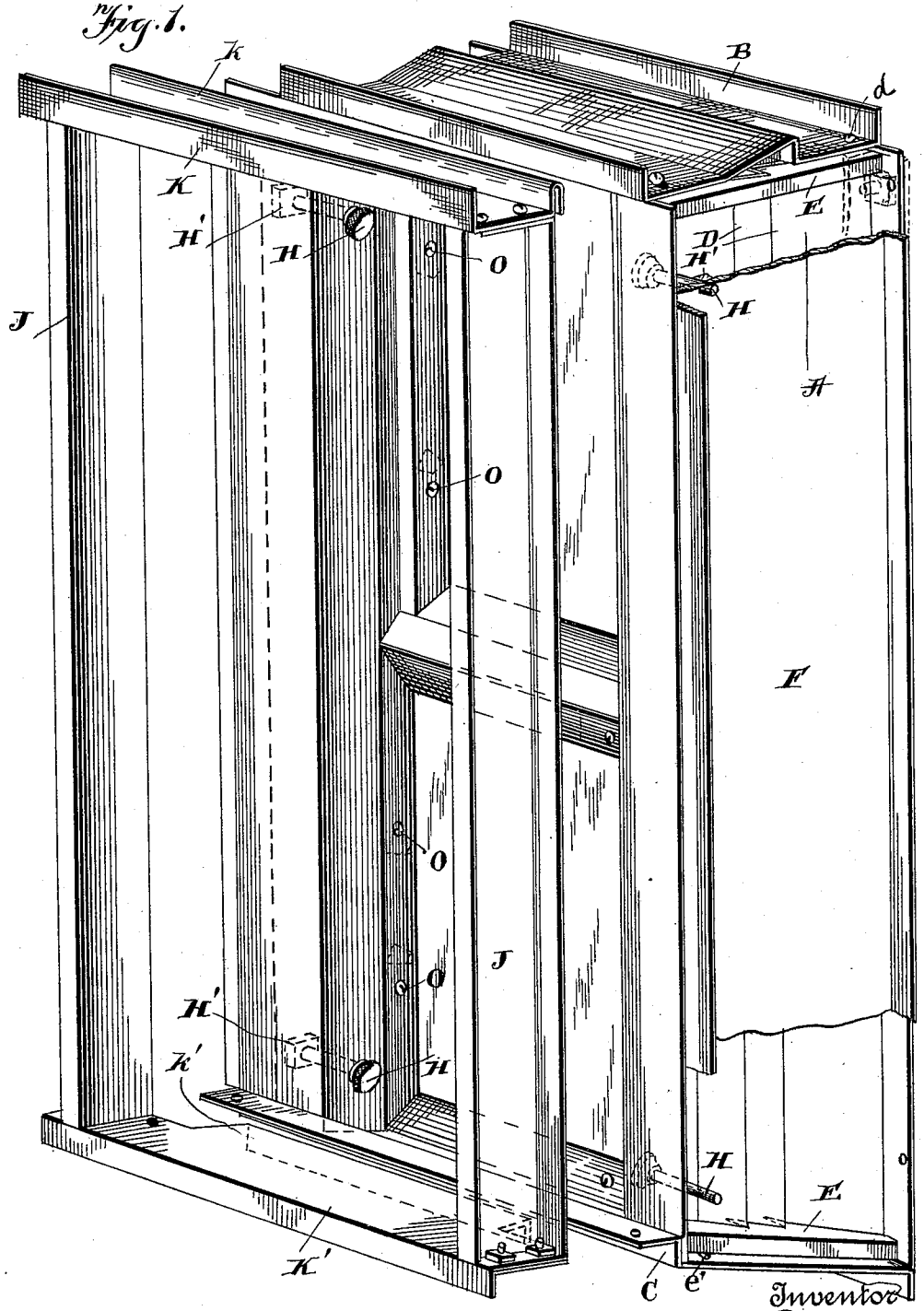
(No Model.) 3 Sheets—Sheet 1.

B. F. RICHARDS.

WINDOW.

No. 602,361. Patented Apr. 12, 1898.

Fig. 1.



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Fig. 2.

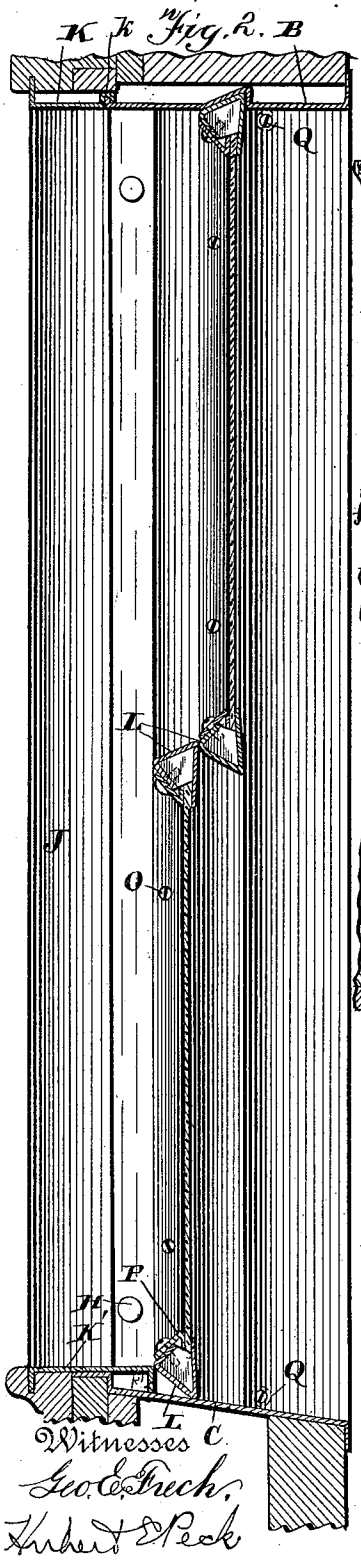


Fig. 3.

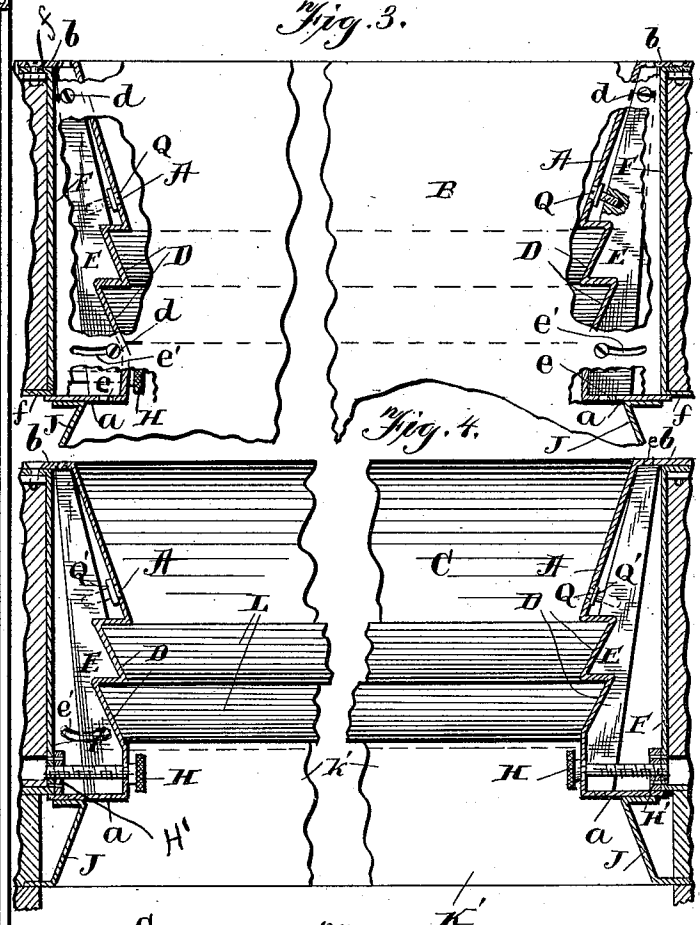
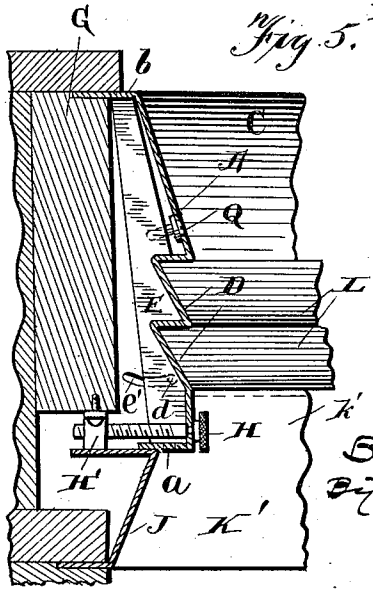


Fig. 4.

Fig. 5.



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Fig. 6.

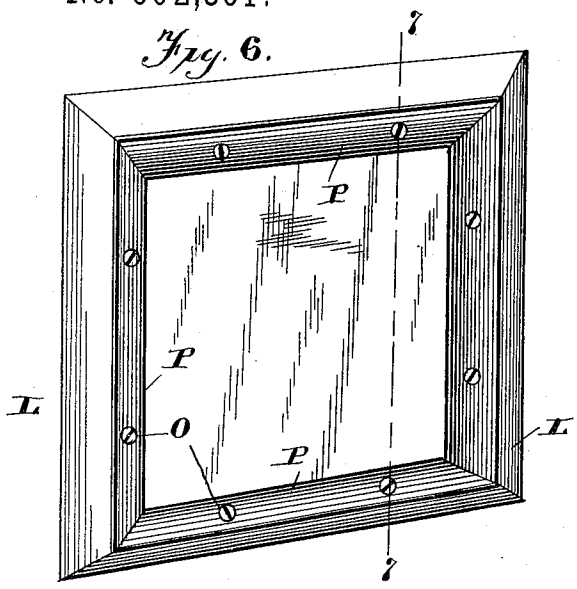


Fig. 7.

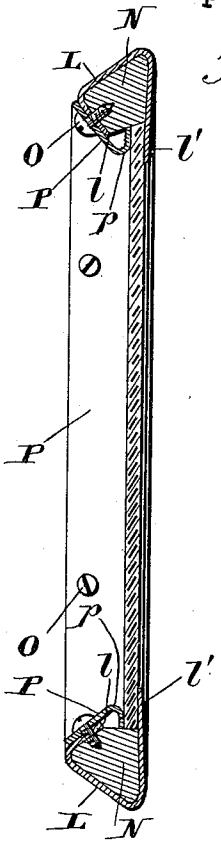
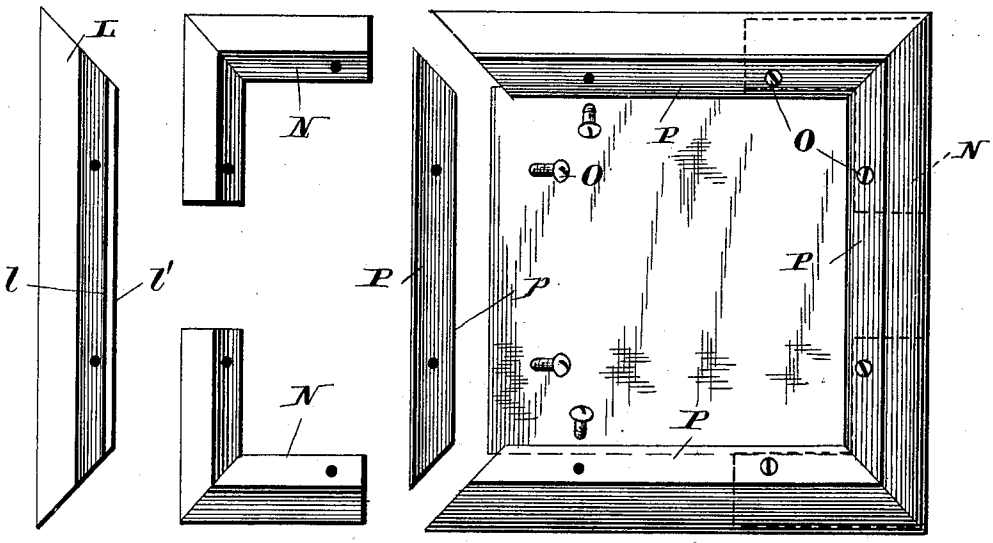


Fig. 8.



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UNITED STATES PATENT OFFICE.

BENJAMIN F. RICHARDS, OF CHICAGO, ILLINOIS.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 602,361, dated April 12, 1898.

Application filed April 22, 1897. Serial No. 633,387. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. RICHARDS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Windows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to windows; and the object thereof is to provide a knockdown window-frame, a knockdown jamb-lining, and knockdown sashes, all of cheap, simple, and improved form, which when segregated may be compactly packed for shipment and which may be quickly and conveniently set up and united in proper relative position for setting.

A further object is to dispense with the usual sash-holding beads by so forming the frame as to confine the sashes and at the same time providing the frame with such adjustment as will render the sashes readily removable.

With the above and other objects in view, as will presently appear, the invention consists in the novel features of construction and in the assemblage and arrangement of parts hereinafter fully described and claimed, and illustrated by the accompanying drawings, in which—

Figure 1 is a perspective view of my improved window, the frame proper and jamb-lining being separated. Fig. 2 is a vertical sectional view. Fig. 3 is a plan view, portions of the window being broken away and other portions shown in section. Fig. 4 is a sectional plan view of a frame for brick walls, the sashes being removed. Fig. 5 is a similar view of the arrangement of frame for wooden walls. Fig. 6 is a detail perspective view of one of the sashes. Fig. 7 is a sectional view on line 7 7 of Fig. 6. Fig. 8 is an elevation of one of the sashes partially segregated.

The frame proper consists of vertical sides A, top or crown piece B, and bottom or sill piece C. The inner and outer vertical edges of sides A are turned laterally or flanged, as indicated, respectively, at *a* and *b*, while between their edges they are formed with vertical triangular corrugations D. Transversely-extending bars or strips E are arranged within sides A, adjacent their upper and lower ends, said strips having pintles *e* at their ends, extending into perforations in flanges *a* and *b* for uniting the strips to the sides, the inner edges of the strips or bars being notched to fit around corrugations D. The strips thus secured to sides A are united to top and bottom portions B and C, respectively, by screw-bolts *d*, thus securely uniting the several parts of the knockdown frame. The bolts extend through slots *e'* in the top and bottom portions, so that the sides A may be adjusted laterally independently of said parts in manipulating the sashes and adjusting the frame thereto, as will be presently explained.

For brick structures the frame sides are provided with a lining F, which extends from top to bottom of the frame, and which are flanged on their edges, as shown at *f*, to fit in the brick seams, and flanges *b* of sides A are bolted thereto, so that said lining not only protects the frame sides from mortar and prevents the brick from being so laid as to encroach on the space required for the adjustment of the sides, but also serves to firmly set and secure the frame in the wall. The lining members may be so arranged as to form weight-pockets when it is desired to employ weights. For frame structures the lining is not needed and is therefore dispensed with, as seen in Fig. 5, flange *b* in such case being secured to lintel G. In this construction, as in the arrangement for brick structures, the secured edge of each side closely fits lintel G or lining F, as the case may be, its entire length and forms a tight air-excluding joint, while at the same time, as before described, the sides turn freely on their secured edges, as may be necessary in removably securing the sashes.

The sashes, of improved form presently to be described, are placed in position and removed from corrugations D, in which they slide, by adjusting sides A laterally, the sides turning or springing for this adjustment at their outer edges, the devices for securing the adjustment being carried at the inner edges of the sides, said devices consisting of screws H, arranged adjacent the upper and lower ends of the frame and extending backward and taking in nuts H'. In the frame for the

brick structure said nuts are secured to lining F, while for the frame structure they are secured to studding G. The screws turn freely in the sides, but are held thereby, as shown, from longitudinal displacement, so that the sides move with the screws as the latter are adjusted in the nuts.

The material which I prefer to use in constructing the frame is sheet metal, as illustrated, as it affords the springing action requisite for the adjustment, as well as being cheap and readily formed into the required shape. I do not desire, however, to limit myself to the use of sheet metal in forming the frames, the jamb-linings, or the sashes, as wood, vulcanized rubber, papier-mâché, celluloid, wood fiber, or other material might be used and at the same time be within the scope of the present invention.

The side portions J of the jamb-lining are flanged at their upper and lower ends, where they are secured to top and bottom portions K and K′, respectively, the adjacent edges of top K and frame-top B uniting in seam *k*, while bottom portion K′ is formed on its inner side with flanged lip *k′*, which overhangs frame-bottom C, as seen in Fig. 2, with the lower sash closing thereagainst. The sides of the jamb-lining are in no way united with sides A, so that the latter are freely adjustable behind the lining, as above described. The overlapping bottom portions C and K′ are united by bolts, as shown.

The sash-rails and stiles are formed alike, the same being substantially triangular in cross-section and snugly fitting corrugations D. Each rail and stile consists of an elongated hollow member L, mitered at its ends, with its front inner edge *l* having less protrudance than back or outer edge *l′*, whereby the glass M may when the sash is built up move past edge *l* and rest against and be held by edge *l′*. Angle-irons N fit within and unite members L and are secured in place by screws O, which also secure the glass-retaining strips P, the latter being mitered at their ends to fit snugly within the frame, as shown, and turned inward at *p*, where they clamp the glass. If desired, packing or listing may be arranged behind strips P to effectually seal the glass and exclude air. A complete knock-down sash is thus provided which may be quickly set up or taken apart, or new glass may be inserted by simply removing strips P without removing the sashes from the frame. The use of putty is obviated. The labor of glazing is greatly lessened, and a much more complete and secure glass-holding means is provided.

While the form of sash herein shown and described is admirably adapted to the frame of the character disclosed, it is not my desire or intention to limit myself to such use alone, as obviously it may be used in other forms of frames and may differ in details of construction without departing from the intent of this invention; and the converse of this statement is true of the frame. The latter may also differ in details of construction without avoiding the invention and may be used with or without a jamb-lining, as may be preferred.

A supplemental adjustment for frame sides A is provided in screws Q, taking in strips or bars E and headed at Q′ to bear on the inner surfaces of the sides, the reduced extremities of the screws projecting through openings formed in the sides and slotted to receive a screw-driver. These screws are located just outside of corrugation D for the upper sash and serve to contract the frame when desired to more effectually clamp the sashes, particularly the upper sash, than can be done with screws H. The frame may thus be accurately adjusted to the sashes, such adjustment, however, interfering in no way with the adjustment secured by screws H.

The invention may be adapted for railway-cars and other structures in addition to buildings, as will be understood.

Sheet metal, which, as before stated, is the material which I prefer to use, is especially adapted for the purpose, as it may be quickly stamped and otherwise formed into the required shapes, and, in addition, is comparatively inexpensive.

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

1. An improved window-frame including side members formed of laterally-yielding material, means for securing the entire length of one vertical edge of each side to the building so as to seal the joints between said edges and the building, and devices operatively connected to the free portions of the yieldable frame sides for turning the same on their secured edges, substantially as shown and described.

2. A window-frame having its sides formed of yieldable material, the sides being secured at one edge and adapted to yield in swinging movement at said edge, the other edges of the frame being free, and adjusting means for swinging the sides, in combination with sashes adapted to be removably held in the frame by means of the adjustment, substantially as shown and described.

3. An improved window-frame, including fixed top and bottom members, laterally-adjustable side members arranged therebetween, and an adjustable connection between the sides and the top and bottom members respectively, substantially as shown and described.

4. In a window-frame having laterally-adjustable sides for the purpose of holding the sashes in place, the combination of top, bottom and side members, the side members being arranged between the top and bottom members, the last two members being slotted, screws extended through the slots for securing the sides, and adjusting means, substantially as shown and described.

5. In a window-frame, the combination of

slotted top and bottom members, side members arranged between the top and bottom members, transversely-extended bars secured to the sides adjacent their ends, screws extended through the slots of the top and bottom and taking in the bars for adjustably securing the parts together, and adjusting means for the sides, substantially as shown and described.

6. A frame having its sides formed of spring metal or analogous material, in combination with bars fixed behind the sides, and adjusting devices carried by the bars for springing laterally the sides, substantially as shown and described.

7. A frame having its sides formed of spring material, in combination with bars fixed behind the sides, and screws adapted to be adjusted in the bars for springing the sides, substantially as shown and described.

8. A window-frame having its sides adapted to move laterally for removably holding the sashes in the frame, in combination with screws adapted to adjust the sides laterally, substantially as shown and described.

9. A window-frame having its sides adapted to move laterally for removably holding sashes in the window-frame in combination with screws rotatably mounted in the sides, and fixed nuts which the screws engage, substantially as shown and described.

10. A window-frame having the outer edges of its vertical sides formed with laterally-extending flanges, said flanges being adapted to be secured to the building or other structure, the sides having a springing or turning movement on said edges and adapted to removably secure the sashes in the frame, and devices for adjusting the sides laterally, substantially as shown and described.

11. The combination with a window-frame having fixed top and bottom members and laterally-adjustable side members, and a jamb-lining separate from the frame but adapted at its upper and lower ends to unite with the top and bottom members of the frame, the lining having no connection with the frame sides and in no way impeding their lateral movement, substantially as shown and described.

12. The combination with the window-frame having adjustable sides for the purpose described, of a jamb-lining detachably secured to the top and bottom of the frame, substantially as shown and described.

13. The combination with a window-frame, of a jamb-lining independent of but detachably secured to the frame, the bottom of the lining being formed with a projecting lip adapted to extend into the frame and overlap the bottom thereof, substantially as shown and described.

14. The combination of a window-frame having the edge of its top member formed with a vertically-extended flange, and a jamb-lining separate from the frame and having its top member formed with a loop-flange adapted to inclose the frame-top flange, substantially as shown and described.

15. In a window-frame, the combination of vertical side A formed of spring metal and having its longitudinal edges turned laterally, bars E arranged transversely behind the side and at their ends secured to laterally-turned edges thereof, and devices carried by the bars for springing laterally the sides, substantially as shown and described.

16. In a window-sash, the combination of the rails and stiles each formed of a single piece of sheet metal bent to tubular form with the edges slightly separated or open to admit the glass, and the angle-irons at the corners of the sash over which the rails and stiles fit and against which the glass bears and upon which the same is supported in proper position within the sash, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN F. RICHARDS.

Witnesses:
THOS. L. BRUNK,
J. T. WILLIAMS.