4 Sheets—Sheet 1.

I. RIGDON.

PLATFORM SCALES.

No. 189,786. Patented April 17, 1877.

Fig. 1

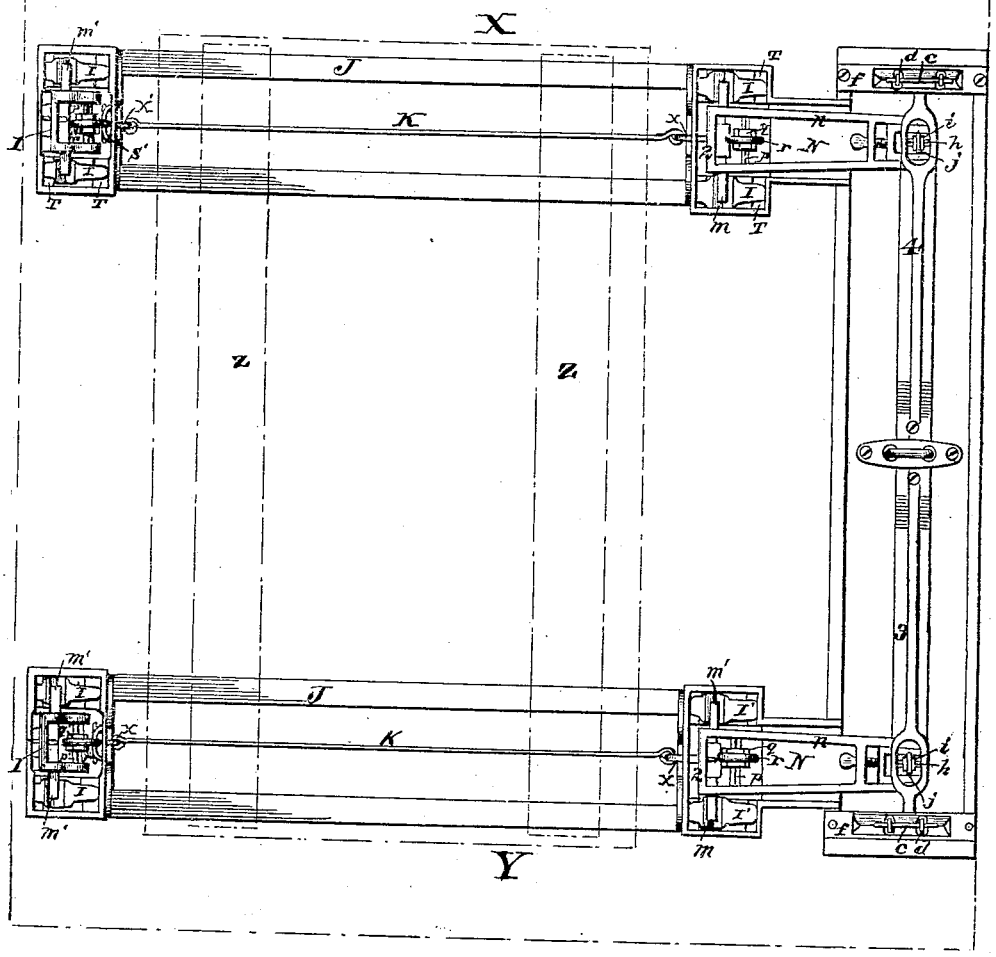


Fig. 2

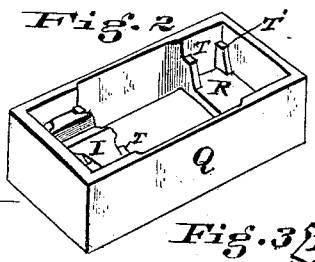
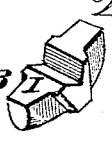


Fig. 3



Attest

D. P. Kennedy

Charles Schammel

Inventor

Isaac Rigdon per

Wm. Hubbell Fisher,

his atty in fact.

4 Sheets—Sheet 2.

I. RIGDON.

PLATFORM SCALES.

No. 189,786. Patented April 17, 1877.

Fig. 4

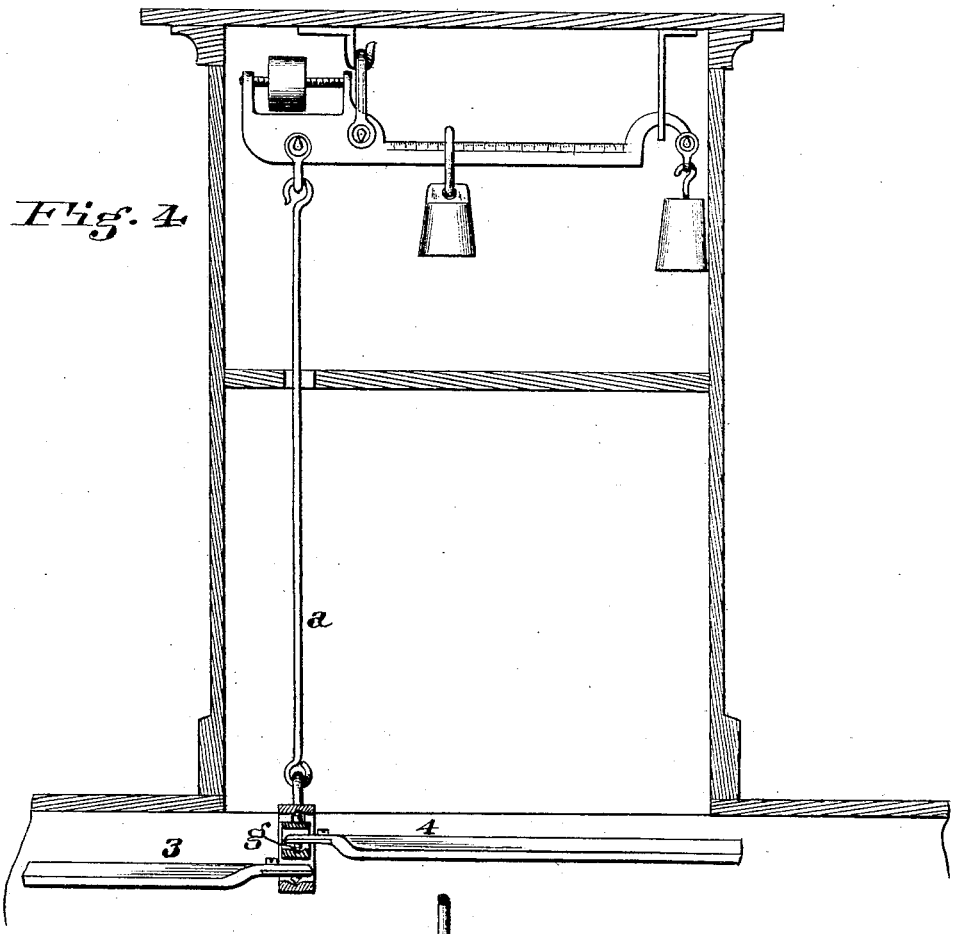


Fig. 5

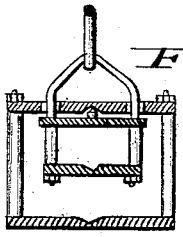


Fig. 6

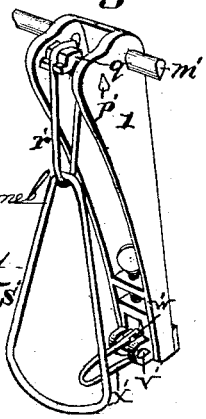
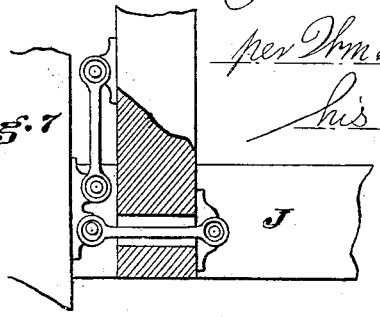


Fig. 7



Inventor

Isaac Rigdon

per Wm Hubbell Fisher

his Atty in fact

Attest

Charles Sumner

D P Remedy

4 Sheets—Sheet 3.

I. RIGDON.

PLATFORM SCALES.

No. 189,786. Patented April 17, 1877.

Fig. 8

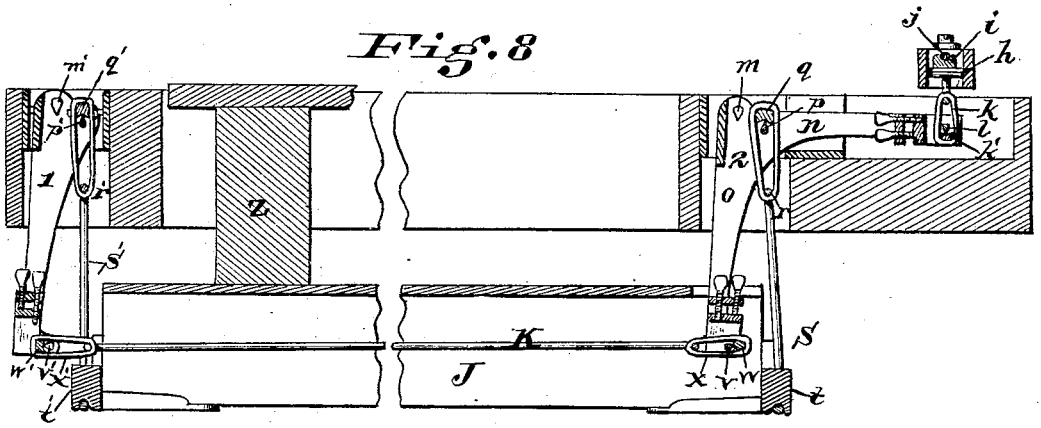


Fig. 9

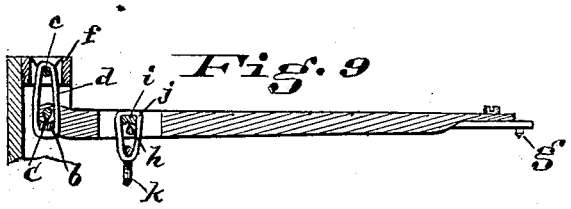


Fig. 10

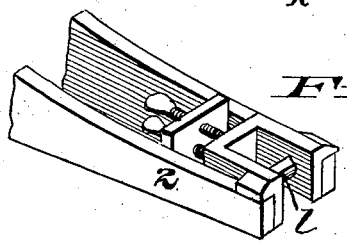
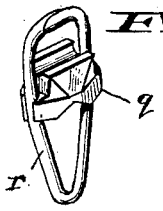


Fig. 11



Attest

D. P. Kennedy.

Charles Schammel.

Inventor

Isaac Rigdon per

Wm. Hubbell Fisher,

his Atty in fact

4 Sheets—Sheet 4.

I. RIGDON.

PLATFORM SCALES.

No. 189,786. Patented April 17, 1877.

Fig. 14.

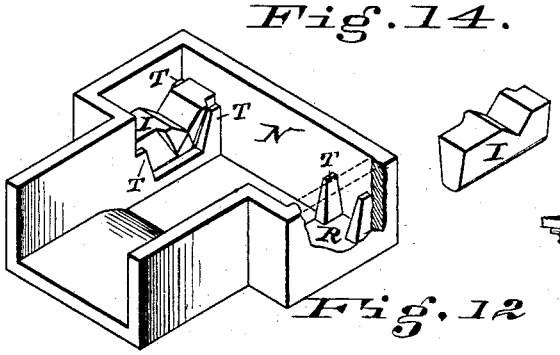


Fig. 12

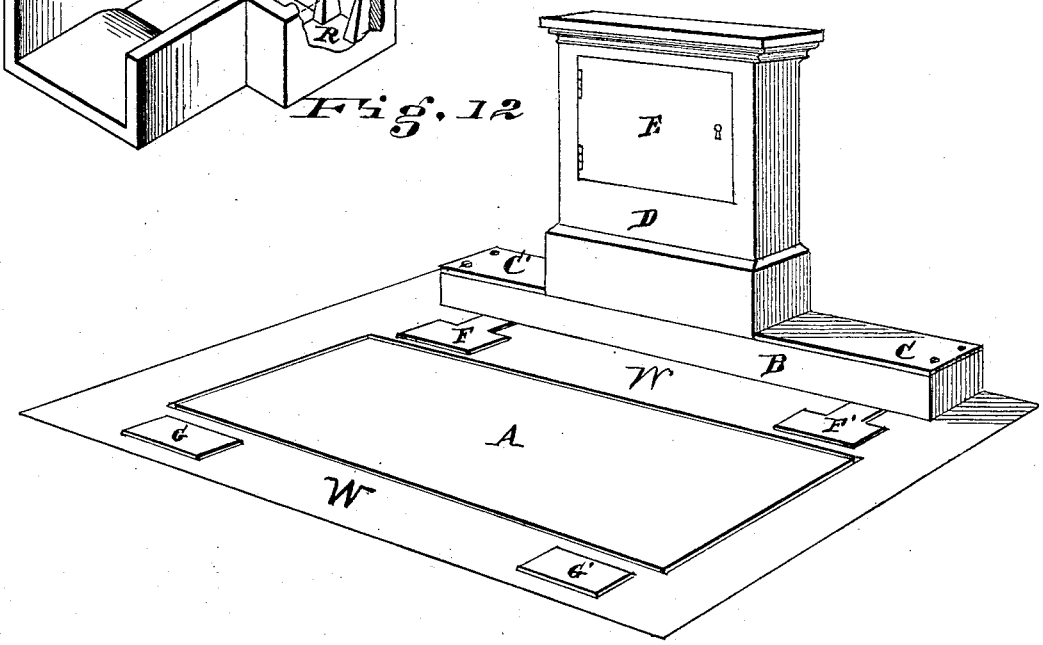
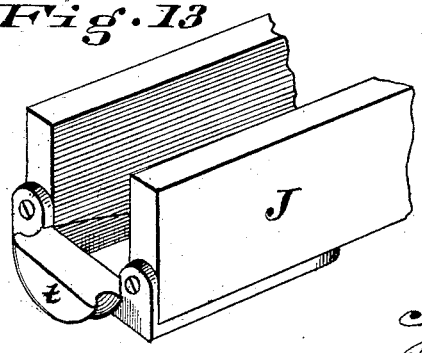


Fig. 13



Attest

D. C. Remedy

Charles Schammel

Inventor.

Isaac Rigdon.

per Wm. Hubbell Fisher,

his Atty in fact

UNITED STATES PATENT OFFICE.

ISAAC RIGDON, OF CINCINNATI, OHIO.

IMPROVEMENT IN PLATFORM-SCALES.

Specification forming part of Letters Patent No. **189,756**, dated April 17, 1877; application filed August 21, 1875.

To all whom it may concern:

Be it known that I, ISAAC RIGDON, a resident of the city of Cincinnati, in the State of Ohio, have invented certain new and useful Improvements in Platform-Scales, of which the following is a specification:

My invention is capable of subdivision into several subordinate parts, as follows:

The first part of my invention consists in a combination of a multiplying and equalizing lever of a novel construction, and of a multiplying-lever, also of a novel construction, the latter being connected, in the usual manner, to the beam-rod.

The second part of my invention consists in a new style of seat for the bearing which supports the multiplying and equalizing levers and the multiplying-lever, whereby the bearing is at liberty to accommodate itself to the edge of the pivot of said levers, thereby relieving the pivot from all strain, and insuring a perfectly level and straight bearing for said pivot.

The third part of my invention relates to the peculiar construction of the cross-piece, which not only envelops the connecting-rod which connects the lower end of the vertical multiplying-lever and the lower end of the multiplying and equalizing levers, and keeps them free from dirt and moisture, but also makes operative my peculiar combination of loops, bearings, and levers. (Shown hereafter herein.)

The fourth part of my invention relates to the novel construction of the vertical multiplying-lever, and also of the multiplying and equalizing lever, whereby the upper bearings can be brought very close together, thereby relieving the lever from all liability to spring. This novel construction of these levers also enables the cavity for the bearing-loops to play in to be extended beyond the line of the pivot which, by connections, supports the platform, and, further, allows the aforesaid levers to be put into the scale in a perpendicular position.

The fifth part of my invention consists in the double loop, whereby the platform is suspended from the multiplying-lever and the multiplying and equalizing levers.

The sixth part of my invention relates to the perpendicular of said double loops, and the cross piece hook, and the cross-piece.

It may be here remarked that platforms of large scales have been suspended by placing the levers above the level of the platform; but it is altogether novel with myself to accomplish the suspension of the platform by placing the levers at each side of the platform and below the level of the latter. This arrangement of the levers with reference to the platform constitutes the seventh part of my invention.

The eighth part of my invention consists in such a new manner of suspension of the platform of said scale, in connection with loops, levers, and bearings, that any motion communicated to the same by a load passing on or off shall not affect the bearings or the accuracy of the scale, and so that the only wear to which the pivots are subjected arises from the direct crushing strain of the platform and load, and not from any shifting of the platform.

The ninth part of my invention relates to a new and useful style of boxes for the reception and the inclosure of the levers and bearings, and thereby protecting the mechanism of the scale from all dirt and moisture.

In the accompanying drawings, forming a part of this specification, Figure 1, Sheet 1, is a plan of the mechanism of my scale at and beneath the surface of the platform. Fig. 2, Sheet 1, is a view, in perspective, of one of the boxes which support the pivot-bearings of the vertical multiplying-lever. Fig. 3, Sheet 1, represents the pivot-bearings used in the box shown in Fig. 2. Fig. 4, Sheet 2, is a vertical longitudinal section of a beam-box, showing the usual mechanism connecting the beam with the levers. Fig. 5, Sheet 2, is a central vertical section of the connection frequently employed to connect the beam-rod with the horizontal lever. Fig. 6, Sheet 2, is a view of my improved lever and loop and their connections. Fig. 7, Sheet 2, is a corner section, showing the usual method of staying the platform to prevent vibration. Fig. 8, Sheet 3, represents a vertical longitudinal section of my scale, taken through the dotted line 2 2,

Fig. 1. Fig. 9, Sheet 3, is a central longitudinal section of the horizontal multiplying-lever. Fig. 10, Sheet 3, is a view, in perspective, of the device usually employed to adjust the pivot of the levers. Fig. 11, Sheet 3, represents, in perspective, my improved pivot-bearing and loop. Fig. 12, Sheet 4, affords a view of the exterior of my improved platform-scale. Fig. 13, Sheet 4, exhibits, in perspective, the cross-piece hook, which is a bearing for the bottom of the loop. This figure also exhibits a detached portion of the cross-piece, which incases the connecting-rod aforementioned. Fig. 14, Sheet 4, exhibits, in perspective, a view of the box which supports the bearings of the multiplying and equalizing lever.

A, Fig. 12, Sheet 4, represents the platform of my improved scale. B designates the box incasing the levers at the bottom of the beam-box D, and extending the length of the platform. C C′ are the lids of the respective ends of box B. The beam-box D is of any of the usual forms, and is provided with a door, E, for reading the beam. F F′ G G′ indicate the lids which cover the top of the open boxes or receptacles which contain certain of the bearings, and portions of certain of the levers of the scale. Each lid fits over its respective box, (the boxes are such as are shown in Figs. 2 and 14,) and is preferably secured in place by screws passing through the ears of the lids directly into the sills outside of the box. These lids exclude all dirt and water from the boxes.

The beam and its accompanying mechanism (shown in Fig. 4) differs in no way from that commonly employed in other platform-levers. The multiplying-levers 3 and 4 (of my invention) are connected with the ordinary connecting-rod *a* by the usual yoke or nose-iron. (Shown in enlarged section in Fig. 5.) At their other end the levers 3 and 4 (see Figs. 8 and 9) each have a pivot, C, on each side. This pivot C rests in a bearing, *b*, supported in turn by a loop, *d*, (such as shown in Fig. 11, reversed,) the upper end of each loop *d* being swung on the same rod *e*, supported on a cast-iron rest, *f*.

A pivot, *h*, is located in a mortise in lever 3 and 4, at a point distant from pivot C one-tenth of the distance between pivot C and the beam-pivot *g* of the lever. (See Figs. 9 and 12.) On this pivot *h* rests a bearing, *i*, over which hangs a loop, *j*. This latter loop is held in position by grooves in its sides and top, which receive the edges of the loop, as shown in Fig. 11. A second loop, K, depends from the loop *j*, in the lower portion of which rests a bearing, K′, as shown in Fig. 11 reversed, the bearing K′ supporting the pivot *l* of the front end of the equalizing and multiplying lever 2. This pivot *l* is adjustable forward or backward by means of the usual device now employed to adjust the bearing-pivots of scales, and shown in Fig. 10.

Near the rear end of the horizontal arm of this lever 2 is fixed therein a pivot, *m*, each end of which rests on one of the bearings I I′, (shown in Figs. 1 and 2,) and by which one end of the horizontal arm *n*, and all of the vertical arm or portion *o* of lever 2, (see Fig. 8,) is supported.

A pivot, *p*, is placed in the horizontal arm, a distance from pivot *m* equal to one-tenth of the entire distance between pivot *m* and the pivot *l*. On this pivot *p* rests bearing *q*, which supports, as shown in Fig. 11, the small loop *r* and the large loop S. The latter fits around a hook or bearing, *t*, attached to the cross-piece J.

It may be here remarked that the fact that the levers 1 and 2 are practically open their entire length, being practically made as if two thin levers of same shape were placed parallel to one another at such a distance as to allow of the play of the loops, is of great convenience, as it admits of placing the pivots *m* and *g* as close together as necessary, thus preventing all liability of the lever to spring.

At the lower end of the perpendicular arm of the lever 2 is a pivot, V, capable of adjustment to or from the pivot *p* by means of the usual device employed for that purpose. (Shown in Fig. 10.) The distance between pivot V and pivot *p* is exactly equal to the distance between pivot *p* and pivot *l*. Against the front sides of this pivot V is a bearing, W, and loop X, such as shown at Fig. 11, that end of the loop X not occupied by the bearing is coupled to connecting-rod K.

The cross-piece J is hollow or tubular, as shown in Figs. 1 and 13, and is supported at the rear end by a hook, *t*, and loops *r′ s′*, similar to those by which it is supported in front, as shown in Fig. 6. These loops *r′ s′* are supported by a bearing, *q′*, resting on a pivot, *p′*, in the multiplying-lever 1.

Both bearing *q′* and pivot *p′* are similar, both in configuration and in their mode of combination to the bearing *q* and pivot *p* of lever 2.

The vertical multiplying-lever 1 is supported by a pivot, *m′*, fixed therein, projecting on each side of the lever, and resting in a bearing, I, at either side, as shown in box M, Fig. 2.

The distance between the pivot *m′* and the pivot *p′* is one-tenth of the distance between pivot *p′* and the pivot *v′*, the latter being located at the lower end of lever 1, and made adjustable by a device such as shown in Fig. 10. Against the pivot *v′* there rests a bearing, *w′*, and a loop, *x′*, around the back and sides of the bearing *w′*, unites the connecting-rod K and the pivot *v′*. The pivot *v*, bearing *w′*, loop *x′*, and their mode of combination is precisely similar to that of the pivot *v*, bearing *w*, and loop *x* of lever 2.

The boxes N (see Fig. 14) are for the reception of bearings I, which sustain the pivot *m* of the lever 2, and the longer part of the arm *n* of said lever.

The boxes Q (see Fig. 2) are for the recep-

tion of bearings I, which sustain the pivot m' of the lever 1.

Both the boxes N and Q have seats R and guiding-studs T T′, which support and hold the bearings I in position.

The boxes are mortised in the sills W, (see Fig. 8,) and sunk so that their tops are flush with the tops of the sills.

The bearings I are made in a peculiar form, rounded on the bottoms, so as to allow vertical play to the bottom of the slot receiving the edge of the pivot v or v', and so that the different portions of the bottom of the edge of the pivot shall always impinge against every portion of the bottom of the slot.

The spaces between the studs T T′ of the bearing-box are somewhat larger than the ends of the bearings, thus allowing the said ends of the bearing to play horizontally, so as to permit the edge of the pivot, in seeking the bottom of the slot in the bearing, to turn the bearing sufficiently to allow the pivot-edge to reach the bottom of the slot, thus lessening the friction or strain of the edge of the pivot upon the sides of the slot of the bearing. The mechanism on the other end X (see Fig. 1) of the scale corresponds exactly with that already described as belonging to the end Y.

Z represents the usual bearing-timber supporting the platform, and resting on the cross-piece J, at the same distance from the pivot of lever 2 that the timber Q is from pivot l.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the vertical multiplying-lever No. 1 and the multiplying and equalizing lever No. 2, substantially as and for the purposes set forth.

2. The combination of the vertical multiplying-lever No. 1, and the multiplying and equalizing lever No. 2, and the horizontal multiplying-lever No. 3, substantially as and for the purposes specified.

3. The multiplying-lever No. 1, made open or hollow for the reception of pivot and pivot-bearing, whereby the double loop S r is supported.

4. The multiplying and equalizing lever No. 2, made open or hollow for the reception of pivot and pivot-bearing, whereby the double loop S r is supported.

5. The combination of the seat R, provided with guiding-studs T T′, and the bearing I, substantially as and for the purposes set forth.

6. The box N or Q, provided with seats R and guiding-studs T T′, for the reception and maintenance of the bearing I, substantially as and for the purposes set forth.

7. The combination of the multiplying-lever No. 1, and the multiplying and equalizing lever No. 2, and the cross-piece J, substantially as and for the purposes specified.

8. The double loop S r, in combination with the loose bearing resting upon the multiplying-lever No. 1, or the multiplying and equalizing lever No. 2, as and for the purposes set forth.

9. The arrangement of the platform within the frame cross-pieces J, and within the suspension-loops, substantially as and for the purposes set forth.

10. The combination of the box N or Q and the sill of the platform, the box being mortised or sunk in the said sill, so that the top of the box is flush with the top of the sill, substantially as and for the purposes set forth.

ISAAC RIGDON.

Attest:

D. A. KENNEDY,

CHARLES SCHAMMEL.