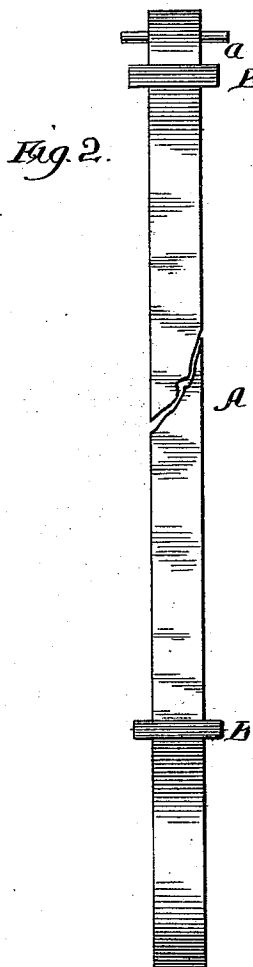
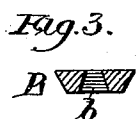
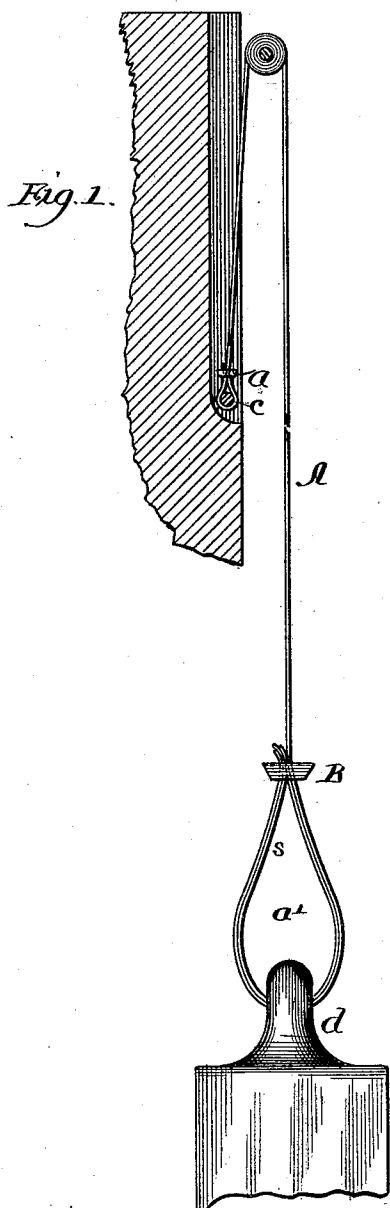


(No Model.)

G. C. GARDNER.
SASH BALANCE.

No. 469,690.

Patented Mar. 1, 1892.



Witnesses:

Charles C. Sherway
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UNITED STATES PATENT OFFICE.

GEORGE C. GARDNER, OF HINSDALE, ILLINOIS.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 469,690, dated March 1, 1892.

Application filed September 16, 1889. Serial No. 324,162. (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 similar reference-letters indicate the same parts, Figure 1 is an edge view of the band and spring; Fig. 2, a face view of the same, and Fig. 3 a section of the fastening-clip.

This invention relates to the employment of a flat flexible metal band for connecting the sash to the balance-weight; and it consists in certain improvements designed to render the end fastenings simple, durable, and efficient, and to give the band such a degree of elasticity as will effectually prevent it from being accidentally ruptured by the sudden starting or stopping of the sash.

In the drawings, A represents the band which connects the sash and weight, and which consists of a thin flexible steel ribbon or tape playing over a suitable guide-pulley located between the ends of the band. The band is preferably plated or washed with nickel, tin, silver, or other comparatively incorrodible material to prevent it from rusting.

The end fastenings are formed by bending the end of the band back upon the body and securing it thereto by a clip B of some suitable soft metal. The clip consists of a small block or plate of proper shape provided with an aperture *b* to receive the band, preferably V-shaped, to facilitate the introduction and removal of the latter. In applying the device the clip is slipped upon the band, one end of the latter then passed through the staple or eye of the sash or weight, doubled back, and inserted through the aperture *b*, and then by the blow of a hammer the clip is upset or swaged upon the two parts of the band, firmly and permanently fastening them together. To unfasten the parts, it is only necessary to insert the edge of a suitable tool into the V-shaped slit *b* at the loop side of the clip and

pry the latter open. The wide end of the slit is preferably arranged toward the loop *a* to give the sides of the latter greater freedom of movement, for the reason that the hammer will close the narrow end tightly upon the band without necessarily closing the wide end. The clip is easily applied, obviates all necessity for puncturing and thus weakening the band, and when hammered down binds squarely and uniformly across the fiber of the band, making a simple, cheap, and effective fastening, which preserves the entire strength of the band and does not subject it to unequal strains at different points of its width.

To give the band when applied to its purpose the desired elasticity, I make it, preferably, of spring-steel. In this case the loop will bow outward from the clip in an ovoid or proximately annular form and will act as a spring, tending to support with an elastic force the balance-weight or the sash, as the case may be. If the band be of sufficient thickness or stiffness to enable the loop to support the weight dependent from it without bringing the sides of the loop together or parallel, while at the same time able to spring or yield under a superior force, it will answer the purpose without reinforcement. Otherwise I thicken the loop, for example, and preferably by inserting within or without it a small strip or strips *s* of spring metal similar to that of which the loop itself is formed and securing the ends of these strips or laminae in the clip B in the manner above described. Such reinforcing-pieces, when made of thin spring-steel, not only protect the loop from being worn or abraded by the eye or staple of the weight or sash, but also increase both its stiffness and its strength. The number of reinforcing-strips may be varied according to the weight to be supported.

It is obvious that there is no necessity of making the loop itself integral with the body of the band, as any one of the reinforcing-strips will answer as a loop, and hence the entire spring-loop structure may be made separate, lapped together, and secured in the clip, and it is also obvious that for the purpose of merely reinforcing the loop against

the abrasion of the eye or staple the reinforcing-piece need not be made of spring metal nor extend the whole length of the loop.

I claim as new and desire to secure by Letters Patent—

The combination of a sash and its balance-weight with a connecting-band of thin flexi-

ble metal having its end or ends bent into the form of a loop and secured to its body by a swaged clip, substantially as described.

GEO. C. GARDNER.

In presence of—

HARRY BITNER,
W. M. HILL.