J. W. WHITSON.

COLLAPSIBLE FIREPROOF SHUTTER.

APPLICATION FILED OCT. 7, 1914.

1,330,224.

Patented Feb. 10, 1920.

2 SHEETS—SHEET 1.

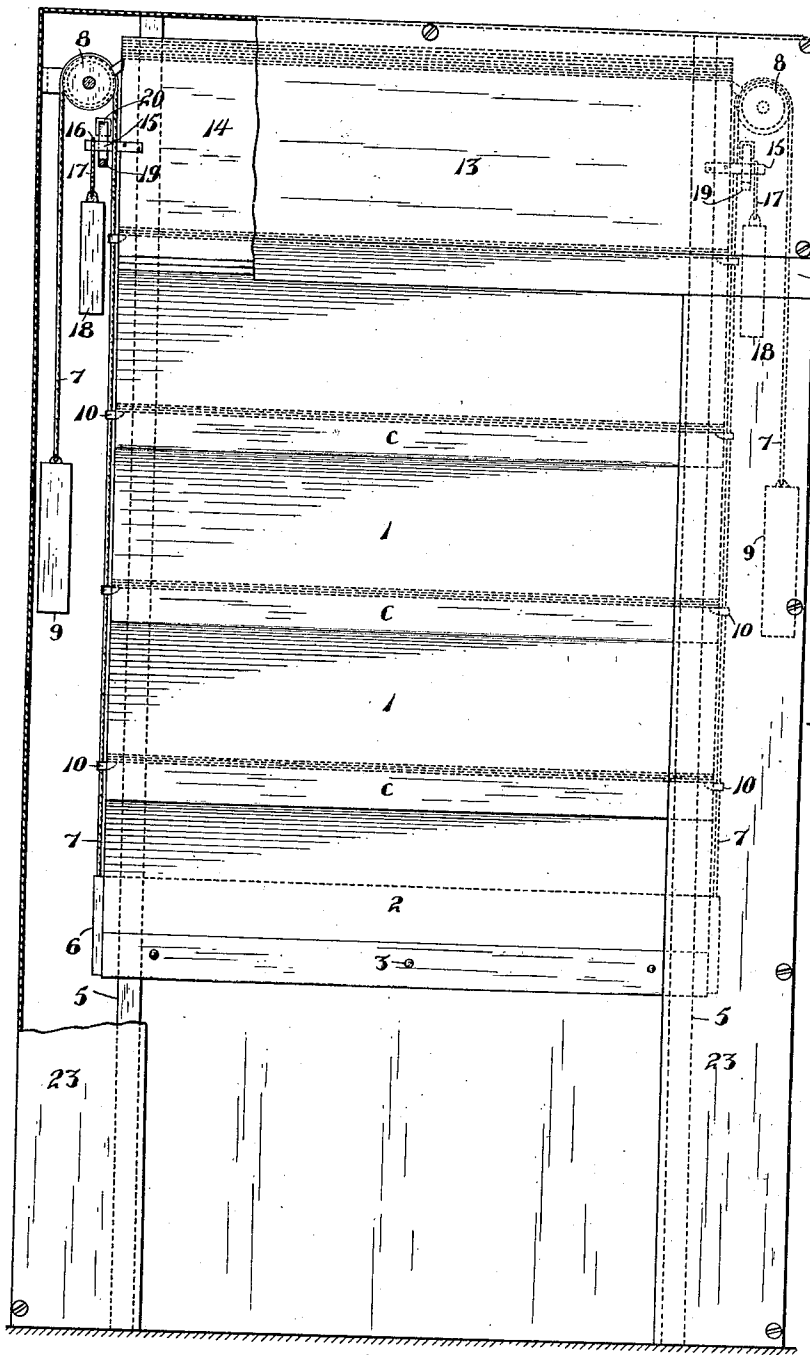


Fig. 1.

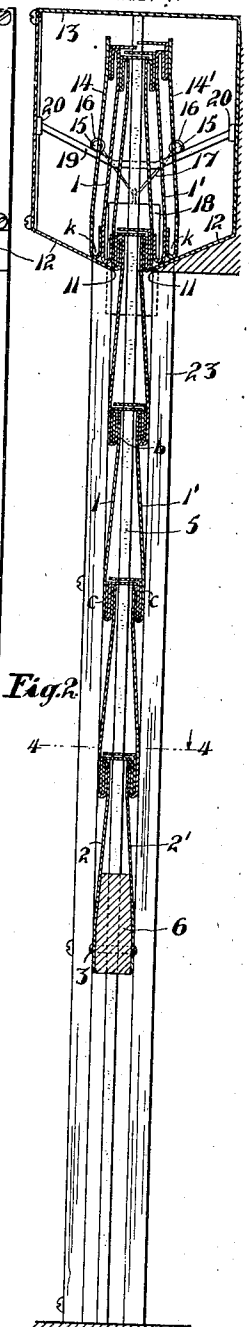


Fig. 2.

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Fig. 3.

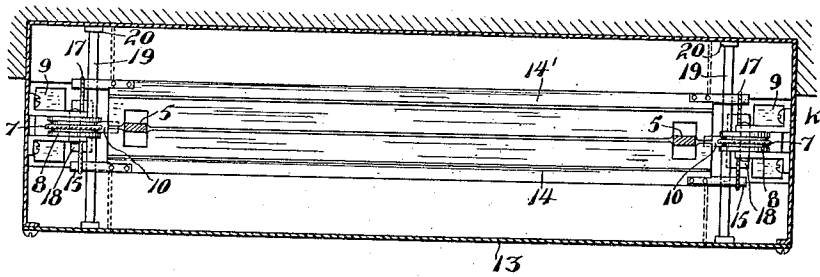


Fig. 4.

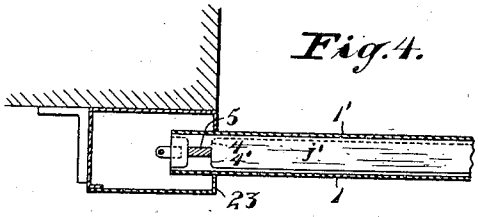


Fig. 6.

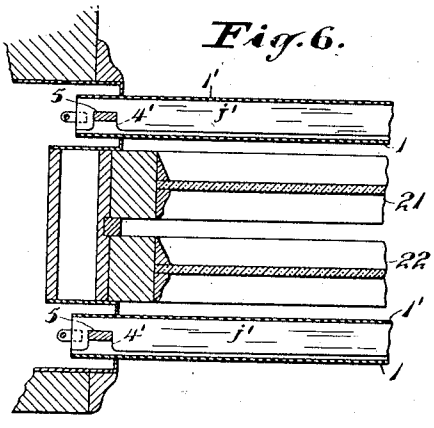
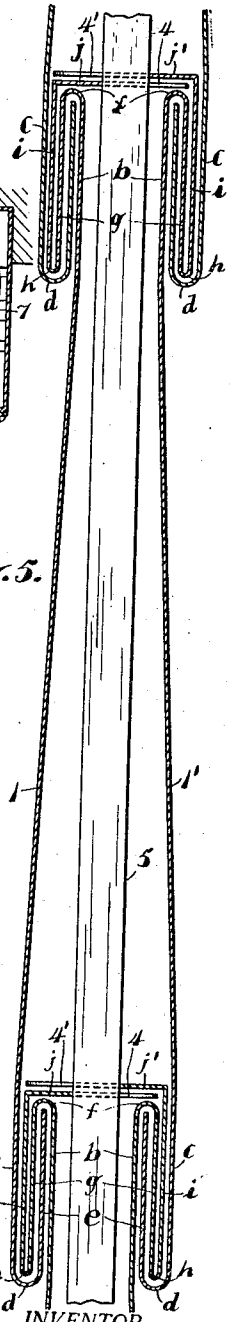


Fig. 5.



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COLLAPSIBLE FIREPROOF SHUTTER.

1,330,224. Specification of Letters Patent. Patented Feb. 10, 1920.

Application filed October 7, 1914. Serial No. 865,516.

To all whom it may concern:

Be it known that I, JOHN W. WHITSON, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Collapsible Fireproof Shutters, of which the following is a specification.

The object of the present invention is to provide a strong, collapsible, fire-proof shutter between the walls of which will be an air space for greatly retarding the passage of heat therethrough. A further object is to provide such a shutter which, when collapsed, will occupy but little space, especially in a horizontal direction, and which can therefore be installed with ordinary doors and windows, the shutter casing taking the place of parts of the door or window frames, without any material change in their size and shape.

In the accompanying drawing, Figure 1 is a front view of the shutter, partly extended; Fig. 2 is a sectional view of the same; Fig. 3 is a top plan sectional view of the same; Fig. 4 is a horizontal section on the line 4—4 of Fig. 2; Fig. 5 is an enlarged vertical section of the shutter; Fig. 6 is a view, similar to Fig. 4, showing the shutters applied to an ordinary window frame.

On referring to the drawing, it will be seen that my improved shutter consists of sections or slats, all of which except the lowermost are precisely alike in form and size. Each of the upper sections comprises two plates 1, 1′. Each plate has a long, mediate portion *a* sloping slightly inwardly upward and extended at the top and bottom into short vertical parts *b* and *c*, the part *c* bending at the bottom, as shown at *d*, (see Fig. 5), and then extending vertically upward, as shown at *e*. At the top of the vertical portion *b* the plate is bent. as shown at *f*, to rest upon the upper edge of the extension *e* of the next higher plate on the same side, then extends vertically downward, as shown at *g*, to almost the level of the bend *d*, then bent back on itself, as shown at *h*, extending vertically upward, as shown at *i*, to a height greater than the downward bend *f* and then extending horizontally inward at right angles, as shown at *j* or *j′*, the horizontally extending portion *j′* of the plate 1′ being above that *j* of the plate 1.

The lowermost section instead of having interlocking lower portions, has two sides 2, 2′ which are riveted at the bottom, as shown at 3, to a horizontal bar 6, and the upper portions of which sides are in other respects similar to the plates 1 and 1′ of the upper sections. The horizontally extending portions *j* and *j′* have recesses 4, 4′ in their sides near their ends and in said recesses are received vertical guide rods 5. These guide rods and recessed portions secure said shutters against excessive bending due to any pressure on the shutter, for the guide rods act as locks to prevent longitudinal displacement of the ends of the shutter sections out of the vertical side casings 23 in which ends of the shutter sections move vertically.

Said bar 6 extends at its ends beyond said lowermost section and to the ends of said block are secured cables 7, which pass over pulleys 8 near the top of the shutter and support counter-weights 9. To said cables are secured, at intervals equal to the height of the sections, lugs 10 which extend immediately under the horizontally extending portions *j*, so that, as the counter-weights are lowered and the lugs ascend, the sections are thereby raised.

The uppermost section passes between the inner edges 11 of the sloping lower portions 12 of an upper head or casing 13. In so passing up between said edges said uppermost section is interposed between, and separates two presser plates 14, 14′, which, except in the upper portion, are similar to the plates 1, 1′, having hooked lower portions *k* which engage the bent portions of the uppermost section and support the same. Said plates 14, 14′ are secured to fingers 15, around which pass loops 16 at the ends of cords 17 supporting weights 18. Said fingers are supported by rods 19, the ends of each rod being secured, as shown at 20, to the front and back surfaces of the casing 13, and the rods sloping downward from said ends to the center. By reason, therefore, of said weights the plates tend

to assume a central position in the casing and are only separated when the shutter sections intervene between them.

The uppermost shutter section having been raised by the uppermost lugs so as to be interposed between said presser plates, each lower section in turn passes between the inner edges 11 and spreads apart the plates of the section immediately above it, so that eventually the plates of all of said sections except the lowermost are so separated and are received within the casing 13.

Conversely, when the cables 7 are released and allowed to descend, the lowermost shutter section first descends between said edges 11, and, as it descends, the two plates 1, 1' of the next lower section approach each other, so that the hooked upper portions of the lowermost section engage the hooked lower portions of the next lowermost section, and said next lowermost section itself descends between the edges 11, and so on for all the sections.

Fig. 6 illustrates the application of the shutter to an ordinary window, 21, 22 indicating the window sashes, and the shutters being shown on both sides of the window, the casing 23 taking the place of either the blind or loose stops.

The advantages of this construction are that by forming each shutter section of two pieces I obtain double the strength of ordinary rolling slats, and furthermore, I also obtain an air space between the inner and outer walls of the shutter, which air space renders it practically impossible for a conflagration on one side of the shutter to raise the other side of the shutter to the degree of heat necessary to ignite combustible material adjacent to said other side. Consequently my improved shutter gives far better protection against heat than those heretofore provided.

While the construction in which each section comprises two plates, which, when they arrive at the upper head, are pushed to opposite sides by the succeeding sections, is the preferred form of my invention, it is not absolutely essential thereto, as an inferior form of the invention may be used in which each section consists of a single plate only, this plate, when it arrives at the upper head, being pushed to one side by the next succeeding plate of the shutter.

I claim:—

1. A collapsible shutter consisting of shutter sections each having upper and lower parts which detachably engage similar lower and upper parts respectively of the adjacent sections, and also having between said parts two upwardly extending walls, and each shutter section having means spacing said walls from each other, when the shutter is extended.

2. A collapsible shutter consisting of shutter sections each composed of two plates, and means for spacing said plates from each other, each plate having upper and lower parts which detachably engage similar lower and upper parts respectively of the adjacent plates on the same side of the shutter.

3. A collapsible shutter consisting of shutter sections each composed of two plates, and means for spacing said plates from each other, each plate having upper and lower parts which engage similar lower and upper parts respectively of the adjacent plates on the same side of the shutter, said engagement being vertically detachable.

4. A collapsible shutter consisting of shutter sections each having upper and lower parts which detachably engage similar lower and upper parts respectively of the adjacent sections, and also having between said parts two upwardly extending spaced walls, and means disconnected from one of said walls, spacing said walls from each other, when the shutter is extended.

5. A collapsible shutter consisting of shutter sections each having parts detachably engaging parts of adjacent shutter sections, and having also between said parts walls, means spacing said walls from each other when the shutter is extended, and vertical guides between said walls for said shutter sections.

6. A collapsible shutter consisting of shutter sections each having parts detachably engaging parts of adjacent shutter sections, and having also between said parts walls, means spacing said walls from each other when the shutter is extended, and having horizontally extending parts formed with recesses and vertical bars in said recesses and guiding said shutter sections.

7. A collapsible shutter consisting of sections each comprising plates, the plates of each section being spaced from each other but converging upwardly, said sections having parts detachably engaging similar parts of other sections to connect the same together, guides for the plates of the sections when separated from each other by the interposition of the next lower section, and means for pressing said plates of each section together when so separated.

8. A collapsible shutter consisting of a series of sections having marginal parts detachably engaging marginal parts of other sections, means for moving simultaneously and at uniform speed all of said sections in their extended position, means for arresting each section in succession, the part of said section so arrested which engages the marginal part of the next succeeding section being automatically detached therefrom by said arrest.

9. A collapsible shutter consisting of a series of sections having marginal parts de-

tachably engaging marginal parts of adjacent sections of a series, a container to which said sections can be moved and in which they are received, and means for moving said sections to said container, the engagements between the marginal parts permitting any section more remote from the container to separate from one nearer thereto, when the latter is arrested in its movement to the container, each section being constructed in said movement to move laterally the next nearer section into the container.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN W. WHITSON.

Witnesses:
FRANCIS M. WRIGHT,
D. B. RICHARDS.