Jan. 24, 1956 F. MEINIG 2,732,199

BALANCE

Filed April 13, 1950

Fig. 1

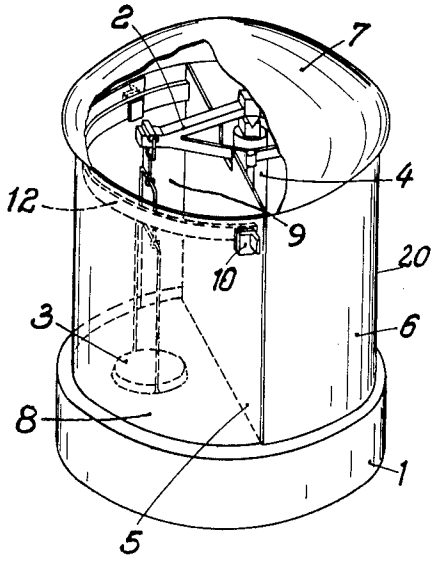
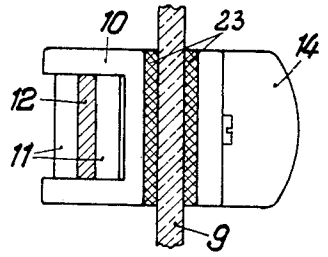


Fig. 4



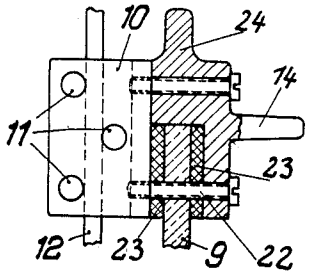
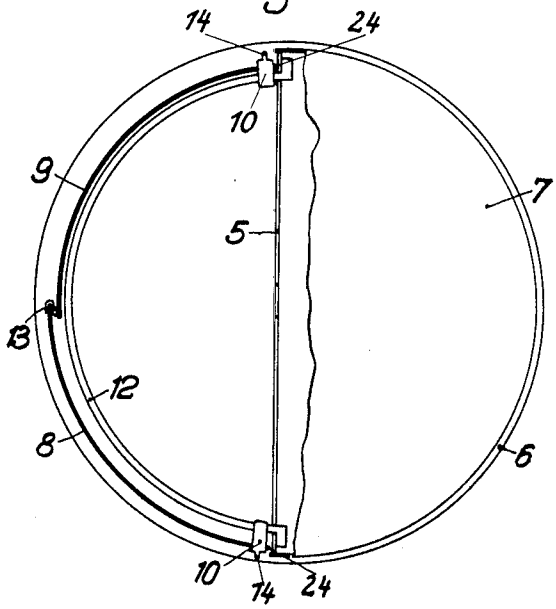


Fig. 5

Fig. 2



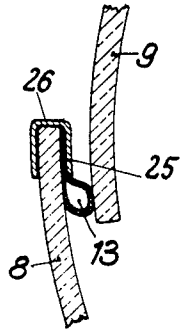


Fig. 3

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BALANCE

Friedrich Meinig, Gottingen, Germany

Application April 13, 1950, Serial No. 155,614

Claims priority, application Germany August 18, 1949

8 Claims. (Cl. 265—54)

The present invention relates to a balance, and more particularly to a precision balance provided with an automatic device for applying the weights.

It is an object of the present invention to decrease the surface of the balance in heat exchange with the surroundings.

It is another object of the present invention to provide a balance having a casing devoid of dead corners in its interior in order to eliminate uncontrolled heat exchanges and flow conditions.

It is a further object of the present invention to increase the stability of the casing while keeping its weight as low as possible.

It is still another object of this invention to provide a balance which is simple to manufacture. All the parts of the balance can be well fitted to one another and mounted on the base plate, thus having a high inner stability favorable in the use of the balance.

The balance according to the invention comprises in its broadest aspects a base plate and a cover arranged on the base plate, the cover having a substantially circular cross section.

In a preferred embodiment of the present invention the base plate has a substantially cylindrical shape of a diameter slightly in excess of the diameter of the cover.

In a preferred embodiment of the invention the cover includes a substantially cylindrical wall arranged on the base plate and a lid arranged on the edge of the cylindrical wall opposite to the base plate. The lid may be either flat or dome-shaped and preferably semi-spherical.

In a preferred embodiment of the present invention the cylindrical wall has an aperture, and a door having part-cylindrical shape is provided for closing the aperture. Preferably the door is designed as a sliding door of substantially the same curvature as the cylindrical wall.

Preferably an arc-shaped rail is connected to the cover and a clamp is movably arranged on the rail and holds the door, the clamp being preferably shaped as a handle for manipulating the door.

In a preferred embodiment the aperture of the cylindrical wall is substantially half-cylindrical and can be closed by two movable doors each having the shape of substantially a quarter of a cylinder of substantially the same curvature as the cylindrical wall.

In a preferred embodiment of the present invention a substantially semi-circular rail is arranged substantially along the upper edge of the half-cylindrical aperture on which clamps are movably arranged and which respectively hold the doors. Preferably, the clamps are shaped as handles for manipulating the doors.

In a preferred embodiment of the present invention a flexible strip is arranged between the doors and adapted to seal the interior of the cover in the closing position of the doors. At the same time this strip decreases the flow of air when the doors are open.

Preferably, the flexible strip is held by a clamp arranged on one straight edge of one of the curved doors.

In a preferred embodiment of the present invention, means for neutralizing any electric charges generated by the motion of the doors are provided. These means may be designed as a layer of a lacquer adapted to remove the charges. This lacquer may be either arranged on one or both doors or on the flexible strip.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of a balance according to the invention, the cover being partly broken away;

Fig. 2 is a top view of the balance shown in Fig. 1, the left half of the lid being broken away;

Fig. 3 shows a plan view at an enlarged scale of the overlapping ends of the doors shown in Fig. 2;

Fig. 4 is an enlarged side elevation showing one of the doors and the clamp connecting it to the rail; and

Fig. 5 is a top view of Fig. 4.

Referring now to the drawings, the balance comprises a base plate **1** preferably of cylindrical shape on which the entire mechanism needed for a weighing is mounted. The weight means is operable from the exterior of the device in a well known manner, as shown, for example, in U. S. Patent Number 2,614,825. In Fig. 1 the balance beam **2** supported by the column **4** and one of the weighing pans **3** suspended from one end of the balance beam **2** are shown. A vertical partition **5** subdivides the space inside the cover **20** into approximately two equal parts, the partition **5** being arranged at right angles to the balance beam **2**. All these parts are covered by a half cylindrical wall **6** with two doors **8** and **9** and a preferably removable lid **7** arranged at the top of the cylindrical wall **6**. The cylindrical wall **6** has preferably a diameter slightly less than the diameter of the cylindrical base **1**. The lid **7** may be dome-shaped, as shown in the drawings.

The two doors **8** and **9** preferably consist of transparent material such as glass or Plexiglas. The doors are shaped each as substantially a quarter of a cylinder having substantially the same curvature as the wall **6** and are connected by means of clamps **10** to a substantially semi-circular rail **12** fixed at its opposite ends to the upper edge of the partition **5**. The clamps are arranged at the outer ends of the upper curved edge of each door as clearly shown in Fig. 2.

The clamps **10** slide along the rail **12** by means of rollers **11** as clearly shown in Figs. 4 and 5. They hold the doors **8** and **9** by means of screws **22** and flexible layers **23**. Preferably the clamps **10** are provided with handles **14** for the manipulation of the doors. Extensions **24** forming continuations of the doors **8** and **9** abut in the closing end position of the doors against the partition **5**.

A flexible strip **13** is arranged between the doors **8** and **9** and is adapted to seal the interior of the balance in the closed position of the doors (Figs. 2 and 3). Preferably, the strip consists of a textile fabric or rubber being folded as a loop the ends **25** of which are held by a clamp **26** provided on one of the straight edges of one of the doors, such as **8**, so as to hold the strip **13** in a fixed position with respect to said door.

The clamps **10** can be moved by means of the handles **14** so that each of the doors **8** and **9** can be opened independently of the other so that either an aperture

corresponding to a quadrant of the circle or two apertures corresponding to two octants of the circle can be free.

In order to remove charges which may be generated by friction during the sliding of the doors, layers of a lacquer adapted to remove the charges may be provided on one or both of the sliding doors or on the flexible strip 13.

What I claim as new and desire to secure by Letters Patent is:

1. A precision balance comprising, in combination, a cylindrical base; a partition fixed to said base and extending upwardly therefrom; a column mounted on said base; a balance beam pivotally mounted intermediate its ends on said column and having two arms one of which extends across said partition to one side thereof and the other of which is adapted to be connected to a weighing mechanism located on the other side of said partition; a pan suspended from a free end portion of said one arm of said balance beam; a cylindrical wall mounted on said base, extending upwardly therefrom, and engaging said partition to form with said opposite side thereof a chamber open only at the top and adapted to house the weighing mechanism, said wall being formed in part by a door of part-cylindrical shape facing said one side of said partition to give access to said pan; and a lid located over and covering the space defined by said wall.

2. A precision balance comprising, in combination, a cylindrical base; a partition fixed to said base and extending upwardly therefrom; a column mounted on said base; a balance beam pivotally mounted intermediate its ends on said column and having two arms one of which extends across said partition to one side thereof a pan suspended from a free end portion of said one arm of said balance beam; a cylindrical wall mounted on said base, extending upwardly therefrom, and engaging said partition to form with said opposite side thereof a chamber open only at the top and adapted to house the weighing mechanism, said wall having a movable portion facing said one side of said partition to give access to said pan, said movable portion of said wall being in the form of a segment of a cylinder and being movable about the axis of said cylindrical wall from a closed position, where said cylindrical wall extends completely about said base, to an open position overlapping an adjacent part of said cylindrical wall; and a lid located over and covering the space defined by said wall.

3. A precision balance comprising, in combination, a cylindrical base; a partition fixed to said base and extending upwardly therefrom; a column mounted on said base; a balance beam pivotally mounted intermediate its ends on said post and having two arms one of which extends across said partition to one side thereof and the other of which is adapted to be connected to a weighing mechanism located on the other side of said partition; a pan suspended from a free end portion of said one arm of said balance beam; a cylindrical wall mounted on said base; extending upwardly therefrom, and engaging said partition to form with said opposite side thereof a chamber open only at the top and adapted to house the weighing mechanism, said wall having a movable portion facing said one side of said partition to give access to said pan, said movable portion of said wall being in the form of a segment of a cylinder and being movable about the axis of said cylindrical wall from a closed position, where said cylindrical wall extends completely about said base, to an open position overlapping an adjacent part of said cylindrical wall; a lid located over and covering the space defined by said wall; and a flexible sealing strip fixed to one side edge of said movable wall portion and engaging said adjacent part of said cylindrical wall so that said movable wall portion is in sealing engagement with said adjacent part of said movable wall while being movable with respect thereto.

4. A precision balance comprising, in combination, a cylindrical base; a partition fixed to said base and extending upwardly therefrom; a column mounted on said base; a balance beam pivotally mounted intermediate its ends on said post and having two arms one of which extends across said partition to one side thereof and the other of which is adapted to be connected to a weighing mechanism located on the other side of said partition; a pan suspended from a free end portion of said one arm of said balance beam; a cylindrical wall mounted on said base, extending upwardly therefrom, and engaging said partition to form with said opposite side thereof a chamber open only at the top and adapted to house the weighing mechanism, said wall having a movable portion facing said one side of said partition to give access to said pan, said movable portion of said wall being in the form of a segment of a cylinder and being movable about the axis of said cylindrical wall from a closed position, where said cylindrical wall extends completely about said base, to an open position overlapping an adjacent part of said cylindrical wall; a lid located over and covering the space defined by said wall; a flexible sealing strip fixed to one side edge of said movable wall portion and engaging said adjacent part of said cylindrical wall so that said movable wall portion is in sealing engagement with said adjacent part of said movable wall while being movable with respect thereto; and a layer of lacquer located on said flexible strip for preventing the creation of static charges.

5. A precision balance comprising, in combination, a cylindrical base; a partition fixed to said base and extending upwardly therefrom; a column mounted on said base, a balance beam pivotally mounted intermediate its ends on said column and having two arms one of which extends across said partition to one side thereof, and the other of which is adapted to be connected to a weighing mechanism located on the other side of said partition; a pan suspended from a free end portion of said one arm of said balance beam; a cylindrical wall mounted on said base, extending upwardly therefrom and engaging said partition to form with said opposite side thereof a chamber open only at the top and adapted to house the weighing mechanism, said wall being formed at said one side of said partition by an arcuate rail extending about the axis of said cylindrical wall and a pair of doors slidably mounted on said rail, being in the form of segments of a cylinder and being movable on said rail about said axis of said cylindrical wall from a closed position, where said cylindrical wall extends completely about said base, to an open position where said doors are in overlapping relation with one door located behind the other; and a lid located over and covering the space defined by said wall.

6. A precision balance comprising, in combination, a cylindrical base; a partition fixed to said base and extending upwardly therefrom; a column mounted on said base; a balance beam pivotally mounted intermediate its ends on said column and having two arms one of which extends across said partition to one side thereof and the other of which is adapted to be connected to a weighing mechanism located on the other side of said partition; a pan suspended from a free end portion of said one arm of said balance beam; a cylindrical wall mounted on said base, extending upwardly therefrom, and engaging said partition to form with said opposite side thereof a chamber open only at the top and adapted to house the weighing mechanism, said wall being formed at said one side of said partition by an arcuate rail extending about the axis of said cylindrical wall and a pair of transparent doors slidably mounted on said rail, being in the form of segments of a cylinder and being movable on said rail about said axis of said cylindrical wall from a closed position, where said cylindrical wall extends completely about said base, to an open position where said doors are in overlapping relation with one door located behind the

other; and a lid located over and covering the space defined by said wall.

7. A precision balance comprising, in combination, a cylindrical base; a partition fixed to said base and extending upwardly therefrom; a column mounted on said base; a balance beam pivotally mounted intermediate its ends on said column and having two arms one of which extends across said partition to one side thereof and the other of which is adapted to be connected to a weighing mechanism located on the other side of said partition; a pan suspended from a free end portion of said one arm of said balance beam; a cylindrical wall mounted on said base, extending upwardly therefrom, and engaging said partition to form with said opposite side thereof a chamber open only at the top and adapted to house the weighing mechanism, said wall being formed at said one side of said partition by an arcuate rail extending about the axis of said cylindrical wall and a pair of doors slidably mounted on said rail, being in the form of segments of a cylinder and being movable on said rail about said axis of said cylindrical wall from a closed position, where said cylindrical wall extends completely about said base, to an open position where said doors are in overlapping relation with one door located behind the other, said doors in said closed position thereof having overlapping edge portions; a lid located over and covering the space defined by said wall; and a strip of flexible material fixed to one of said overlapping edge portions of said doors and engaging the other of said overlapping edge portions to maintain said doors in sealing engagement with each other.

8. A precision balance comprising, in combination, a cylindrical base; a partition fixed to said base and extending upwardly therefrom; a column mounted on said base; a balance beam pivotally mounted intermediate its ends on said column and having two arms one of which extends across said partition to one side thereof, and the other of which is adapted to be connected to a weighing mechanism located on the other side of said partition; a pan suspended from a free end portion of said one arm of said balance beam; a cylindrical wall mounted on said base, extending upwardly therefrom, and engaging said

partition to form with said opposite side thereof a chamber open only at the top and adapted to house the weighing mechanism, said wall being formed at said one side of said partition by an arcuate rail extending about the axis of said cylindrical wall and a pair of doors slidably mounted on said rail, being in the form of segments of a cylinder and being movable on said rail, about said axis of said cylindrical wall from a closed position, where said cylindrical wall extends completely about said base, to an open position where said doors are in overlapping relation with one door located behind the other, said doors in said closed position thereof having overlapping edge portions; a lid located over and covering the space defined by said wall; a strip of flexible material fixed to one of said overlapping edge portions of said doors and engaging the other of said overlapping edge portions to maintain said doors in sealing engagement with each other; and a layer of lacquer located on said strip to prevent the creation of static charges.

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