

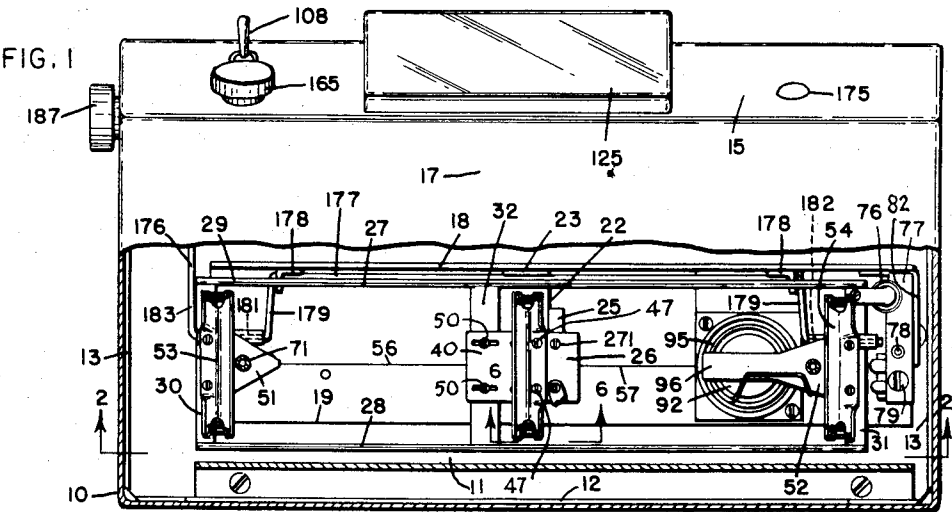
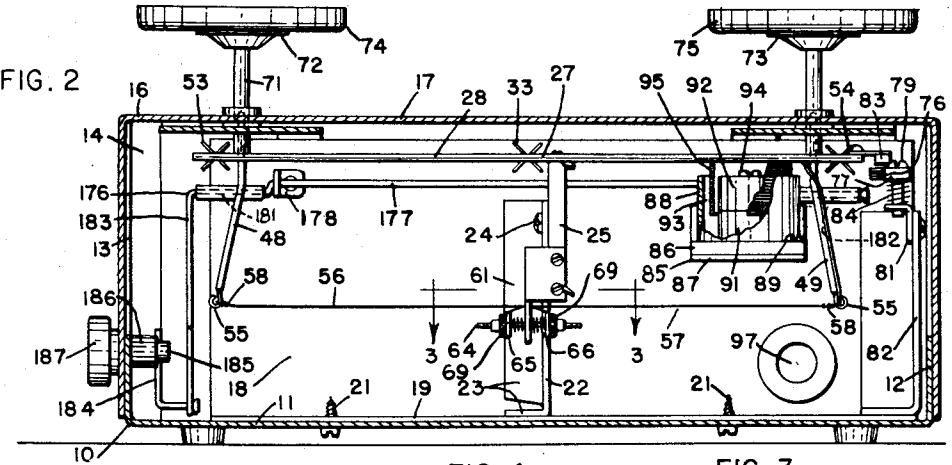
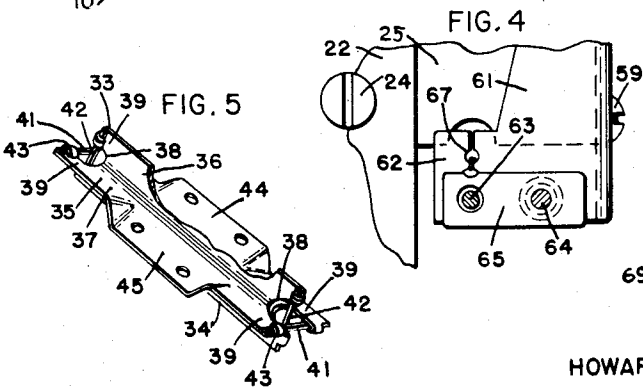
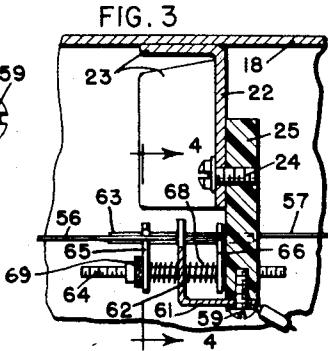
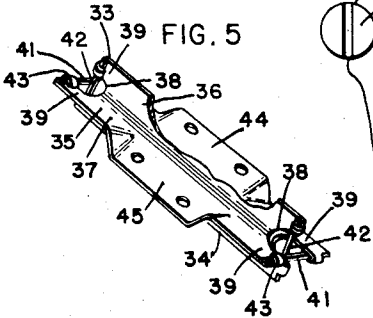
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BALANCES

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BALANCES

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No. 677,134

5 Claims. (Cl. 265—54)

The herein disclosed invention relates to electric balances and particularly to a balance in which wire is used as check links and in further providing means for maintaining the links in tension.

An object of the invention resides in offsetting the pans with reference to the pivots for the pan supports to procure the desired results.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

This application for patent is a division of my copending application for patent for Electromagnetic Balance, Serial Number 493,966, filed March 14, 1955.

In the drawings:

Fig. 1 is a plan view of a balance illustrating an embodiment of the invention and with portions broken away to show the construction of the same.

Fig. 2 is an elevational-sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary plan sectional view taken on line 3—3 of Fig. 2 and drawn to a greater scale.

Fig. 4 is an elevational-sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a perspective view of one of the pivot means of the invention and detached from the balance.

The invention utilizes a balance best shown in Figs. 1 and 2. This balance is mounted in a case 10 having a bottom 11 with flanges 12 turned up from the front and back of the bottom, and flanges 13 turned up from the sides of the bottom. The flanges 13 have in turn flanges 14 turned inwardly from the forward portions of the same and to which is attached a panel 15 supporting the electrical components of the invention. A cover 16 is secured to the flanges 12 and 13 and has a top 17 through which portions of the balance extend.

The balance proper is mounted on a vertical plate 18 which extends upwardly from the bottom 11 and which is attached thereto through a flange 19 secured to said bottom by means of screws 21. Extending rearwardly from the plate 18 is a bracket 22 which has a flange 23 secured to said plate by spot welding or otherwise. This bracket has secured to it by means of screws 24 a block 25 of insulating material. This block has attached to it a supporting member 26 which is held in position thereon by means of screws 271.

The upper beam 29 of the balance consists of two rods 27 and 28 which have brazed to the ends of the same crossbars 30 and 31 and a crossbar 32 intermediate the ends of the same. The beam 29 is pivoted to the supporting member 26 by means of pivot means indicated in its entirety by the reference numeral 33 and illustrated in detail in Fig. 5. This pivot means comprises two angle shaped mounting members 34 and 35. These members each have a flange 36 and a flange 37 and the vertexes of said flanges are arranged in close proximity to one another. The ends of the flanges 36 and 37 are cut away as designated at 38 in Fig. 5 to leave lugs 39

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on said flanges projecting outwardly therefrom. With the parts properly arranged, the flange 36 of the mounting member 34 lies substantially in the plane of the flange 37 of the mounting member 35 and the flange 37 of the first mounting member 34 lies in the plane of the flange 36 of the mounting member 35. Extending across the corresponding lugs 39 of the respective mounting members are wire pieces 41 and 42 which are soldered to said lugs. These wire pieces cross each other as shown in Fig. 5 and form pivot members acting between said mounting members. To limit the extent of the bending of the wire pieces 41, clips 43 are provided, which are formed at the inner edge of the lugs 39. The flange 36 of the mounting member 34 has an offset portion 44 while the flange 37 of the member 35 has an offset portion 45. These offset portions lie in substantially parallel planes when the pivot means is in normal position. The offset portion 44 of mounting member 34 is attached to a plate 40 by means of screws not shown. This plate is in turn attached to the crossbar 32 by means of screws 50. The offset portion 45 of the mounting member 35 is similarly attached to the supporting member 26 by means of screws 47. The crossbar 32 is so positioned that the intersections of the wire pieces 41 and 42 of the pivot means 33 fall exactly midway between the ends of the beam 29. By means of this construction, the beam is pivoted at its center about the pivot means 33 as a fulcrum and being carried by the supporting member 26 is insulated from the case 10 and the other structure attached thereto.

At the ends of the beam 29 are provided legs 48 and 49 which are attached to plates 51 and 52. These plates are hingedly connected to the ends of the beam 29 by pivot means 53 and 54. These pivot means are identical with the pivot means 33 and are attached to the crossbars 30 and 31 and to the plates 51 and 52 in identically the same manner as the pivot means 33 is attached to the crossbar 32 and to the supporting member 26. The lower ends of the legs 48 and 49 are formed with hooks 55 which are connected to wire links 56 and 57. These links have loops 58 formed on the ends of the same and which hook over the hooks 55. The other ends of these links are attached to the block 25 of insulating material by means of a construction shown in detail in Figs. 3 and 4. Secured to the edge of the block 25 by means of screws 59 is a bracket 61 which has an arm 62 extending toward the plate 18. This arm carries two rods 63 and 64 of which the rod 64 is threaded at its ends. Mounted on these rods are two sliders 65 and 66. The link 56 is attached to the slider 66 while the link 57 is attached to the slider 65. These links pass through an aperture 67 in the arm 62 of the bracket 61 which arm serves as a fulcrum for said links and by means whereof said links are held in axial alignment. Springs 68 mounted between the arm 62 and the sliders 65 and 66 urge the sliders outwardly. Adjusting screws 69 screwed on the threaded ends of the rod 64 serve to hold the sliders 65 and 66 in properly adjusted position on the two rods 63 and 64. By means of this construction, the lengths of the links 56 and 57 and the positions of the ends of the same may be adjusted.

The legs 48 and 49 project upwardly above the plates 51 and 52. Mounted on such portions of the legs are tubular stems 71 which have attached to them holders 72 and 73 on which suitable pans 74 and 75 may be placed. These pans serve the usual purpose. By disposing the pans 74 and 75 inwardly from the pivot means 53 and 54, any weight placed on said pans together with the weight of the pans produces a moment tending to tension the links 56 and 57.

The advantages of the invention are manifest. The

balance can be constructed with wire check links and the offset relation of the pans to the pivots at the ends of the beam keep the links tensioned without the use of other counterbalances. Adjustment of the lengths of the links may be had without undoing the connections at the ends of the links.

Changes in the specific form of the invention, as herein described, may be made within the scope of what is claimed without departing from the spirit of the invention.

Having described the invention, what is claimed as new and desired to be protected by Letters Patent is:

1. In a balance, a beam, a support, pivot means acting between said support and said beam intermediate its ends, legs disposed at the ends of said beam and extending below the same, pivot means acting between said legs and beam, check links disposed below and parallel to the beam, connections between said links, legs and support, the distance between said second named pivot means being substantially equal to the distance between the connections between the links and the legs, a pan attached to each of said legs and offset from the pivot means between the beam and the leg to which it is attached in a direction toward the support, said pans providing forces tensioning said links.

2. In a balance, a beam, a support, pivot means acting between said support and said beam intermediate its ends, legs disposed at the ends of said beam and extending below the same, pivot means acting between said legs and beam, check links disposed below and parallel to the beam, connections between said links and legs, guide means carried by said support, sliders mounted for sliding movement on said guide means in the direction of the length of said check links, connections between the inner ends of said check links and sliders, means for holding said sliders in adjusted position on said guide means, the distance between said second named pivot means being substantially equal to the distance between the connections between the links and the legs, a pan attached to one of said legs and offset from the pivot means between said leg and beam in a direction toward the support, a second pan attached to the other leg and similarly disposed relative to the pivot between the beam and said other leg, said pan providing forces tensioning said links.

3. In a balance, a beam, a support, pivot means acting between said support and said beam intermediate its ends, legs disposed at the ends of said beam and extending below the same, pivot means acting between said legs and beam, check links disposed below and parallel to the beam, connections between said links and legs, a threaded rod carried by said support and extending in the direction of extent of said check links, a stop extending across said rod intermediate its ends, sliders slidable on said rod and disposed on opposite sides of said stop, connections between the inner end of each of said check links and the

slider on the opposite side of the stop, compression coil springs encircling said rod and bearing against said stop and sliders and urging said sliders outwardly to tension said check links, nuts screwed on said rods and against which said sliders abut, the distance between said second named pivot means being substantially equal to the distance between the connections between the links and the legs, a pan attached to one of said legs and offset from the pivot means between said leg and beam in a direction toward the support, a second pan attached to the other leg and similarly disposed relative to the pivot between the beam and said other leg, said pan providing forces tensioning said links.

4. In a balance, a beam, a support, pivot means acting between said support and said beam, a leg disposed at one end of said beam and spaced from said pivot means, said leg extending below said beam, pivot means acting between said leg and beam, a flexible check link disposed below and parallel to said beam, a connection between said link and leg, a fulcrum disposed directly below said first named pivot means and over which said check link passes, guide means carried by said support and disposed below said first named pivot means, a slider mounted for sliding movement on said guide means in the direction of the length of said check link and disposed beyond said fulcrum in a direction away from said leg, a connection between the inner end of said check link and said slider, means for holding said slider in position on said guide means, the distance between said first and second named pivot means being substantially equal to the distance between the connection between the link and the leg and said fulcrum, and means for counterbalancing the beam, leg, pan and link.

5. In a balance, a beam, a support, pivot means acting between said support and said beam, a leg disposed at one end of said beam and spaced from said pivot means, said leg extending below said beam, pivot means acting between said leg and beam, a check link disposed below and parallel to said beam, a connection between said link and leg and another connection between said link and support, the distance between said first and second named pivot means being substantially equal to the distance between the connections between said link and leg and said link and support, a pan attached to said leg and offset from the pivot means between said beam and said leg in a direction toward the support, said pan providing a force tensioning said link, and means for counterbalancing said beam, leg, pan and link.

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