J. B. MARTIN.

SCALE.

APPLICATION FILED APR. 20, 1917.

1,264,834. Patented Apr. 30, 1918.

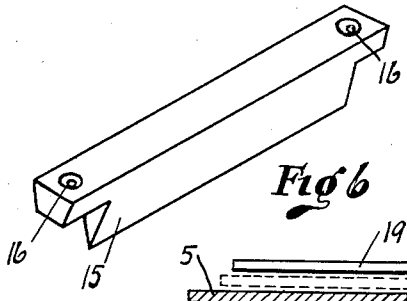


Fig 6

Fig 1

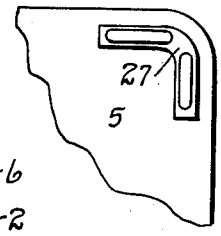


Fig 5

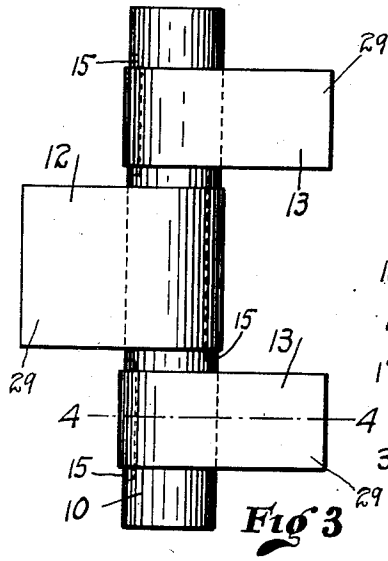


Fig 3

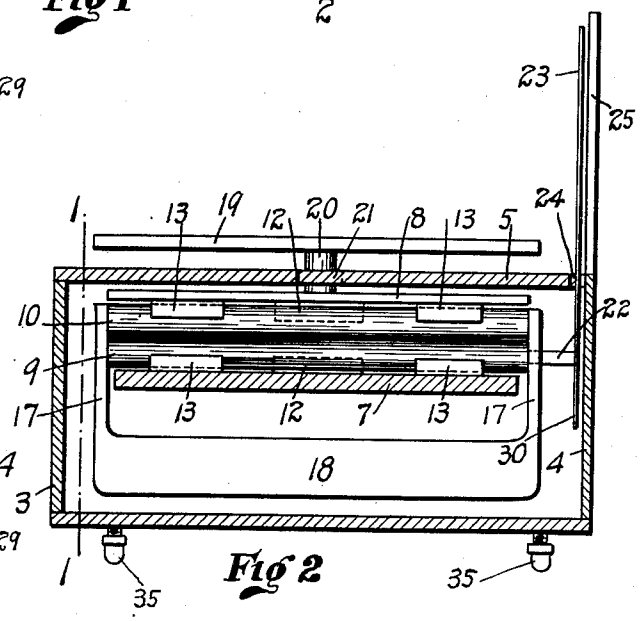


Fig 2

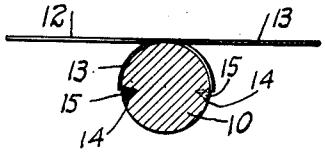


Fig 4

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SCALE.

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To all whom it may concern:

Be it known that I, JOHN B. MARTIN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Scales, of which the following is a specification.

My invention belongs to that class of scales known as "gravity" or "pendulum" scales, and it is cheap of manufacture, simple in construction and highly efficient in use.

In carrying out my invention I employ a number of rollers which I may call a roller system, thus there are no bearing edges to wear flat or uneven; no springs to break or assume varying degrees of tension and stress, no movable weights to handle, no frictional points to retard free action. All the working parts of the scale are rigidly and permanently united and joined together, needing no readjustment.

The weights are triangular in form, having arms extending upward from each end to the required length, connecting firmly with rollers which rest between bearing plates having smooth surfaces, holding the weights pendant; the arms extending still farther upwardly but at an angle sufficiently eccentric to move the weights under pressure, said arms rigidly attached to other rollers of equal diameter, upon which the platform of scales is to rest.

These rollers are attached to the plates with brass straps which hold them in a novel way in their places—one end of the strap being attached to the roller, and one end to the plate—preferably a strap at each end of roller in same position, and one strap of double width and of same consistency attached to the roller between the end straps, but in an adverse position, so that when the arms move they cause the unwinding of the one strap in the center, and the winding up of the two end straps of reverse application. Any possible resistance of the straps upon the rollers when in motion is compensated by the reverse action of each to the other, thereby preserving a balance as though there were no straps used.

The weight, arms and rollers are rigidly connected, as though all were one piece, and cannot get out of order, and have no wear or tear. A second plate used as the platform of the scale is firmly attached to a connecting post in the center of the upper bearing plate in order always to have the pressure in act of weighing to bear upon the center of upper bearing plate that the two weights may be equally engaged.

In the accompanying drawing forming part of this specification:

Figure 1, is a section on line 1—1 of Fig. 2, looking toward the dial of the scale,

Fig. 2, is a section taken on line 2—2 of Fig. 1, looking toward the dial,

Fig. 3, is a plan of one of the rollers and its connecting straps,

Fig. 4, is a section on line 4—4 of Fig. 3,

Fig. 5, is a plan of a corner of the top part of scale, showing spirit levels, and

Fig. 6, is an isometric view of wedge blocks I use.

The base or frame work of the scale consists of bottom plate 1 and side plates 2, front and back plates 3 and 4 and top plate 5, all suitably united together.

On lugs 6—6, of side plates 2, I support a lower bearing plate 7 and above this plate and under top 5 I place the top bearing plate 8.

Between these two bearing plates 7 and 8, I place two sets of rollers, one set near each end. The lower rollers are marked 9 and the upper rollers 10. The lower rollers are attached to the bearing plate 7 and the upper rollers are attached to the bearing plate 8. This attachment of the rollers is made through the medium of series of straps preferably made of thin copper strips.

On each roller I place a wide strap 12, centrally located and at each side thereof and equidistant therefrom I place narrower straps 13. The straps 13 are attached to the same side of the roller and straps 12 to the opposite side. The straps of the upper rollers are attached to the bottom of bearing plate 8 and the straps of the lower rollers are attached to the top of the lower bearing plate 7 and they bear against said plates to a minimum degree to prevent friction.

These straps are attached to the bearing plates at their ends 29 in any suitable manner, but in a permanent and uniform way, so that they will not become displaced, but maintain a positive fixed position at all times.

In the rollers 9 and 10 I cut V-shaped recesses as 14 and I extend the end of the straps into said recesses and then place the

wedge block 15 into the recesses to impinge against said ends and so that they will hold said straps firmly in place and form a bearing over the entire end of the straps.

These wedge blocks are held in position against displacement by placing screws through holes 16, thus tightly wedging the blocks in position, the straps are not pierced by any holding means thus preventing them from tearing or working unevenly.

At their ends, on each side, the rollers 9 and 10 are each attached to the upper end of arms 17, which carry at the lower extremity the balance weight or pendulum 18, preferably made integral with said arms.

The scale platform is marked 19 and is supported on upper bearing plate 8 connecting therewith through medium of a center post 20, which passes through and works in a slot 21 in top plate 5.

On one of the lower rollers 9, I provide a short extension or shaft 22, to the end of which I attach the dial hand or pointer 23 in any suitable manner. This dial pointer is made heavier at its lower part 30 so as to balance the pointer at any angle.

The pointer 23 passes up through a slot 24 in top piece 5. The dial 25 is attached to back 4 or may be made integral therewith, and it carries the graduated scale 26.

On one corner of the top plate 5 I attach two spirit levels 27—at right angles to each other, so that both sides and front of scale can be leveled at any time, by turning screws 35 and bottom 1.

The arms 17 at their upper extremities are peculiarly shaped and out of a vertical line so that the least weight on platform 19 will tend to operate them.

The rollers 9 and 10 are also placed out of a vertical line so as to coincide in position to the upper ends of the arms 17, in order to operate at the slightest weight on the platform. The dotted lines show the position the parts assume when weight is placed on the platform 19.

When the article to be weighed is placed upon the scale platform, downward pressure will be exerted upon the top bearing plate, this will cause said bearing plate to shift or move as shown in dotted lines in Fig. 1, causing the rollers to rock to the position shown in dotted lines in said figure; the pendant weights being attached to said rollers will also shift to the position shown in dotted lines in said figure and the pointer being attached to one of said rollers will oscillate and designate the proper weight on the dial. When the weight is removed the parts will assume normal position.

While I have described one specific form of carrying my invention into effect, it will be readily understood that the same is capable of considerable modification without departing from the spirit or principle of the invention and I wish to be understood as claiming that such modifications will fall within the scope of my invention.

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

1. In a scale of the character described, an upper and a lower bearing plate spaced apart, a scale platform attached to the upper plate, upper and lower rollers between said bearing plates, means for flexibly attaching said rollers to said bearing plates so that they may rock when weight is placed on the scale platform, weights pendant from said rollers, the rocking of the rollers moving said weights, a dial on the scale, a pointer attached to one of said rollers, said pointer moving when the roller rocks, to designate the weight.

2. In a scale of the character described, an upper and a lower bearing plate, spaced apart, a scale platform attached to the upper plate, upper and lower rollers, means for flexibly attaching said rollers between said plates so that they may rock when weight is placed upon said scale platform, weights pendant from said rollers, the rocking of the rollers moving said weights, said scale platform, rollers and weights operating simultaneously, a dial on the scale, a pointer attached to one of said rollers and moving with the roller to designate the weight.

3. In a scale of the character described, an upper and a lower bearing plate spaced apart, a scale platform attached to the upper plate, upper and lower rollers attached between said plates by straps so that they may rock when weight is placed on the scale platform, weights pendant from said rollers, the rocking of the rollers moving said weights, a dial on the scale, a pointer attached to one of said rollers, said pointer moving when the rollers rock, to designate the weight.

4. In a scale of the character described, an upper and a lower bearing plate spaced apart, a scale platform attached to said upper plate, upper and lower rollers between said plates and means for flexibly attaching said rollers to said plates so that they may rock when weight is placed on the scale platform, said rollers lying in two parallel planes, weights pendant from said rollers, the rocking of the rollers moving said weights, a dial on the scale, a pointer attached to one of said rollers and moving when the roller rocks, to designate the weight.

5. In a scale of the character described, an upper and a lower bearing plate spaced apart, a scale platform attached to the upper plate, upper and lower rollers between said plates and means for flexibly connecting said rollers between said plates so that they may rock when weight is placed on the scale

platform, arms depending from said rollers and carrying weights at their lower extremities, the lower part of the arm carrying the weight being at an angle to the upper part of the arm carrying the upper roller, a dial on the scale, a pointer attached to one of said rollers and moving when the roller rocks to designate the weight.

6. In a scale of the character described, an upper and a lower set of rollers, means for supporting said rollers, a platform for said scale, said platform supported and carried by said rollers, means for flexibly connecting said rollers to their supporting means so that they may rock when weight is placed on the scale platform, weights pendant from said rollers, the rocking of the rollers moving said weights, a dial on the scale, a pointer connected with the rollers, said pointer moving when the rollers rock to designate the weight.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN B. MARTIN.

Witnesses:
H. E. CARSTENS,
JOHN W. STREHLI.