F. FAIRBANKS.

SCALE-BEAM.

No. 186,122. Patented Jan. 9, 1877.

Fig: 1.

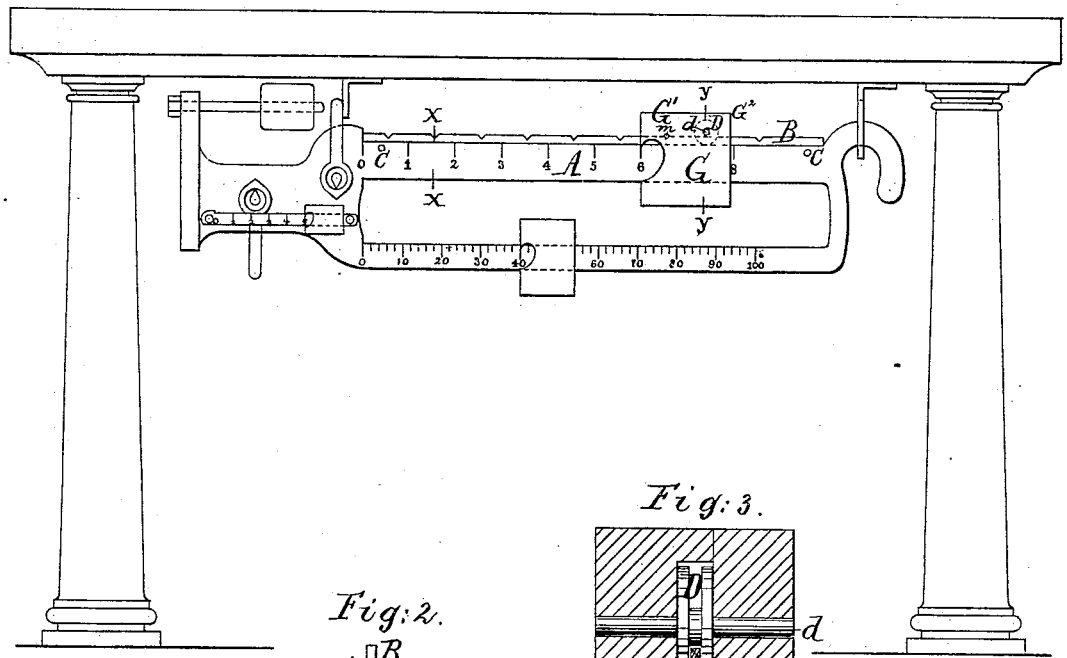


Fig: 3.

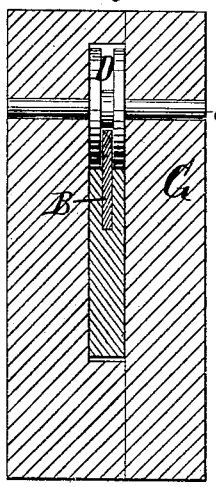
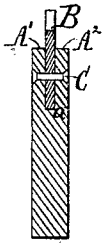


Fig: 2.



Witnesses:

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Inventor:

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by his attorney

F. S. Stetson

UNITED STATES PATENT OFFICE.

FRANKLIN FAIRBANKS, OF ST. JOHNSBURY, VERMONT, ASSIGNOR TO E. & T. FAIRBANKS & CO., OF SAME PLACE.

IMPROVEMENT IN SCALE-BEAMS.

Specification forming part of Letters Patent No. **186,122**, dated January 9, 1877; application filed June 20, 1876.

To all whom it may concern:

Be it known that I, FRANKLIN FAIRBANKS, of St. Johnsbury, Caledonia county, Vermont, have invented certain Improvements relating to Scale-Beams for Weighing, of which the following is a specification:

The beam of an elaborate weighing-scale is not only conspicuous, and should be made of a material capable of receiving and retaining a rich finish, but the graduating-notches are, in a much-used scale, subjected to severe wear. The best mode of graduating for general purposes is by notches in the upper surface, which receive the poise, and incline it to come to rest at points exactly corresponding with the respective graduations; but the notches offer resistance to the sliding of the poise along on the beam, and are liable to become rapidly worn out. The notched upper surface of the beam is, ordinarily, the first part of a scale to fail, so that its duration practically determines the length of the life-time of a scale. I have devised a construction which makes it easy to move the poise, and, at the same time, allows the notches to remain perfect for a long period.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a side elevation of the scale. Fig. 2 is a section through a part of the beam, on the line *x x* in Fig. 1. Fig. 3 is another section through a part of the beam and the poise, on the line *y y* in Fig. 1. Figs. 2 and 3 are on a larger scale than Fig. 1. Fig. 4 shows the poise in the tilted position required to be most easily moved along on the beam.

Similar letters of reference indicate like parts in all the figures.

A is the main body of the beam. A^1 A^2 are flat surfaces at the top thereof. B is a plate of thin steel, like a saw-plate, secured firmly in a corresponding thin recess, *a*, and projecting above the surfaces A^1 A^2. The plate B is accurately notched on its upper edge by suitable machinery, either before or after its insertion in the beam. I hold the piece B by rivets C, the heads of which may be countersunk into the surface of the beam on each side and accurately finished, taking care to use the same kind and color of metal for the rivets C as for the beam A, so that the rivets shall not appear. The poise G loosely embraces the entire beam A B. A peculiarly-shaped roller or double wheel, D, is fitted to turn on the pivot *d* in the poise, and to support the main part of the weight thereof by rolling on the surfaces A^1 A^2; but it is not in position to support the whole of the weight. The side G^1 of the poise preponderates, and a small pin, *m*, is firmly set in that side, and adapted to rest in a notch in the piece B. The double wheel D is sufficiently small in the middle to move clear of the piece B.

When it is desired to move the poise G, the end may be accomplished by main force, if desired, and in such case the pin *m* will traverse over and wear the notches in the usual manner, but exert less than the usual destructive effect, because only a portion, instead of the whole of the poise, is supported on it; but it is desirable to still further relieve the notches from wear, and this can be attained by right manipulation. To this end the hand is applied forcibly on the top of the poise G, at the point G^2, farthest from the index side G^1. The hand of the attendant, pressing down at this point G^2 with gentle force, lifts the other side, G^1, and thus lifts the pin *m* out of contact with the notches in the part B. Now, the poise may be moved along to any desired extent, rolling freely on the double wheel D until an approximately right position is attained, when the pressure of the hand on the point G^2 is relaxed, and the poise, assuming its ordinary position, brings the pin *m* in contact with the top of the piece B, and causes it to come to rest in one of the notches in the part B.

The pin *m* being firmly riveted in the poise G, there cannot be any play or looseness, even when the scale has been long used. The pin *m*, having a rigidly-fixed position relatively to the mass of the poise, drops into the required V-shaped notch in the upper edge of the piece B, and brings the poise to rest in the mathematically-correct position relatively to the notch.

The invention involves an absolute exactness of operation, which is very desirable in a weighing-instrument of this character.

I am aware that spring-catches have been employed in a poise somewhat analogous to my pin *m;* but being hinged, and turning on such hinge in a manner which involves wear, sufficient looseness and uncertainty is involved to seriously influence the correctness of the weighing. My invention, on the contrary, holds all stiffly in position with rigid exactness.

The piece B may be made of hardened steel, while the main body A A^1 A^2 may be of finely-finished and richly-lacquered brass. By giving the beam considerable mass or thickness relatively to the slender plate B, as represented, I experience no difficulty from unequal expansion or contraction by heat or cold. I propose sometimes to secure the part B by riveting, soldering, or the like, with absolute firmness only at the end nearest the knife-edges, the other end being secured by the passing of the transverse rivets C through long holes or slots, instead of round holes. Thus equipped, it may be possible for the brass to expand in the sunshine of August, and to contract again when the temperature is at zero, to the full extent natural to brass, while the part B, carrying the notches, shall expand and contract only to the less extent natural to steel. This will involve an advantage which may be important in some cases; but for ordinary practice I propose to secure the part B absolutely fast along its entire length.

I claim as my invention, in relation to weighing-scales—

1. The scale-beam A B, having the steel blade B let into the main body A, of softer metal, along its whole length, and secured, substantially as herein specified.

2. The beam formed, as specified, with a brass body, A, and a steel notched blade set therein, in combination with a tilting poise, G, carrying wheels D, axis *d*, and pin *m*, as herein set forth.

In testimony whereof I have hereunto set my hand this 12th day of June, 1876, in the presence of two subscribing witnesses.

FRANKLIN FAIRBANKS.

Witnesses:

ELIJAH D. BLODGETT,

PERLEY F. HAZEN.