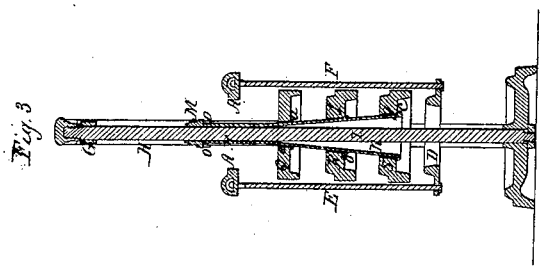
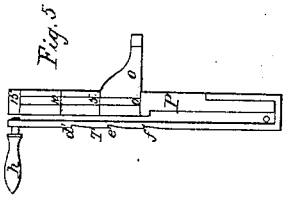
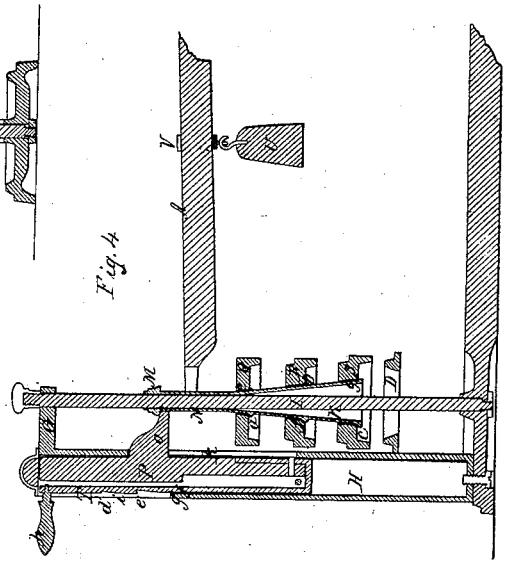
R. EASTMAN.

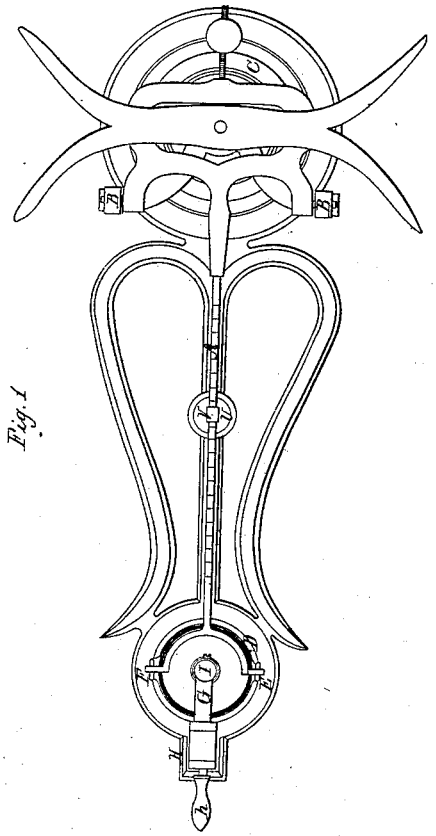
BALANCE FOR WEIGHING.

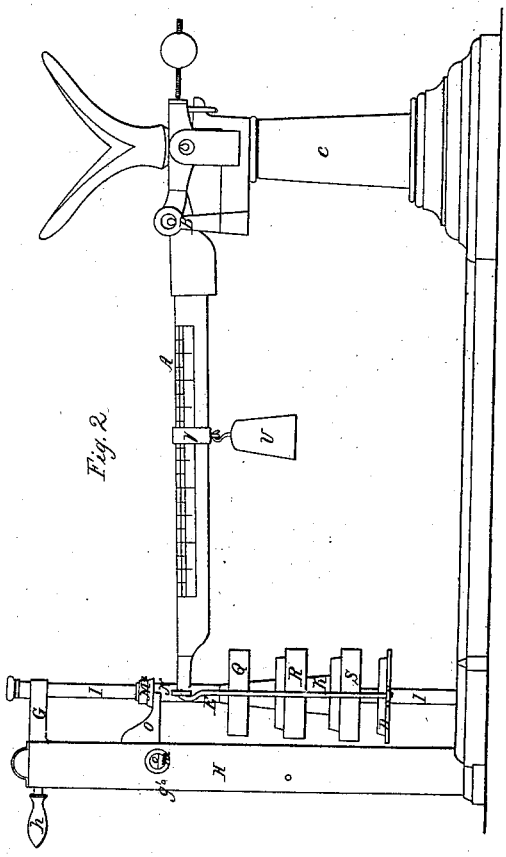
No. 6,174. Patented Mar. 13, 1849.











UNITED STATES PATENT OFFICE.

ROBERT EASTMAN, OF CONCORD, NEW HAMPSHIRE, ASSIGNOR TO MARIA L. EASTMAN.

IMPROVEMENT IN BALANCES FOR WEIGHING.

Specification forming part of Letters Patent No. **6,174**, dated March 13, 1849.

To all whom it may concern:

Be it known that I, ROBERT EASTMAN, of Concord, in the county of Merrimac and State of New Hampshire, have invented a new and useful Improvement in Scales or Balances for Weighing; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereon.

Of the said drawings, Figure 1 denotes a top view, and Fig. 2 a side elevation, of my improved balance. Fig. 3 is a transverse and vertical section, taken through the series of weights connected with the end of the scale-beam. Fig. 4 is a vertical and longitudinal section of a part of the scale-beam and the said series of weights and their apparatus for successively raising or lowering each of said weights.

In the said drawings, A exhibits the scale-beam or graduated lever, resting on pivots or bearings at B B, and being made at one end to support a scale-pan in any proper manner. C is the supporting-frame of the scale-lever and other parts. A small circular platform, D, is suspended from or hung to the other end of the lever A, by means of two suspension-rods, E F. A vertical guide-rod, I, extends upward through the said platform, and is kept in place at its lower end by being fixed in the frame. At its upper end said rod is supported by an arm, G, made to extend from an upright hollow post, H. The rod I has a metallic cone, K, fixed upon it in such manner as to be capable of being raised up and lowered down on the rod. The said cone, by means of a shoulder, M, projecting from a tube, N, extending upward from the cone, is supported on an arm, O, which extends from a slide-bar, P, arranged within the hollow column or post H. A series of any suitable number of weights, Q R S, is disposed over the platform D, the cone K being made to pass through said series of weights. The cone may be provided with three or any other suitable number of shoulders, flanges, or projections, *a b c*, arranged, respectively, around it and at its upper end, middle, and lower end of it, the holes *e*, *f*, and *g* through the weights being of such diameters as to cause the weights to respectively rest and be supported on the said flanges *a b c*, and entirely above and off the platform D when the cone is elevated to its highest position. The slide-bar P has a spring-catch, T, extending from and applied to it, as seen in Fig. 4, the said spring-catch being provided with a series of projections or notches, *d' e' f'*, which operate in connection with a small shelf or pin, *g'*, arranged as seen in the drawings. From the upper end of the spring-catch a knob or handle, *h*, extends, as seen in Figs. 2, 4, there being an opening or long vertical slot, *i*, cut through the post H, to allow of the passage of the knob out of or through the post and its vertical movements. A similar slot, K, should also be made through the opposite side or part of the post to allow of the extension of the arm O out of the post, and the vertical movements of said arm. The platform D should be made with a hole or passage through it large enough to admit of the operations of the cone which moves through said platform. The regular poise or weight for weighing is shown at U as hung upon a slide, V, placed on the graduated-scale beam.

Fig. 5 denotes an external or side view of the slide-bar P, as it appears when it is removed from the post H. Said slide-bar has certain figures, 0, 5, 10, 15, marked upon it at suitable heights. These figures operate (as will be hereinafter more readily explained) in connection with an orifice or hole, *m*, made through the side of the post H, as seen in Fig. 2.

We will now suppose the divisions and subdivisions of the scale-beam to be such as, in conjunction with the poise U, to enable us to ascertain the weight of any body placed in the scale-pan and weighing from one to five pounds. If we desire to weigh any body or article of a less weight than five pounds, we take hold of the knob or handle *h*, and elevate the slide-bar P and the cone K into their highest position, and so as to lift all the weights Q R S entirely off the platform D, as seen in Fig. 2. During this operation the upper weight will be raised first, the second or middle weight next, and so on throughout the series. When the parts are in this position, and held up by the lower notch, *f'*, of the spring-catch T, the 0 (zero) on the slide-bar should come into such position as to be seen through the hole *m*. All this being effected, we proceed to move the poise on the beam until it is brought into a level or horizontal position, and the weight is indicated by the divisions of the beam.

We will next suppose that we wish to determine the weight of a body weighing over five pounds and between five and ten pounds. We take hold of the knob or handle *h*, press inward the spring-catch, and permit the slide-bar P and the cone K to descend sufficiently to deposit the lower weight, S, upon the platform D. The figure 5, on the slide-bar P, should then appear or be seen through the hole *m*, the weight S being sufficient, when the poise is placed at the commencement of the divisions of the scale-beam, to balance five pounds placed in the scale. If the weight in the scale-pan is seven pounds exactly, the poise, in order to bring the beam to a level, would have to be moved to the division 2 of the beam, or that indicating two pounds thereon, and whatever the weight in the scale-pan may exceed five pounds, the excess may be determined by moving the poise on the beam until the latter is brought into a level position. The divisions and subdivisions will then denote said excess. So if we desire to weigh a body of over ten and less than fifteen pounds weight, we depress the cone until the next weight R is deposited on the weight S, and until the figures 10 appear at the hole *m*. The excess of weight over ten pounds is to be determined on the beam by means of the poise. In weighing over fifteen (15) pounds and less than twenty (20) pounds, we depress the third and last weight, so as to cause it to rest on the weight R, and proceed as before.

Although I have described my invention as adapted to the weighing of bodies of any weights from five to twenty pounds, I do not confine it to such, as it is evident that a scale-beam may be constructed and an apparatus be applied to it, so as to operate on similar principles and determine much greater weights, all of which will be readily comprehended by balance-makers.

What I claim as my invention is—

The afore-described improvement or combination as applied to a scale-beam, and composed of the following elements or their mechanical equivalents, viz: first, the suspended platform D; second, the series of one, two, or more weights, Q R S; third, a lowering and lifting apparatus, the same consisting of the cone K, slide-bar P, and catch T, as specified, the whole being combined and made to operate together essentially in the manner and for the purpose, as above explained; and in combination with said lifting and lowering apparatus, the scale of figures on the slide-bar P, and the hole *m*, made through the post H, or their equivalents, the same being for the purpose described.

In testimony whereof I have hereto set my signature this 15th day of May, A. D. 1848.

ROBERT EASTMAN.

Witnesses:
CHAS. EASTMAN,
T. W. KELLY.