June 13, 1950 B. HANSEN 2,511,108

COMBINATION DOOR

Filed Nov. 6, 1946

Fig. 1.

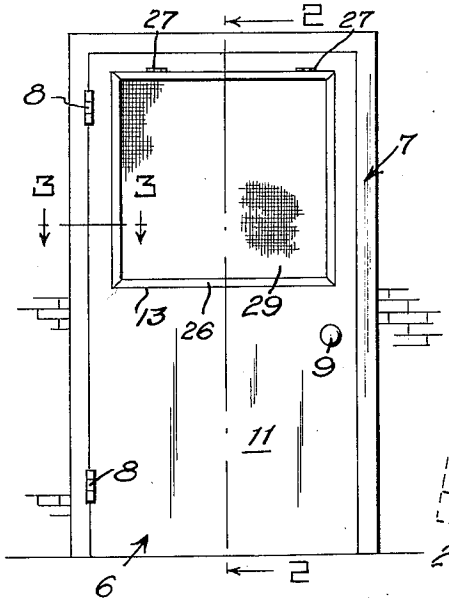


Fig. 2.

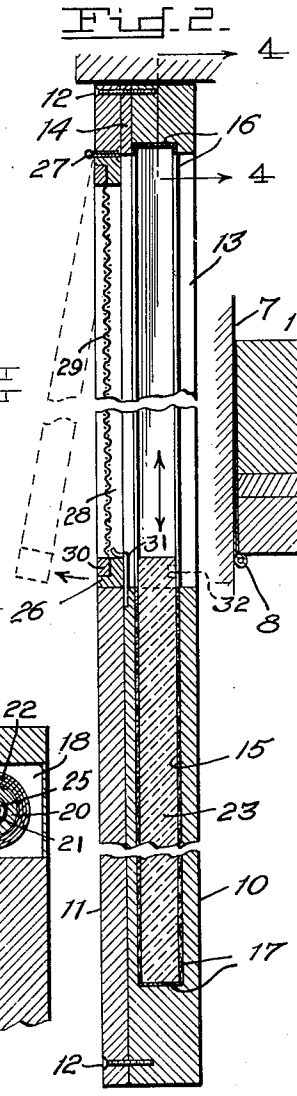


Fig. 3.

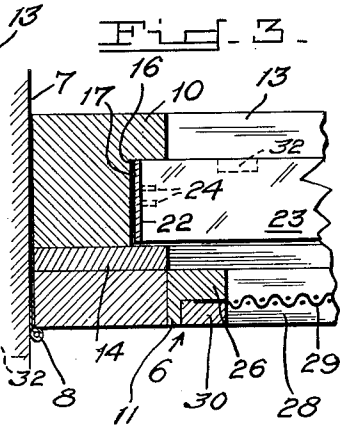


Fig. 4.

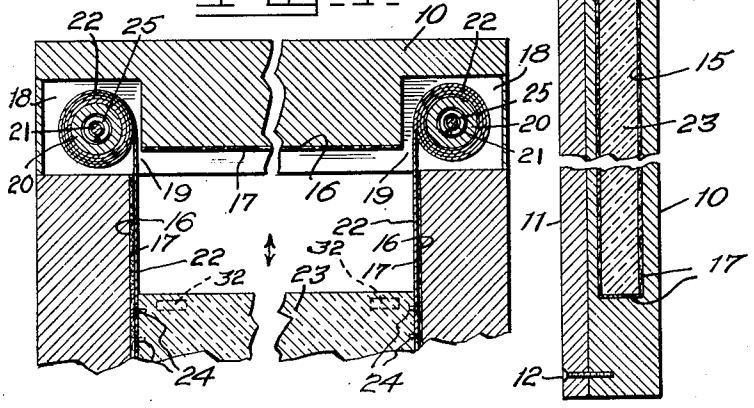
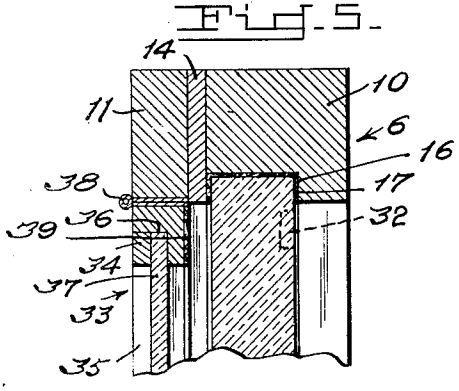


Fig. 5.



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COMBINATION DOOR

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3 Claims. (Cl. 160—90)

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This invention relates to a combination all-purpose door adapted for use generally in buildings for outside doors and especially intended and adapted for use with doors of homes which open to the outside or exteriorly of the enclosure.

More particularly, the primary object of the present invention is to provide a combination door which will eliminate the need for a separate screen door and storm door and in which will be incorporated the advantages of both types of doors in addition to a conventional door.

Another object of the invention is to provide an improved construction of door capable of being quickly and easily converted from a combination door and storm door to a combination door and screen door and which will eliminate the need for separate screen and storm doors.

Still a further object of the invention is to provide a combination door which will be more durable than conventional screen doors, the screen of which will not be damaged by young children pushing thereagainst, and which will prevent dust and dirt from being blown through the door, through the lower part thereof.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating the preferred embodiment thereof, and wherein:

Figure 1 is a side elevational view on a relatively reduced scale of a preferred embodiment of the invention looking toward the outer side thereof and showing the screen incorporated with the door;

Figure 2 is an enlarged longitudinal sectional view taken substantially along a plane as indicated by the line 2—2 of Figure 1 and showing the transparent pane of the door in a retracted, open position;

Figure 3 is an enlarged horizontal sectional view taken substantially along a plane as indicated by the line 3—3 of Figure 1;

Figure 4 is a vertical sectional view taken substantially along a plane as indicated by the line 4—4 of Figure 2 and showing the transparent pane in a partially raised position; and

Figure 5 is a fragmentary vertical sectional view taken substantially on the same plane as Figure 2 and showing the door with a storm window substituted for the screen window thereof.

Referring more specifically to the drawing, 6 designates generally the improved door in its entirety and which comprises the invention. The door 6 in Figures 1, 2, and 3 is illustrated disposed in a frame 7 defining a door opening and swingably supported along one edge thereof to a stile of the frame 7 by means of conventional leaf hinges 8. The door 6 is provided adjacent its opposite longitudinal edge and preferably slightly below the mid-point of the top and bottom thereof with a conventional door knob 9. It will be understood that the door 6 is provided with a knob 9 on each side thereof and that said knobs are connected to and operate a latch means, not shown, for engaging a keeper in the other stile of the door frame 7 and that a suitable lock, not shown, may also be provided for locking the latch means.

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The door 6 comprises an inner, relatively thick panel 10 and an outer, thinner panel 11 which is preferably secured to the outer side of the inner panel 10 by countersunk screw fastenings 12. The upper portion of the door 6 is provided with a relatively large opening 13, formed in the panels 10 and 11 and the outer side of the panel 10, around the top and sides of said opening 13 is reduced in thickness and the space, thereby afforded, is filled by a removable filling strip 14 which is detachably secured between the recessed part of the outer side of the panel 10 and the panel 11 by certain of the fastenings 12.

The panel 10 is provided with a relatively deep well 15 which opens at its upper end into the bottom of the opening 13. The portion of the panel 10, defining the opening 13 is also provided with downwardly and inwardly opening channels 16, the outer sides of which are defined by the filling strip 14. The vertically extending inwardly opening channels 16 also form continuations of the edge portions of the well 15. The channels 16, and the edge portions and bottom of the well 15 are lined with felt or similar material 17.

As best seen in Figure 4, the top rail portion of the inner door panel 10, adjacent the upper corners thereof, is provided with corresponding outwardly opening recessed portions 18 having restricted passages 19 communicating with the ends of the upper, downwardly opening horizontal channel 16. A roller 20 is journaled in each of the recesses 18 on a pin 21 and a tape 22 is wound on each roller 20 and extends downwardly therefrom through the associated opening or passage 19 and into the vertical groove or channel 16 which is located directly beneath.

A pane of glass or other transparent material 23 is sized to fit, when in a retracted position, substantially within the well 15 and with the upper edge portion thereof protruding slightly into the lower part of the opening 13 and with the side edges of said portion disposed in the

inwardly opening side channels 16. The lower, free ends of the tapes 22 are secured to the side edges of the pane 23 by pins or other suitable anchoring means 24. A spring 25 is interposed between each roller 20 and its pin 21; said springs being anchored at one end to the pins and at the opposite ends thereof to the rollers causing said rollers to be revolved in a direction for urging free ends of the tapes 22 upwardly toward the recesses 18. It will be readily apparent that the outwardly opening recesses 18 will be exposed by removal of the panel 11 and the filling strip 14 to afford access to the rollers 20.

An open frame 26 is detachably mounted in the portion of the opening 13 formed by the panel 11; said frame 26 being sized to fit relatively tight in said opening and being swingably supported therein by means of leaf hinges 27 at the top of the frame 26 and in the upper part of the opening 13. The frame 26 is provided with an opening 28 across which a strip of mesh wire fabric 29 is stretched. The frame 26 is provided with a removable outer section 30 surrounding the opening 28 thereof and between which and the remainder of the frame 26, the edge portion of the wire fabric is clamped. The removable frame portion 30 may be secured in position in any suitable manner and is intended to be removed only for replacement of the screen 29, if such should be required. A spring latch member 31 is suitably anchored at one end thereof between the panels 10 and 11 and projects therefrom into the lower part of the opening 13 and is adapted to engage over the bottom rail of the frame 26, inwardly of the wire fabric 29, for detachably retaining said frame in its normal, closed position of Figure 2.

As illustrated in dotted lines in Figure 4, the inner side of the pane 23 is provided with recessed portions adjacent the upper edge thereof forming finger holds 32 which are disposed slightly above the bottom of the opening 13 when the pane 23 is in a retracted position in the well 15, as illustrated in Figure 2. A grip may be obtained on the pane 23 by means of the finger hold 32 for raising the pane 23 from its fully retracted position of Figure 2 to a partially raised and closed position, as seen in Figure 4, or to a fully raised and closed position, as seen in Figure 5. The spring actuated rollers 20 in urging the tapes 22 toward a wound position thereon will assist in raising the pane 23 by substantially counterbalancing the weight thereof and are of sufficient strength to retain the pane 23 in either a partially or fully raised and closed position. The felt linings of the channels 16 and the well 15 will also function to frictionally retain the pane 23 in any position to which it is manually moved and will cushion said pane to prevent damage thereto resulting from slamming of the door 6 and also function as weather stripping to prevent the passage of air between the pane 23 and opening 13, when the former is in a fully raised and closed position, as seen in Figure 5.

Figure 5 is a fragmentary sectional view illustrating the door 6 employed as a storm door and for use during cold weather. A storm window, designated generally 33 and comprising a frame

34 having an opening 35 and an inwardly opening channel 36, which opens into the opening 35 is shown mounted in the opening 13 and in place of the screen 26, 29. A glass pane 37 or a pane of other transparent material has its marginal edge portions seated in the channel 36 and closes the opening 35 of said frame 34. The upper rail of the frame 34 is swingably secured in the upper part of the opening 13 by hinges 38 in the same manner and for the same purpose as the hinges 27, and it will be readily obvious that the same hinge leaves which are secured to the panel 11 may be utilized for mounting either the window screen or storm window by merely removing the hinge pins and interchanging the screen or storm window. It will be readily seen that either of said closures may be selectively mounted in the opening 13 for providing either a storm door with the pane 23 raised and the window 33 utilized or a screen door with the pane 23 retracted and the screen closure 26, 29 employed. The panes 23 and 37 of the storm door will provide an air chamber therebetween which will effectively function to reduce the amount of heat or cold which would otherwise be conducted through the pane 23. The storm frame 35 may be lined with felt or other weatherstripping 39 to prevent passage of air between the frame and opening 13.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit and scope of the invention as hereinafter defined by the appended claims.

I claim:

1. A combination door comprising an inner panel and an outer panel, means for detachably connecting said panels together, said door being provided with an opening in the upper part thereof, said inner panel being provided with a well in the lower portion thereof and opening upwardly into said opening, a transparent pane for normally closing said opening, said pane being retractable into said well, and a window frame swingably and detachably mounted in said outer panel and closing the opening thereof.

2. A door as in claim 1, and a sheet of mesh wire fabric engaged in said frame and combining therewith to form a screen window.

3. A door as in claim 1, and a pane of transparent material closing the opening of said window frame and combining therewith to form a storm window and combining with the pane of said door, when in a raised and closed position, to form an air chamber within the door opening.

BRUNO HANSEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
500,967	Shipman	July 4, 1893
1,572,184	Casey	Feb. 9, 1926
1,859,974	Kroenke	May 24, 1932
1,935,887	Murphy	Nov. 21, 1933
1,970,905	Gillen	Aug. 21, 1934