(No Model.) 2 Sheets—Sheet 1.

J. P. GARDNER.

SASH CORD FASTENER.

No. 460,859. Patented Oct. 6, 1891.

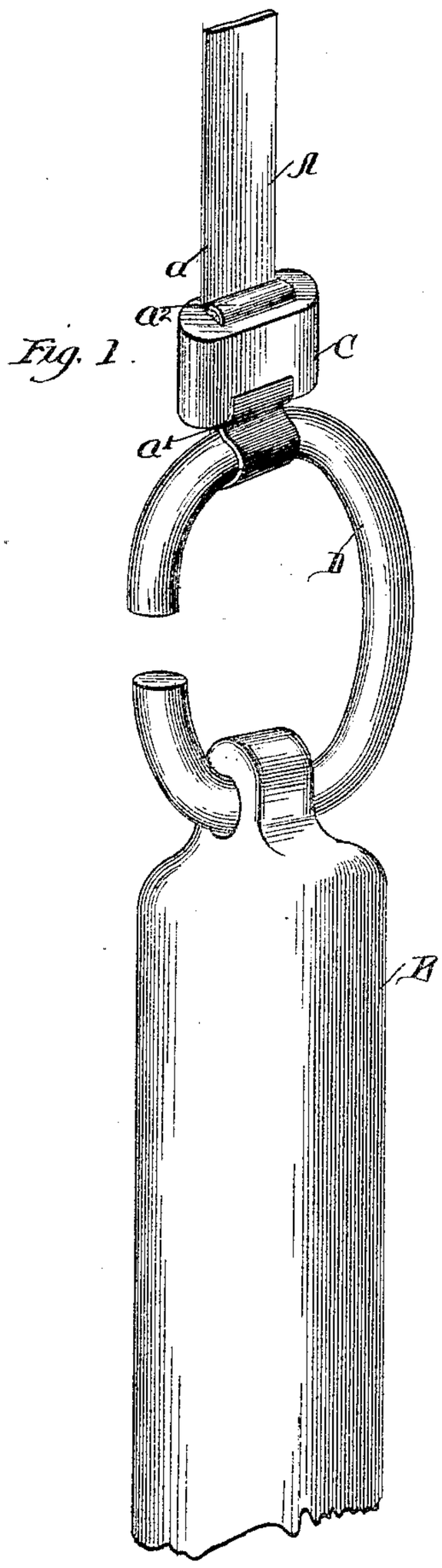

Fig. 1.

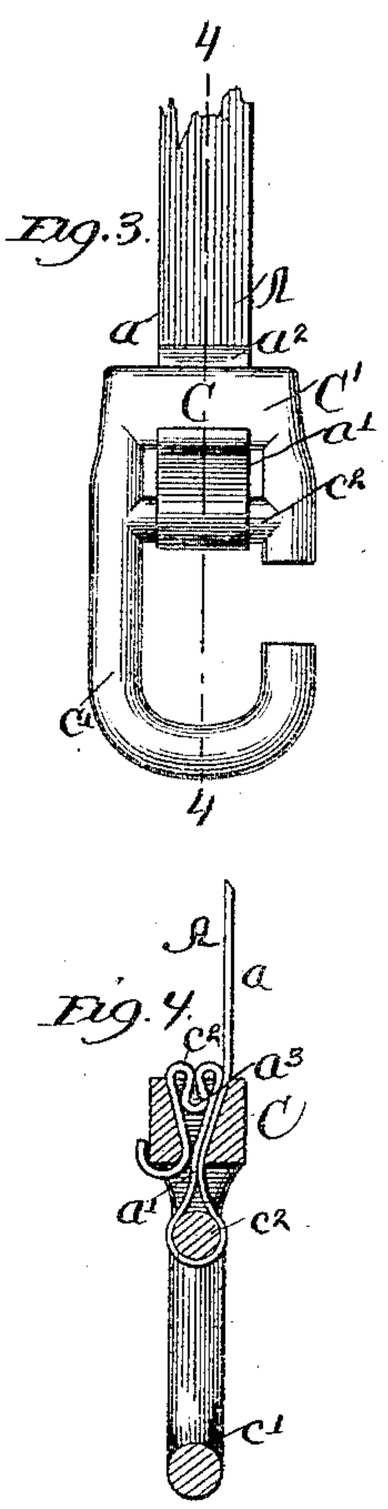

Fig. 3.

Fig. 4.

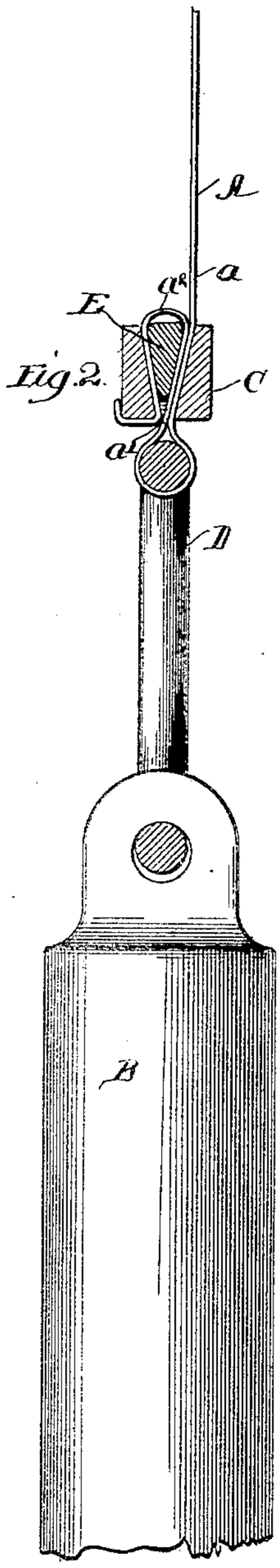

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5

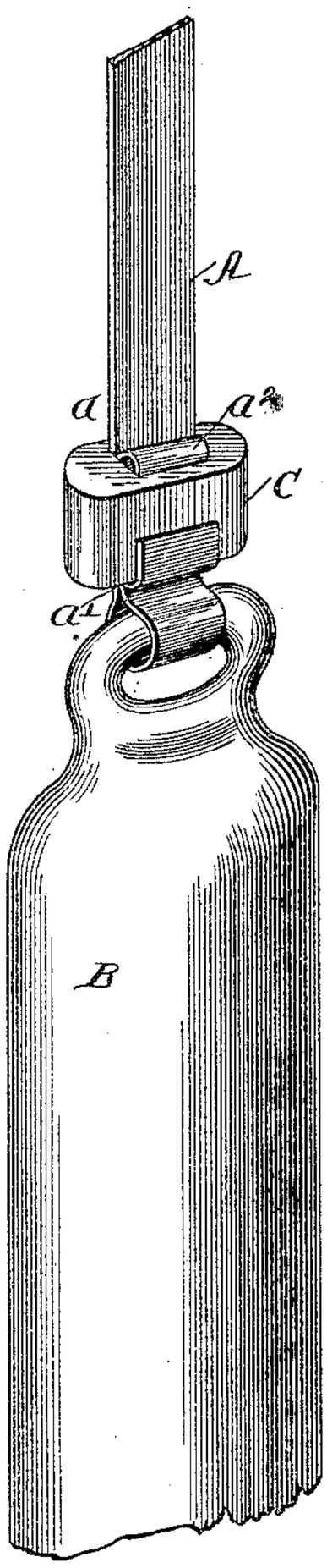


Fig. 6.

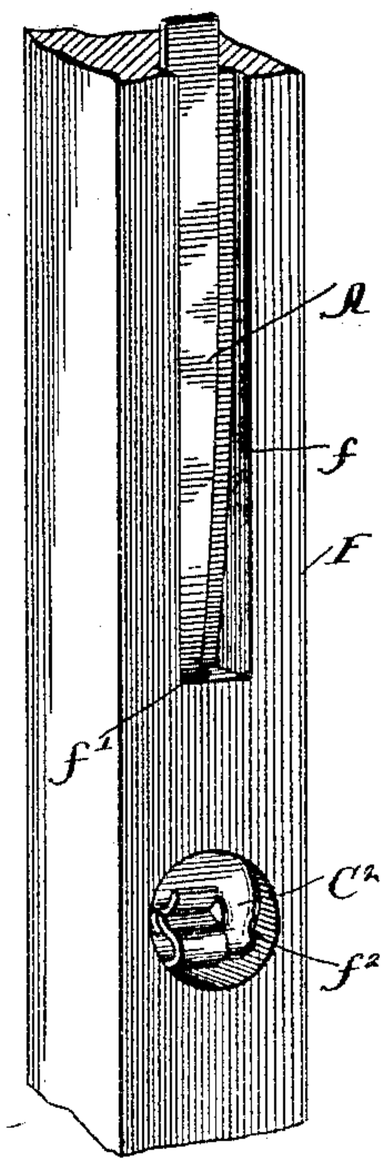


Fig. 7.

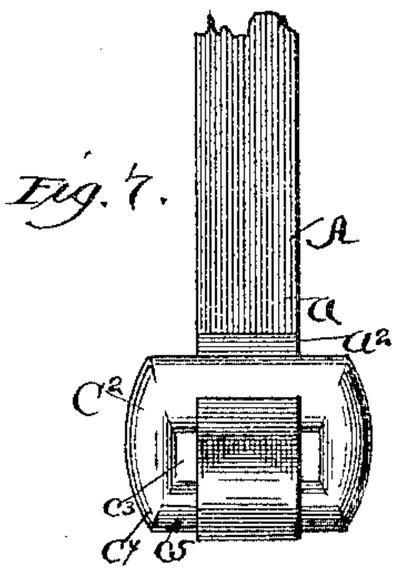
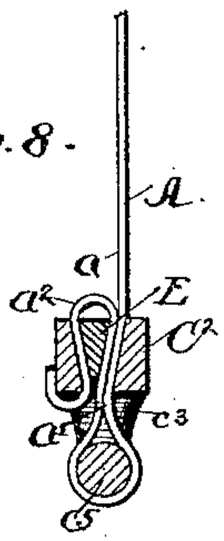


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES P. GARDNER, OF CHICAGO, ILLINOIS.

SASH-CORD FASTENER.

SPECIFICATION forming part of Letters Patent No. 460,859, dated October 6, 1891.

Application filed June 15, 1891. Serial No. 396,234. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. GARDNER, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sash-Balances, of which the following is a specification.

My invention relates to a sash-balance of that class in which the sash and balancing-weights are supported by thin metal ribbons or tapes passing over pulleys and secured at their opposite ends to the sash and to their respective weights. The great difficulty in constructing a balance of this sort is encountered in securely fastening the ribbon to the sash and weights, inasmuch as its great tensile strength can only be utilized by drawing upon it squarely, and it breaks readily if it contains any sharp folds or kinks at the points of attachment. A very successful device for the purpose is shown in the patent of George C. Gardner, No. 429,212, dated June 3, 1890. In this device a block of metal adapted for attachment to the weight or sash is provided with a flaring slot, the ribbon passed through this slot from the narrow end, looped back upon itself and back through the slot, and a body of some sort, as a pin or an intermediate fold in the band itself, interposed to prevent the loop from being drawn backward through the slot. In this device, however, the weight or sash is attached directly to the block, and the main strand of the ribbon draws with its whole pull directly upon the wedging-body in the loop. For light windows this is no objection; but in heavy work the clips have been split by the great strain brought upon them. It is my purpose to so improve the fastening that the wedging or splitting strain shall be greatly reduced; and in working for this object I have made certain incidental improvements, which will clearly appear from the following description.

In the drawings hereto attached, Figure 1 is a perspective of my preferred fastening applied to the weight end of the ribbon; Fig. 2, a longitudinal cross-section of the same; Fig. 3, a side view of a modification; Fig. 4, a similar cross-section of this modification. Fig. 5 is a perspective of another modification. Fig. 6 is a perspective of the fastening applied to the sash. Fig. 7 is a side view, and Fig. 8 a section, of the sash-fastening.

The general principle of my invention is the same as that of the George C. Gardner patent above referred to—that is, the ends of the metal ribbon are secured to slotted blocks by passing them through the slots, looping them back upon themselves, and interposing some body within the loop to prevent it from being drawn backward through the slot. My main improvement over the fastening of said patent consists in passing the ribbon through the slot in the block and about a body adapted for attachment to the weight or sash before it is passed through the block to form the loop by means of which it is secured to said block. This reduces the pull upon the wedge more than one-half, inasmuch as the pull of the weight or sash would in the absence of friction be equally divided between the main strand of the ribbon and the one which passes about the wedge, and the great friction which is necessarily present adds to the portion of the weight that must be sustained by the main or supporting strand.

Referring for a clearer explanation of this to Figs. 1 and 2, where my preferred fastening for the weight end of the ribbon is illustrated, the metal ribbon is seen at A, and the weight at B. The slotted block or clip is lettered C, and the body about which the ribbon is passed before being secured to the block consists of an open ring D, from which the weight is suspended. The main or supporting strand of the ribbon a is passed downward through the slot in the block about the ring D, then upward through the slot again at a', then looped back upon itself at a^2, passed down through the slot, and a wedge E inserted and drawn into the slot. The weight B is supported through the ring D upon the strands $a\ a'$ of the ribbon, and in the absence of friction the weight would be equally divided between the two. As, however, the pulling downward of the strand a' necessitates the slipping of the ribbon about the ring and upward through the slot, the great friction which is encountered considerably increases the proportion of the weight borne by the strand a.

As far as the main purpose of the inven-

tion is concerned, it is obvious that it is entirely immaterial whether the ring D be separate from or a part of or rigidly secured to the clip C. Figs. 3 and 4 illustrate a modification in which the latter is the case, the block C′ in these figures consisting of an upper portion *c*, corresponding to the block C in Figs. 1 and 2, a downwardly-extending yoke *c′*, adapted for attachment to the weight, and a cross-bar c^2, about which the ribbon is passed in the same manner as about the ring D in Figs. 1 and 2. In these figures the wedge E is dispensed with, and the body which is interposed in the loop a^2 of the ribbon consists of an intermediate loop a^3, which, while not as good as the wedge E, yet, because of the great reduction in the strain brought upon the securing-loop, would probably be satisfactory in the hanging of light sashes. It is of course regarded as the general equivalent of the wedge E, and in fact is so shown in the prior patent of George C. Gardner, above cited. I believe it preferable, however, to use the ring D, as shown in Figs. 1 and 2, inasmuch as the use of the same still further reduces the strain upon the wedging-loop of the ribbon and also adds to the security of the fastening, because when the ring is pulled up tightly against the block C it becomes of itself a sort of wedge and adds a considerable resistance to the slipping of the ribbon about it.

Fig. 5 shows a modification, wherein the ring D is omitted, or, to speak more accurately, is made a part of the weight B. This construction would of course be as good as the preferred form shown, or, indeed, better than the same, if it were possible or expedient to so construct the weights; but as they must obviously be large and clumsy, it is too expensive to cast them with eyes smooth enough and accurate enough to bear upon the thin metal ribbon.

Figs. 6, 7, and 8 illustrate my improved fastening as adapted for attachment to the sash. In this case a block C^2 is formed with a slotted portion c^3 and a yoke c^4, terminating in a cross-bar c^5. The metal ribbon is passed through the slot, around the cross-bar, bent back upon itself, and secured in the slot in the same manner as described in connection with the fastening at the weight end. The sash F is grooved at *f*, and a vertical hole *f′* extends downward from the groove, terminating in a transverse opening f^2. The ribbon is thrust downward through the hole *f′*, out through the opening f^2, then secured to the block c^2, and the block pulled into the opening f^2.

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

1. A fastening for metal ribbons, consisting of a slotted block, a body adapted for attachment to whatever the ribbon is to be fastened to, and a metal ribbon secured to said body by passing it through the slot in the block, about the body, back through the slot, then looping it back upon itself, and interposing in the loop a second body to prevent it from being drawn through the slot, substantially as described.

2. A fastening for metal ribbons, consisting of a block containing a flaring slot, a wedge fitted to said slot, a body adapted for attachment to the object to which the ribbon is to be fastened, and a metal ribbon secured to said body by passing it first through the slot from the broad toward the narrow end thereof, then about the body, then back through the slot, looping the end back upon itself, interposing the wedge in the loop, and drawing it tightly into the slot, substantially as described.

JAMES P. GARDNER.

Witnesses:
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C. R. ALISON.