E. & T. FAIRBANKS.

Weighing Heavy Bodies.

No. 119. Patented Feb. 10, 1837.

Fig. 1.

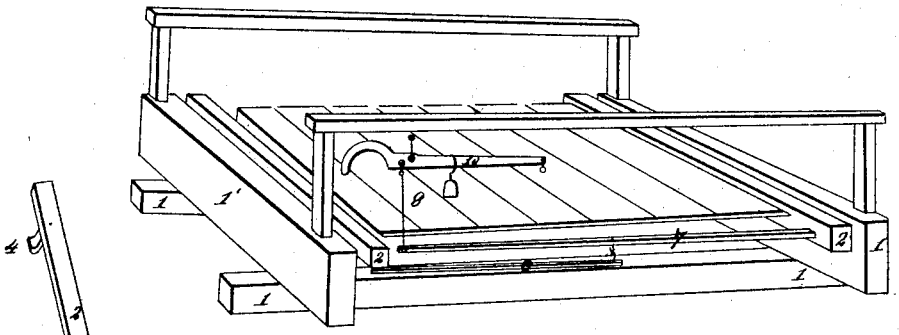
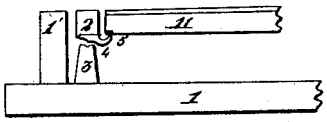


Fig. 4.

Fig. 2.



Witnesses.

Luther Jewett.
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Erastus Fairbanks.
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UNITED STATES PATENT OFFICE.

ERASTUS FAIRBANKS AND THADDEUS FAIRBANKS, OF ST. JOHNSBURY, VERMONT.

IMPROVEMENT IN THE MACHINE FOR WEIGHING HEAVY BODIES

For which Letters Patent were granted, dated June 13, 1831, and subsequently canceled on account of a defective specification, and new Letters Patent granted, dated March 6, 1834, which new Letters Patent are hereby canceled on account of a defective specification.

Specification forming part of Letters Patent No. **119**, dated February 10, 1837.

To all whom it may concern:

Be it known that we, ERASTUS FAIRBANKS and THADDEUS FAIRBANKS, of St. Johnsbury, in the county of Caledonia and State of Vermont, have made an Improvement in the Machine for Weighing Heavy Bodies, usually called the "Platform-Scale;" and we do hereby declare that the following is a full and exact description of the same.

This machine is intended to be made of different sizes and to be used in stores and other places for ordinary weighing, as well as for carts and wagons with their loading. In giving our description, however, we shall refer to one of the usual size for weighing loaded wagons.

We make a frame by taking two pieces of timber for bed sills, which may be ten inches square and about sixteen feet long. These are placed parallel to each other about seven feet apart. Across these and nearly at their ends we bolt two timbers, which may be eight by fourteen inches and twelve feet long. These constitute the frame which is to sustain the platform and its appurtenances.

In the accompanying drawings, Figure 1, the two bed-sills are marked 1 1 and the two end timbers, 1′ 1′. The two pieces marked 2 2 we denominate "rockers." These may be eight inches square and nine feet long. They are placed immediately within, having their tops flush with the end timbers, 1′ 1′. To the rockers are attached the hinges and also the levers, to be presently described. Fig. 2 represents in section one of the bed-sills and end timber, the platform, and hinge, one corner of the apparatus being supposed to be cut through vertically and longitudinally, the members when they are the same corresponding with similar parts in the other figures.

There are four hinges, one placed at each corner of the machine, each hinge having upon it two knife-edges, one of which rests upon a fulcrum and the other sustains the platform by bearing against an iron plate upon the under side of the platform. In the drawings, the hinge is shown in Fig. 4. The hinges are firmly bolted to the under side of the rockers in such a position that one of its knife-edges projects so far as to receive the plate 5, by which it sustains the platform. The other knife-edge rests on the top of the fulcrum 3, which stands upon the bed-sills 1 1. The rockers are kept in their proper position and act upon the scale-beam by means of two horizontal levers, one proceeding from each rocker, as seen at 7 and 8, Fig. 1. The longer lever, 7, terminates at the side of the platform nearly against the opposite rocker, while the shorter lever terminates at a point equidistant from the axis of each, where it is suspended to the longer lever by a chain, rod, or stirrup. From the end of the longest lever a rod, 9, extends perpendicularly to a steelyard or common balance, 10, suspended from a fixture for the purpose of ascertaining the weight of any article.

The advantages of using but one lever in connection with each pair of hinges are that whether it consists of one or more constituent parts, if such lever be connected with its rocker, or otherwise with its hinges, so as to compose but one moving power, and the two levers be connected at a point equidistant from their axes or center of motion, the arrangement constitutes the most simple combination, and of course avoids much of the friction attending a more numerous combination of levers. Again, the knife-edge bearings being all on parallel lines, the friction and cramping which would result from an oblique position of the knife-edges is avoided.

The platform upon which the wagon, cart, or other article to be weighed is placed is formed by taking two pieces of timber, which are of such length as to pass freely between the two rockers. These are placed parallel to each other directly over the bed-sills, and across them are spiked stout plank nine feet long, so as to form a platform—say, nine by twelve feet. Upon the under side of these longitudinal timbers are fastened the plates 5, resting on the inner knife-edge of the hinge, as above described.

The operation of this machine will now be easily understood. Suppose the two knife edges or bearings upon each hinge to be six inches apart, while the length of the lever from its axis or center of motion to the point where

it is suspended by the rod of the steelyard or balance (measuring in a line perpendicular to the parallel lines of the knife-edges) is sixty inches, the weight of the platform and the articles placed upon it will be ten times the amount indicated by the steelyard or balance; but if the steelyard or balance be attached to a point of the lever one hundred and twenty inches from its axis, the weight will be twenty times the amount indicated by the steelyard, and so of any proportional difference between these two lengths.

The article to be weighed may be placed upon any part of the platform, inasmuch as it is placed upon a similar hinge at such corner, each of which bears the same relation to and of course exerts the same influence upon the steelyard-rod.

The apparatus above described may be variously modified so as to produce a similar effect—as, for example, the rockers may be placed directly under the platform either in the position hereinbefore set forth or longitudinally with the frame, or the hinges may be bolted to the upper side of the rockers and the projecting knife edges or bearings hanging upon the fulcra, the platform resting upon the other bearings. Again, the knife-edges of the hinges connected with one lever may be farther apart than those of the hinges connected with the other lever, in which case the connecting-point of the two levers must obviously be in the center of their relative power.

We do not claim the invention of knife-edge bearings; but we do claim—

The employment of two levers connected together at a point equidistant from their axes or at the point of their relative power, in combination with two pairs of knife-edge hinges or bearings whose knife-edges are on parallel lines.

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Witnesses:
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