T. Bullivant,

Window.

No. 108,443. Patented Oct. 18, 1870.

Fig. 4.

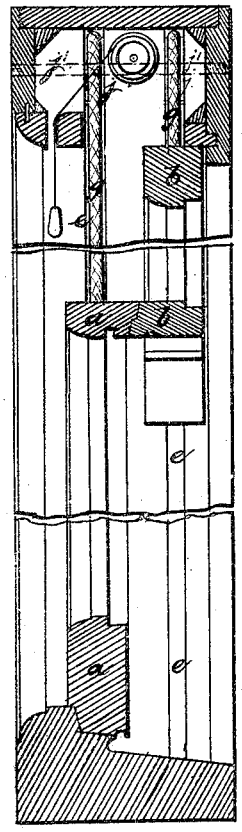


Fig. 3.

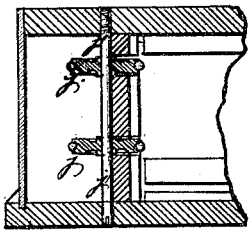


Fig. 1.

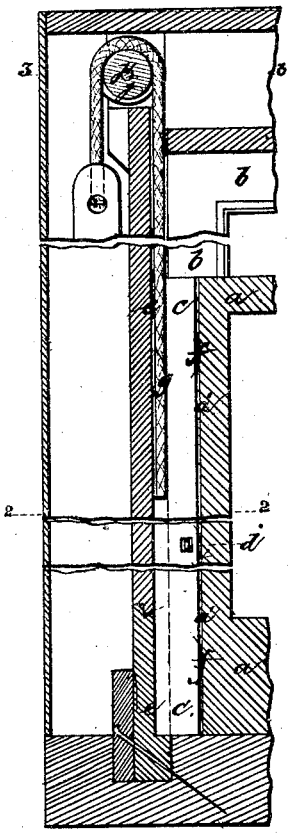


Fig. 8.

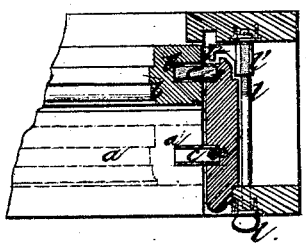


Fig. 5.

Fig. 7.

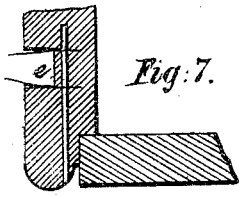


Fig. 2.

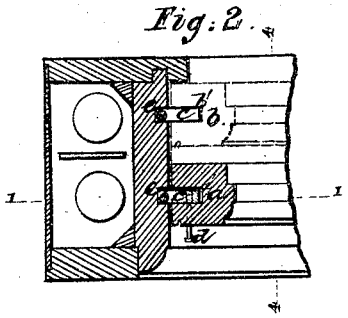
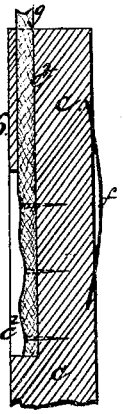


Fig. 6.



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W. J. Mills

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Letters Patent No. 108,443, dated October 18, 1870.

IMPROVEMENT IN WINDOWS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, THOMAS BULLIVANT, of Ledbury Road, Bayswater, in the county of Middlesex, England, a subject of the Queen of Great Britain, have invented or discovered new and useful "Improvements in Window-Sashes, Shutters, and Frames, and in Pulleys for the Same; and I, the said THOMAS BULLIVANT, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof; that is to say—

The invention relates, first, to improvements upon an invention for which Letters Patent of the United States of America were granted to me dated 24th March, 1868, No. 75,853, in which the inner and parting-beads, together with the outside linings of the sash-frame, as generally employed, were dispensed with, while the sash and sash-frames were provided with vertical slots, in which guides of a peculiar form, at each end covered with flexible material, and fixed to the pulley-cords and weights, were caused to work in such manner as to admit of the removal of the sashes, when required, by means of plate and stud-fastenings.

Now this part of my invention consists in the employment of plain guides, in which the projections at each end of such guides are dispensed with, thereby obviating the necessity of a groove deeper than the width of the guide in which to receive it when it is disconnected from the sash. By the present arrangement I am enabled more readily to connect and disconnect the guides with the sashes, as it is only necessary to remove one or more screws or keys, when the guides will slide out vertically from the grooves in the sashes without requiring to be pushed sideways to liberate them. I also prefer to cover such guides with a metallic plate on the weather side, which is sprung outward along its edges, so as to act as a spring packing, to prevent any noise or vibration in the sashes, and also to prevent the passage of dust, draught, and moisture. If desired, such metallic covering may also be applied to other sides of such guides, the outer edges of the guides being also pressed up by springs acting thereon.

The arrangement of pulleys which I prefer to employ consists of two separate pulleys, which are received into suitable spaces provided for them in a box or cavity above the sashes, and of a screw-bolt or axis, passed through such pulleys and screwed into the sash frame. The head of the sash-frame is also formed with mortise-holes, to allow the guides to pass up when required, or, if desired, the guides may be made in two parts, connected together by any suitable means. In some cases, the cords, weights, and pulleys may be dispensed with, when I employ one or more adjusting-screws, wedges, keys, or other suitable means, to act on the edges of the guides, and press them up tightly in the grooves, so as thereby to apply friction thereto, and retain the sash in any desired position; and

In order that my invention may be more clearly understood and readily carried into effect, I will proceed, aided by the accompanying drawing, more fully to describe the same.

Description of the Drawing.

Figure 1 is a sectional front view on the line 1 1 of Figure 2, which is a sectional plan on the line 2 2 of fig. 1, showing the mode in which I carry out the first part of my invention;

Figure 3 is a sectional plan on the line 3 3, fig. 1; and

Figure 4 is a vertical section on the line 4 4 of fig. 2.

a is the lower sash, and *b* is the upper sash, which, it will be seen, are provided with grooves, *a' b'*, in which plain guides, *c*, are held by keys *d*, as shown, or by other suitable means, there being grooves, *e*, in the sash-frame, in which the guides *c* work. By these means, by simply removing the keys *d*, or other connections, the guides *c* are released from the sashes, and are at liberty to slide out of them, so as to enable the sashes to be readily removed from their frames without, as heretofore, having to move the guides sidewise in the grooves in the sash-stiles.

It will be seen, also, on reference to the drawing, that the guides *c*, which I prefer to form of wood, are covered with thin sheet-metal, *c'*, on one or more sides, so as to protect them from injury by the weather or use, while I employ springs, *f*, to act on the edge of the guides *c*, to prevent any sidewise motion thereof in their grooves. These springs *f* I form, as shown, of a strip of metal, sprung into saw-cuts made in the guides *c*.

At Figures 5 and 6 I have shown an end view and section to a larger scale of part of a guide, *c*, in which the two sides are each covered with a metallic plate, *c'*, the outer edges of which are sprung outward, as shown, to act as a spring packing, to prevent any noise or vibration in the sashes, and also to prevent the passage of dust, draught, or moisture.

If desired, the edges of the guides *c* may also have applied thereto a similar metallic covering.

The cords *g*, from the weights, are connected to the guides *c* by passing into a recess, c^2, formed for them in such guides, and being nailed and glued therein, as will be well understood.

At figs. 1, 3, and 4 I have shown the mode I prefer to mount the pulleys when a box or cavity is employed to receive them. This I do by first making

suitable recesses in the box or cavity, to receive the pulleys *j*, and then passing a screw-bolt or axis, *j'* through the pulleys, such screw-bolt or axis being screwed into the sash-frame, as shown; by these means facility is afforded for employing larger pulleys than usual.

I sometimes make the guides *c* entirely of metal, in which case I find it advisable to line the grooves *e* in the sash-frame with metal, as shown at Figure 7, to facilitate the action of the parts, and to prevent undue wear. This lining I also sometimes employ with guides, otherwise formed; and I in some cases cause the two sides of the lining to spring inward, to clip the guides, as shown.

Figure 8 is a sectional plan, showing the mode I adopt when dispensing with the cords, weights, and pulleys, similar parts being marked with similar letters of reference to those employed in the previous figures.

In order that the sashes may be retained in any position in which they may be placed, I employ one or more thumb-screws, *l*, taking into and giving motion to traveling nuts l^1, projections l^2, from which are caused to act against one side of the guides *c*, as shown at fig. 8, or other suitable means may be employed, to act on the sides or edges of the guides *c*, to press them tightly in the grooves, so as thereby to retain the sashes in any desired position.

The invention relates, secondly, to improvements in such description of shutters and shutter-frames, in which the shutters are caused to slide with suitable guides; and consists in the employment of grooves, *a' b'*, in the shutters, and grooves, *e*, in the shutter-frames, suitable guides, *c*, being fixed in the grooves *a' b'* by pins, keys, or screws, as described, with reference to the sashes, thereby dispensing with the beadings ordinarily employed. The various improvements before referred to are also applicable to shutters.

I have not thought it necessary to give a drawing of this part of my invention, as, with the description already given, such will be readily understood.

Some parts of my invention are applicable to shutters and shutter-frames, as well as to window-sashes.

Having thus described the nature of my said invention, and the mode in which I carry the same into effect, I would have it understood that I do not confine myself to the precise details herein shown and described; but

What I do claim is—

The guides *c c*, covered with thin sheet-metal, *c'*, fitting and filling grooves in the sash and frame, the sash and guide being held together by the pin *d*, and the sash being retained in any position by means of the thumb-screw *l*, taking into and giving motion to traveling nuts l^1 and projections l^2, acting against one side of the guides *c c*, all constructed, arranged, and operated as set forth.

T. BULLIVANT.

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