

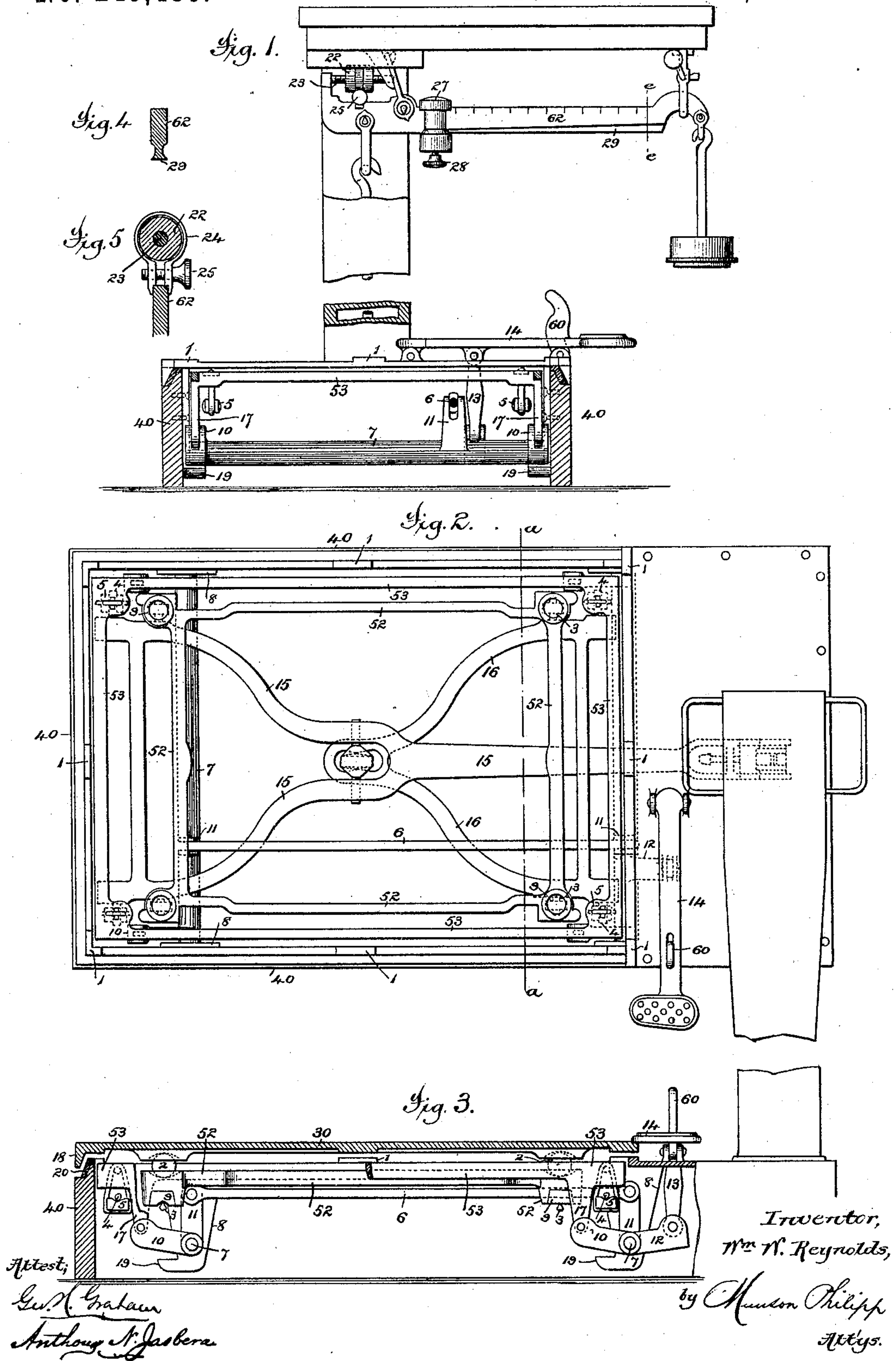
(No Model.)

W. W. REYNOLDS.

SCALES.

No. 249,483.

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# UNITED STATES PATENT OFFICE.

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## SCALE.

SPECIFICATION forming part of Letters Patent No. 249,483, dated November 15, 1881.

Application filed June 13, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. REYNOLDS, a citizen of the United States, residing in the city of Rutland, county of Rutland, and State of Vermont, have invented certain new and useful Improvements in Scales, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to that class of weighing-scales in which the load of material to be weighed is placed upon the platform while the same is resting upon a solid base, which platform may be raised so that it and the load it  
15 supports may be sustained upon the levers which are connected with the weigh-beam, which platform and its load may be lowered after the weight of the latter is ascertained, to again rest solidly upon its base, permitting the  
20 load to be dragged therefrom without injury to the scales.

Scales of this class as commonly constructed have their platforms raised in one form by dropping the supporting-levers and weigh-beam, so  
25 as to leave the platform and its load resting upon the frame of the scale, a contra movement lifting the platform and load, so that it may be weighed. In another form the levers only are lowered by dropping their supports  
30 at each corner of the base through rods connected with a lever on the top of the column or to the foot-treadle. The first form is objectionable by reason of the frictional wear occasioned to the knife-edges that support the levers,  
35 caused by dropping and raising the platform upon them, from which great injury results to the knife-edges, and the accuracy of the movements of the levers, and consequently the scale, is impaired. The second form is a structure  
40 requiring great complication of parts, which are readily liable to derangement, which would result in injury to the accuracy of the scale. I avoid these difficulties by a portion of my improvements, which embody a peculiar structure and combination of supporting-frames and  
45 lifting devices, whereby the main platform-levers, their knife-edged pivots, and their seats are raised and lowered without separating said pivots from their seats or deranging the relation of the working parts of the scale. In flour-

scales constructed upon either of these plans a continuing difficulty results from the deposit of flour and dust upon the parts beneath the platform, which seriously interferes with the working parts and destroys their accuracy of  
55 operation. I avoid this defect by providing the platform with a flange that overlaps the edges of the base, and thus renders any ingress of dust almost impossible.

In all scale weigh-beams it is necessary to  
60 provide a weight or balance-ball at the rear end of the beam, which is moved backward and forward to balance the scale, usually traveling on a screw-rod. In such structure the ball or weight is liable to be moved by the jar of the  
65 scale, and thus its balance destroyed. I have improved such structure by a peculiar clamping device securing the balance weight or ball in all positions of its adjustment.

Another improvement relates to the structure of the scale-beam and the means for securing its poise in any adjustment thereon.

A platform-scale embodying these improvements is illustrated in the accompanying drawings, wherein—

75 Figure 1 shows the principal parts of such a scale, partly in side elevation and partly by a section on the line *a* of Fig. 2, Fig. 2 being a plan view with the platform proper removed to expose the underlying devices. Fig. 3 is a  
80 sectional elevation of the parts of such a scale on a line at right angles to the section-line *a* of Fig. 2. Fig. 4 represents a section of the weigh-beam on the line *e* of Fig. 1, and Fig. 5 is a similar sectional elevation through the  
85 balancing-bar.

The base of the scale consists, as usual, of a rectangular platform-frame formed by sides  
40, which are provided with lugs 1, upon which the rising and falling platform 30 of the scale  
90 may rest when it is properly lowered, said platform having corresponding lugs, which platform is constructed with a depending flange, 18, at its outer edges, that overlaps the correspondingly-shaped neck 20, which may have  
95 a packing upon it, whereby the platform snugly fits upon the sides 40 and forms a close joint, preventing the passage of dust and similar material, which would injure the scale by depositing upon its working parts. This plat- 100



form 30 is supported upon a rectangular frame, 52, at whose corners curved sockets or seats are provided, as is the under side of said platform, in which sockets balls 2 rest as connecting-supports. At its four corners, beneath the sockets, this frame 52 is provided at its under side with bearing-blocks 9, that rest upon the knife-edged pivots 3, which project outwardly from the main platform-levers 15 16 just in advance of their fulcrum-points. These levers 15 16 are of the usual form, as will readily be understood from Fig. 2, and they are respectively fulcrumed at their rear ends by outwardly-projecting knife-pivots 4, that rest upon bearing-blocks 5, that are hung in stirrups from the four corners of an outer rectangular frame, 53. This frame 53 lies just within the sides or frame of the base of the scale, and is supported by means of depending feet 17 near its four corners, to which are pivoted rock-arms 10, that are fast to the shafts 7, which latter are journaled in boxes 8, that are screwed or bolted to the sides 40 of the base. These shafts 7 are each provided with upright arms 11, connected by a rod, 6, and caused to receive a simultaneously-rocking movement through a rock-arm, 12, and a pitman, 13, which latter is pivoted to a foot-treadle, 14, that is fulcrumed to the deck of the scale. By depressing the foot-treadle 14 the rock-arms 10, of which there are four, will be simultaneously raised, thus lifting the frame 53, and through the stirrups and the bearing-blocks 5 the levers 15 and 16 and the frame 52, and with the latter the platform 30, in which operation all of the working parts of the scale, together with its platform and any load it may contain, are bodily carried upward without having removed any of the knife-edged pivots from their bearings, or vice versa. In this raised position said working parts may be held by a hook, 60, which locks the treadle 14 in its depressed position. At this time the platform 30 is suspended by the knife-edged pivots, and the levers 15 and 16 are free to vibrate in the usual manner to actuate the weigh-beam 62 in the operation of ascertaining the quantity of weight resting upon said platform.

When the body weighed is to be removed from the platform the treadle 14 may be released from the hook 60 and the rock-shafts 7 allowed to turn, thereby lowering the rock-arms 10, and through them the frame 53, the levers 15 and 16, the frame 52, and the platform 30, which latter will seat itself upon the lugs 1, and be firmly and rigidly supported by the frame-sides 40, while the frame 53, with the working parts it supports, will rigidly rest through the rock-arms 10 upon the feet 19, that project outwardly from the boxes 8 beneath them, which feet are then engaged by said rock-arms. The body or load may be then dragged from the scale-platform without injury to any of the working parts of the scale. By thus carrying the platform-levers and the knife-edged pivots upon which they vibrate in a

frame-work provided with means for bodily raising and lowering it without moving the knife-edges away from their seats, a most perfect and accurate scale may be protected from wear upon such of its parts as would destroy its efficiency.

By a slight modification in arranging the rock-arms 10 the foot-treadle may be dispensed with and said rock-arms be operated by a rod connected with a lever at the top of the column supporting the weigh-beam 62.

I have improved the means for adjusting or balancing the scale by applying a peculiar clamp to its balance ball or weight 22, which is arranged, as is common, to turn upon a screw-threaded rod, 23, at the rear end of the weigh-beam 62. In order to prevent this ball or weight 22 from losing its position of adjustment, I attach to it a clamping-hoop, 24, which lies in a groove formed in the ball, and has its free ends depending so as to embrace the rear end of the weigh-beam 62 between them, as in Fig. 5. The ends of this hoop 24 have a thumb-screw, 25, passed through them, which screw, when operated so as to allow the arms to expand, permits the weight or ball 22 to be rotated and to carry the clamp-hoop with it to any lateral position of adjustment it may require, which position, when ascertained, is secured by turning the screw 25 until the arms of the hoop 24 securely clamp upon the weigh-beam 62, whereupon said beam may be vibrated forcibly or otherwise to any extent without disturbing the relation of the balance weight or ball 22.

The weigh-beams of platform and other scales are frequently provided with a poise, 27, that has a means for securing it in any longitudinal adjustment upon said beam, so that when the scales are to be used to produce a number of packages or bulk of like weight the poise may be secured at the proper point, so as not to necessitate more than one adjustment of it. This is commonly done by a thumb-screw in the side of the poise, which engages with the side of the weigh-beam, if said weigh-beam is tapered toward its outer end, as is the custom, to give a neat and shapely form. In other structures, however, where the weigh-beam is uniform in width, the poise is secured by a screw, as 28, engaging with the under edge of the beam. Where the screw enters the side of the weigh-beam it greatly defaces its polished face, and soon so mars it as to render it difficult to see the graduations thereon, while where the beam is made of uniform width and thickness it has a bulky and unsightly appearance. In order to secure the greatest efficiency in the means for securing this poise without destroying the appearance of the beam, I construct the beam with a uniform width throughout its length traversed by the poise 27, but cut away the lower edge of the beam by tapering grooves, as in Fig. 4, so that the beam shall have the usual appearance upon its side faces carrying the graduations, and yet provide a central depending rib, 29, that shall afford an even horizontal



bearing for engagement by the fastening-screw 28 of the poise 27. As the side of the scale-beam is polished, the rib 29 may be left rough or colored dark to improve its appearance, and thus the shapely form commonly given to scale-beams be produced and the best means for fastening its poise be secured.

Having thus described my invention, what I claim is—

10 1. In a scale, the combination, with its platform and platform-levers, of a supporting-frame upon which the platform directly rests, and a frame supported upon rock-arms, to which frames said platform-levers are pivoted, substantially as described.

15 2. The combination, with the platform 30, frame 52, levers 15 16, and frame 53, of the rock-arms 10 and an operating-lever, as 14, substantially as described.

20 3. The combination, with the platform 30

and platform-levers, of a frame, as 53, to which said levers are fulcrumed, the said frame being secured to the base of the scale and provided with means for producing its vertical reciprocation, substantially as described. 25

4. The combination, with the platform-levers 15 16, the frame 53, and rock-arms 10, of the supporting-feet 19, substantially as described.

5. The combination, with the scale-beam, as 62, and its balance ball or weight 22, of the hoop 24, provided with clamping-arms, which secure said balance-ball in a fixed relation to the scale-beam, substantially as described. 30

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses. 35

WM. W. REYNOLDS.

Witnesses:

S. W. ROWELL,

J. C. PEASE.