(No Model.) 2 Sheets—Sheet 1.

A. H. EMERY.

PLATFORM SCALE.

No. 278,905. Patented June 5, 1883.

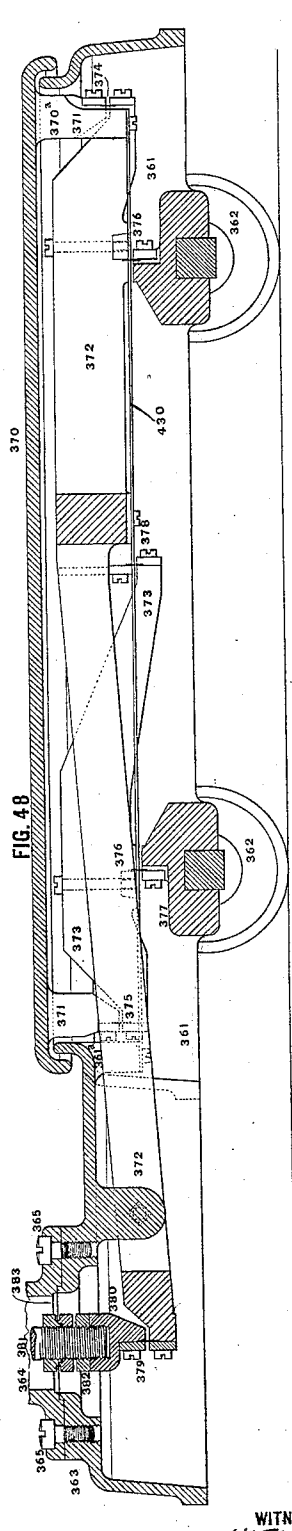


FIG. 4 8

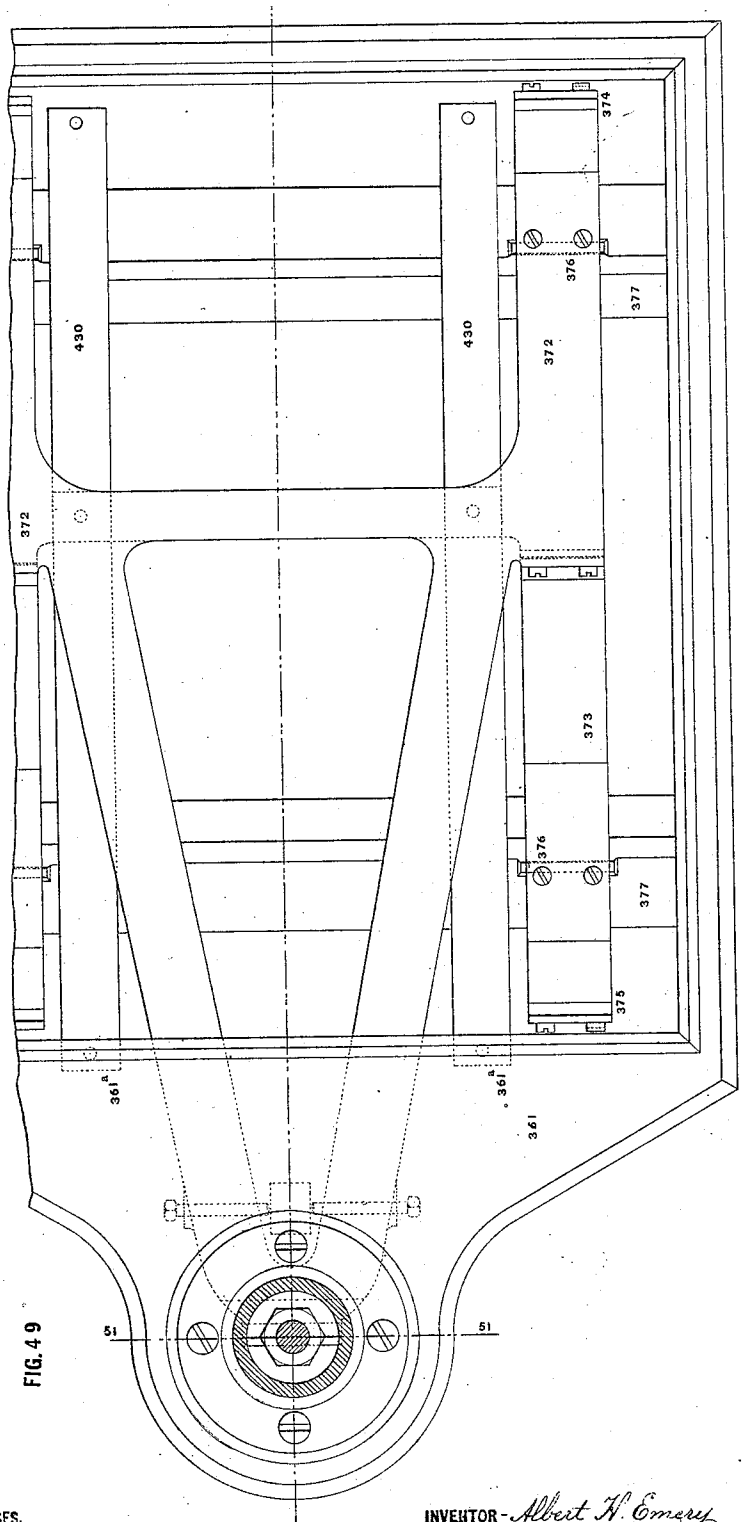


FIG. 4 9

WITNESSES.
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BY Knight Bros Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

A. H. EMERY.

PLATFORM SCALE.

No. 278,905. Patented June 5, 1883.

FIG. 50

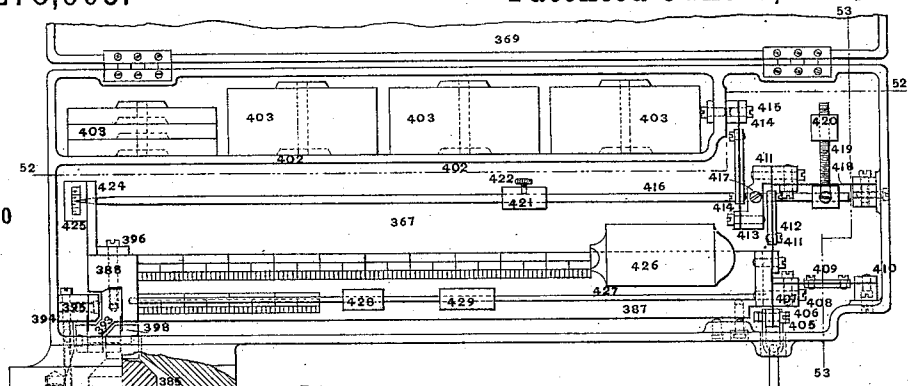


FIG. 57

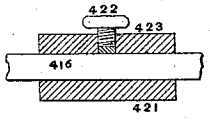


FIG. 53

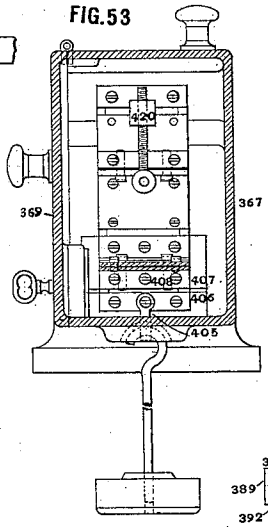


FIG. 58

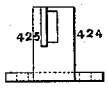


FIG. 51

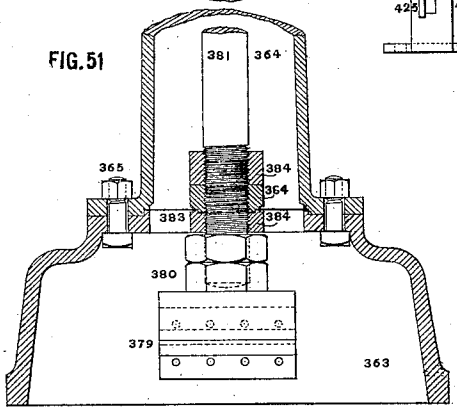


FIG. 54

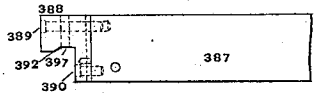


FIG. 56

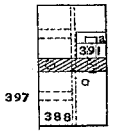


FIG. 55

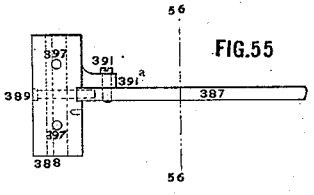
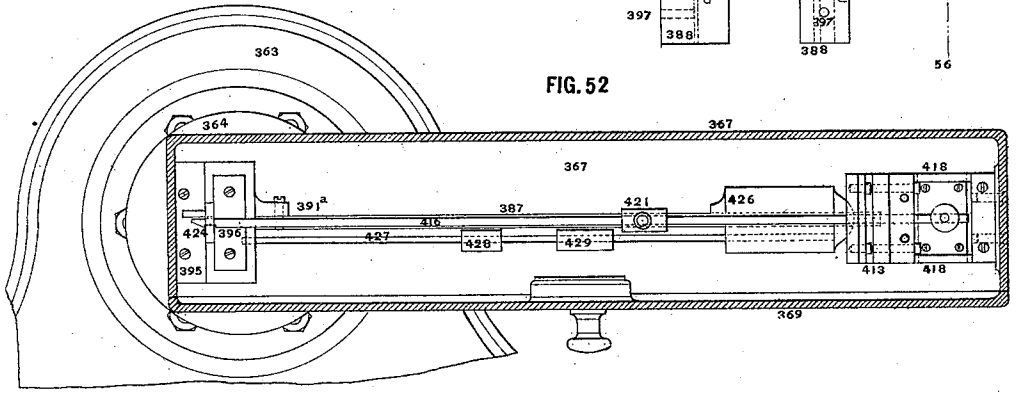


FIG. 52



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UNITED STATES PATENT OFFICE.

ALBERT H. EMERY, OF NEW YORK, N. Y., ASSIGNOR TO THE EMERY SCALE COMPANY, OF STAMFORD, CONNECTICUT.

PLATFORM-SCALE.

SPECIFICATION forming part of Letters Patent No. 278,905, dated June 5, 1883.

Application filed February 5, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. EMERY, of the city, county, and State of New York, have invented certain new and useful Improvements in Scales, of which the following is a specification.

The subject of this invention is a platform-scale with leverage connections arranged to act upon the beam by an upward thrust. The connections between the platform-levers and thrust bar or column and between the latter and the beam consist of flexible transmitting-plates. The bed supporting the platform-levers is flanged for the attachment of a flanged hollow pillar for supporting the beam-case, the latter being attached to the aforesaid pillar also by flanges and bolts. Annular flexible fixing-plates, secured at their outer edges between the flanged bed and pillar and between the pillar and beam case, and clamped at their inner edges to the thrust bar or column by suitable nuts, stay the column concentrically within the hollow pillar, while permitting it to move vertically without friction. The flexible transmitting and fulcrum plates of the beam are connected thereto by means of a fulcrum-block and clamping-plates and screws, to facilitate putting the parts together and to firmly hold the connections. The joints being substantially frictionless, a friction-brake is employed with an adjusting-screw to graduate the friction as required. The fulcrum-head of the beam is made separately from the beam proper and attached thereto by a lug and screws, as hereinafter described. The weight end of the beam is stayed against longitudinal or lateral motion by thin flexible plates, which do not interfere with its proper vertical movement. It is further connected with an indicator having greater angular motion, and likewise stayed horizontally by thin flexible plates. The suspension-rod of the hanging weights passes through an aperture in the beam adapted to limit its swinging and its upward motion. The indicator-rod carries a sliding weight, which is fixed thereon by means of a set-screw bearing upon a block of rubber or other elastic material, to produce sufficient pressure on the rod to hold it where it is set without preventing its movement when desired. The point of the rod works within a guide and in proximity to an indicator-plate, which guide and indicator-plate are connected in one and attached to the beam near its fulcrum end.

In the accompanying drawings the invention is represented in eleven views, numbered 48 to 58, inclusive. Figure 48 is a central longitudinal section of the lower part of the scale. Fig. 49 is a plan of a part thereof with the platform removed. Fig. 50 is a front elevation of the weigh-beam case open, showing a portion of the hollow pillar and supporting-column in section. Fig. 51 is a vertical section of the lower portion of the hollow pillar and the end of the bed on the line 51, Fig. 49, showing the pressure-column and parts of its attachments in elevation. Fig. 52 is a horizontal section on the line 52, Fig. 50. Fig. 53 is a vertical transverse section on the line 53, Fig. 50. Fig. 54 is a front elevation of the fulcrum-head of the beam with a portion of the beam attached thereto. Fig. 55 is a plan of the same. Fig. 56 is a transverse section on the line 56, Fig. 55, showing the fulcrum-head in elevation. Fig. 57 is a vertical section of an adjustable sliding weight provided with elastic friction-pad and set-screw. Fig. 58 is an elevation of the connected guide and indicator-plate.

The bed 361 is supported on wheels 362, and is constructed with a flanged end, 363, for the attachment of a flanged hollow pillar, 364, by means of screws or bolts 365. The hollow pillar 364, Figs. 50 and 51, is flanged also at its upper end, 366, for the attachment of the beam-case 367 by screws or bolts 368. The beam-case is preferably constructed with a hinged front, 369, Figs. 50, 52, and 53. The platform 370 rests by lugs 371 upon levers 372 373, Figs. 48 and 49, through the medium of flexible metallic plates 374 375, which are clamped to the said lugs 371, and to one end of each of the said platform-levers. The levers 372 373 rest by fulcrum-plates 376 on the cross beams or lugs 377 of the bed, these fulcrums being placed between the end fulcrums of the levers. The main lever 372 may be made in one piece, of A form. The levers 373 are parallel bars connected by flexible plates 378 to the main lever 372 at a point midway between the two fulcrums 376, and the short ends of all the levers are equal to each other,

so that a load on either end or on any part of the platform will have an equal effect on the main lever 372.

The platform 370 and the levers 372 and 373 are fixed against longitudinal movement by the flexible stay-plates 430, which are in the same horizontal plane with the fixed fulcrums of the levers and connected to the platform by lugs 370^a and to the frame by lugs 361^a. By putting these stay-plates in the same horizontal plane with these fulcrums there will be no side-thrust from these plates produced by the vertical movement of the platform.

The free end of the lever 372 is connected by a flexible plate, 379, with a lug, 380, attached adjustably to the lower end of the thrust bar or column 381, and fixed in position on said column by a lock-nut, 382. The lower end of the column 381 is held concentrically within the hollow pillar 364 by an annular flexible fixing plate or diaphragm, 383, the outer edge of which is clamped between the connecting-flanges of the pillar and the bed, and the inner edge of which is clamped between lock-nuts 384.

The upper end of the column 381 is constructed with an enlarged flange or head, and is held concentrically within the hollow pillar by a fixing-plate, 385, clamped at its outer edge between connecting-flanges of the hollow pillar and the beam-case, and at its inner edge between the nut or screw collar 386 and the flange or head of the column.

The weigh-beam 387 is constructed with a removable head, 388, secured thereto by the longitudinal and transverse screws 389 390 391. (Shown in dotted lines in Figs. 54 and 55.) The head 388 is formed, as shown in Fig. 54, with a cavity underneath, and an oblique or beveled shoulder, 392, for the reception of a fulcrum-block, 393, of the peculiar shape shown in Fig. 50, which is attached to the beam-case through the medium of a flexible plate, 394, and a block, 395, with suitable clamping-screws, as shown.

The fulcrum-piece 393 is adapted to receive two drawing-screws, 396, Fig. 50, which are passed through the apertures 397 in the beam shown in Fig. 55 and indicated by dotted lines in Figs. 54 and 56. By tightly drawing up the fulcrum-piece 393 by means of the screws 396, the flexible transmitting-plate 398, constituting the connection between the column 381 and the beam 387, is securely clamped to the said beam, having been previously clamped in the upper end of the column 381. As the thin-plate connections adapt the levers, column, and beam to move without friction, a brake is provided to apply any desired friction to check the movement. This brake may bear upon the levers, thrust-bar, or beam, or, being connected to any such moving part, may bear upon any adjacent stationary part. As shown in the present illustration, it consists of an elastic plate, 399, Fig. 50, fastened by a screw, 400, to the pressure-column, and bearing at its free end against the point of a screw, 401, the adjustment of which in the hollow pillar varies the pressure and consequent friction as desired.

The beam-case is provided with a shelf, 402, for the reception of the main weights 403, which are applied to the suspension-rod 404 in customary manner. This rod is suspended from the extremity of the beam through the medium of a link or staple, 405, pivoted to a pair of clamp-plates, 406, which connect with the end of the beam through a thin flexible plate or plates, 407, clamped to the said beam by a bracket, 408. To the bracket 408 are also clamped horizontal thin flexible plates 409, attached at 410 to the beam-case, so as to stay the beam against longitudinal or lateral horizontal movement, while permitting it sufficient vertical play without friction. The link or staple 405 passes through an aperture in the beam-case, and the hook of the rod 404, by which the latter hangs to said link or staple, occupies a cavity in the under side of the beam-case, as indicated by dotted lines in Fig. 53, so as to limit the upward movement of the hook and prevent the horizontal motion of the staple beyond the elastic limits of the suspending-plate 407 without interfering with the swing of the weight-suspending rod.

The weight end of the beam is connected by thin flexible plates 411 and clamp-plates 412 with the bracket 413, which is suspended by flexible plates 414 and clamps 415 to the beam-case, as shown in Fig. 50, to constitute the fulcrum of the indicator-rod 416, which is fixed adjustably in said bracket by a set-screw, 417.

The indicator-rod fulcrum-bracket 413 is stayed against horizontal movement by thin flexible plates 418, clamped to the said bracket and to the beam-case.

419 is a stud or standard mounted adjustably on the rear projection of the indicator-rod, and carrying a vertically-adjustable weight, 420. The indicator-rod carries a tare or balance weight, 421, which is secured in position by a set-screw, 422, bearing on a block, 423, of leather, cork, or other elastic material, Fig. 57, adapted to press upon the rod without indentation with sufficient force to hold the weight securely in any position in which it may be set, while permitting its free adjustment by hand. The end of the rod works within a slotted guide, 424, and in proximity to an indicator-plate, 425. The guide and indicator-plate are formed or connected in one, as illustrated in Figs. 50, 52, 58, with a base flange for the attachment of the connected plates to the fulcrum-head of the beam by means of the screws 396. 426 represents a sliding weight used in connection with the graduations shown at the upper edge of the beam in Fig. 50.

The beam is provided with a weight-rod, 427, carrying a light weight, 428, for fractional weighing, in connection with the second graduated scale, and carrying also a tare or balance weight, 429.

Whatever novel subject-matter I have set forth and not claimed or attempted to claim

herein I have claimed or attempted to claim in other applications or have reserved to be claimed in future original applications.

The following is claimed as new:

1. In combination with the bed 361 or supporting-pieces 377, the platform 370, and the platform-levers 372 373, the thin connecting and fulcrum plates 374 375 376, arranged as herein shown, with the plates connecting the levers to the bed intermediate between the ends of said levers, so that pressure on the platform will produce an upward thrust on the free end of the lever 372, as set forth.

2. In combination with the platform 370, its levers 372 373, and frame 361, the flexible stay-plates 430, to prevent horizontal motion of the platform, arranged in the same horizontal plane with the fixed fulcrums of the levers, substantially as set forth.

3. The combination of the bed, the platform-levers, and thin flexible compression-plate 379, applying an upward pressure to the beam-column, as set forth.

4. The platform 370 and levers 372 373, directly connected by thin plates, in combination with the thrust or compression bar 381, the scale-beam 387, and the compression-plates 379 398, secured by clamp-plates, substantially as and for the purposes set forth.

5. The combination of the platform-levers 372 373, the platform-bed 361, the flanged pillar 364, the fixing-plate 383, and the beam pressure column suitably connected to the main platform-lever, substantially as and for the purposes set forth.

6. The combination, with the flanged pillar 364, bed 361, beam pressure column 381, and fixing-plate 383, of the lock-nuts 384, for fastening the plate to the column, as set forth.

7. The combination of the clamping-nut 386 with the thin plate 385 and pressure-column, as and for the purposes set forth.

8. The combination of the flanged pillar-head 366, the beam-case secured thereto, the pressure-column 381, the diaphragm 385, clamped between the pillar head and case, and the nut 386, for fixing the diaphragm to the pressure-column, as set forth.

9. In combination with the pressure-column 381, fixing-diaphragm 385, and weigh-beam 387, the fulcrum-piece 393 and thin plates 398 394, as herein set forth.

10. The combination of the thin plate 394, clamp-plates thereof, and fulcrum-block 393 with the case 367, with or without the intermediate attaching-block, 395, as and for the purposes set forth.

11. The combination of an adjusting-screw, 401, with the friction-brake 399, pillar 364, and bar or column 381, substantially as and for the purposes set forth.

12. In combination with the beam-head 388, shoulder 392, fulcrum-block 393, and thin plate 398, the draw-screws 396, operating substantially as and for the purposes set forth.

13. The beam 387, made separately from its fulcrum-head 388, and attached thereto by the projecting lug 391[a] and screws 389 390 391.

14. A scale beam or lever secured against longitudinal motion by one or more flexible plates attached to it and to another suitable part of the scale.

15. The thin flexible plate or plates 409, connecting the weight end of the beam to the case or frame, to fix it against longitudinal or lateral motion, as explained.

16. The thin flexible plate or plates 418, connecting the fulcrum-piece of a supplemental beam or indicator-rod with the case or frame, substantially as and for the purposes set forth.

17. The weight-rod 404 and attaching link or stirrup 405, connected as shown, and having their point of connection within an aperture in the case, which limits their motion, substantially as set forth.

18. In combination with a weight sliding on a rod or beam, 416, the fixing-screw 422 and elastic friction-piece 423, substantially as set forth.

19. The connected guide and index-plate 424 425, attached to the stationary frame or beam near the fulcrum of the latter, for use in connection with the indicator-rod 416, as herein set forth.

ALBERT H. EMERY.

Witnesses:
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MAHLON RANDOLPH.