

No. 760,083.

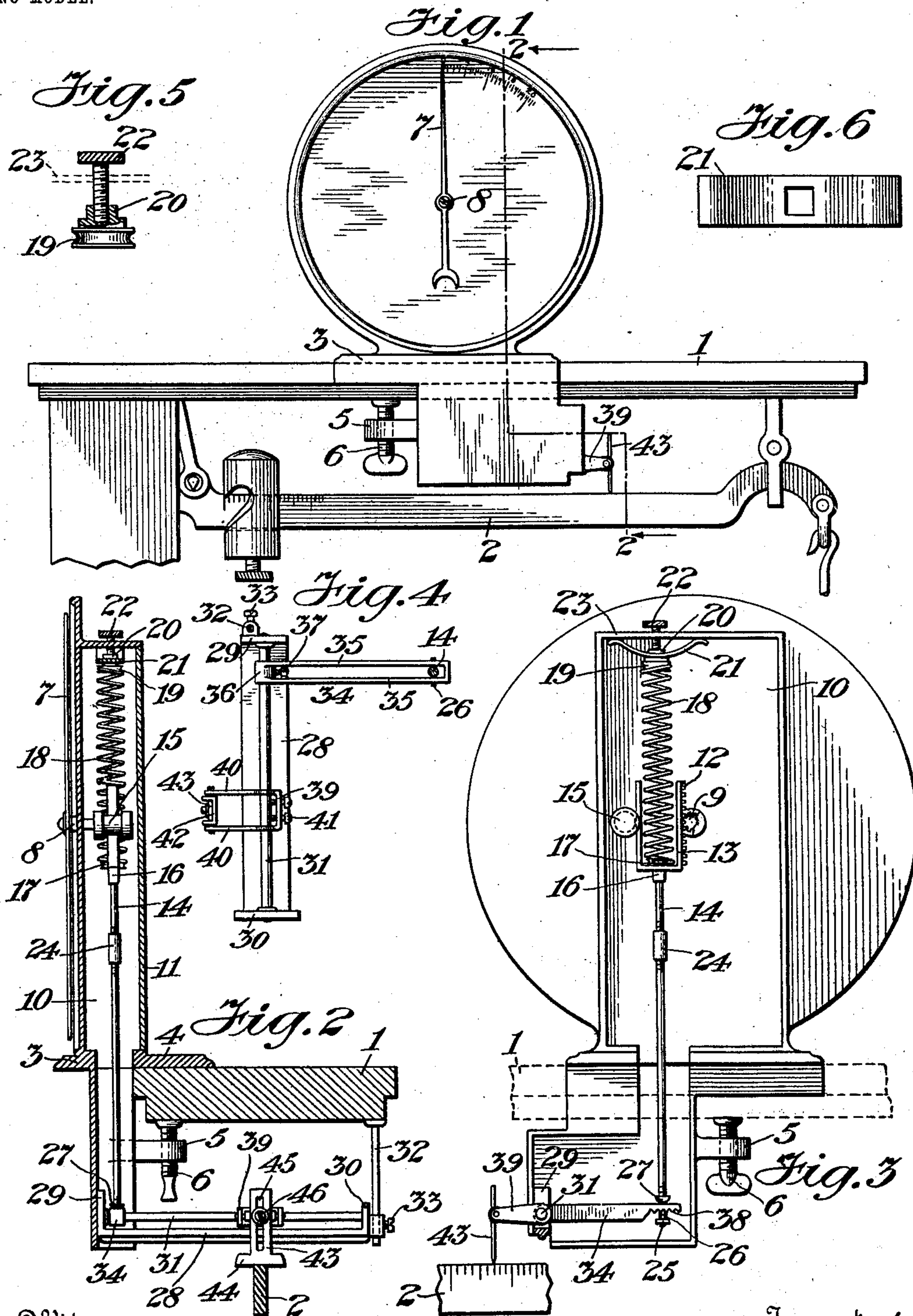
PATENTED MAY 17, 1904.

F. W. & W. H. SMITH.

INDICATING ATTACHMENT FOR PLATFORM SCALES.

APPLICATION FILED JULY 2, 1903.

NO MODEL.



Witnesses
Chas. J. Clagett
W. L. Sheridan

Inventors
Frank W. Smith
William H. Smith
By their Attorney
Thos. Stockbridge

UNITED STATES PATENT OFFICE.

FRANK W. SMITH AND WILLIAM H. SMITH, OF NEW YORK, N. Y.,
ASSIGNORS TO THE ACORN ELECTRIC AND MANUFACTURING
COMPANY, OF NEW YORK, N. Y., A FIRM.

INDICATING ATTACHMENT FOR PLATFORM-SCALES.

SPECIFICATION forming part of Letters Patent No. 760,083, dated May 17, 1904.

Application filed July 2, 1903. Serial No. 164,015. (No model.)

To all whom it may concern:

Be it known that we, FRANK W. SMITH and WILLIAM H. SMITH, citizens of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Indicating Attachments for Platform-Scales, of which the following is a specification.

Our invention resides in an attachment for platform-scales whereby the weight of an article upon the platform may be visually indicated upon a dial without the necessity for the adjustment of the balance-weight along the scale-beam.

The object of the invention is to provide a sensitive and accurate weight-indicating attachment which may be readily attached to the scale-arm or other stationary part of any platform-scales without the necessity of mutilating said arm and which is adjustable at different points to facilitate the adaptation of the same to scales of different sizes, styles, and relative proportions of parts.

Other objects of the invention will hereinafter appear, and that which we regard as new will be set forth in the claims.

In the drawings forming part of the specification, Figure 1 is a front elevation of our improved device shown applied to the arm of a platform-scales. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 3 is a rear elevation with the cover of the casing at the rear of the dial removed. Fig. 4 is a plan view of the lower parts of the mechanism, and Figs. 5 and 6 show details of construction.

Like reference-numerals indicate like parts in the different views.

Our invention has been illustrated in connection with the laterally-extending arm 1 and the beam 2 of an ordinary platform-scales. The same is designed for attachment to one side of the arm 1, with provision for the cooperation of some of the parts thereof with the scale-beam 2. The frame 3 of the attachment is intended to be located in vertical position when properly applied and is provided at a point intermediate its ends with a laterally-

extending flange 4. This flange rests upon the upper surface of the scale-arm 1, and when the device is permanently secured in place screws, bolts, or other analogous securing devices may be passed through said flange into or through the arm 1. For the temporary attachment of the device, however, while the various adjustments of the parts are being made or while the device is being demonstrated by a salesman we provide on the lower portion of the frame 1 a laterally-extending lug or projection 5, having a threaded opening therein through which the clamping-screw 6 is passed. The screw 6 and the flange 4 are located in line with each other and constitute a clamp by means of which the device may be secured either permanently or temporarily to the scale-arm 1.

It will be noted that when our attachment is in place a portion of the frame 3 extends above the arm 1, while another portion extends down to a point below the arm 1. On the front face of the upper part of frame 3 is a dial of ordinary form, in front of which is mounted a hand or pointer 7. This hand or pointer is secured at the center of the dial to a rotary shaft 8, which extends through to the rear of the dial and is formed or provided with a pinion 9. This pinion is located within a casing or housing 10 at the rear of the dial, which casing is adapted to be closed by a removable back plate 11. Coöperating with the pinion 9 is a rack 12, which has been shown as vertically disposed and capable of movement in a vertical line. The said rack is formed upon or secured to one of the branches of a yoke or fork 13, and the latter is secured to the upper end of a rod 14. The rack 12 is held from accidental disengagement from the pinion 9 by means of a flanged guide-roller 15, against which the other branch of the fork 13 is adapted to bear. The yoke 13 is secured to the rod 14 by means of a sleeve 16, having a head 17 on its upper end, which is grooved on its periphery for the ready and convenient attachment of the lower end of a coil-spring 18. The upper

end of the spring 18 is similarly connected to a head-piece 19, having a polygonal shank 20 thereon, which extends through a similarly-shaped opening in a curved leaf-spring 21.

5 A set-screw 22 extends through an opening in the upper wall 23 of the casing 10 and fits within a screw-threaded opening in the shank of the head-piece 19. The opposite ends of the spring 21 bear against the lower inner

10 surface of the wall 23, and said spring is held under tension by tightening the set-screw 22. When said set-screw is tightened, it draws up on the head-piece 19, to which the spring 18 is connected; but said head-piece

15 and said spring 18 are prevented from turning by reason of the fact that the shank 20 of said head-piece is polygonal in cross-section and extends through a correspondingly-shaped opening in the spring 21. By this construc-

20 tion it will be observed that by turning the set-screw 22 in one direction or the other the tension of the spring 21 may be varied, and consequently the tension of the spring 18, which bears upon the yoke 13, may be ad-

25 justed. By forming the rack 12 on one of the arms of the yoke 13, as shown, we are enabled to employ a much longer spring 18 within the same size of casing than could be otherwise done.

30 The rod 14 is capable of longitudinal extension and contraction for the purpose of properly adjusting the device to compensate for variations in the original tension of the spring 18. To accomplish this result, we

35 have shown said rod as made in two sections, coupled together by a turnbuckle 24, with a right and left hand screw-threaded connection between said turnbuckle and the two sections of said rod. The lower end of the

40 rod 14 is provided with a head or shoulder 25, shown in the form of an adjustable collar or nut, and above said head is a cross-piece 26, having a knife-edge, as shown. This knife-

45 edged cross-piece extends beyond the sides of the rod 14, and above the same on said rod is located an adjustable nut or collar 27, these parts being provided for a purpose which will hereinafter appear.

Secured to the lower projecting portion of

50 the frame 3 is a bracket 28, the same extending beneath and transversely of the scale-arm 1. The opposite ends of the bracket 28 are provided with upturned flanges 29 and 30, in which are located bearings for a rock-shaft 31.

55 On the outer or free end of the bracket 28 we provide an adjustable steadying-bar 32, which extends through a sleeve or boss on the flange 30 and is adjustable by means of the set-screw 33, so as to hold its head or upper end in con-

60 tact with the lower surface of the scale-arm 1. Upward movement or vibration of the bracket 28 and the parts connected therewith is thus prevented. Connected to the end of the rock-shaft 31 adjacent to the flange 29, in which the

same is mounted, is a crank-arm 34, the same 65 being shown in the form of two parallel arms 35, connected together at their outer ends and having a sleeve or collar 36 formed upon their inner ends, which sleeve or collar surrounds the shaft 31 and is locked thereto by means 70 of a screw 37. Adjacent to the free end of the crank-arm 34 the two parts thereof are formed along their lower edges with a plu-

75 rality of notches 38, and in one or the other of said notches the knife-edged cross-piece 26 is adapted to be adjusted. It will be under-

80 stood, of course, that the lower end of the rod 14 extends down between the parallel portions of the crank-arm 34 and that the same is held in the position shown and described by means of the adjustable nuts 27. By adjust-

85 ing the cross-piece 26 in one or the other of the notches 38 a greater or less leverage between the crank-arm 34 and the rod 14 may be obtained, and consequently a variation in the extent of movement of the rod 14 with the same movement of the crank-arm 34 may be effected. The knife-edged cross-piece 26 may be held in one or the other of the notches 38 after adjustment by means of the nut or collar 90 27. Adjustably connected to the rock-shaft 31 is a second crank-arm 39, shown in the form of a U-shaped piece or yoke, the two branches or sides 40 thereof being provided with openings for the reception of the shaft 95 31 and the connecting-piece between said branches or sides being provided with a locking or adjusting screw 41. Pivotaly mounted between and in bearings in the side pieces 40 of the crank-arm 39 adjacent to the outer or 100 free ends of the latter is a support 42 for a vertically-adjustable tip-piece 43. Said support has been shown in the form of a flanged plate or channel-piece, the flanges or sides thereof serving as guides for the tip-piece 43. Said 105 tip-piece is formed with a laterally-extending foot 44, having a knife-edge, and the stem of said tip-piece is provided with an elongated slot 45, through which and into the support 42 a tightening or set screw 46 passes. When 110 the device is in operation, the foot 44 of the tip-piece is designed to bear against the upper edge of the scale-beam 2. The lateral or bodily adjustment of the crank-arm 39 on the shaft 31 provides for the location of the 115 tip-piece 43 directly over the scale-beam 2 to compensate for variations in different scales in the distance between the side edges of the arm 1 and the plane of the beam 2, and the vertical adjustment of the tip-piece 43 by 120 means of the slot 45 and the set-screw 46 provides for the adaptability of the device to scales of different makes or sizes where the distance between the scale-beam 2 and the arm 1 varies. The elongated foot 44 on the 125 tip-piece 43 serves to prevent the failure of the scale-beam 2 from engaging the lower edge of said foot in case of the lateral swing-

ing movement of said scale-beam, and the mounting of the support 42 for the tip-piece 43 in pivotal bearings provides for the swinging movement of said tip-piece, the same being maintained in operative position with respect to the scale-beam 2 by gravity. The increased weight caused by the elongated foot 44 on the lower end of the tip-piece 43 serves to maintain said tip-piece at all times in vertical position.

From the foregoing description it is thought that the operation of our improved device will be readily understood. Assuming the parts to be in the positions shown in the drawings, however, the operation, briefly stated, is as follows: When a weight is placed upon the platform of the scales to which the device is applied, the outer or free end of the beam 2 will be moved upwardly a distance proportionate to the weight on the platform. As the beam 2 rises it acts upon the tip-piece 43, connected to the crank-arm 39, and rocks the shaft 31 in its bearings. The inner or free end of the crank-arm 34 is thus depressed and draws the rod 14, connected thereto, downwardly. The rack 12 on the yoke 13, which is connected to the rod 14, is also drawn downwardly, and through its engagement with the pinion 9 the shaft 8 is rotated, and the hand or pointer 7 is moved until it reaches a point on the dial behind the same indicating the exact weight on the scales. It is merely necessary, therefore, to place the weight to be measured upon the platform of the scales and look at the dial to see the amount registered thereon. None of the usual adjustments of balance-weights along the scale-beam 2 is required, and consequently the weighing operation may be effected much more quickly, readily, and conveniently than according to the old method. As soon as the weight is removed from the platform the parts are returned to their normal positions, with the hand or pointer 7 at zero, through the action of the spring 18.

The device is extremely sensitive and accurate, and by reason of the fact that it is capable of adjustment at various points it is adapted for use upon scales of different sizes, styles, and relative arrangements of parts. Furthermore, it may be attached to the arm of any scale without the formation of holes or openings therein or the mutilation of said arm in any other way.

While the rod 14 has been shown as vertically disposed for coöperation with the hand-actuating mechanism of the indicating device located above the same, we do not limit ourselves to this disposition of said rod, as it is obvious that the same may be otherwise disposed, if desired.

Our invention has been described in what we deem at this time to be its preferable form. We realize, however, that many changes may

be made in the shape, location, and relative arrangements of the parts. Consequently we do not limit ourselves to any of the details of construction herein shown and described except as defined by the appended claims.

Having now described our invention, what we claim as new is—

1. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame, means for connecting said frame at a point intermediate its ends to one side of the scale-arm, whereby the same projects above and below said arm, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located between said arm and the scale-beam, operative connections between said shaft and said beam whereby the former is rocked by the movement of the latter, indicating mechanism in the upper part of said frame, and operative connections between said shaft and said indicating mechanism.

2. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame, means for connecting said frame at a point intermediate its ends to one side of the scale-arm, whereby the same projects above and below said arm, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located between said arm and the scale-beam, a crank-arm on said shaft, means on said crank-arm adapted to be engaged by the scale-beam for rocking said shaft, indicating mechanism in the upper part of said frame, and operative connections between said shaft and said indicating mechanism, extending along one side of said scale-arm.

3. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame, means for connecting said frame at a point intermediate its ends to one side of the scale-arm, whereby the same projects above and below said arm, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located between said arm and the scale-beam, crank-arms on said shaft, means on one of said crank-arms adapted to be engaged by the scale-beam for rocking said shaft, indicating mechanism in the upper part of said frame, and operative connections between the other of said crank-arms and said indicating mechanism, extending along one side of said scale-arm.

4. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame, means for connecting said frame at a point intermediate its ends to one side of the scale-arm, whereby the same projects above and below said arm, a transversely-extending rock-

shaft carried by the lower part of said frame and designed to be located between said arm and the scale-beam, a crank-arm on said shaft, a pivotally-mounted tip-piece on said crank-arm adapted to be engaged by said scale-beam for rocking said shaft, indicating mechanism in the upper part of said frame, and operative connections between said shaft and said indicating mechanism, extending along one side of said scale-arm.

5. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame, means for connecting said frame at a point intermediate its ends to one side of the scale-arm, whereby the same projects above and below said arm, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located between said arm and the scale-beam, a crank-arm on said shaft, a pivotally-mounted tip-piece on said crank-arm, normally held in vertical position by gravity and adapted to be engaged by the scale-beam for rocking said shaft, indicating mechanism in the upper part of said frame, and operative connections between said shaft and said indicating mechanism, extending along one side of said scale-arm.

6. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame, means for connecting said frame at a point intermediate its ends to one side of the scale-arm, whereby the same projects above and below said arm, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located between said arm and the scale-beam, a crank-arm on said shaft, a pivotally-mounted, vertically-adjustable tip-piece on said crank-arm, normally held in vertical position by gravity and adapted to be engaged by the scale-beam for rocking said shaft, indicating mechanism in the upper part of said frame, and operative connections between said shaft and said indicating mechanism, extending along one side of said scale-arm.

7. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame adapted to be connected to a stationary part of the scales, a transversely-extending rock-shaft designed to be located above the scale-beam, a crank-arm adjustable on said shaft, a pivotally-mounted vertically-adjustable tip-piece on said crank-arm, having a transversely-elongated foot, adapted to be engaged by the scale-beam, for rocking said shaft, and serving to hold said tip-piece normally in vertical position, indicating mechanism, and operative connections between said shaft and said indicating mechanism.

8. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame

adapted to be connected to a stationary part of the scales, a transversely-extending rock-shaft designed to be located above the scale-beam, a forked crank-arm adjustable on said shaft, a tip-piece support mounted to turn in bearings in the branches of said crank-arm, a tip-piece vertically adjustable on said support and adapted to be engaged by the scale-beam for rocking said shaft, indicating mechanism, and operative connections between said shaft and said indicating mechanism.

9. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame adapted to be connected to a stationary part of the scales, a transversely-extending rock-shaft designed to be located above the scale-beam, a forked crank-arm adjustable on said shaft, a tip-piece support, having side flanges, mounted to turn in bearings in the branches of said crank-arm, a tip-piece adapted to be engaged by the scale-beam for rocking said shaft, having an elongated slot therein and fitting between the flanges of said support, a screw extending through said slot into said support, whereby said tip-piece is capable of vertical adjustment, indicating mechanism, and operative connections between said shaft and said indicating mechanism.

10. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame adapted to be connected to a stationary part of the scales, a transversely-extending bracket on said casting, a rock-shaft mounted in bearings in said bracket and designed to be located above the scale-beam, operative connections between said shaft and said beam whereby the former is rocked by the movement of the latter, indicating mechanism, and operative connections between said shaft and said indicating mechanism.

11. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame adapted to be connected to a stationary part of the scales, a transversely-extending bracket secured to said frame and designed to be located between the scale-arm and the scale-beam, an adjustable steadying-rod on the free end of said bracket adapted to engage the scale-arm, a rock-shaft mounted in bearings in said bracket, a crank-arm on said shaft, means on said crank-arm adapted to be engaged by the scale-beam for rocking said shaft, indicating mechanism, and operative connections between said shaft and said indicating mechanism.

12. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame having a dial in the upper part thereof, means for connecting said frame at a point intermediate its ends to one side of the scale-arm,

whereby the same projects above and below said arm, a pointer movable over said dial, a pinion on the pivot of said pointer, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located between said arm and the scale-beam, operative connections between said shaft and said beam, whereby the former is rocked by the movement of the latter, a crank-arm on said rock-shaft, a rod connected to said crank-arm and extending along one side of said scale-arm, and a rack carried by said rod and meshing with said pinion, as and for the purpose set forth.

13. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame having a dial in the upper part thereof, means for connecting said frame at a point intermediate its ends to one side of the scale-arm, whereby the same projects above and below said arm, a pointer movable over said dial, a pinion on the pivot of said pointer, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located between said arm and the scale-beam, operative connections between the said shaft and the said beam, whereby the former is rocked by the movement of the latter, a crank-arm on said rock-shaft, a longitudinally extensible and contractible rod connected to said crank-arm and extending along one side of said scale-arm, a rack carried by said rod and meshing with said pinion, and a spring for resisting the movements of said rod, as and for the purpose set forth.

14. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame adapted to be connected to a stationary part of the scales, and provided with a dial, a pointer movable over said dial, a pinion on the pivot of said pointer, a transversely-extending rock-shaft designed to be located above the scale-beam, operative connections between said shaft and said beam whereby the former is rocked by the movement of the latter, a crank-arm on said rock-shaft having two parallel members provided with a series of notches adjacent to their free ends, a rod fitting between said members and having a knife-edged cross-piece thereon adapted to be adjusted and held in one of said notches, a rack carried by said rod and meshing with said pinion, and a spring for resisting the movements of said rod, as and for the purpose set forth.

15. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame adapted to be connected to a stationary part of the scales, and provided with a dial, a pointer movable over said dial, a pinion on the pivot of said pointer, a longitudinally-movable yoke, a rack on one of the branches

of said yoke meshing with said pinion, a coil-spring located between the sides or branches of said yoke for resisting its movements, and means for transmitting the movements of the scale-beam to said yoke, as and for the purpose set forth.

16. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame adapted to be connected to a stationary part of the scales, and provided with a dial, a pointer movable over said dial, a pinion on the pivot of said pointer, a longitudinally-movable yoke, a rack on one of the branches of said yoke meshing with said pinion, a guide-roller for holding said rack in mesh with said pinion, a coil-spring located between the sides or branches of said yoke for resisting its movements, and means for transmitting the movements of the scale-beam to said yoke, as and for the purpose set forth.

17. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame adapted to be connected to a stationary part of the scales, and provided with a dial, a pointer movable over said dial, a pinion on the pivot of said pointer, a longitudinally-movable rack meshing with said pinion, a coil-spring connected at one end to said rack for resisting its movements, a head-piece to which the other end of said spring is connected, having a polygonal shank, a curved leaf-spring having a polygonal slot therein for the reception of the shank of said head-piece, the ends of said leaf-spring bearing against a fixed part of said frame, a screw extending through said fixed part into said head-piece for compressing and releasing said leaf-spring and thereby regulating the tension of said coil-spring, and means for transmitting the movements of the scale-beam to said rack, as and for the purpose set forth.

18. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame, indicating mechanism in the upper part thereof, means for connecting said frame at a point intermediate its ends to one side of the scale-arm, whereby the same projects above and below said arm, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located above the scale-beam, operative connections between said shaft and said scale-beam, whereby the former is rocked by the movements of the latter, and operative connections between said shaft and said indicating mechanism.

19. An indicating attachment for platform-scales, having a fixed scale-arm and a scale-beam, the said attachment comprising a frame, indicating mechanism in the upper part thereof, a clamp on said frame at a point intermediate its ends for connecting said frame to one side of the scale-arm so that the same

projects above and below said arm, a transversely-extending rock-shaft carried by the lower part of said frame and designed to be located above the scale-beam, operative connections between said shaft and said scale-beam, whereby the former is rocked by the movement of the latter, and operative connections between said shaft and said indicating mechanism.

In testimony whereof we have hereunto set to our hands in presence of two subscribing witnesses.

FRANK W. SMITH.
WILLIAM H. SMITH.

Witnesses:

WM. M. STOCKBRIDGE,
M. W. NOLAN.