2 Sheets—Sheet 1.

S. H. HIBBARD.

PLATFORM-SCALES.

No. 193,762. Patented July 31, 1877.

Fig. 1.

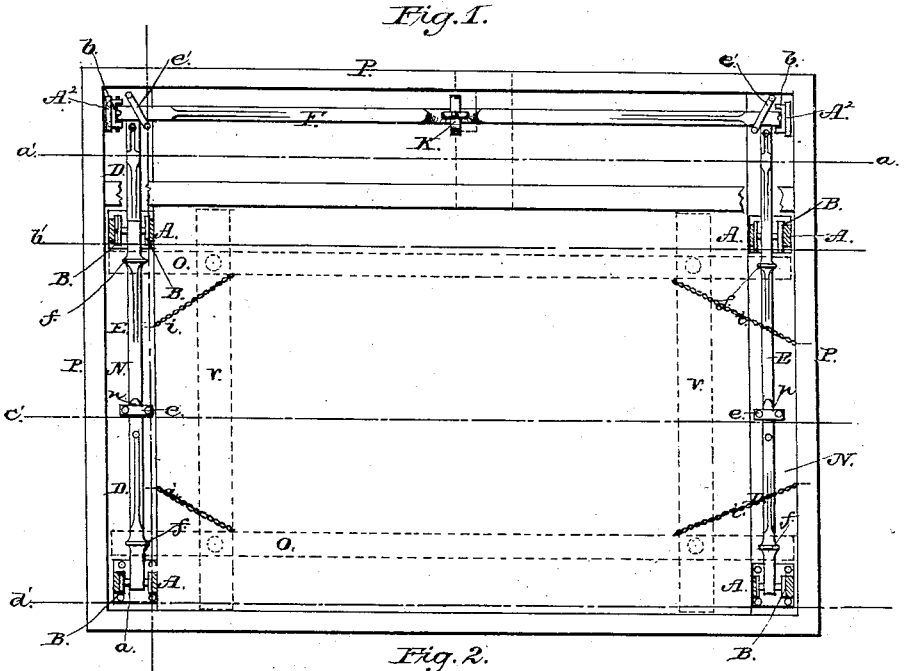


Fig. 2.

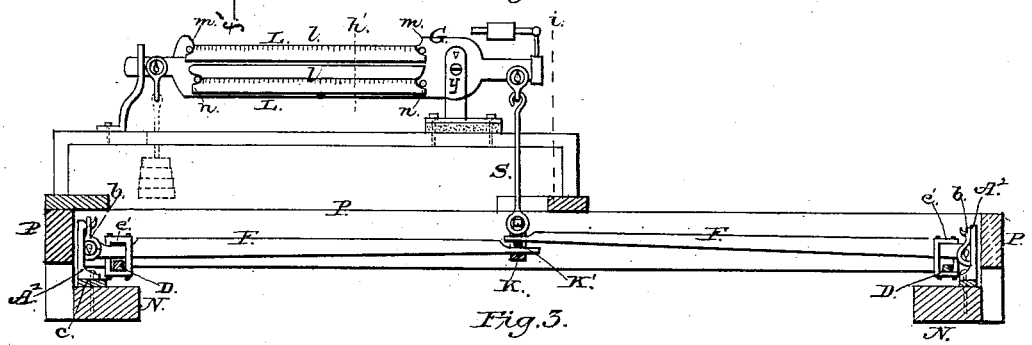


Fig. 3.

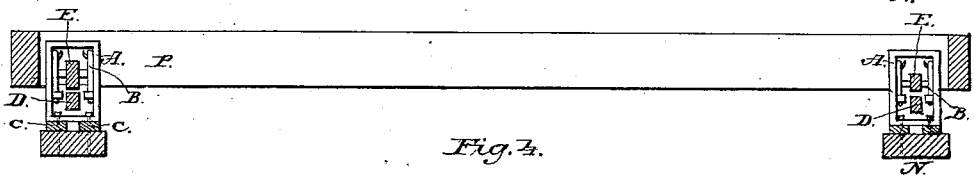
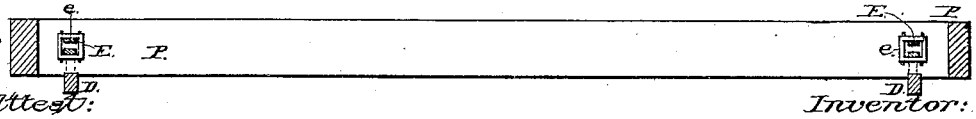


Fig. 4.



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by E. Thurlow his atty
in fact.

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S. H. HIBBARD.

PLATFORM-SCALES.

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Fig. 5.

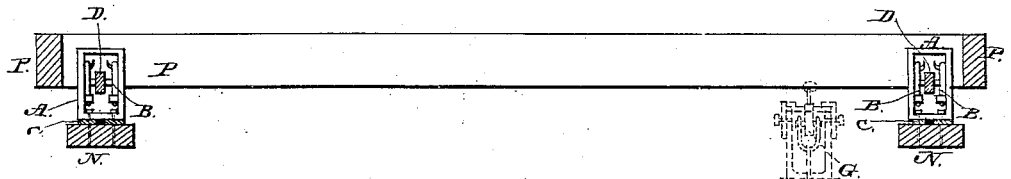


Fig. 6.

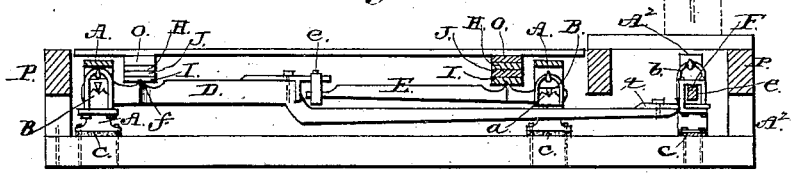


Fig. 7.

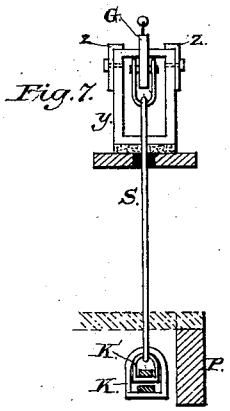


Fig. 8.

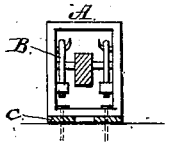


Fig. 9.

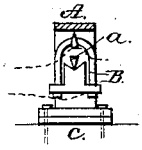


Fig. 10.

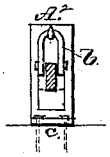


Fig. 11.

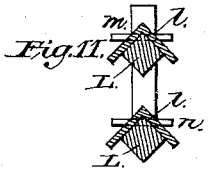
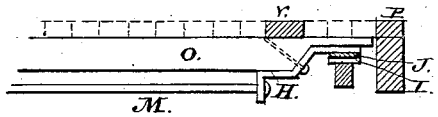


Fig. 12



Attest:

John Martin
Theo. X. Zamar.

Inventor:

Silas H. Hibbard
by S. Thurlow his atty in fact

UNITED STATES PATENT OFFICE.

SILAS H. HIBBARD, OF LA SALLE, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO CHARLES BRUNNER AND NORMAN SNOW, OF PERU, ILLINOIS.

IMPROVEMENT IN PLATFORM-SCALES.

Specification forming part of Letters Patent No. **193,762**, dated July 31, 1877; application filed February 7, 1877.

To all whom it may concern:

Be it known that I, SILAS H. HIBBARD, of La Salle, in the county of La Salle, in the State of Illinois, have invented an Improvement in Wagon or Platform Scales; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a plan with the steelyard and platform removed; Fig. 2, section on line *a'*, Fig. 1; Fig. 3, vertical section on line *b'*, Fig. 1; Fig. 4, vertical section on line *c'*, Fig. 1; Fig. 5, vertical section on line *d'*, Fig. 1; Fig. 6, a cross-section on *f'*, Fig. 1; Fig. 7, a vertical section on line *i*, Fig. 2; Fig. 8, a side elevation of pivot housing and shackles; Fig. 9, cross-section of housing with shackle; Fig. 10, elevation of pivot-housing A^2; Fig. 11, cross-section of steelyard on line *h'*, Fig. 2; and Fig. 12, elevation of end of platform beam and bearing on lever.

The objects of this invention are—

First, to obtain a very sensitive scale.

Second, to avoid the usual pit and foundations.

Third, to obtain a portable scale.

Fourth, to deaden or destroy the oscillation of the platform, so that the latter, on receiving weight, will not have the effect to destroy the sensitiveness of the pivots or housings and levers by throwing the latter out of perpendicularity.

Fifth, to weigh various kinds of grain in bushels, in gross or net weight, by means of changeable scales or indices.

The first object is accomplished by connecting the bearing-levers with each other in the same line or level, and the use of elastic foundations under each pivot-housing.

The second object is attained by the said arrangement of all the levers as nearly as possible on one level all round the scale, so that the depth of the inclosing-frame will range only from six to sixteen inches, according to the tonnage of the scale.

The third object (portability) is obtained by means of said slight depth of the machinery and frame and disconnection with any pit or foundation, so that the whole can be transported on friction-rollers or small wheels in the base of the frame.

The fourth object is accomplished by placing an elastic or spring foundation between the housings and their foundation-beams, which brace the frame.

The fifth object is attained by forking the steelyard into two parallel arms, to receive various differently-graded scales or indices, so that, as before said, various kinds of grain or produce, &c., can be weighed in gross or in net.

This scale is inclosed in a frame which receives the platform, and within each end, at right angles with the steelyard side, is a cross-beam, upon which rest the respective pivot-housings, three to each beam. There are four bearing-levers, placed in pairs on either of said beams, the longest lever of each pair being connected with one of the two steelyard-levers on the third side of said frame, and extend outward the whole width of the scales to their respective housings or pivots, each passing through or by an intermediate pivot-housing, which is the pivot of its companion lever just above it, and which lever is about one-third shorter, and covers (or is placed over) the central part of said longer lever. The free end of the shorter lever rests in a stirrup on the upper edge of the longer one, for which purpose, and to bring these pairs of levers on a line or level, the longer lever is recessed or bent in profile. There are no levers or machinery on the fourth or outer side of the scales, opposite to the steelyard. The bearing parts of each of these pairs of levers are, of course, just inside of each fulcrum or pivot, four bearings in all, (*i. e.*, platform-bearings,) and the longer levers deliver the weight to the steelyard-levers, the two being connected by means of stirrups. The pivot-housings of the main pairs of levers are fixed to their respective beams, each having an elastic substance or springs placed between them and their beams to allow the housings to sway slightly to keep the pivots on a true bearing, so preventing the platform from deranging the efficient working of the scales. Each pivot-housing of said main levers consists of a base-plate,

from which rise short uprights united by a cross-piece, from which, or the uprights, swing the pivot eyes or shackles. The pivot-housings, at the junction of the main or platform-bearing levers with the steelyard-levers, have, in like manner, a swinging pivot-eye for the pivot of the respective steelyard-levers. One of the uprights in this case is dispensed with, as in the way. The steelyard-levers are on or near the same level with the main levers, and their free ends meet in the stirrup of the vertical steelyard-rod. The steelyard forks into two parallel horizontal arms, each arm being fitted to receive any of a series of movable and graduated scales or divisional bars or rods, indicating pounds or other measures of weight, bushels, &c.

I construct this scale as follows: P represents the inclosing-frame; N N, the attached cross-beams below, which carry the pivot-housings; A A A^2 A^2, the pivot-housings, set upon rubbers *c c*, and bolted to their respective beams, but so as to allow a little play, or lateral sway, to allow the housings to keep the pivots of their respective levers D E in a true or continuous bearing, whatever the agitation made by a vehicle may be, as well as to break the vertical jar on the scales by such vehicle.

Within the housings are hooks or supports, on either side, from which swing the pivot eyes or shackles B B, supporting either end of a lever-pivot or knife-edge, *a*. The housings A^2, at the junction of the main with the steelyard levers F, have but one upright, and the pivot has but one eye or shackle, *b*.

D represents the longer bearing-levers, one at either end of the frame P, each pivoted in their respective shackles B and housing A at the end farthest from the steelyard G. Each lever D D is recessed in profile at about two-thirds of its length from said housing, to make room for the companion short lever E above it, and for the attaching-stirrup *e*, of a parallelogram form, and each rest their free ends in their respective stirrups *e' e'*, pendent from the pivoted end of each steelyard-lever F F. The latter at their free ends rest in the respective stirrups K K' of the steelyard-rod S, so preserving the perpendicularity of said rod S.

The points of each lever D are made extensible, if necessary, in arranging or adjusting the scale, by being each provided with a short sliding extension-point, *t*, provided with a set-screw, to extend it more or less within stirrup *e'*.

G represents the steelyard, provided with a double or divided arm, L L, for weighing, each arm being provided with removable adjustable weight-indicating scales *l l*, each graduated for any known weight or measure.

These scales consist of two plates joined at right angles, and notched at their ends, and made to fit over the arms of the steelyard G, and secured thereon by the pins *m m* and *n n* passing through the notched ends of the plates and the ends of the arms. Thus by slipping out the pins the scales can be removed, and others of a different graduated measure substituted in their places.

O O represent the platform-beams, to which the boards or flooring of the platform are fixed. These rest at either end upon one of the ribs *f*, near the respective fulcra of the levers D E, and between each rib *f* and the beam is placed, first, a steel plate, I, recessed to admit said rib; second, between said plate I and the beam is interposed the rubber plate J; and, third, between the rubber and the beam is bolted the heel-iron H, which is bolted to the beam, and braced to its fellow at the other end of the same beam by means of a brace-rod, M. This platform is steadied by means of chains *i i i i*, in the usual mode.

The longer levers D D have extensible points *t*, with screws and slots, by which the levers are more nicely adjusted to the connecting or adjoining levers.

What I claim as my invention is—

1. The long levers D D, constructed to allow the short levers E E to extend over and connect in the same plane with levers D D by means of the stirrups *e e*, the said levers D D and E E having their bearings in pivot-housings attached to the beams of the frame-work, in combination with the steelyard-levers F F, substantially as and for the purposes set forth.

2. The pivot-housings, having rubber plates or springs *c* interposed between them and the beams upon which they are attached, substantially as and for the purpose set forth.

3. The interposition of rubber plates or springs between the bearing-plates I and the iron heels or plates H on the ends of the beams of a platform-scale, substantially as and for the purpose set forth.

4. The platform-beams, having a rubber plate, J, interposed between the recessed bearing-plates I and iron heels H, attached to the ends of the said beams, and secured by brace-rods M, substantially as described.

5. The plates forming the removable scales, as described and shown, and having their ends notched and made to fit over the arms of the steelyard G, in combination with the removable pins *m m* and *n n*, substantially as set forth.

In testimony that I claim the foregoing wagon or platform scale I have hereunto set my hand this 1st day of January, A. D. 1877.

SILAS H. HIBBARD.

Witnesses:

HAMILTON M. GALLAGHER,

H. W. UNDERHILL.