Elnathan Sampson Assignor to self and Stephen R. Andres. & Hiram Andres.

Platform Scale.

3 Sheets--Sheet 1.

No. 121,200.

Patented Nov. 21, 1871.

Sheet No. 1.

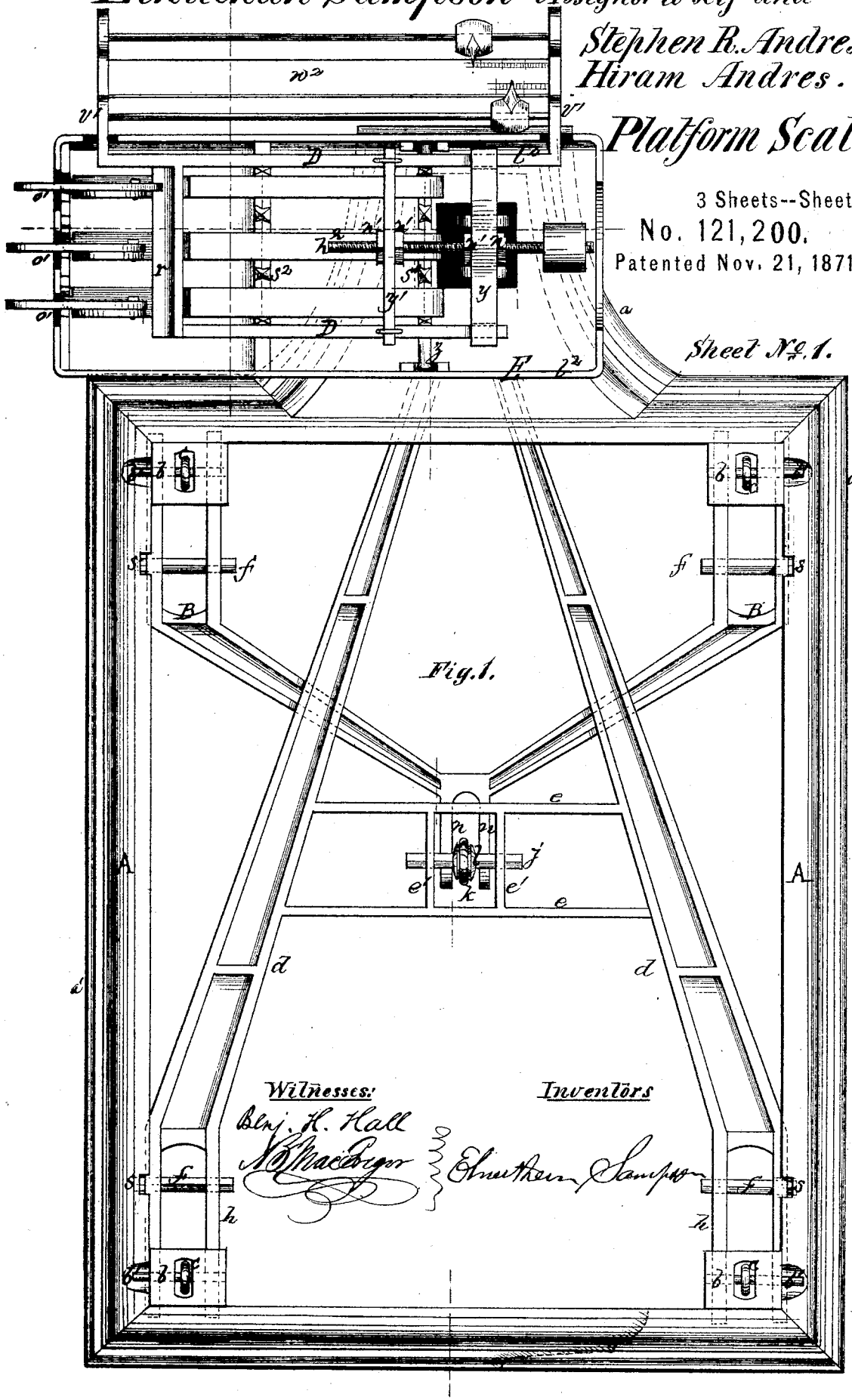


Fig. 1.

Witnesses:

Benj. H. Hall

N. Wisner

Inventors

Elnathan Sampson

Elnathan Sampson, Assignor to self and Stephen R. Andres: and Hiram Andres.

Platform Scale.

3 Sheets--Sheet 2.

Sheet. No. 2.

No. 121,200.

Patented Nov. 21, 1871.

Inventor.

Elnathan Sampson

Witnesses:
Benj. H. Hall
A. MacGregor

Fig. 4.

Fig. 3.

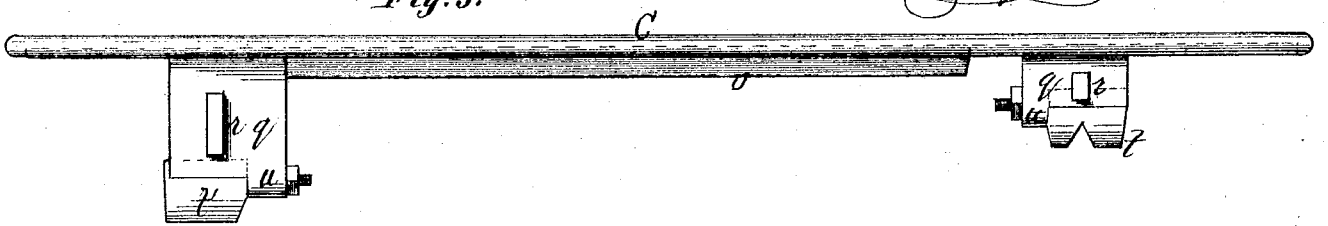


Fig. 5

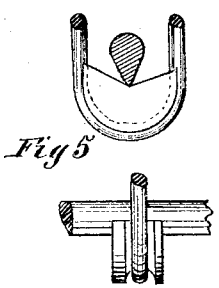
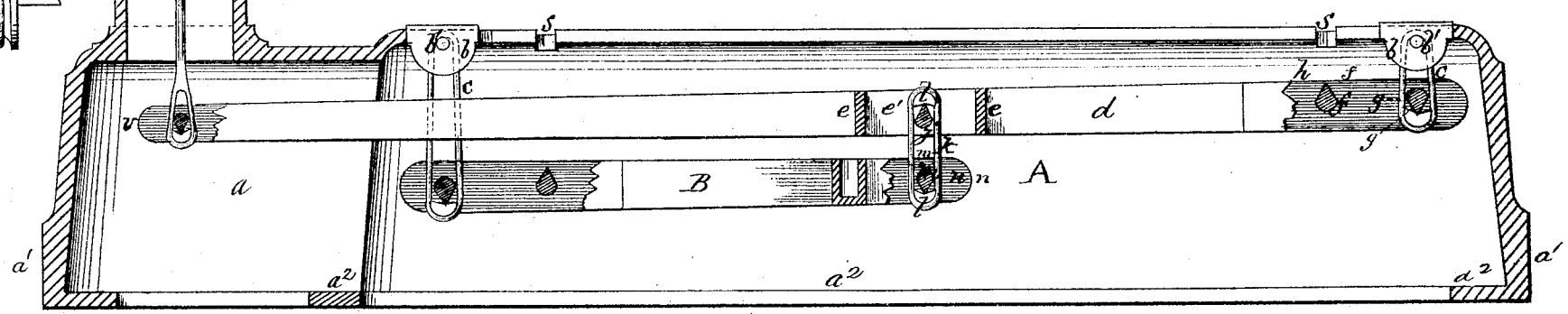


Fig. 2.



Elnathan Sampson Assignor to self and Stephen R. Andres.
& Hiram Andres.

Platform Scale.

Sheet No. 3.

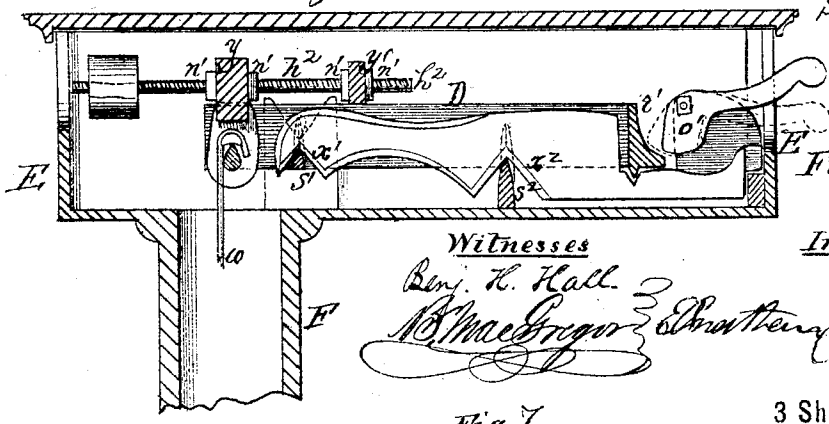


Fig. 6.

Witnesses

Benj. H. Hall.
A. Mac Gregor

Inventor:

Elnathan Sampson

Fig. 7.

No. 121,200.

3 Sheets--Sheet 3.

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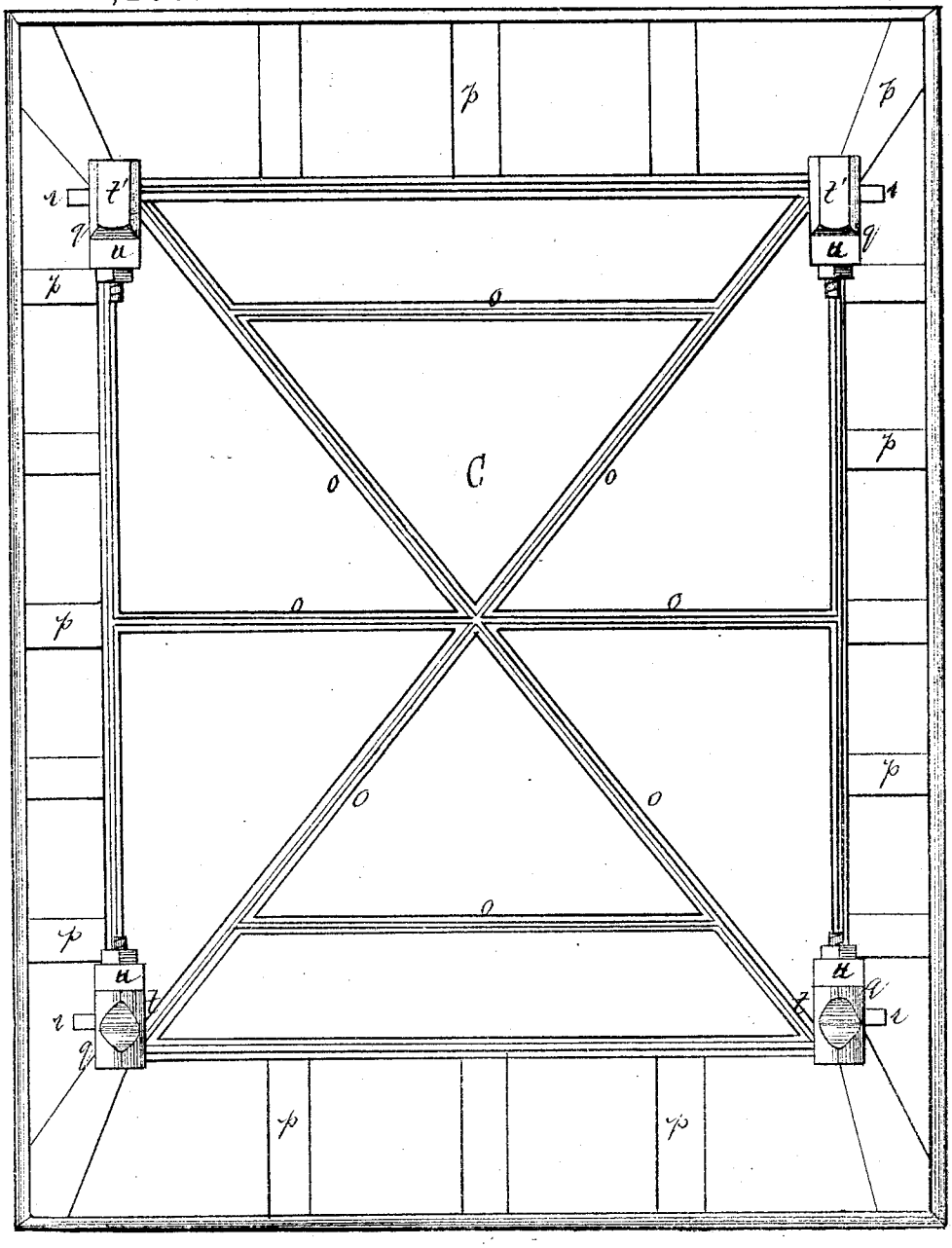

UNITED STATES PATENT OFFICE.

ELNATHAN SAMPSON, (AMANDA A. SAMPSON, ADMINISTRATRIX,) OF NASSAU, ASSIGNOR TO HIMSELF, STEPHEN R. ANDRES, AND HIRAM ANDRES, OF TROY, NEW YORK.

IMPROVEMENT IN PLATFORM-SCALES.

Specification forming part of Letters Patent No. 121,200, dated November 21, 1871.

To all whom it may concern:

Be it known that I, ELNATHAN SAMPSON, of Nassau, in the county of Rensselaer and State of New York, have invented new and useful Improvements in Scales; and I do hereby declare that the following is a full, clear, and exact description thereof, sufficient to enable those skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, in which—

Figure 1, Sheet 1, is a plan of a scale constructed according to my invention, the platform being removed. Fig. 2, Sheet 2, is a longitudinal section taken in the line *x x*, Fig. 1. Fig. 3 is a side view of the platform. Fig. 4 is a view of one of the weights detached. Fig. 5 shows one of the friction-blocks detached in side and end views. Fig. 6, Sheet 3, is a longitudinal section of the beam-box, beam, and the mechanism connected therewith. Fig. 7 is an inverted plan view of the platform.

Similar letters of reference indicate like parts in the several figures.

My invention consists, first, in combining with a scale-beam an adjustable bridge, screw-shaft, and counter-balance, under an arrangement that greatly facilitates and reliably holds the beam in adjustment. It further relates to a scale-beam so constructed that its main portion shall operate in an inclosed box or chamber and its graduated portion outside thereof, and in a horizontal, flat, or inclined position, so that its figures or marks may be more easily seen and read. It further consists in combining with a scale-beam and a beam-box a series of graduated weights that are picked up and let down by said beam at the will of the operator or user. It further consists in combining with the main and short-beam levers of a platform-scale knife-edged pivots that are supported at both of their ends, and intermediate connections for making a very strong and very sensitive connection between them. It further consists in certain devices formed on or in connection with the frame, platform, and beam-levers, so that the platform may be readily removed or replaced and still be held to the frame without actual contact with it. It further consists in a series of weights having notches, cavities, and projections, and controllable by bridges and cross-bar in the inclosure in which they are placed, so that they may, from the exterior, be attached to or detached from the scale-beam.

In scales as heretofore constructed the device by which the adjustment of the beam is effected has been placed at the "nose" of the beam-lever, and consequently it has been necessary to raise the scales bodily to afford access to the adjusting devices or "nose-iron." To avoid this difficulty I provide peculiar devices for the adjustment of the beam and apply them to the beam itself, where they are readily accessible. The graduated beam is attached to the main beam, forming part of it, and is so arranged that it shall be flat, or have an inclination, greater or less, upon the arms of the said main beam, whereby the figures upon it are more easily read. The weights are of peculiar structure, and are provided with cam-levers or other fastening devices for connecting them at will with the main beam and disconnecting them therefrom so as to move with the beam or remain inoperative. The scale-levers are cast hollow; and, instead of having the sides diverge to the extremity of their length, as usual, the outer portions are straight and parallel with each other, thus bringing the knife-edges, on which the platform rests, close to the sides of the frame, and enabling the location of the platform-legs very near the edges of the platform to prevent tipping. The knife-edges, which form the points of suspension of the levers and the bearings for the platform, are fixed in the ends of the hollow levers in such a manner that they are supported at each extremity, whereby any tendency to warp or sag is prevented. The loops by which the platform-levers are suspended are hung on pins fitted in a peculiar manner in seats located at the corners of the frame. Instead of securing the platform in the usual manner, I cast on the sides of the legs projections or shoulders, which pass through notches in the upper edge of the frame and catch under said edge when the platform is moved slightly forward. The platform is cast with strengthening-braces on the under side, and the legs are fitted with friction-blocks of peculiar construction and application. The frame, unlike those in common

use, is made with vertical sides, having a slightly-enlarged base, and provided with webs at top and bottom; extending entirely around, the requisite strength is obtained, while the casting is very light.

To enable those skilled in the art to fully understand the nature of my improvements, I will now proceed to describe them in detail, referring to the drawing.

The frame A, with its "neck" *a*, is cast with vertical sides, having a slightly-enlarged base, a^1, and is strengthened by a flange, a^2, extending entirely around the lower edge and across the neck at the point of its connection with the frame, and a web on the inner surface, near the top of the frame. By this construction great strength is obtained, although the casting is very light, and the scale-levers are allowed to work in close proximity to the sides of the frame. In the corners of the frame A are located seats *b*, the preferred form of which is shown in Fig. 1. These seats are cast with transverse openings, in which pins *b'* are inserted from the side, said pins passing through links *c*, which suspend the scale-levers. The main beam-lever resembles in form the letter **A**, being composed of sides *d d*, uniting at the front end and diverging in the opposite direction, and braced by the transverse pieces *e e*. The peculiarity of this lever consists in casting it hollow and open at the top and in making the outer portions of the diverging sides straight and parallel with each other. The object in casting the lever hollow is to secure lightness and to give the knife-edges *f g* a bearing at each end; and the purpose in straightening the portions *h h* is to bring them, with the bearings of the platform, in close proximity to the sides of the frame, and thus permit the location of the legs nearer the edges of the platform than has been heretofore accomplished, which prevents any tendency of the platform to tilt. The short lever B possesses the same peculiarities of construction—that is, cast hollow and with straight ends—as the main scale-lever, and it is suspended in the same manner from the pins *b'*; but it also has connection with the long lever, as will now be described. Between the transverse braces *e e* of the main lever are pieces *e' e'*, through which passes a knife-edge, *j*, on which a link, *k*, is suspended. In each end of this link is fitted a friction-block, *l*, the construction of which is clearly shown in Fig. 5. These blocks receive the knife-edges *j m*, of which the former has been described, while the latter, which is similar, is fitted between lugs or ears *n*, cast with the lever B. By reference to the drawing it will be seen that the links at the corners of the frame are also provided with friction-blocks similar to those just described. In scales as heretofore constructed the knife-edges *f g* in in the outer ends of the levers have projected from the sides of the lever, having a bearing only at one end. Experience has demonstrated that when thus applied there is great tendency to sag, bend, or warp, and much care must be exercised and time spent to get them true. This difficulty is entirely obviated by inserting the knife-edges, as shown, whereby a bearing is provided for each end. The platform C is cast in one piece, with lateral, transverse, and diagonal strengthening-braces *o* on the the under side, substantially as shown in Fig. 7, and with corrugations *p* around the edges, and bounded by a flange which imparts sufficient strength to the body of the platform, which may be made very light. The legs *q q*, which are also cast with the platform, have projecting shoulders *r r* adapted to pass through notches *s* in the upper part of the frame and catch under the edge of the latter when the platform is moved slightly forward. This does away with the old method of fastening, which necessitates either the lifting of the scales or the removal of part of the platform to give access to the fastening devices. To the legs *q q* are applied friction-blocks *t t'*. These blocks are of two kinds, those marked *t* having a **V**-shaped bearing to receive the knife-edges *f* of the main scale-lever, while those marked *t'* have a plain surface so as to be capable of a slight movement upon the knife-edges of the lever B to prevent binding. The friction-blocks *t t'* are provided with short round arms, which pass through openings made in lugs *u* forming part of the legs *q* and are held in place by nuts screwed on the end of the arm. These blocks, being rounded and fitted into recesses of corresponding form in the ends of the legs, have a sufficient but limited play from side to side. At the forward end of the beam-lever are formed two ears, *v*, in which is fitted a knife-edge resting on a friction-block in an elongated eye at the lower end of the beam-rod *w*, which, at its upper end, is suspended from a knife-edge inserted in lugs cast with a bridge, *y*, adjustable on a beam, D. This beam has its bearings *z z* in a beam-box E, mounted on the pillar F. The bridge *y* is adjustable back and forth upon a screw, h^2, and rests on the side-bars $l^2 l^2$ of the main beam. The screw h^2 passes through the adjustable bridge *y* and is fixed, by nuts, in the stationary bridge *y'*. On the outer end of the screw is a movable counter-balance ball, and the screw may be itself adjusted to increase and decrease the leverage. To adjust the bridge *y* the nuts *n'* are loosened to permit the desired movement of the bridge and then tightened to hold it in position. By the arrangement just described of the adjusting devices upon the beam the latter is adjusted to the levers and weights; whereas, in scales as heretofore made, it has been necessary to adjust the levers to the beam and weights. Attached to the main beam are arms *v'* which work in slots in the side of the beam-box and support the graduated beam w^2, which either lies flat or is inclined, more or less, as shown in Fig. 2, whereby the figures upon it can be more readily observed than when the beam is vertical, as has been the case heretofore. At each side of the beam w^2 is a fixed rod, on which are movable poises, as shown. I prefer to make the weights of the form shown in Fig. 4, though the shape may be somewhat varied without departing from the principle of my invention. The weights will be of different sizes, according to the number of pounds they are to represent. Near the inner end of each weight is

a notch, x^1, which engages with a bridge, s^1, and also with a notch, x^2, which fits over a stationary bridge, s^2, fixed across the bottom of the beam-box. The front cross-bar r' of the beam rests in a cavity, p', formed in the weight. At the side of this cavity a cam-lever, o', is pivoted to the weight, its handle projecting through a slot in the end of the beam-box. Several of these weights may be arranged alongside of each other; and, to prevent any danger of their interference one with another, the bridges are formed with vertical projections which keep the weights apart, while the provision of a separate slot for each lever-handle will also further the same end. The cross-bar a' of the beam is preferably curved in its cross-section, as shown, and the cam-lever is of such form that, when depressed, it will clamp the weight to the beam so as to move therewith, while by elevating the lever the weight will be detached and will rest upon the stationary bridge, so that the beam is entirely relieved from that weight. The denominations of the various weights will be marked immediately above them on the beam-box.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the beam D, the adjustable yoke or bridge y, screw-shaft h^2, and counter-balance, arranged as and for the purpose described and represented.

2. The beam D, so constructed as that its main portion shall vibrate in an inclosed chamber or box and its graduated portion outside thereof, and in a horizontal or inclined position so as to be easily seen and read, as described and represented.

3. In combination with the beam and beam-box E, a series of graduated weights in said box furnished with recesses and projections, by which they may be connected to or detached from the beam at the will of the user, as and for the purpose described.

4. The combination of the long skeleton **A**-shaped main beam-lever and the skeleton short beam-lever B, with their knife-edge pivots, supported at both ends, and connections, as at j k l m n, substantially as described.

5. In combination with the platform C, frame A, and the long and short beam-levers, the friction-blocks t t' and shoulders r on the platform, the notches s s in the frame, and the knife-edge bearings f f on the levers, so that the platform may be readily adjusted, removed, or replaced, and be held to the frame without actually touching it, as described and represented.

6. The weights formed with the notches x^1 x^2 and the cavity p', and provided with the weight-lever or cam o' in combination with the bridges s^1 s^2 and cross-bar r' of the beam, arranged and operating as herein represented and described.

ELNATHAN SAMPSON.

Witnesses:
BENJ. H. HALL,
B. MACGREGOR.

(132)