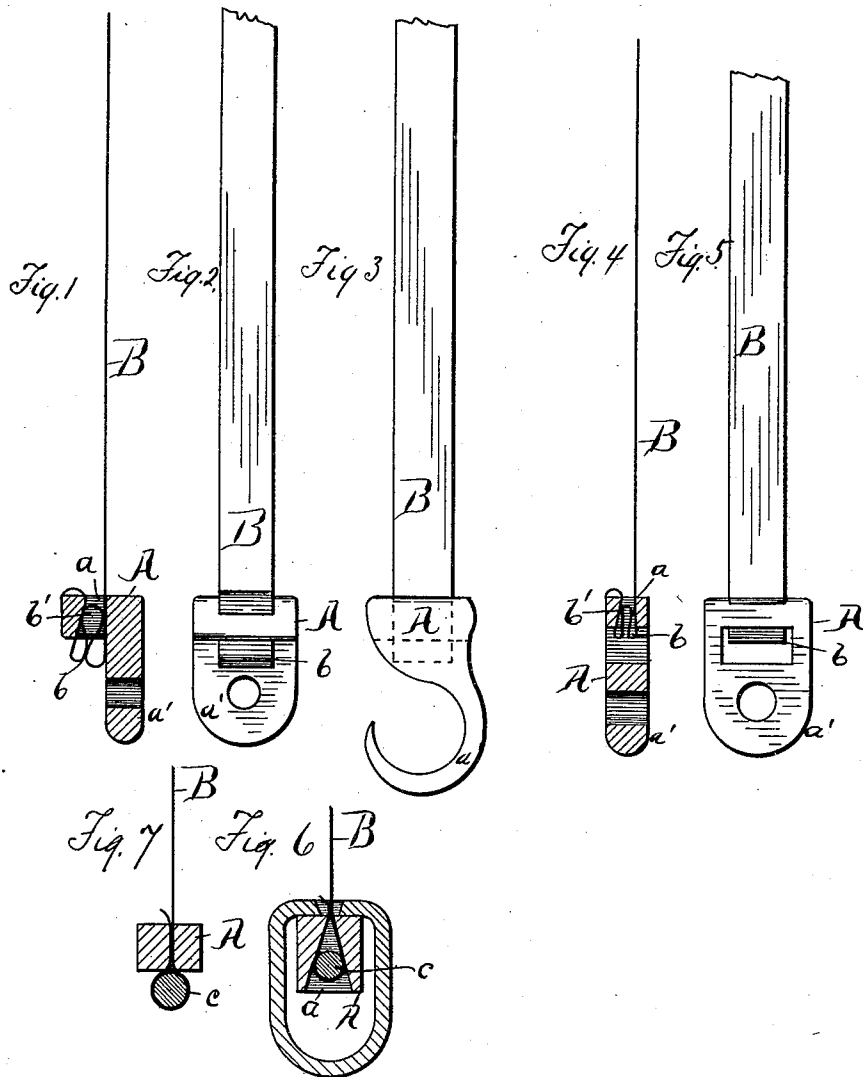


(No Model.)

G. C. GARDNER.
SASH BALANCE.

No. 429,212.

Patented June 3, 1890.



Witnesses

Harry Bitner
Frank E. Danner.

Inventor.

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UNITED STATES PATENT OFFICE.

GEORGE C. GARDNER, OF HINSDALE, ILLINOIS.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 429,212, dated June 3, 1890.

Application filed February 12, 1890. Serial No. 340,094. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. GARDNER, a citizen of the United States of America, residing at Hinsdale, in the county of Du Page and State of Illinois, have invented certain new and useful Improvements in Sash-Balances, of which the following is a specification.

Referring to the accompanying drawings, wherein like reference-letters indicate like parts, Figure 1 is a longitudinal section in line *xx* of Fig. 2; Fig. 2, a plan view of the clip or plate at the end of the band; Fig. 3, a similar view of a modified form of said clip or plate. Figs. 4 and 5 show a modified form of clip; Fig. 6, a modified form of fastening, and Fig. 7 the fastening of Fig. 6 applied to a clip with parallel-sided slot.

This invention is an improvement upon the sash-balance described and shown in my pending application, filed April 19, 1889, Serial No. 307,879, and also shown, with certain improvements, in my pending application, filed September 16, 1889, Serial No. 324,162, in both of which constructions the suspending-band extended through a swaged metal clip, so as to form a terminal loop, to which the weight or sash was attached.

My present improvements, which are capable of conjoint or separate use, consist, first, in adapting the clip for the direct attachment of the weight or sash thereto instead of to the band, and, secondly, in an improved means for securing the clip to the band.

In the drawings, B represents the thin flat metal band, which plays over a guiding-pulley in the window-frame and has the sash attached at one end and the balance-weight at the other, and A represents a metal clip attached to the band and supporting the sash or weight, the latter being suspended from the clip instead of directly from the band, as in my former applications above referred to. With this construction it is not necessary to swage the clip to the band, although this may be done, if preferred; but for the general purposes of the structure any other suitable fastening may be adopted which will hold securely and draw squarely and evenly across the fiber of the band. The simplest and best

method which I have devised consists in constructing the clip with a slit or slot through it in line with the band, as shown at *a*, making the slot preferably wedge-shaped, with the wide end next to the weight or sash, then passing the end of the band through from the narrow to the wide end of the slot, so as to project therefrom, then doubling the projecting end back upon the body of the band and pushing it through the slot in the reverse direction, so as to form a loop or bight *b* at the wide end of the slot, and interposing in the loop or bight a body either integral with the band or separate from it, which when the band is drawn taut will cramp both sides of the loop against the corners or sides of the slot and thereby bind the band and clip firmly together, the greater the weight the more firmly. There are several ways in which this may be done, some of which are illustrated in the drawings. For example, in Figs. 1 and 4 a portion of the loop *b* is folded in, so as to form an internal loop *b'*, which by any sufficient draft upon the band is forced between the two sides of the outer loop into the open end of the slot, thereby wedging the band firmly between the sides of the slot in the clip. This construction is recommended for its cheapness, convenience, simplicity, and effectiveness.

In Fig. 6 a piece of wire *c* is inserted in the loop *b* and drawn into the open end of the slot with similar effect. In Fig. 7 the slot is made with parallel sides, and a piece of wire *c*, preferably about the diameter of the slot, is inserted in the loop *b*, with the result that the draft upon the band will clamp the wire and surrounding band between the corners of the slot, thereby effectually locking the parts together. All these devices are more or less equivalents of each other for the general purpose, although the one shown in Figs. 1 and 4 is the simplest and best. All involve the principle of forming a loop in the band, placing the two sides of the loop in the slot of the clip, and inserting within the loop between said two sides a body of metal or other material, which will be drawn against said two sides by any longitudinal draft upon the band and will thus clamp or wedge both sides of

the loop firmly against the walls or corners of the slot, so as to form a secure fastening, binding squarely across the fibers of the band throughout the entire width thereof.

5 The clip itself may be made in any suitable form adapted for attachment to the sash or weight, so that the strain will be in line with the band. In the form shown in Fig. 6 the weight is suspended from the clip by means of a slotted bail or stirrup, the slot in the stirrup being sufficient to admit the passage of the band, but not the clip. The band is passed through the stirrup-slot and the clip then applied and fastened to the band, so that the stirrup and the weight which it supports are suspended from the clip.

In Figs. 1, 2, and 3 one side of the clip is prolonged into a lug a' , which may be provided with an eye, Figs. 1 and 2, or a hook, Fig. 3, for the direct attachment of the weight. In Figs. 4 and 5 the clip is formed in one end of a flat plate, to the other end of which the weight is attached, an opening being made through the middle of the plate to accommodate the loop of the band. These forms are substantial equivalents so far as concerns the main function; but that shown in Figs. 1, 2, and 3 is deemed preferable in the matter of cheapness.

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

1. In a gravity sash-balance, the combination of the flat thin metallic suspending-band B with a clip A, provided with a slot through it for the attachment of the band and adapted for connection to the weight or sash, whereby the clip is attached to the band and the sash

or weight is suspended from the clip, substantially as described. 40

2. In a gravity sash-balance, the combination of the flat thin metallic suspending-band B with a slotted clip A, from which the weight or sash is suspended, and with a fastening for attaching the band to the clip, constructed by passing the end of the band through the slot and doubling it back and passing it in the reverse direction through the slot, so as to form a loop or bight b , and interposing between the sides of the loop a body adapted to be wedged against the sides or corners of the slot when the loop is contracted, so as to clamp and bind the band to the clip under the strain produced by the suspended weight or sash, substantially as described. 55

3. In a gravity sash-balance, the combination of the flat thin metallic suspending-band B with a clip A, from which the sash or weight is suspended, having a V-shaped slot through it, and with a fastening constructed by passing the end of the band through the slot and doubling it back and passing it in the reverse direction through the slot, so as to form a loop or bight b in the band at the wider end of the slot, and folding in a portion of said loop, so as to form a loop b' within the loop b , whereby any sufficient longitudinal strain upon the band will wedge the metal of the loop b' between the sides of the main loop b in the wider end of the slot, and thus bind the band and clip firmly together, substantially as described. 65 70

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Witnesses:

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