W. HEUSSER.

BALANCE.

APPLICATION FILED JAN. 14, 1914.

1,104,892.

Patented July 28, 1914.

2 SHEETS—SHEET 1.

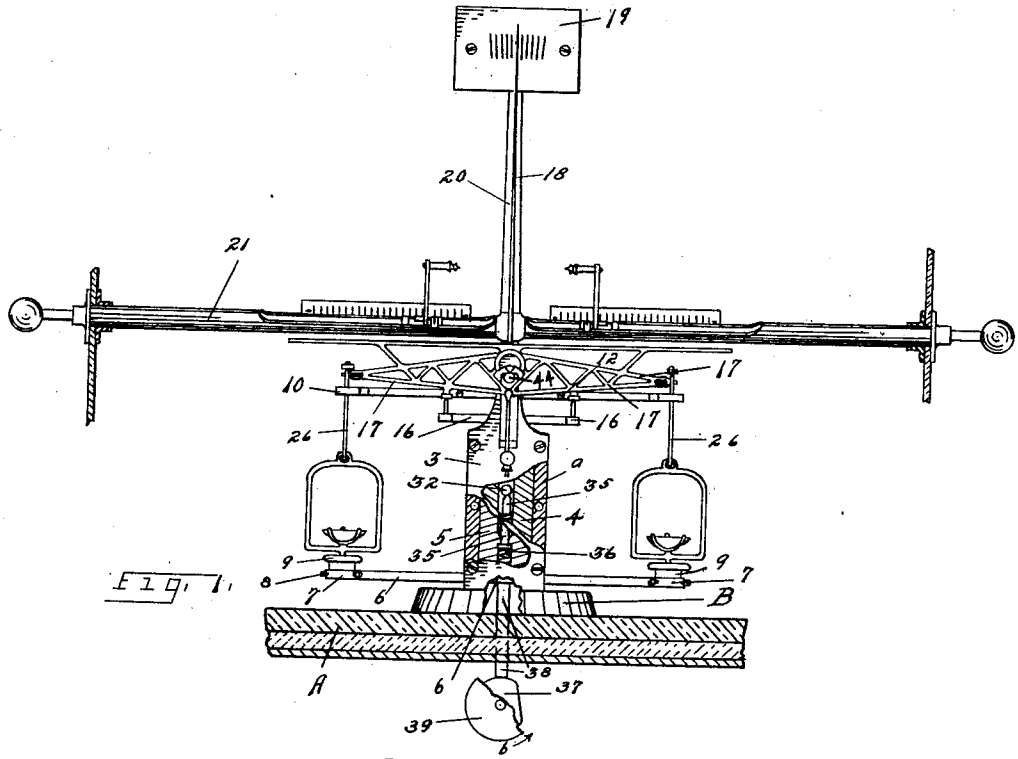


Fig. 1.

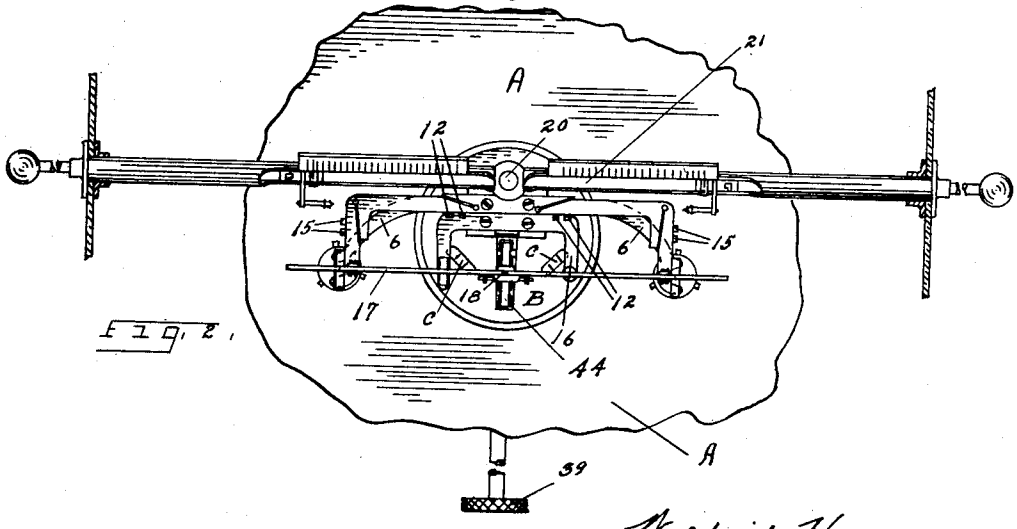


Fig. 2.

WITNESSES:

F. H. Thomas.

J. T. Clark.

Wilfrid Heusser

INVENTOR.

BY J. M. Thomas

ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

W. HEUSSER.

BALANCE.

APPLICATION FILED JAN. 14, 1914.

1,104,892.

Patented July 28, 1914.

2 SHEETS—SHEET 2.

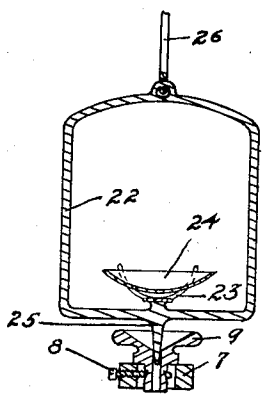


Fig. 3.

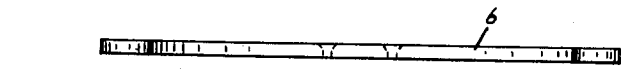


Fig. 4.

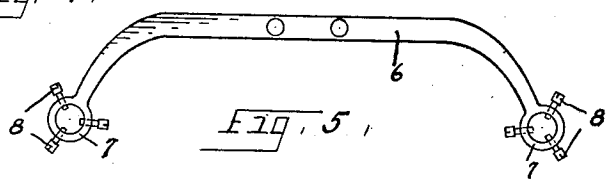


Fig. 5.

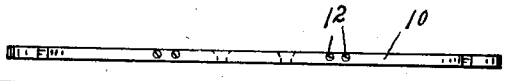


Fig. 6.

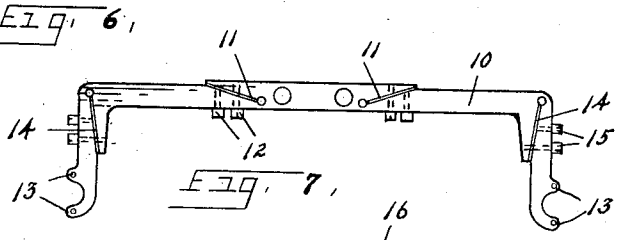


Fig. 7.

Fig. 8.

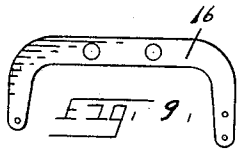


Fig. 9.

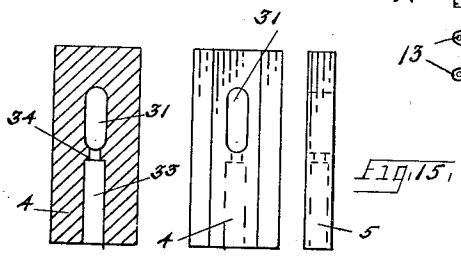


Fig. 15.

Fig. 13.

Fig. 14.

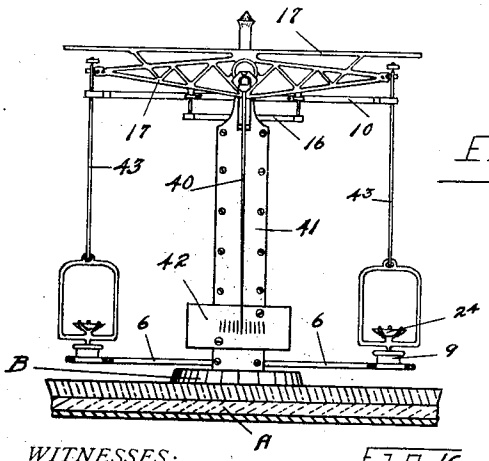


Fig. 16.

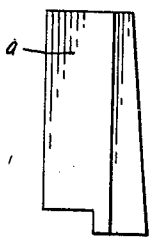


Fig. 10.

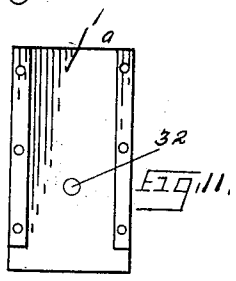


Fig. 11.

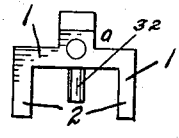


Fig. 12.

WITNESSES:

F. H. Thomas.

J. T. Clarke.

Adolph Heusser

INVENTOR.

BY J. M. Thomas

ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILFRID HEUSSER, OF SALT LAKE CITY, UTAH.

BALANCE.

1,104,892. Specification of Letters Patent. Patented July 28, 1914.

Application filed January 14, 1914. Serial No. 812,163.

To all whom it may concern:

Be it known that I, WILFRID HEUSSER, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Balances, of which the following is a specification.

My invention relates to balances, and has for its object to provide an economical, accurate and efficient balance for assayers and scientists. These objects I accomplish with the device illustrated in the accompanying drawings in which similar letters and numerals of reference indicate like parts throughout the several figures and as described in the specification forming a part of this application and pointed out in the appended claims.

In the drawings in which I have shown a substantial embodiment of my invention, Figure 1 is a front elevation of the device, parts cut away, and showing portions of the inclosing case and supporting base. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section of one of the pans, pan hangers and pan rests. Fig. 4 is a front elevation in detail of the pan rest support. Fig. 5 is a plan view of the same. Fig. 6 is a front elevation in detail of the pan hanger support. Fig. 7 is a plan view of the same. Fig. 8 is a front elevation in detail of the beam support. Fig. 9 is a plan view of the same. Fig. 10 is a side elevation, Fig. 11 is a front elevation and Fig. 12 is a plan view in detail of the guide channel within which the supporting standards are operated. Fig. 13 is a longitudinal section of one of the vertical standards. Fig. 14 is a front elevation of the same. Fig. 15 is a side elevation of one of the vertical standards. Fig. 16 is a front elevation, reduced in size, of a modified form of my invention in which the height of the balance is increased and the free end of the pointer is downward.

I use the same inclosing case as that described in the patent issued to me on the 21st day of Sept., 1909, No. 934526, and I mount the balance on a base similar to that described in my application for a patent filed in the United States Patent Office December 20th, 1913, Serial Number 808,048. Between said base which I will herein designate as A, and a vertical metal guide channel *a* is fastened a level plate within which the usual spirit levels C are secured. Said channel *a*, has open ends and face and a closed back 1 and sides 2, and on which a face plate 3 is fastened. On the upper end of said face plate is secured the bearing 44 for the beam. Within said channel *a* are slidably and independently operated the vertical standards 4 and 5. On the lower end of said standard 4 and movable therewith is secured the pan rest support 6. The end portions of said support are forwardly curved, and each end is enlarged and perforated to form a circular disk shaped pan rest seat 7. Within the vertical side portions of said seats are provided adjusting screws 8 by means of which the pan rests may be laterally adjusted. Within each of said seats 7 a funnel shaped pan rest 9 is adjustably mounted. On the upper end of said standard 4 and movable therewith is fastened the pan hanger support 10, which is partially severed near where it is fastened to said standard by two angled cuts or slots 11 therein. Each of said slots opens into a hole bored vertically through said hanger support and tend to weaken said support to permit lateral adjustment of the end portions thereof. Said adjustment is made by opposed set screws 12 which are operated horizontally in said support one tending to increase the width of said slot and the other to decrease it. The extreme end portions of said hanger support are forwardly bent at practically right angles to the main portion to provide the hanger pivot seats 13. Each forwardly bent portion is partially severed at or near the elbow by the angled slots 14. Opposed set screws 15 are operated transverse of said slots 14 to adjust the hanger pivots longitudinally. On the upper end of the said standard 5 is secured the beam support 16, on which the usual beam 17 is mounted. Centrally on said beam is secured a pointer 18 which is preferably pointed upward and when said beam is tilted the free end of the pointer vibrates back and forth across a dial 19, that is mounted on a stationary standard 20, that is mounted in the upper end of said guide channel *a*. On said stationary standard, and below said dial is secured the rider shifting apparatus 21, similar to that described in the patent issued to me the 15th day of June 1909, numbered 934,663.

The standards 4 and 5 are alike in construction and the elements operable therein similar. Each of said standards is pro-

vided with an elongated longitudinally disposed slot 31. Said slots are centrally located in said standards and when the standards are in the raised position the slots are in vertical alinement and encompass a laterally projecting pin or lug 32, that is secured in the rear wall 1 of said guide channel *a*. On the longitudinal axis of each of said standards 4 and 5 is bored a plunger chamber 33 leading from the lower end to the elongated slot 31 therein. The upper portion of each of said chambers 33 is smaller than the lower portion forming a shoulder 34 at their junction. A plunger 35 is carried in each of said chambers 33 with one end slidable in the lower portion of its chamber and the other slidable in and protruding from the upper section of its chamber and made to bear against said pin 32. Each of said plungers 35 rests on a spiral spring 36 which is carried in the lower portion of said chamber 33, and holds the respective plunger in contact with said pin 32. As will be obvious any movement of either of said vertical standards 4 and 5 upward will compress its respective spring, and I provide the usual cam 37 which is mounted below said base B, to move said standards upwardly. I have shown one of the cam plungers 38 which imparts the cam action to said standards. Said cam is rotated by the hand wheel 39 which is mounted below the base A.

The hanger frames 22 are suspended from the ends of said beam 17 by link rods 26 and each has mounted therein the pan griffs 23 within which the pans 24 are carried. The lower portion of each of said hanger frames 22 is formed into a depending stud 25 which enters the opening in the adjacent tunnel shaped pan rest 9 with the device assembled.

The operation of my balance is as follows: A slight rotation of the hand wheel 39 in the direction of the arrow *b* will lower the vertical standard 4 and carry the pan hanger support 10 and the pan rest support with their respective connected elements downward. The continued rotation of said hand wheel 39 will then move the cam on its axis and lower the vertical standard 5 and carry the beam support 16 and beam 17 mounted thereon downward. This will poise the beam on its central bearing and the same rotation of the cam will lower the vertical standard 4 with its connected parts 6 and 10 and leave the pan hangers supported from the beam 17 and the pan rests lowered and free from any contact with the depending stud 25. A slight rotation of the said hand wheel in the return or reverse direction will raise the pan rests and hold said hangers 22 from any tendency to sway, by the said depending stud 25 entering the hole in the funnel shaped pan rests 9 and engaging therewith. The operator may then pick up with suitable tweezers any minute article in either pan without the usual annoyance and delay of the pan swaying. A continuation of said reverse motion of the said hand wheel will raise all of the movable elements to stationary position.

I have shown in Fig. 16 a modified form of my balance, wherein the guide channel *a*, and the vertical standards 4 and 5 are made longer. The dial 42 is mounted on a lengthened face plate 41, and the pointer 40 is secured on the lower side of the beam 17 and points downward. The links 43 are made longer to connect the hanger frames 22 with the raised beam 17.

Having thus described my invention I desire to secure by Letters Patent and claim:

1. In a device of the class described the combination of the metal base; of a guide piece in channel form mounted thereon; standards vertically movable therein; a beam support secured on the upper end of one of said standards and movable therewith; a pan hanger support and a pan rest support secured on the other standard and movable therewith; and means to raise and lower said standards.

2. In a device of the class described the combination with a guide piece in channel form; of vertically movable standards in said channel; means to raise and lower said standards independently of each other; a pan rest support secured on one of said standards having perforations through the end portions; a funnel shaped pan rest carried in each end of said support; and means to adjust said rest laterally.

3. In a device of the class described the combination of a metal base; a guide piece in channel form mounted thereon; standards vertically movable therein; a pan hanger support secured on the upper end of one of said standards; pan hanger frames suspended from said support; a depending stud on each of said frames; and pan rests supported from the lower end of said standard; with means to adjust said rests laterally.

4. In a device of the class described the combination of a base; a guide piece in channel form mounted thereon; standards vertically movable in said channel; a pan hanger support secured on the upper end of one of said standards and provided with open angularly disposed slots therein; and means to widen and lessen the outer ends of said slots for a lateral and longitudinal adjustment.

5. In a device of the class described the combination of a base; a guide piece in channel form mounted thereon; a horizontally projecting pin fastened in said channel; vertically movable standards in said channel each having a longitudinal slot therein adapted to encompass said pin, and a lon-

gitudinal chamber in each, opening from said slot to the lower end of the standard; and a spring controlled plunger in each of said chambers bearing against said pin.

6. In a device of the class described the combination of a metal base; a guide piece in channel form mounted thereon; a face plate covering said channel; a horizontally projecting pin secured in said channel; vertically movable standards operable in said channel, each having a longitudinally disposed slot therein and a longitudinally disposed chamber opening from said slot to the lower end thereof; a spring controlled plunger operable in said chamber and adapted to bear against said projecting pin; a beam support mounted on the upper end of one of said standards; a balancing beam mounted on said support; a pointer centrally secured on said beam; a pan rest support secured on the lower end of the other of said standards having the end portions forwardly bent and perforated; pan rests mounted in said perforations and laterally adjustable; a pan hanger support secured on the upper end of the last mentioned standard; pan hanger frames suspended from said support; a depending stud on each of said frames; pan rests supported from the lower end of the same standard; and means to adjust said rests laterally.

7. In a device of the class described the combination of a metal base; a guide piece in channel form thereon; a face plate covering said channel to form a housing; a beam bearing mounted on said face plate; standards movable in said housing; a beam support on one of said standards and movable therewith; a pan hanger support and a pan rest support secured on and movable with the other standard; and means to raise and lower said standards.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILFRID HEUSSER.

Witnesses:
SAM RANEY,
JOHN MARESH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."