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DOOR

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Fig. 1.

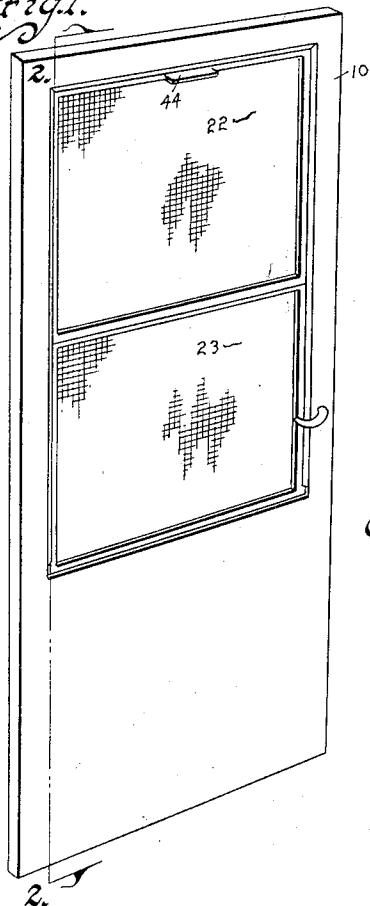


Fig. 2.

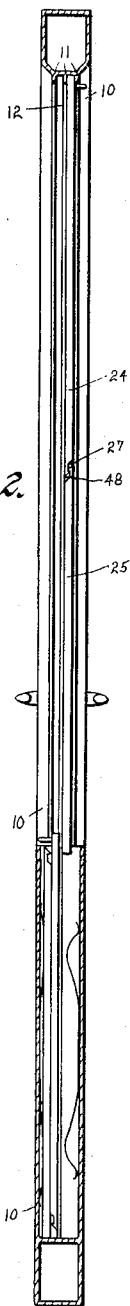


Fig. 3.

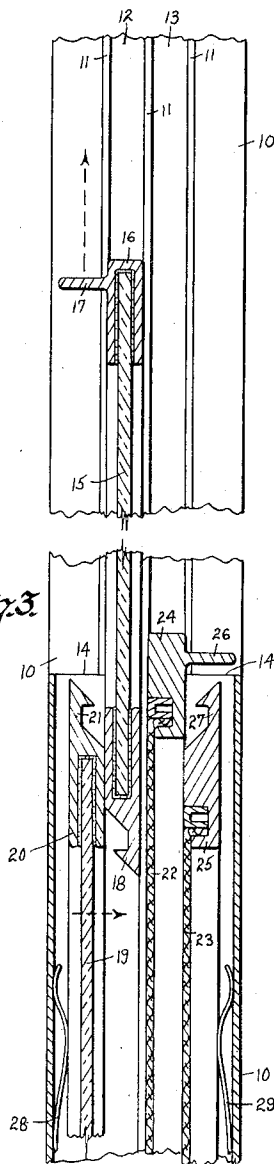
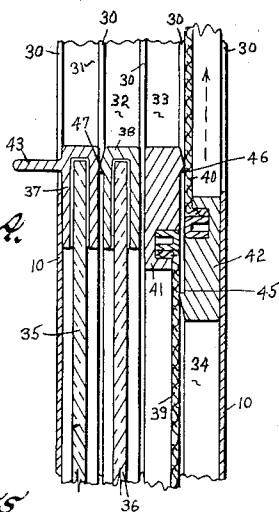


Fig. 4.



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1

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4 Claims. (Cl. 160—37)

My invention relates particularly to what is commonly known as a combination screen and storm door. This type of door is not new and has long been used as a decided improvement over separate screen and storm doors which must be entirely removed and replaced as the seasons require. In the combination screen and storm door, the same door frame is used the year around but the screen and glass portions are removable and interchangeable so that when required, only the removable portions need be handled. The portion not used is generally stored in the garage, basement or the like where it is vulnerable to damage and breakage. In my invention I have improved upon this door by a novel type door, the principal object of which is to provide a combination screen and storm door having an opening greater than one-half of its dimension in any one direction and having screens and glass panel portions slidably arranged within the door frame so that they may be safely stored in a portion of the door when not in use.

A further object of this invention is to provide a combination screen and storm door wherein the screen and glass portion can be stored within a portion of the door when not in use and so arranged that the door can be converted into a screen door, a storm door or a door having a part screen portion and a part glass panel, if desired.

A still further object of this invention is to provide a door designated to be convertible into either a storm or screen door wherein the screen or glass portions not in use are stored within a portion of the door, that is economical in manufacture, refined in appearance and durable in use.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained as herein after more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of my door shown arranged as a screen door and ready for use,

Fig. 2 is a longitudinal cross-sectional view of this door taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged broken fragmentary longitudinal sectional view of the center portion of this door showing the screen portions stored in the bottom portion thereof and showing a glass panel portion being raised to form a storm door, and

Fig. 4 is an enlarged fragmentary longitudinal sectional view of a modified form of construction of this door showing the position of the top portions of the glass panels when stored in the bottom portion of this door.

Referring to the drawings I have used the numeral 10 to designate an ordinary door frame provided with an opening greater than one-half of its dimension in any one direction. This frame may be made from any suitable material and may be transparent if desired. The respective sides of the bottom portion of the frame 10 are

2

spaced apart to provide a storage compartment for use as will be later described.

The inside of each side of the frame portion of the door 10 adjacent the open portion therein is provided with three vertical spaced apart flanges 11 to form the channels 12 and 13, as shown in Fig. 3. These flanges extend from the top of the open space in the frame 10 vertically downwardly to the top edge 14 of the storage compartment.

The numeral 15 designates a glass panel or pane suitably arranged within a frame 16 and vertically slidable within the channel 12. The upper portion of the frame 16 is provided with a laterally extending hand grip member 17 integrally formed thereon to facilitate the manual raising and lowering of the panel 15. The frame 16 is so arranged within the channel 12 that it will stay at any given place within the channel 12 by frictional engagement. The bottom portion of the frame 16 is provided with a hook portion 18 as shown in Fig. 3.

The numeral 19 designates a second glass panel having a frame 20 and having on its upper portion a hook member 21 of the same shape as the hook 18 but in inverse position in relation to hook 18, as shown in Fig. 3. The frame 20 is slidably positioned adjacent the frame 16 in the storage compartment, as shown in Fig. 3.

The numerals 22 and 23 designate mesh screen members, with each having a suitable frame 24 and 25 respectively. The frame 24 has a hand grip 26 similar to the grip member 17 and the frame is arranged in the channel 13 the same as described for the frame 16 in the channel 12. Likewise the frame 25 is slidably positioned adjacent the frame 24 in the storage compartment, as shown in Fig. 3.

The bottom portion of the frame 24 is provided with a hook 28, the same as hook 18, and the upper portion of the frame 25 has a hook 27 the same as hook 21, and arranged as shown in Fig. 3. The numerals 28 and 29 designate two tension spring members. One of these springs is positioned in the bottom inside portion of each side of the door so that spring 28 exerts an inwardly force against the frame 20, and the spring 29 exerts an inwardly force against the frame 25, as shown in Fig. 3.

When this door is constructed as described it can easily and quickly be converted from a screen door to storm door and vice versa, or it can be arranged to have part glass and part screen in the open portion of the frame. This is done in the following manner:

Starting with both glass panels and both screens resting in the storage compartment of the door as can be determined from Fig. 3 the glass panels are raised into the open portion of the door by manually gripping the grip member 17 and pulling the frame 16 upwardly in the channel 12. As the frame 16 moves upwardly the spring 28 is constantly exerting an inwardly pressure against the frame 20 so that as the hook 18 on frame 16 comes adjacent the hook 21 on frame 20, the pressure from the spring 28 is sufficient to cause the hooks 18 and 21 to engage each other whereby the frame 16 will pull up the frame 20 into its proper place below it in the channel 12. Thus the panel 15 will be in the upper portion of the opening in the door and the panel 19 will be in the lower portion thereof and directly below the panel 15. Since the frame 16 is held in place within the channel 12 by friction, the frame 20 will be held in position because of the engagement of the hooks 18 and 21. To return the glass panels to their storage place it is only necessary to manually pull down on the grip member 17. As this is done the frame 20 will reach the bottom of the storage compartment first and because of the cam surfaces on the hooks 18 and 21, the frame 16 will continue downwardly forcing the frame 20 toward the side of the storage compartment to its storage place, as

3

shown in Fig. 3. Here, the spring 28 will hold both the frames 20 and 16 in place without rattling. The screen portions are raised and lowered in the same manner as herein described for the glass panels, wherein the frame 24 is comparable to the frame 16, and the frame 25 is comparable to the frame 19. The frames 24 and 25 will slide within the channel 13 and be returned to the storage compartment as heretofore described for the glass panel portions.

In Fig. 4 I show a variation for the raising and lowering of the glass panels and screen members. The door frame 10 with its opening and storage compartment are the same as previously described and the variation consists of five flanges 30 in spaced relation extending from the top inside of each side of the open space in the frame 10 vertically downwardly to the bottom of the storage compartment to form the channels 31, 32, 33 and 34.

Two glass panels 35 and 36 suitably arranged in frames 37 and 38 are slidably positioned in the channels 31 and 32 respectively, as shown in Fig. 4. Likewise two screen portions 39 and 40 suitably arranged in frames 41 and 42 are slidably positioned in the channels 33 and 34 respectively.

The top of the frame 37 is provided with the laterally extending hand grip member 43 and a similar hand grip member 44 is provided on the top of the frame 42.

The bottom portion of the frame 42 and top portion of the frame 41 are provided with lip hooks 45 and 46 respectively which are arranged, as shown in Fig. 4. The top portion of the frame 38 has a hook 47 similar to hook 46 on frame 41 and the bottom portion of the frame 37 (not shown) is provided with a hook similar to hook 45 on frame 42.

In operation, the device shown in Fig. 4 will function as follows: Each glass panel and screen member slides vertically upwardly or downwardly within its respective channel and remains in its respective channel at all times.

In Fig. 4 the screen member 40 is shown being raised which is done by manually pulling upwardly on the grip member 44. As the bottom of the frame 42 comes adjacent the top of the frame 41 the hook members 45 and 46 will engage each other so that the frame 42 will pull into place the frame 41. The frame 42 is constructed so that it will remain in any given place within the channel 34 by frictional engagement. In returning the screen portions to the storage compartment the grip member 44 is manually lowered and the frame 41 will return of its own weight for lack of support.

The glass panels are raised and lowered in the same manner as just described for the screen portions wherein frame 37 is comparable to frame 42 and frame 38 is comparable to frame 41 with their respective corresponding hook members as previously described.

It is also possible to completely raise the screen members and at the same time raise the glass panel 16 only part way if a partial screen and storm door is desired.

In my drawings I have shown for illustration only two glass and two screen portions. However, it is possible to enlarge the opening in the door frame and provide more than two movable portions, if desired. Obviously, the more movable portions provided, the larger the opening in the frame can be because the height of each respective portion will be smaller and thus the height of the storage space can be reduced.

The advantages of storing the screens or glass panels within the door will be obvious to everyone who in the past has carried the interchangeable portions from storage place to door as the seasons require. My door eliminates not only the physical work formerly involved but provides a safe and convenient storage place on the spot where the panels or screens are to be used and thereby eliminating the possibility of breakage and damage. Because of their ready access at all times it is possible to vary the portion of the door used for screens, when desired. Thus, in the early spring when it may be too

4

cool for a full screen door yet not cold enough for a full storm door, a single screen portion may be utilized as described. This has not previously been possible because heretofore in the combination type doors, it was either all screen or all storm door. Likewise, in the fall of the year when it may not be cold enough for a full storm, though too cool for a full screen door, a partial screen and door as described can quickly be provided. While I show the storage compartment in the bottom of the door, it is obvious that the compartment could be located at either or both sides of the opening, or top.

Some changes may be made in the construction and arrangement of my door without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In a door provided with an open portion, a storage compartment provided in the lower portion of said door, three spaced apart inwardly extending vertical flanges on each side of said open portion; said flanges forming two adjacent vertical channels, two glass panels positioned in said storage compartment adjacent each other, two screen members positioned in said storage compartment adjacent each other, frames on each of said panels and screens respectively, capable of vertically sliding in one of said channels at times, hand grip members on one panel frame and one screen frame respectively, a hook member on the bottom of each frame having said grip member, a hook member on the top of each of the other frames; the hook on either handle bearing frame, when said handle bearing frame is raised a distance in excess of its height engaging the hook at the top of its adjacent similar frame and thereby pulling said adjacent member up into said open portion.

2. In a door provided with an open portion greater than one half of its dimension in any one direction, an enclosed storage compartment provided in the lower portion of said door, three spaced apart inwardly extending vertical flanges on each side of said open portion; said flanges forming two adjacent vertical channels, two glass panels positioned in said storage compartment adjacent each other, two screen members positioned in said storage compartment adjacent each other; one of said screen members being adjacent one of said glass panels, a frame on each of said panels and screens and selectively capable of vertically sliding in one of said channels at times, a hand grip member on one panel frame and one screen frame respectively; said frames being adjacent each other and each positioned below and in line with one of said channels, a hook member on the bottom of each frame having said grip member, a hook member on the top of each of the other frames; the hook on either handle bearing frame, when said handle bearing frame is raised a distance in excess of its height engaging the hook at the top of its adjacent similar frame and thereby pulling said adjacent member up into said open portion below said respective frames having said grip member.

3. In a door having an open portion, a storage compartment in said door adjacent said opening, at least two guiding members extending from said storage compartment along opposite edges of the opening in said door, a pair of window frames adapted to selectively close said door opening and reside in said storage compartment by sliding movement on at least one of said guiding members, a pair of screen frames adapted to selectively close said door opening and reside in said storage compartment by sliding movement on at least one other of said guiding members, hand grip members on one window frame and one screen frame, hooks on one end of each of said frame having hand grip members, and hooks on the opposite ends of other ones of each of the frames, the

5

hooks on either hand grip bearing frame, when said hand grip bearing frame is moved from said storage compartment a distance in excess of the distance from its hand grip to its hook engaging the hook at the other end of its adjacent similar frame.

4. In a door having an open portion, a storage compartment in said door adjacent said opening, at least two guiding members extending from said storage compartment along opposite edges of the opening in said door, a pair of window frames adapted to selectively close said door opening and reside in said storage compartment by sliding movement on at least one of said guiding members, a pair of screen frames adapted to selectively close said door opening and reside in said storage compartment by sliding movement on at least one other of said guiding members, hand grip members on one window frame and one screen frame, and means secured to said

6

frames for operatively associating similar frames together for simultaneous movement away from said storage compartment whenever said hand grip bearing members are moved from said storage compartment a distance greater than the distance from said hand grips to said means.

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