

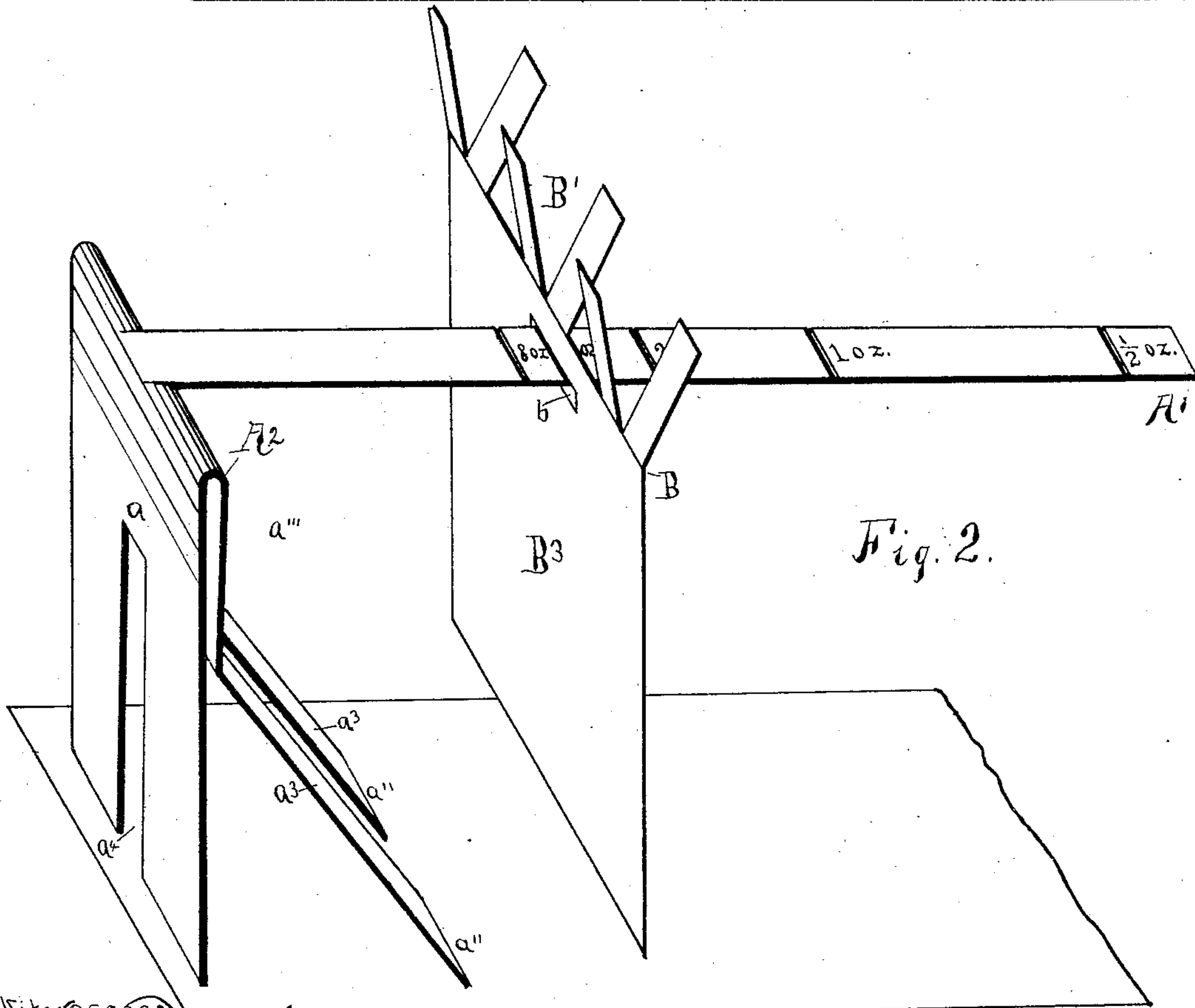
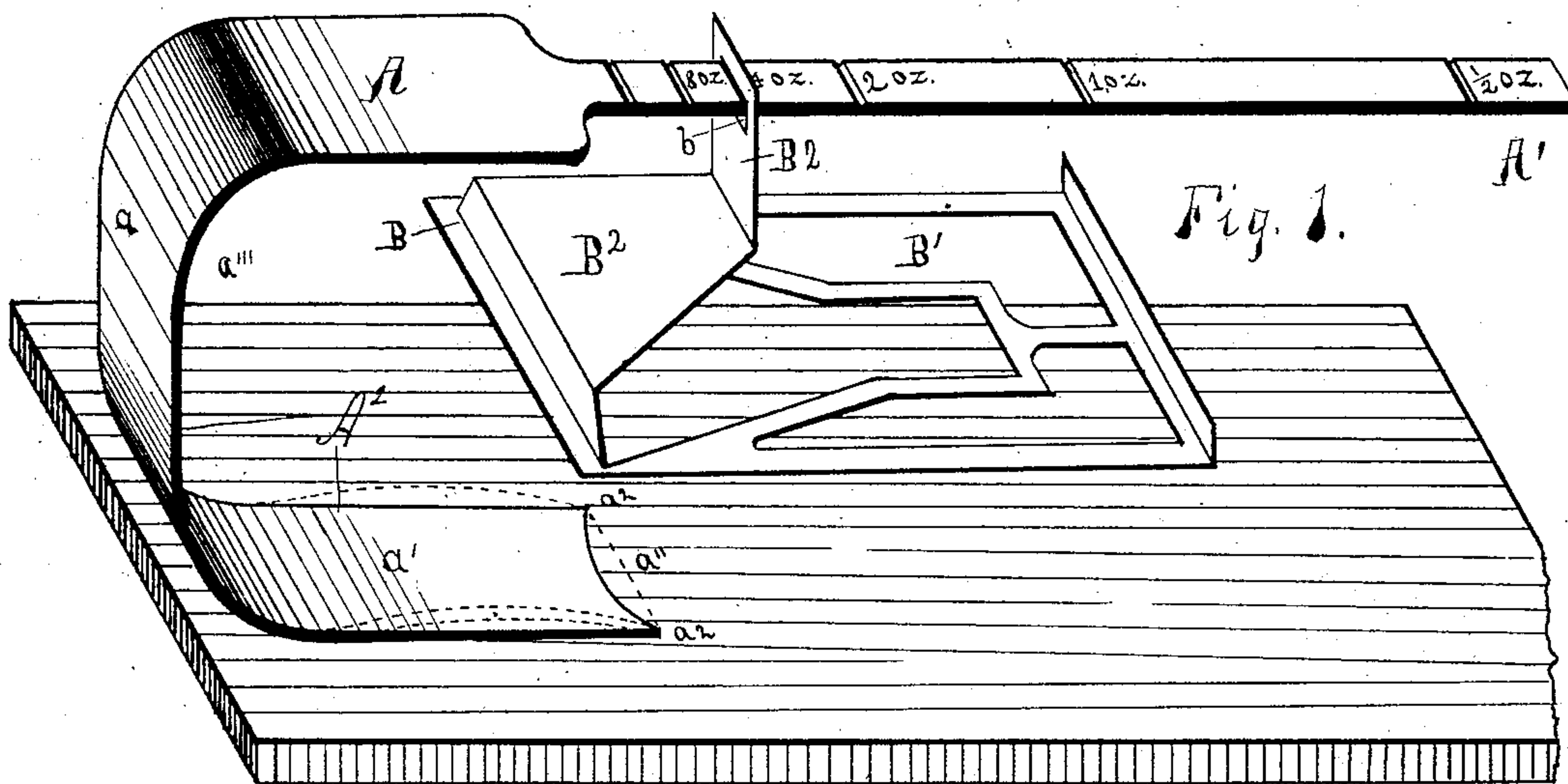
(No Model.)

2 Sheets—Sheet 1.

T. B. WILLSON.  
LETTER SCALE.

No. 336,275.

Patented Feb. 16, 1886.



Witnesses:

*W. B. Willson*  
*W. B. Willson*

Inventor:  
Theo. B. Willson  
by Chas. S. Burton  
his atty.

(No Model.)

2 Sheets—Sheet 2.

T. B. WILLSON.

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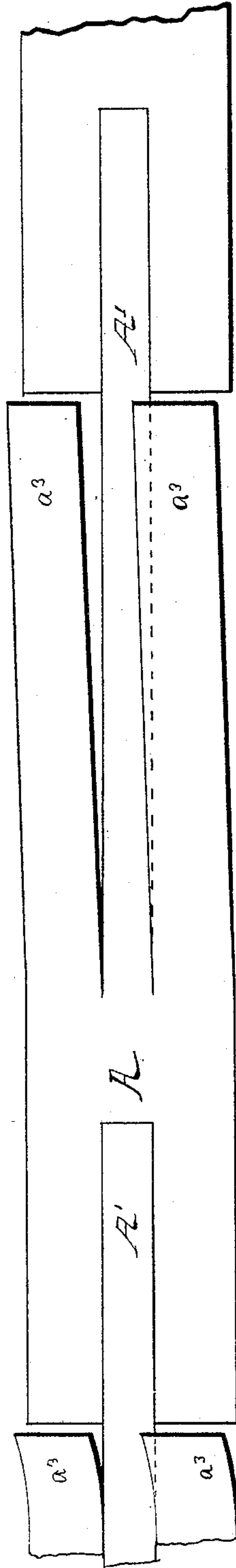


Fig. 4.

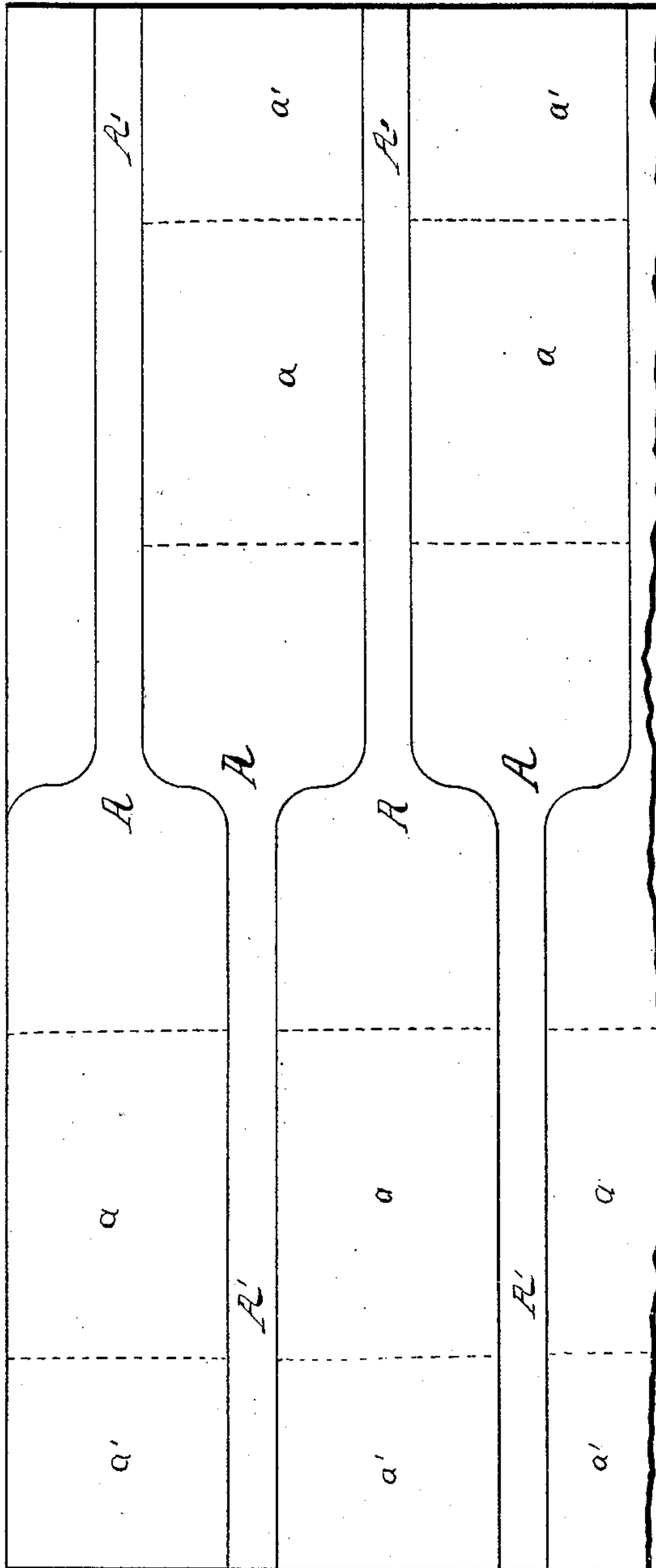


Fig. 3.

Witnesses:

*L. B. Riggs*  
*W. B. Thompson*

Inventor:

*Thos B. Willson*  
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his atty.



# UNITED STATES PATENT OFFICE.

THEODORE B. WILLSON, OF CHICAGO, ILLINOIS.

## LETTER-SCALE.

SPECIFICATION forming part of Letters Patent No. 336,275, dated February 16, 1886.

Application filed February 24, 1885. Serial No. 156,884. (No model.)

*To all whom it may concern:*

Be it known that I, THEODORE B. WILLSON, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Letter - Scales, which are fully described in the following specification.

The purpose of this invention is to provide an improved and more simple device for weighing letters, for the purpose of ascertaining the postage required thereon.

The particular characteristics aimed at are, cheapness and compactness of construction, freedom from liability to derangement, and accuracy and sensitiveness in weighing.

It consists in the scale-beam and its support made rigid, as integral, and preferably of one piece of sheet metal, bent so that one part forms the support adapted to rest upon any horizontal surface, and the remaining part extends horizontally off from the support, and is adapted to sustain a letter pan or tray suspended at points selected at will thereon, the parts which form the scale-beam and the support, respectively, being arranged so that the former extends horizontally off from the latter, the support having sufficient breadth of bearing to sustain the entire device erect and stable when not loaded, and having an edge which forms the pivot of the device when rested upon a horizontal surface, and recessed between such pivotal edge and the overhung scale-beam, to allow the letter pan or tray to extend beyond the vertical plane of the pivotal edge toward the upright part of the support, so that its point of suspension may be brought nearer to the said vertical plane, and the size of the apparatus thereby diminished.

It consists, further, in details of construction hereinafter described, and set forth in the claims, whereby material is economized in the construction.

The letter pan or tray, whether above or below the scale-beam, should be in stable equilibrium, its center of gravity being below the point of contact with the beam. To secure this, when the receptacle is above the beam, it must be provided with suitable extension below the beam to more than counterbalance it and lower the center of gravity of the entire pan or tray. The center of gravity being suspended, the entire pan or tray may be considered as suspended, and I shall so refer to it.

In the drawings, Figure 1 is a perspective of a form of my letter-scale having the receptacle below the beam. Fig. 2 is a similar view of a form having the receptacle above the beam and extended in a suitable counter-balance below, the structure of both scale and scale pan or tray being somewhat different from that shown in Fig. 1. Figs. 3 and 4 show plans of the blanks from which the scales illustrated in Figs. 1 and 2, respectively, are formed, illustrating how they are cut without waste from continuous sheet metal.

A is the blank from which the scale-beam and its support are formed. A' is the scale-beam; A<sup>2</sup>, the support.

In the form illustrated in Fig. 1 the support A<sup>2</sup> comprises the upright part *a* and the horizontal part or foot *a'*, the entire support and scale being of the form of a letter, J, lying upon its shorter arm, the end *a''* of which becomes the pivot when the scale is overbalanced. In this form the said shorter arm or foot *a'* is preferably formed concave below, as shown in dotted line, to insure that the edge *a''*, which is the pivot, shall not be prevented by grains or dust on the supporting-surface from being in contact with the surface and performing its function as such pivot. For a similar reason the end *a''* is preferably cut out between the corners *a<sup>2</sup> a<sup>2</sup>*, as illustrated, so that the two corners only are in actual contact with the supporting-surface, and the greatest accuracy and sensitiveness thereby secured. In this form the recess *a'''* between the scale-beam A' and the foot-piece *a'* permits the pan, when hung underneath the beam, to be moved farther toward the support and nearer the point of maximum weight than could otherwise be done. This form has the scale-beam narrowed, as illustrated, and is preferably planned so that the length of the wider part, which forms the rear of the beam, and the upright *a* and the foot-piece *a'* is equal to that of the narrowed part, by means of which it becomes possible to cut these pieces from a continuous strip of metal whose width is equal to the entire length of the piece without any waste, except a very small amount at the end only of the strip, as illustrated in Fig. 3.

In the form shown in Fig. 2 the portion *a<sup>3</sup>*, cut from the sides of the scale-beam A', are bent down to form the supporting-legs, and their ends *a'' a''* are the pivots over which the



entire scale rocks. The length of metal necessary for these legs  $a^3$ , not being equal to the entire length of the scale-beam  $A'$ , I economize material in making by forming the rear support,  $A^2$ , with the recess or rift  $a^4$  as wide as the scale-beam  $A'$  and as deep as the excess of length of the scale-beam  $A'$  over the legs  $a^3$ , whereby I am able to cut these pieces or blanks successively out of a continuous strip of sheet metal without waste, as illustrated in Fig. 4.

$B$  is the letter pan or tray suspended, on the scale-beam  $A'$  by passing the latter into the loop-hole or slot  $b$ , which is made wide enough to allow the free oscillation of the pan or tray.

In the form shown in Fig. 1 the letter-receptacle  $B'$  is below the loop-hole  $b$ , and so hangs below the scale-beam, and is always in stable equilibrium. It is preferably made approximately or perfectly balanced under its point of suspension, so that it may hang horizontal, thereby permitting the entire device to be made lower than if the receptacle were vertical. Being horizontal, one portion of it must extend from the point of suspension toward the upright support  $A^2$ , and thus in weighing the greater weights for which the device is adapted, it enters the recess between the horizontal scale-beam  $A'$  and the horizontal foot-piece  $a'$ . I prefer to form this style of pan or tray, as clearly seen in Fig. 1, by striking up the portion  $B^2$ , which has the loop-hole  $b$ , out of the bottom or receptacle proper,  $B'$ , thus economizing material.

In the form shown in Fig. 2 the letter-receptacle  $B'$  is above the loop-hole  $b$ , and so above the scale-beam  $A'$ . This necessitates the downward extension or counter-balance  $B^3$ , whereby the center of gravity is sufficiently lowered, so that with the greatest weight which the apparatus is adapted to weigh in the receptacle the center of gravity will still be below the point of suspension.

It will be evident that by giving proper height to the form shown in Fig. 1 the pan or tray shown in Fig. 2 may be used upon it, and that the form of pan shown in Fig. 1 may also be used in the form of scale and support shown in Fig. 2. The same quality of rocking bodily on the supporting-surface when overbalanced pertains to both.

It will be understood that it is not the purpose of these devices to weigh accurately the letters or parcels put into their receptacles, but only to test them for postage. The scale-beam is therefore marked and notched at the points indicating and corresponding to the denominations or fraction of weight by which postage is computed, as at one half-ounce, one ounce, one and a half ounce, two ounces, &c., and in testing letters for postage the suspension-loop will be rested in successive notches until a notch is found at which the weight in the pan or tray will not overbalance the device.

I claim—

1. In a letter-scale, the scale-beam and its support, formed as integral and adapted to be sustained upon a supporting-surface, the support having its bearings upon such supporting-surface in vertical planes inclosing the center of gravity of the entire beam and support, and having as part of such bearing an edge adapted to serve as the pivot over which the scale-beam and support may rock bodily when overbalanced, substantially as set forth.

2. In a letter-scale, the scale-beam and its support, formed as integral, the said support having below the pivotal edge, over which the beam rocks, and recessed between said pivotal edge and said overhanging scale-beam, in combination with the letter pan or tray, suspended freely on the scale-beam and adjustable thereon at will, and adapted to enter said recess.

3. In a letter-scale, the scale-beam and its support, formed as integral and comprising the horizontal scale-beam, the horizontal foot, and the upright, joining their ends and leaving a recess between them, in combination with the letter pan or tray suspended and adjustable on the scale-beam and extended toward and adapted to enter said recess.

4. In a letter-scale, the scale-beam and its support, formed integrally from a continuous strip of metal, having the ends bent to form parallel arms, the one longer than the other, the said longer arm being narrowed to diminish its weight, and the said shorter arm having the pivotal edge over which the device rocks when overbalanced.

5. In a letter-scale, the letter pan or tray adapted to be suspended below the scale-beam, and formed as integral from a single piece of sheet metal by having its suspension loop and arm struck up out of the bottom, substantially as set forth.

6. In a letter-scale, the combination of the scale-beam  $A'$ , foot-piece  $a'$ , and upright  $a$ , formed as integral and bounding the recess  $a''$ , and the letter-pan suspended below the scale-beam and substantially balanced under its point of suspension and extending horizontally toward said recess, substantially as set forth.

7. In a letter-scale, the scale-beam and its support formed of one piece and narrowed at the portion which constitutes the scale-beam, substantially as set forth.

8. In a letter-scale, the scale-beam and its support formed of one piece of sheet metal and narrowed at the portion which constitutes the scale-beam, said narrowed portion and the remaining wider portion being of substantially equal length.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 1st day of February, A. D. 1885.

THEO. B. WILLSON.

Attest:

FRANK S. BLANCHARD,  
CHAS. S. BURTON.