No. 615,937. Patented Dec. 13, 1898.

M. G. WHEELER.

SMALL SCALE.

(Application filed Jan. 15, 1898.)

(No Model.)

Fig. 1.

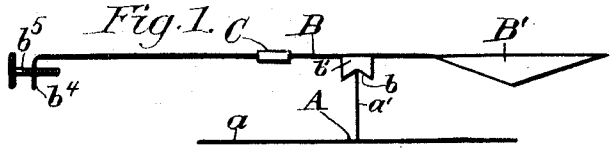


Fig. 2.

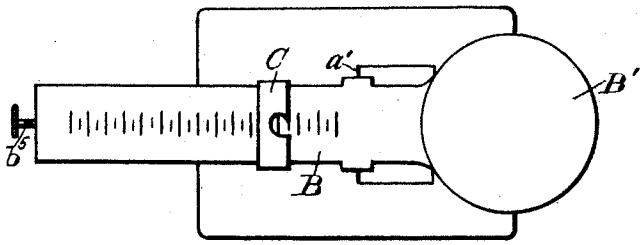


Fig. 3.

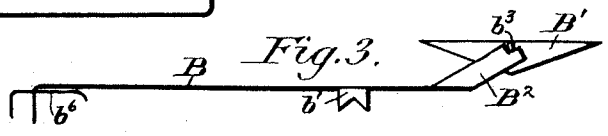


Fig. 4.

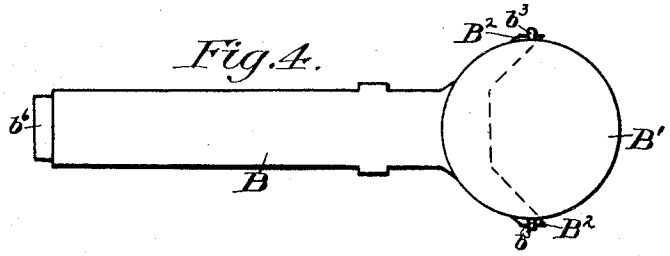


Fig. 5.

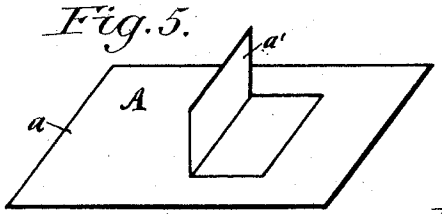
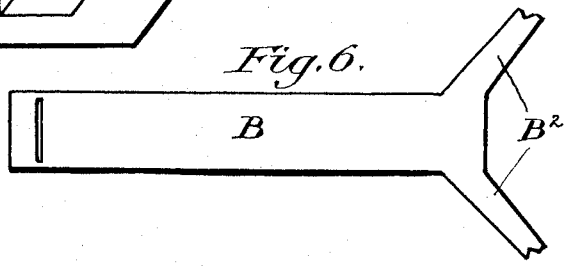


Fig. 6.



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SMALL SCALE.

SPECIFICATION forming part of Letters Patent No. 615,937, dated December 13, 1898.

Application filed January 15, 1898. Serial No. 666,814. (No model.)

To all whom it may concern:

Be it known that I, MARSHALL G. WHEELER, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Small Scales, of which the following is a specification.

My invention relates generally to scales or balances involving in their construction a tilting weighing-beam having a pan on one side of the point of support and a sliding weight or counterpoise on the other side; and it relates especially to scales or balances adapted for weighing comparatively light or fine materials or substance—such, for instance, as dentists' or jewelers' scales.

Prominent objects of my invention are to simplify and lighten the construction of such scales and the cost thereof; to arrange for the ready and easy dismemberment or separation of the parts of the scale, so as to permit of its being easily packed for transportation and also for the quick assembling of the same for service, and to provide other novel features tending to increase the efficiency, accuracy, and usefulness of such scales.

To the attainment of the foregoing and other useful ends, my invention consists in matters hereinafter set forth.

In the accompanying drawings, Figures 1 and 2 are a side elevation and top plan, respectively, of a dentist's or like scale embodying my invention. Figs. 3 and 4 are a side elevation and plan view of a modified form of weighing-beam. Fig. 5 is a perspective view of the base of the scale, and Fig. 6 is a plan of the modified form of beam in process of construction.

In the drawings the scale-base A comprises a flat metal plate or disk *a*, which is composed of sheet metal or the like and which rests or lies upon one of its faces in contradistinction to resting or lying upon one of its edges, and a vertically-disposed upright *a'*, which rises from the middle portion of the other or upper face of the plate *a* and has its upper edge made thin or knife-like, so as to provide a pivotal support or bearing for the tilting scale-beam. The plate *a* is shown substantially rectangular in shape, although it could have any suitable shape or form.

While the upright *a'*, which rises from the middle of the plate *a*, could be formed thereon or attached thereto in any suitable or desired way, it is, as a matter of further improvement, formed by cutting three sides of a rectangular figure upon the plate *a* and by then striking up the portion of the plate thus cut about the uncut side of the rectangular figure as an axis, as best shown in Fig. 5. It will be seen in this way the base A can be constructed in an exceedingly simple, quick, and inexpensive manner and with the use of but very little material and labor and but very few tools and that when so constructed it is light in weight, durable, and sufficiently strong for all strains to which it may be subjected; also, that its width can be as great as desirable at but a trifling cost and that the height of the upright or support *a'* can be easily and simply proportioned relatively to the lateral dimensions of the horizontal portion *a* and can be varied at will without inconvenience or increase of cost.

The base A supports a relatively long horizontally-disposed tilting weighing-beam B, which rests upon and tilts about the upper edge of the upright *a'*, formed by the struck-up portion of the plate *a*. The bearing by means of which the beam B rests upon and tilts about the upper edge of the upright *a'* consists of a couple of downwardly-diverging V-shaped notches *b b*, formed in a couple of vertically-disposed ears or lugs *b' b'*, which project downwardly from opposite sides of the beam B. The latter carries on one side of its point of pivotal support a pan B', into which the material to be weighed is placed. This pan B' is desirably circular and upwardly flaring, in which way the material will slide downwardly in the pan and tend to concentrate its weight at the center thereof, and consequently at a predetermined distance from the point of pivotal support. The pan B' could be made integral with the beam B, as shown in Figs. 1 and 2, and when thus made integral with the beam it could be formed by striking up or spinning into the proper shape a thin flat piece of metal forming a part of the beam and having a size and shape suitable for forming the desired shape of the pan when so treated, or the pan B' could be arranged in connection with the beam B in any other way; but as a preferred

arrangement and matter of further improvement it is made separate from the beam and is suspended therefrom by a pivotal or knife-edge suspension, in which way the weight of the material in the pan will always be applied to the beam at the same point, irrespective of the manner of distribution of the material within the pan itself. As a simple construction, the pan B′ is provided with a couple of knife-edged pins b^3 b^3, Figs. 3 and 4, which project laterally from its upper edge or rim, and the end of the beam B is provided with a couple of arms B^2 B^2, whose ends are separated sufficiently to admit of the interposition of the pan between them and are notched, so as to form bearings for the knife-edges b^3 b^3 of the pan. In this way the pan can be satisfactorily suspended, while at the same time its suspension by the separated ends of a couple of arms permits easy access to it for the purpose of introducing or removing material. As a preferred arrangement, these arms B^2 B^2 extend upwardly from the beam, in which way they can be more easily made, and at the same time they serve to hold the upper edge or rim of the pan above the beam, and thus remove all possibility of interference with the latter when introducing or removing material from the former. As a matter of still further improvement, they extend outwardly—that is to say, in a direction away from the beam—as well as upwardly, and thereby avoid the necessity of supporting the pan at an undesirable height above the beam by allowing the bottom thereof to rest between them.

The weighing-beam B, on the opposite side of its point of pivotal support, is suitably graduated and carries a sliding weight or counterpoise C, which can be slid along the graduations to an extent to balance, and thereby indicate the weight of the material in the pan B′. The weight or counterpoise C conveniently consists of a metallic loop or band which encircles the beam B.

In case the beam B is not exactly balanced when the pan B′ is empty and the counterpoise C in zero position next to the downwardly-projecting lugs b' b' an exact balance can be secured either by screwing a thumb-screw b^5, Figs. 1 and 2, into or out of a flange b^4, which extends downwardly from the rear end of the beam B, or by sliding an adjustable slide b^6, Figs. 3 and 4, into or out of a slot in said downwardly-extending flange b^4, it being observed that each of said arrangements comprises an adjustable balancing-weight carried by the end of the beam. The former arrangement is preferred, for the reason that when a true balance is once obtained by the thumb-screw b^5 such screw is less likely to move, and so destroy the balance, than the slide b^6.

The weighing-beam B could be of any suitable form and construction, and the bearing-lugs b' b', the pan-supporting arms B^2 B^2, (in case the pan is suspended by means of such arms,) and the downwardly-extending balance-weight-holding flange b^4 could be secured to or formed with the beam B in any suitable manner; but as a preferred construction and matter of further improvement the beam B is formed of a flat metal strip, and the lugs b' b' and the flange b^4 are formed by bending downwardly and the arms B^2 B^2 by bending upwardly suitably-formed extended portions or projections of the flat metal strip composing the beam B. The flat metal blank having such shape or configuration, Fig. 6, can be cut or stamped from suitable sheet-metal stock. It will be seen that in this way the weighing-beam, while sufficiently rigid, strong, and durable for weighing comparatively light weights of material, can be made easily, quickly, and inexpensively and that the scale as a whole, when constructed as hereinbefore set forth, will be accurate, light, and inexpensive and can be readily and quickly taken apart and packed in a box, so that it may be easily carried about from place to place and can be as readily and quickly put together again for service.

What I claim as my invention is—

1. A dentist's or like scale comprising a tilting weighing-beam carrying a material-holding pan on one side of its point of pivotal support and having its other side graduated; a counterpoise which can slide along the graduated portion of the weighing-beam; an adjustable balance-weight carried by the beam; and a base composed of a piece of sheet-like material resting upon one of its faces and having a struck-up portion which rises from its other or upper face and has its upper edge adapted to enter upwardly-converging V-shaped bearings provided on the weighing-beam, and so serve as a pivotal support for such beam; substantially as set forth.

2. A dentist's or like scale comprising a graduated and pan-carrying tilting weighing-beam composed of a strip of sheet metal or the like and provided with vertically-disposed upwardly-converging V-shaped bearings which are formed in downturned lateral extensions of said sheet-metal strip; a counterpoise which can slide along the graduated portion of the weighing-beam; an adjustable balance-weight carried by the beam; and a base having a knife-edge which can enter the V-shaped bearings of the weighing-beam, and so afford a pivotal support therefor; substantially as set forth.

3. A dentist's or like scale comprising a tilting graduated weighing-beam formed of a strip of sheet metal or the like and provided on its ungraduated side with a couple of oppositely-arranged and upwardly-extending arms formed of upturned extended portions of said sheet-metal strip; a material-holding pan pivotally suspended from the upper ends of said arms; a counterpoise which can slide along the graduated portion of the beam; and a base which serves as a pivotal support for the beam; substantially as set forth.

4. A dentist's or like scale comprising a tilting graduated and pan-carrying weighing-beam composed of a strip of sheet metal or the like and provided with vertically-disposed upwardly-converging V-shaped bearings formed in downturned lateral projections of said sheet-metal strip, and also with a downturned end portion which serves as a balance-weight holder; a counterpoise which can slide along the graduated portion of the beam; a balance-weight held by, and adjustable relatively to, the downturned end portion; and a base composed of a piece of sheet metal or the like lying upon one of its faces and having a struck-up portion whose upper edge enters the V-shaped bearings of the beam, and so serves as a pivotal support therefor; substantially as described.

Signed by me, at Chicago, Illinois, this 13th day of January, 1898.

MARSHALL G. WHEELER.

Witnesses:

A. MILLER BELFIELD,

L. A. GARDINER.