C. BECKER.

Weighing-Scale.

No. 199,776. Patented Jan. 29, 1878.

Fig. I.

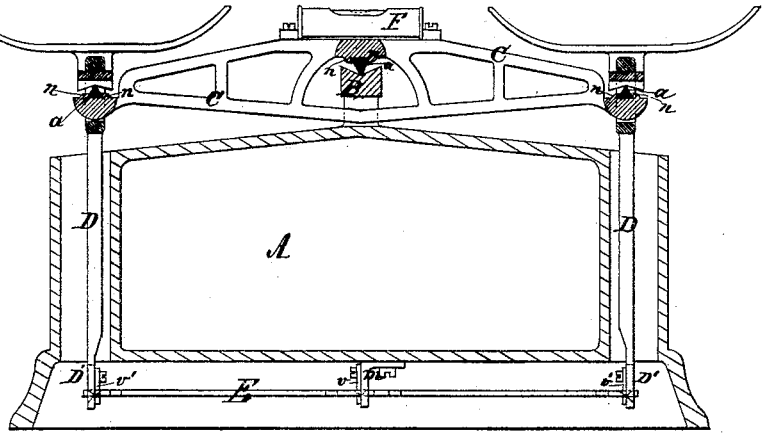
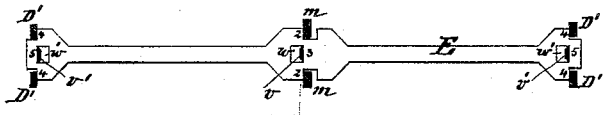


Fig. II.



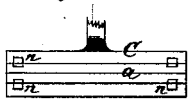


Fig. III.

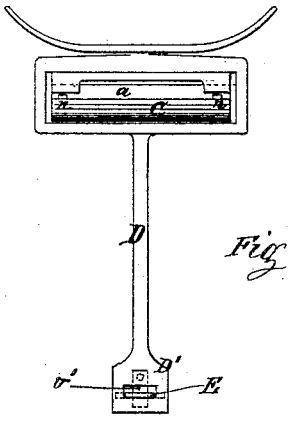


Fig. IV.

Witnesses.

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UNITED STATES PATENT OFFICE.

CHRISTOPHER BECKER, OF NEW YORK, N. Y.

IMPROVEMENT IN WEIGHING-SCALES.

Specification forming part of Letters Patent No. **199,776**, dated January 29, 1878; application filed October 12, 1877.

To all whom it may concern:

Be it known that I, CHRISTOPHER BECKER, of New York, in the State of New York, have invented new and useful Improvements in Scales, which improvements are fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a front view of a scale, partially in section, embodying my improvements. Fig. 2 is a top view of the lower parallel bar. Fig. 3 is a top view of end of balance-beam, and Fig. 4 is an end view of the connecting-rod.

A is a box to support the beam and mechanism. I make this box open at one of its sides for the purpose of forming a convenient receptacle to receive the different weights.

Upon the top of this box the blocks B are fitted to receive the knife-edge of the beam C. To the ends of this beam rods D are connected by similar knife-edges. The lower ends of said rods connect with the parallel bar E, situated below the box A.

The beam C is provided, at the parts where the knives *a* are attached, with small projections *n n*, between which the knives *a* are placed and fitted, when these projections *n n* are bent over the edges of the knives, thereby securing the same permanently in their desired positions without the necessity of any other fastening. A slight blow with the hammer will secure and regulate the position of these knives with great facility, and when once regulated the knives will retain their position in the true line.

On the top of the scale-beam C a spirit-level, F, is attached, to indicate the oscillations of the beam. At the bottom of the frame or box A a small bracket, *m*, is attached, having two projections or legs, between which the parallel bar E works. A steel plate, *v*, is attached to this bracket *m*, fitting into a suitable opening, *w*, to act as a guide for the parallel bar. The side edges of this plate *v* are chamfered to reduce friction, and the edges 2 2 of the bar bearing against the projections of the bracket *m*, and the edge 3 of said bar bearing against the plate *v*, are likewise chamfered.

The ends D′ of the rods D are made with square openings, into which the ends of the parallel bar E pass, and the faces of these ends bear, at both sides of the bar E, against projections near the ends of this parallel bar. To the inner sides of the ends of the rods D steel plates *v′* are fastened, fitting into openings *w′* in the bar E.

The side edges of these plates *v′* are chamfered, and the edges 4 4 and 5 of the bar E, bearing against the sides of the ends of the rods D and against the plates *v′*, are likewise chamfered. In the same manner the inner edges of the lower part of the ends D′ of the rods D, upon which this parallel bar E rests, are chamfered to reduce the friction.

By this arrangement of making the ends D′ of the rods D bear against both sides of the ends of the parallel bar, and by the arrangement of the plate *v*, against which this bar bears in the center, I obtain greater firmness and rigidity, and at the same time greater nicety and accuracy in the scale, particularly if the articles to be weighed or the weights are not placed directly into the middle of the scale-plates.

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

1. The projections *n n* on the scale-beam, in combination with the knives *a*, substantially in the manner and for the purpose described.

2. In a parallelogram scale, the plate *v* in the center of the parallel bar E, arranged in the manner substantially as set forth.

3. The herein-described knife-joint connection between the end of the rod D and the end of the parallel bar E, whereby this beam or bar E is acted upon equally on both sides, thereby equalizing the pressure on the same, substantially in the manner set forth.

C. BECKER.

Witnesses:

HENRY E. ROEDER,

J. B. NONES.