H. WILLARD.

WEIGHING SCALES.

No. 188,557. Patented March 20, 1877.

*Fig. 1.*

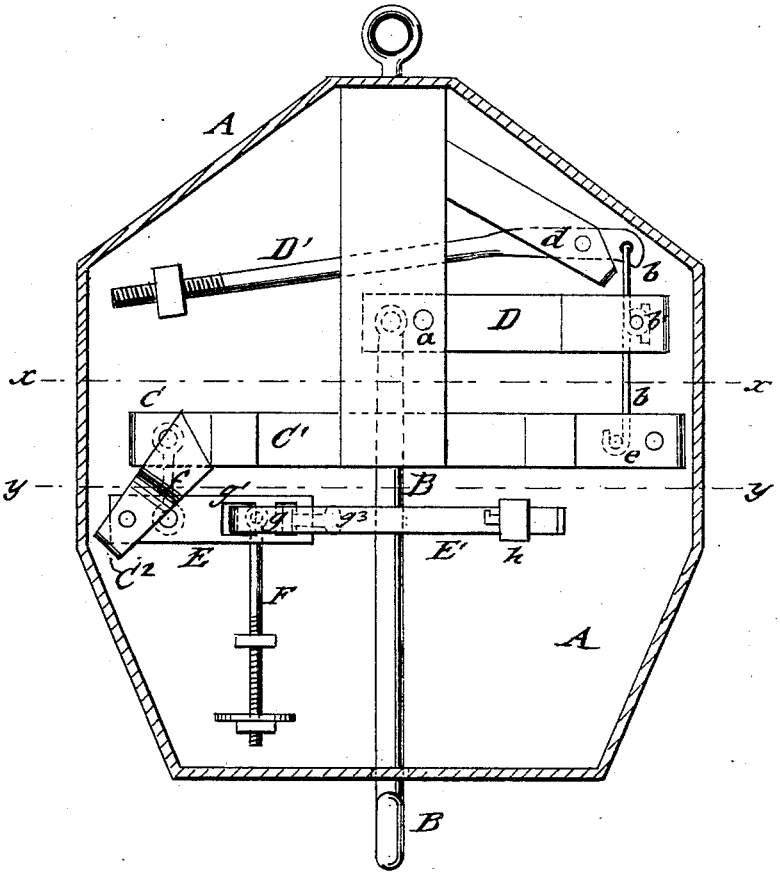



*Fig. 2.*

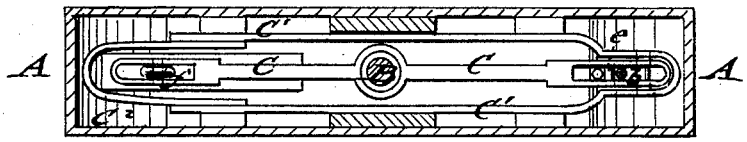
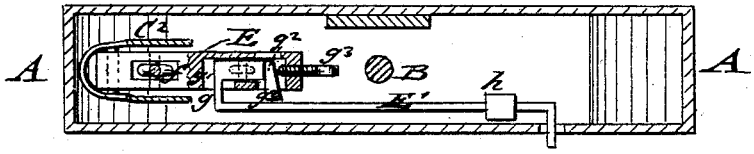



*Fig. 3.*




WITNESSES:

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# UNITED STATES PATENT OFFICE.

HOSEA WILLARD, OF VERGENNES, VERMONT.

## IMPROVEMENT IN WEIGHING-SCALES.

Specification forming part of Letters Patent No. **188,557**, dated March 20, 1877; application filed January 6, 1877.

*To all whom it may concern:*

Be it known that I, HOSEA WILLARD, of Vergennes, in the county of Addison and State of Vermont, have invented a new and Improved Weighing-Scale, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a sectional front elevation of my improved weighing-scale; and Figs. 2 and 3 are horizontal sections of the same, respectively, on lines *x x* and *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The invention is designed to improve the lever and beam scale for which Letters Patent have heretofore been granted to me under date of July 25, 1876, and No. 180,298, so that the construction of the same is simplified, and the gross or net weight taken in quick and perfect manner.

The invention will first be described in connection with the drawing, and then pointed out in the claims.

In the drawing, A represents the inclosing-casing of my improved weighing-scale, which is hung up by a top staple or eye to any suitable point of support.

The weighing-rod B, to which the load is applied, passes through the bottom of casing A, and through a circular expansion or eye of the beam-lever C to main lever D, being pivoted to one end of the same a short distance from its fulcrum *a*. In this construction of scale I employ only one main lever, which simplifies the mechanism and brings the same into a more compact shape, as the connecting-levers and forked beam-lever heretofore used are dispensed with.

The opposite end of main lever D is connected by a pivot-link, *b*, to the adjusting or balance lever D′, that is fulcrumed at *d* to arms of the casing B. The balance-lever D′ is adjusted by means of a weight turning on a screw-thread of its end.

The pivot-link *b* is bent around a cross-pin, *b′*, of the recessed main lever D, and extended below the same to hook onto a cross-pin, *e*, of the beam-lever $C^1$, which is pivoted at its end, close to cross-pin *e*, to a fixed support, C, of casing A, and connected at its opposite end by a pivot-link, *f*, to a third lever, E, that is pivoted below the beam-lever C, a short distance from the pivot-link, to a downward-extending support, $C^2$, at the side opposite to the pivot of the beam-lever C.

The hook F, to which the weights are applied, is hung to a cross-pin of an extension-arm, E′, of lever E, the extension-arm having a U-shaped end, *g*, that is inserted into a recess, $g^1$, of lever E, so as to slide a short distance to one side or the other, and be secured into position by a wedge, $g^2$, passing laterally through slots of lever E, and by a set-screw, $g^3$, at the end of the same, as shown in Fig. 3.

A sliding weight, *h*, is adjusted on the extension-beam E, and thereby the fractional weight on the beam and indicator grossed in accurate manner. An indicator and dial of the usual construction is used with the scale, but not shown in the drawing.

The adjustable extension-beam E′ admits the grossing of the weights, and requires, therefore, only one set of weights to take gross or net weight.

By shifting the wedge and weight-hook at the end of lever E, the weights are adjusted for net or gross weight, which is accomplished in quicker and more convenient manner than by figures.

The scale is used advantageously for weighing coal from boats, and other purposes, as the scale may be applied to the hoisting apparatus, and go with the bucket to the place of deposit, the indicator regulating the loading of the bucket, and determining thus the weight of a boat-load with great facility, and without loss of time or labor.

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

1. A weighing-scale provided with only one main lever, D, whose weight-rod B passes through an eye of the lever C, and is pivoted to its short arm, while its long arm is connected, by rod *b′*, with beam-lever $C^1$ below and adjusting-lever D′ above it, as shown and described.

2. The combination of the recessed lever E with the sliding weight-supporting extension-beam E′ and adjusting-wedge and set-screw, substantially as and for the purpose specified.

HOSEA WILLARD.

Witnesses:
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