

H. M. WEAVER.
Weighing-Scales.

No. 166,046.

Patented July 27, 1875.

Fig. 1

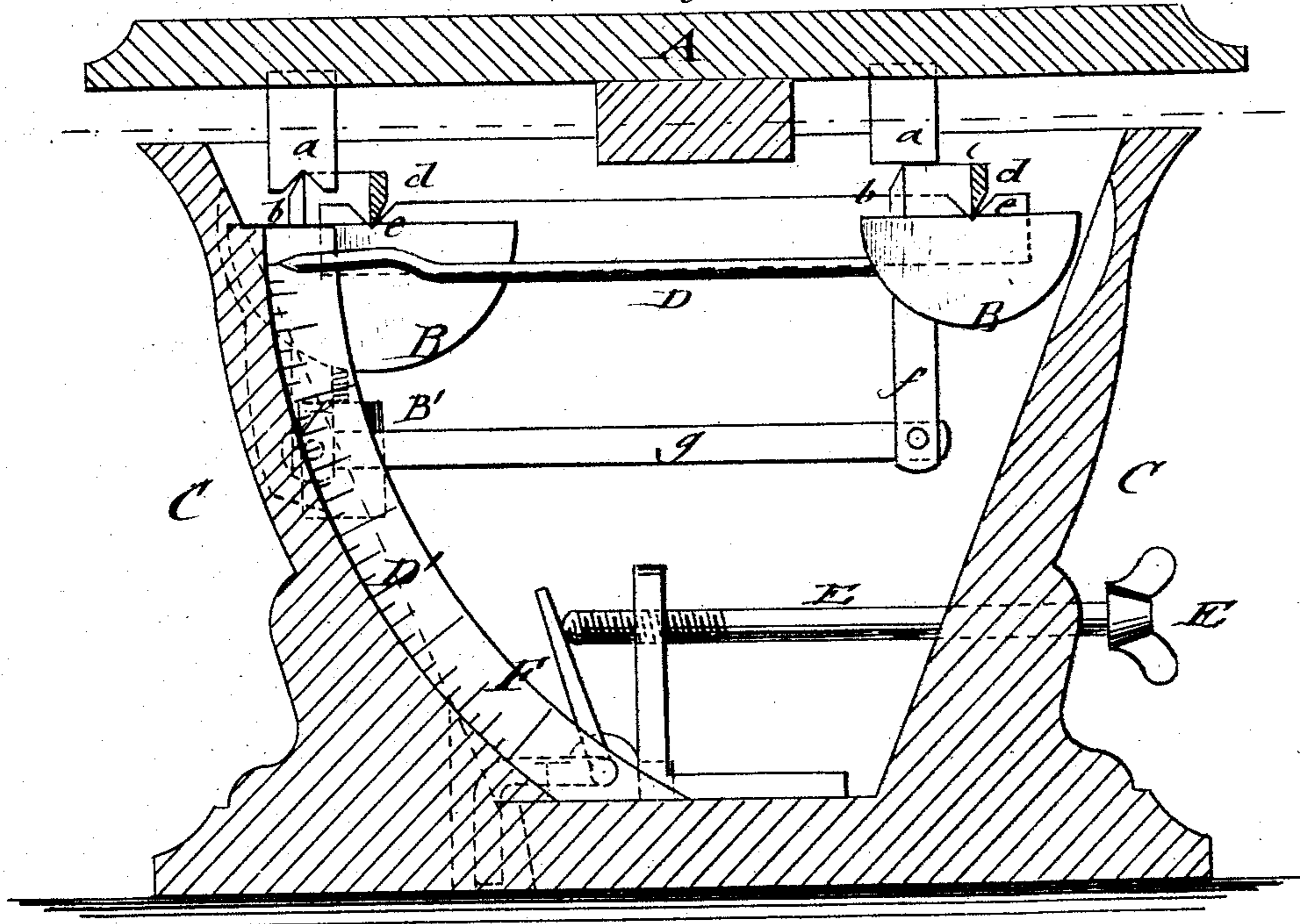
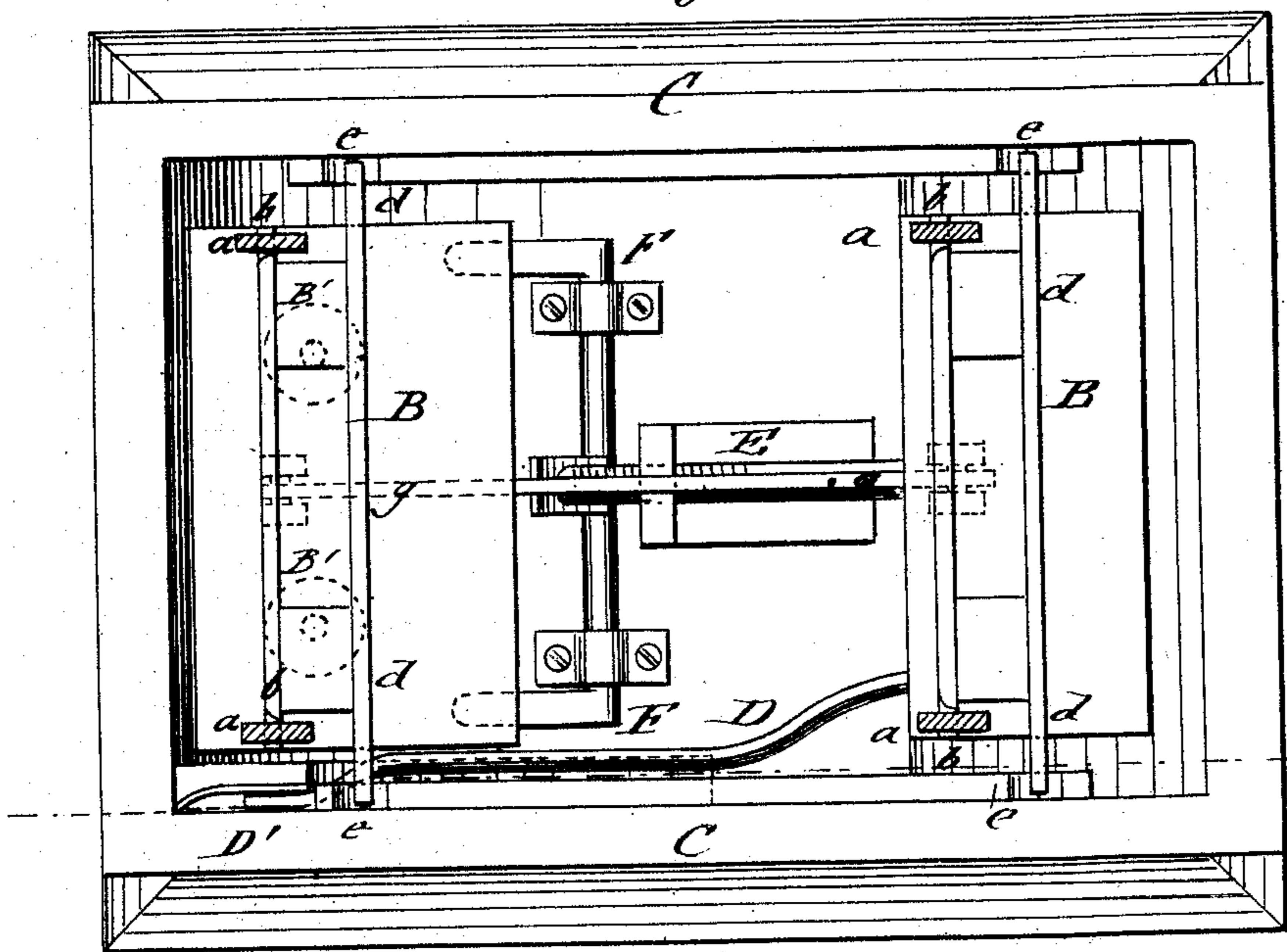


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE

HENRY M. WEAVER, OF MANSFIELD, OHIO.

IMPROVEMENT IN WEIGHING-SCALES.

Specification forming part of Letters Patent No. **166,046**, dated July 27, 1875; application filed April 17, 1875.

To all whom it may concern:

Be it known that I, HENRY M. WEAVER, of Mansfield, in the county of Richland and State of Ohio, have invented new and useful Improvements in Weighing-Scales, of which the following is a specification:

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved weighing-scale, and Fig. 2 a top view of the same with the platform detached.

Similar letters of reference indicate corresponding parts.

The object of my invention is to furnish a sensitive-platform weighing-scale, based upon the principle of the bent lever, simple and effective in construction, whose short and quick oscillations come quickly to a stand-still, and which can readily be adjusted to a required position, and whose capacity can be increased or decreased at pleasure. The invention consists in the direct application of the platform-carrying and weight-supporting knife-edges to separate weights of different proportions. These weights are jointed by arms and pivot-rod, so that the result is obtained of allowing the object to be weighed being placed upon any part of the platform; and also the weights, having to each other quicker and slower oscillations, tend to stop each other, and thus bring the index sooner to a rest. The casing is provided with an adjustable device for setting the index to the zero-point of the stationary dial. To one or each of the weights are attached one or more smaller weights, which, being adjustable, can be used to increase or decrease the capacity of the scale, and also adapt it to any given dial-plate.

In the drawing, A represents the platform of my improved scale, which rests, by four bearings, *a*, upon the knife-edges *b*. These knife-edges are applied directly to the weights B, and secured at equal distances from the supporting knife-edges *d*. The four knife-edges *d* rest on four side bearings, *c*, of the casing C of the scale, both the platform-carrying and weight-supporting knife-edges being permanently attached to the weights B. The weights B are preferably of such shape that their cross-section is a semicircle. I find that such shape gives the greatest result for a given radius of

oscillation. The knife-edges *d* should then be placed at the center. To each of the weights B are attached rigid downward-extending arms *f*, and these are connected by a jointing-rod, *g*, pivoted to their lower ends. A weight placed upon the platform will depress the platform-bearing knife-edges, and swing thereby the weights sidewise, and in the same direction, out of their normal position; and this displacement will be in direct proportion to the weight placed upon the platform. The jointing of the weights by the arms and connecting-rod admits of the weighing of any object at whatever part of the platform it is placed.

By having the platform-supporting knife-edges each lie in relatively the same position to the weight-supporting knife-edges the weights are swung sidewise and in the same direction. This allows the connecting-rod to lie below both weights, and admits a far simpler construction than has heretofore been attained in platform-scales based upon this principle.

The weights B are made of different radial lengths, so that the one swinging in an arc of longer radius than the other moves with slower oscillations. This brings about a very important result—that of bringing the index quickly to a stand-still, and at the same time in no way decrease the sensitiveness and accuracy of the scale. The quick, short oscillations of the one weight meet and retard the longer oscillations of the other, and they thus mutually come to a rest.

The index or pointer D is attached to one of the weights, and moved, by the vibration of the same, along a stationary graduated dial-plate, D'. The index is required to be set to the zero-point of the dial by adjusting the casing to a level. This is accomplished by raising or lowering one side of the casing by means of the thumb-screw E, regulated from the outside, and acting on the upper arm of a fulcrumed elbow-lever, F, whose lower arm passes through a perforation of the bottom to the outside, being forked, or provided with a broad base-plate, or otherwise, to bear on base-support on which the scale is placed, so as to level the scale, and adjust the index to zero. Two smaller weights, B', are attached to the lower

side of one of the weights B by screws, which extend upward from the smaller weights, and enter the larger.

By turning the weights, and with them the screws, they are made adjustable, as they can be raised toward, and lowered from, the weight-supporting knife-edges of B. This accomplishes two purposes: First, by having two or more dial-plates, the scale can be made of different capacities, as by lowering the smaller weights the capacity is increased, and vice versa; next, in manufacturing the scale in quantities, a standard dial-plate being given, the scale can quickly be adjusted to it by using the weights or weight as described.

I do not wish to limit the use of weights which can be raised or lowered, as those B',

as in combination with a larger weight, B, for the main weight B, can be applied in same manner to the knife-edges by having said knife-edges attached to a bar, into which the screws of the weight B enter.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, with knife-edges, of a balance-weight and an auxiliary weight, connected by rigid arms *f f* and pivoted rod *g*, the weights oscillating in same plane, as and for the purpose specified.

HENRY M. WEAVER.

Witnesses:

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E. G. STOKES.