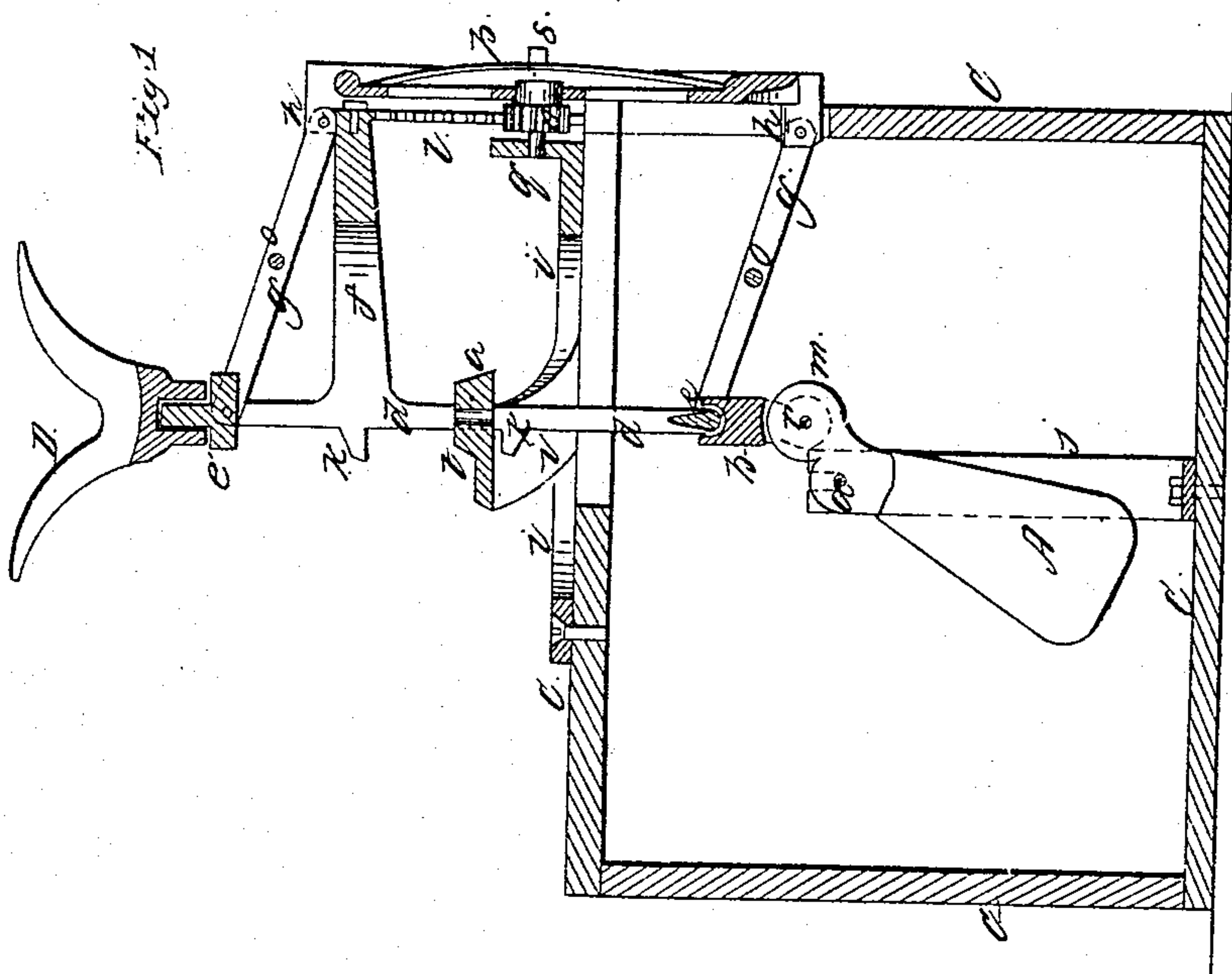
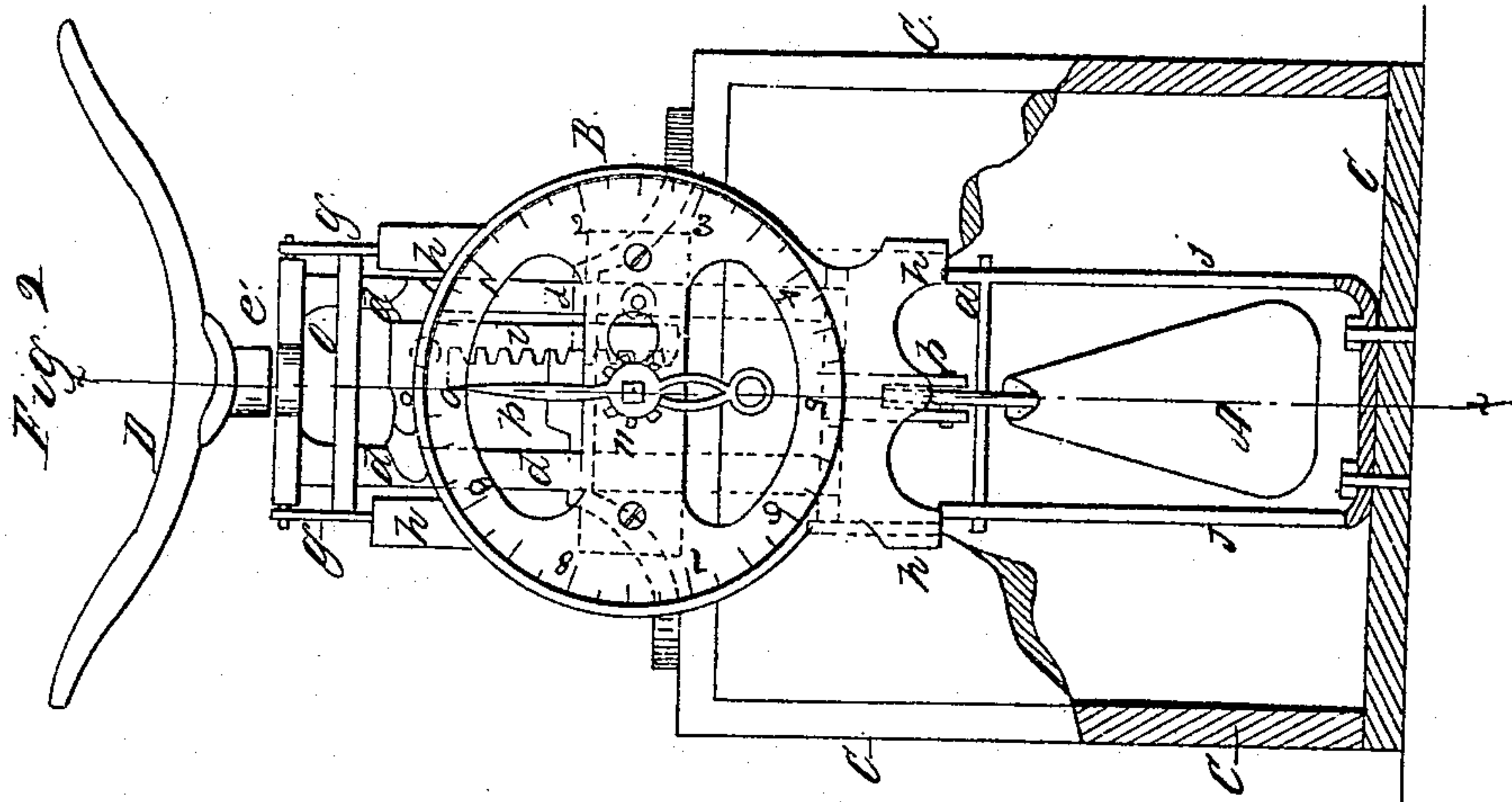


S. S. Hamilton

Weighing Scale.

N^o 85,816.

Patented Jan. 12, 1869.



*Witnesses:
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United States Patent Office.

S. S. HAMILTON, OF TAYLOR'S FALLS, MINNESOTA.

Letters Patent No. 85,816, dated January 12, 1869.

IMPROVEMENT IN WEIGHING-SCALES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, S. S. HAMILTON, of Taylor's Falls, in the county of Chisago, and State of Minnesota, have invented a new and improved Weighing-Scale; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional view of my invention, the section being taken through the line *x x*, fig. 2.

Figure 2 is a front view of the invention, having the front of the box partially removed, to exhibit the interior mechanism.

Similar letters of reference indicate corresponding parts.

The object of this invention is to provide a weighing-scale which is simple, durable, compact, and not liable to get out of repair, and which will indicate, with delicacy and accuracy, the weight of the article weighed.

The invention consists in the arrangement of parts, as will be hereinafter more fully described.

The weight-lever *A* is affixed to the trunnion-rod *a*, upon which it vibrates as a fulcrum-centre.

The rod *a* has bearings in the uprights *j j*, as shown.

The lug *m*, forming part of the weight-lever, is pivoted to the loose plate *b*, the upper end of which is made concave, for fitting against the cross-bar *e*, which connects the two uprights *d d* at the bottom.

These uprights are connected at the top by a similar cross-bar, *e'*, upon which latter the horns *D* set, as shown. The said horns are for the purpose of holding the scoop or vessel for containing the articles to be weighed.

The weight of the substance in the vessel acts, through the rods *d*, in a vertical line, upon the lug *m*, and raises the lower end of the weight-lever to that point in the arc of its vibration at which the weight-lever and the contents of the vessel will be in *equilibrium*.

As the weight-lever is moved from a vertical toward a horizontal position, its dynamic resistance to the weight actuating it becomes greater, in a regularly-increasing ratio, and the degree of vibration of the weight-lever will correspond to the weight of the matter acting upon it, so that when connected with a proper scale or pointer, traversing on a graduated limb, the degree of vibration may be made to denote the weight in pounds, and fractions thereof, of the matter acting upon the weight-lever.

When the weight hangs vertically, the pivot-centre *r* is not in a vertical line through the fulcrum-centre *a*, but on one side of it, the lug *m* being formed laterally on the weight-lever for that purpose, so that the weight-lever will respond to the weight of the matter acting upon it.

The lower end of the weight-lever is enlarged to obtain a greater quantity of metal, to act as a resisting-force to the weight of the matter acting upon it.

The force acting to raise the weight-lever will be in *equilibrium* with the latter at some one point in the arc of the said lever's movement, and this point will always be constant for the same weight of matter.

Different weights of matter will raise the weight-lever to different heights in its arc of vibration, and the weight-lever, once arranged or adjusted to balance a series of increasing weights, will always answer thereafter to the same weight of matter, when placed upon the vessel, resting in the horns *D*.

To make the weight-lever indicate the weight of the matter which holds it in *equilibrium* at any point of its arc of motion, the uprights *d d* are connected with some fixed points, in suitable proximity, by parallel rods *g g*, which are pivoted to the said uprights and to the fixed points, which, in this case, are lugs *h h*, forming part of the dial-plate *B*.

These rods furnish a parallel motion device, to guide the uprights *d d* in their vertical movement.

These rods *g g* are connected by cross-braces *o o*.

The dial-plate bears any requisite numeral figures, the position of which on the graduated face of the dial is determined by trial or computation, for each particular class or size of scales, and these adjustments will remain true for any succeeding number of scales, exactly the same as the first in construction and proportion of parts.

A pointer, *p*, traversing around the graduated dial, is connected with the weight-lever by means of any suitable interpolation of mechanism which will oscillate the pointer around to a point on the dial corresponding to the position to which the weight-lever has been raised, by the matter in the vessel, on the horns *D*.

L is a rack, affixed to the end of an arm, *f*, which is affixed to or forms part of the uprights *d d*.

The rack engages with a pinion, *n*, on the shaft *s* of the pointer, so that, as the rack descends vertically with the downward movement of the uprights *d d*, the pointer will be rotated, and its point, when it stops, will indicate, on the graduated dial, the number of pounds of matter, or fractions thereof, which places the weight-lever in *equilibrium*.

The bearings of the shaft *s* are furnished by the dial-plate and the plate *q*, forming part of the plate *i i*, to which the dial-plate is affixed.

For convenience, the mechanism is affixed to a box, *C C C*, &c., with the weight-lever swung in the uprights *j j*, arising from some part of the said box.

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

The arrangement of the weight-lever *A*, trunnion-rod *a*, uprights *j*, lug *m*, and pivoted plate *b*, with reference to the uprights *d d*, cross-bar *e*, parallel rods *g*, arm *f*, rack *l*, pinion *n*, the dial-plate, and the pointer *p*, as herein described, for the purpose specified.

S. S. HAMILTON.

Witnesses:

O. ROOS,

J. H. McCOMB.