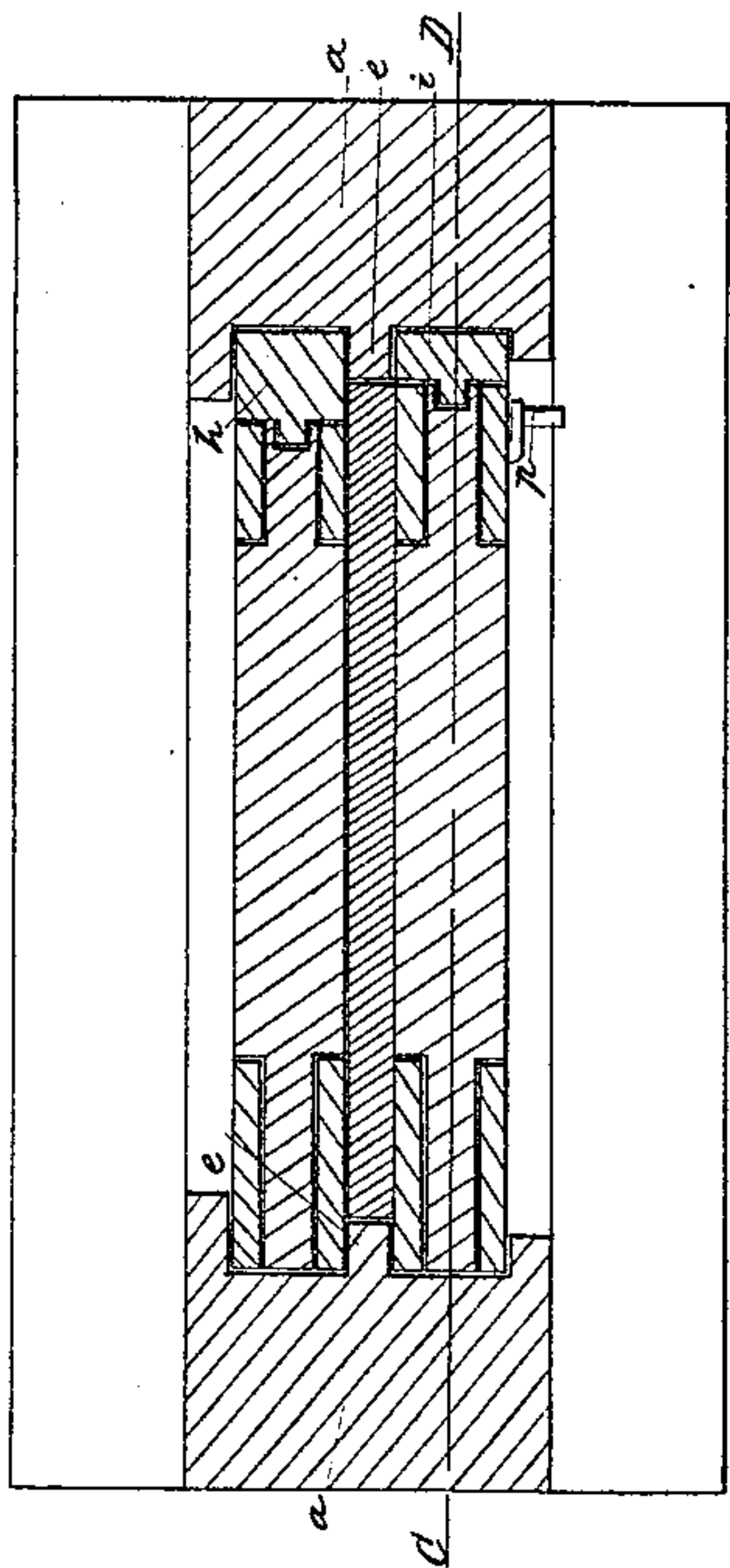


*E. W. Bullard,*  
*Sash Fastener.*

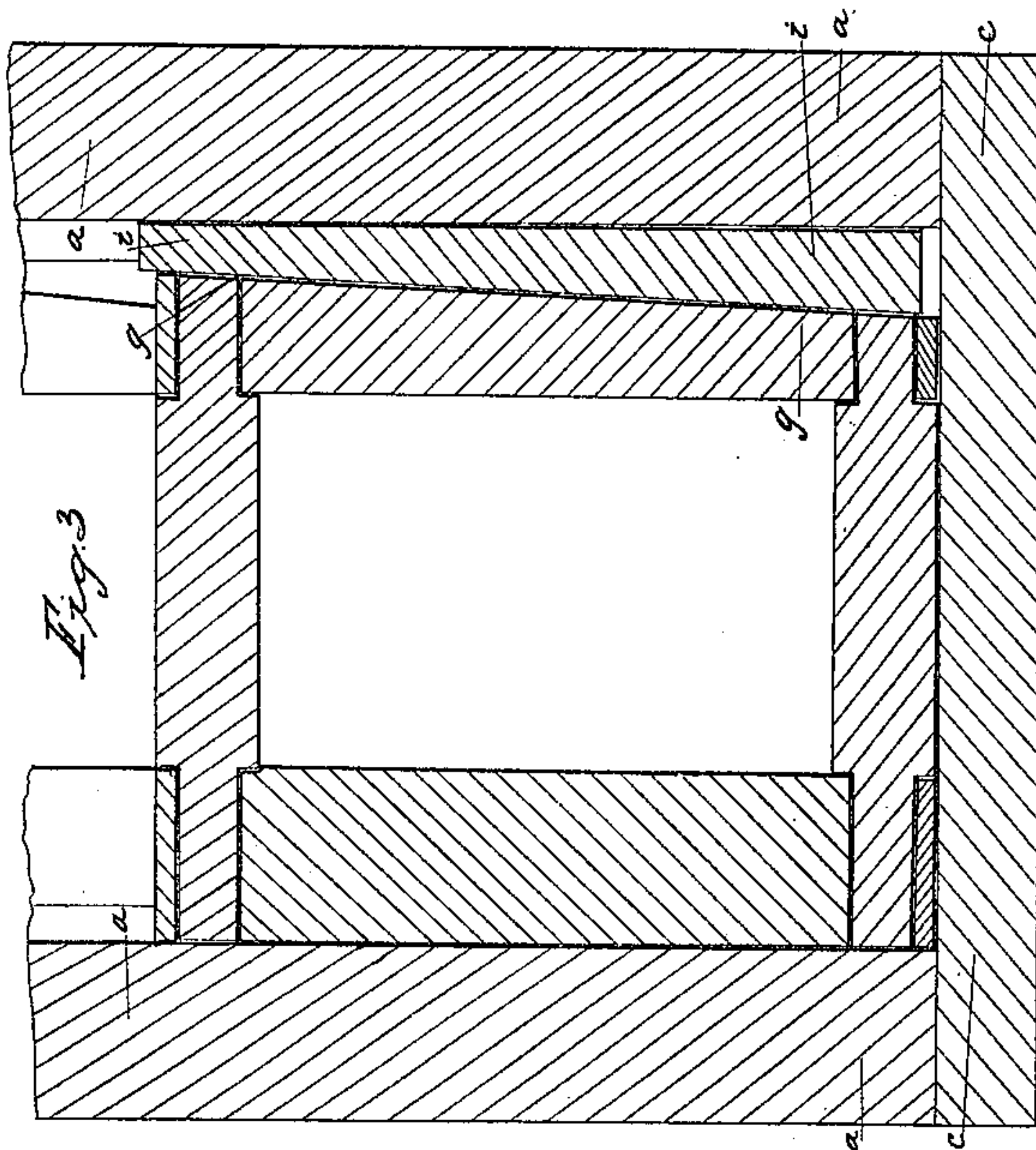
*N<sup>o</sup> 13,863.*

*Patented Dec. 4, 1855.*

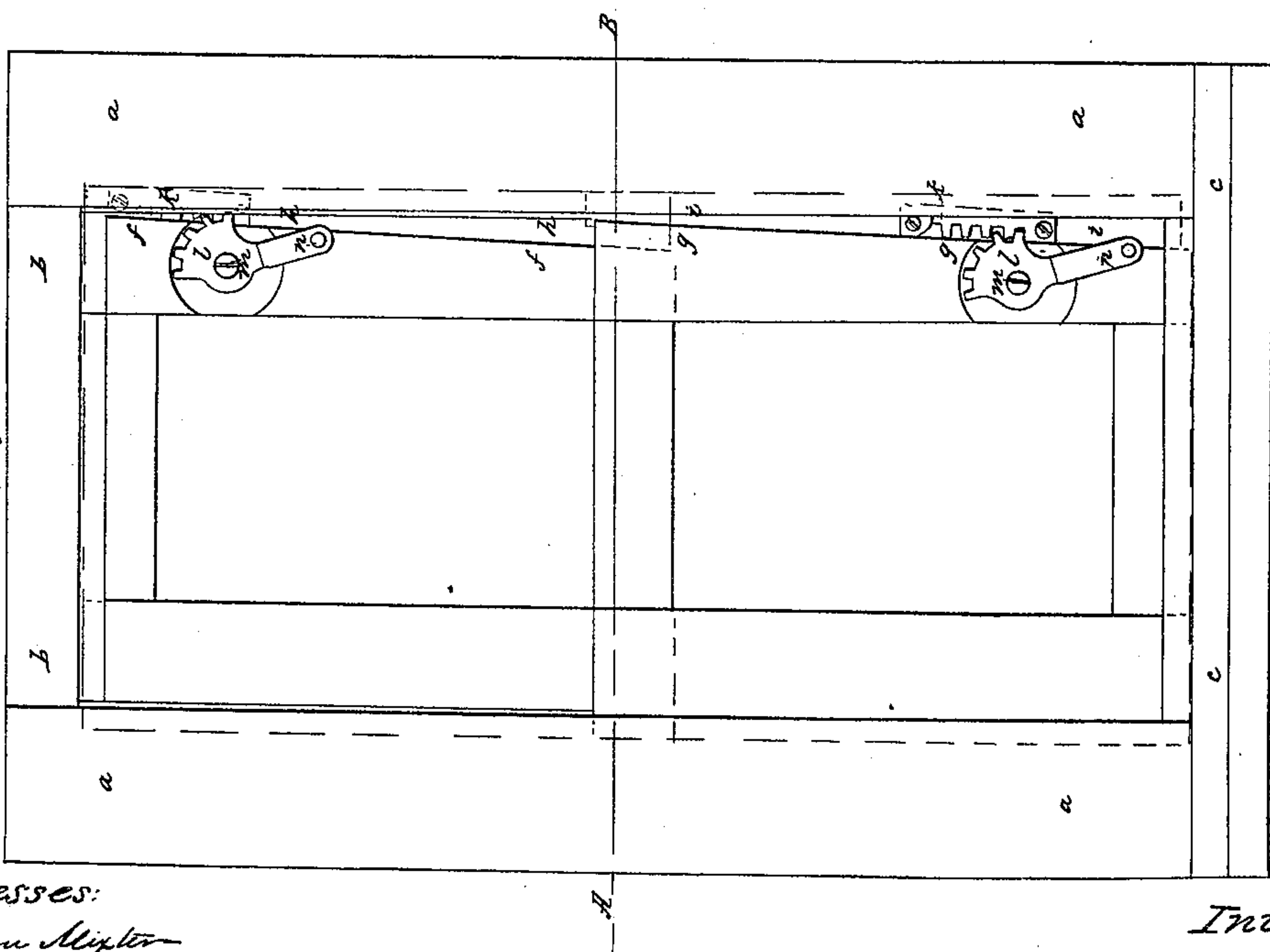
*Fig 2.*



*Fig 3.*



*Fig 1.*



*Witnesses:*  
*William Mixter*  
*Charles C. Spooner*

*Inventor:*  
*E. W. Bullard*



# UNITED STATES PATENT OFFICE.

E. W. BULLARD, OF HARDWICK, MASSACHUSETTS.

## MODE OF HANGING WINDOW-SASHES.

Specification of Letters Patent No. 13,863, dated December 4, 1855.

*To all whom it may concern:*

Be it known that I, E. W. BULLARD, of Hardwick, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Mechanical Modes of Hanging and Fastening Window-Sashes, and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plate of drawings represent my improvements.

Figure 1 is a front elevation of a sash and frame. Fig. 2 is a horizontal section taken in the plane of the line A, B, Fig. 1, and Fig. 3 is a detail vertical section taken in the plane of the line C D, Fig. 2.

My improvements secure these very desirable results in hanging window sashes, viz., the holding and confining the sash in any desired position, without the use of weights of any kind, the loosening of the sash by the most ready means when their sides become swelled so as to bind in the frames, and the removing the sashes most readily and easily from the frames, without first removing the confining and dividing beads or strips. These results are secured by making a groove in only one of the side rails of each sash and beveling said side and combining therewith a long wedge, having a tongue which fits and plays up and down in said groove sometimes with the sash and sometimes independent of the same, so as to hold it in any position or loosen it in its frame as may be desired, the motion of said wedge being by a rack pinion or in any other desirable way.

*a, a, a, a,* represent the side rails of the window frame; *b b*, the top rail and *c c* the sill of the frame. The two latter may be made in the usual way, and the side rails instead of being of the box form, may be made from strips of solid plank with the groove for the play of the sashes planed out on the inside, and divided by the dividing beads *e e* as shown in Fig. 2.

The upper and lower sashes may be

formed and framed in the usual way excepting, that on one side there need be no groove as shown in the drawing and the opposite side of each sash is required by my improvements to be made of the beveling form as shown at *f f* and *g g*, Figs. 1 and 3, and with a groove throughout the length of each of said sides as shown in Figs. 2 and 3 partly by dotted lines in the latter. Adjacent to each of these beveling sides *f f* and *g g* of the sashes, and of the same length with the same is arranged a wedge shaped strip, *h h i i*, the taper or bevel of which, is in the opposite direction to that of the sides of the sashes. These wedges or wedge shaped strips are moved up and down in the grooves of one of the side rails *a a*, of the window frame, by means of a rack plate *k*, secured to one face of each said wedges *h h*, *i i*, and a pinion *l* or a segment of a pinion, secured to the face of one of the beveled side rails of the sash, said pinion turning on a proper bearing *m* and being operated by a crank *n* or in any other desirable way.

From the above description of the several parts of the sashes and frame, it will be seen, that if it be desired to raise or lower either sash, that the same may be done by taking hold of the sash with one hand and the crank *n* of the driving pinion, and when either sash is in any desired position it may be confined therein by turning the pinion *l*, so as to raise its wedge sufficiently to bind it there, and if said sash binds at times too much in moving, it may be relieved by lowering its wedge a little. It will also be perceived that the bevel of the side of the sashes and their wedges is so great that if the sashes be lifted independently of the wedges to a sufficient height, they may be removed without difficulty and without removing the confining beads or strips of the window frame.

The means of raising and lowering the wedges may be varied from those herein above described, and a lever and stud be substituted for the rack and pinion, but this will not vary the essential characteristics of my invention.

Having thus described my improvements I shall state my claim as follows.

What I claim as my invention and desire to have secured to me by Letters Patent, is—

The improved mode herein above de-

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scribed of hanging and fastening sashes  
which consists in beveling one side of the  
sashes and combining therewith a corre-  
sponding wedge or beveled strip moved up  
5 and down as herein above described or in  
any other way by which arrangement the  
modes herein set forth of fastening, loosen-

ing and removing the sashes from the  
frame are secured.

E. W. BULLARD.

Witnesses:

WILLIAM MIXTER,  
CHARLES C. SPOONER.