Jan. 4, 1966 C. W. VAN WORMER 3,226,776

CONVERTIBLE SERVING WINDOW

Filed Aug. 16, 1963 2 Sheets-Sheet 1

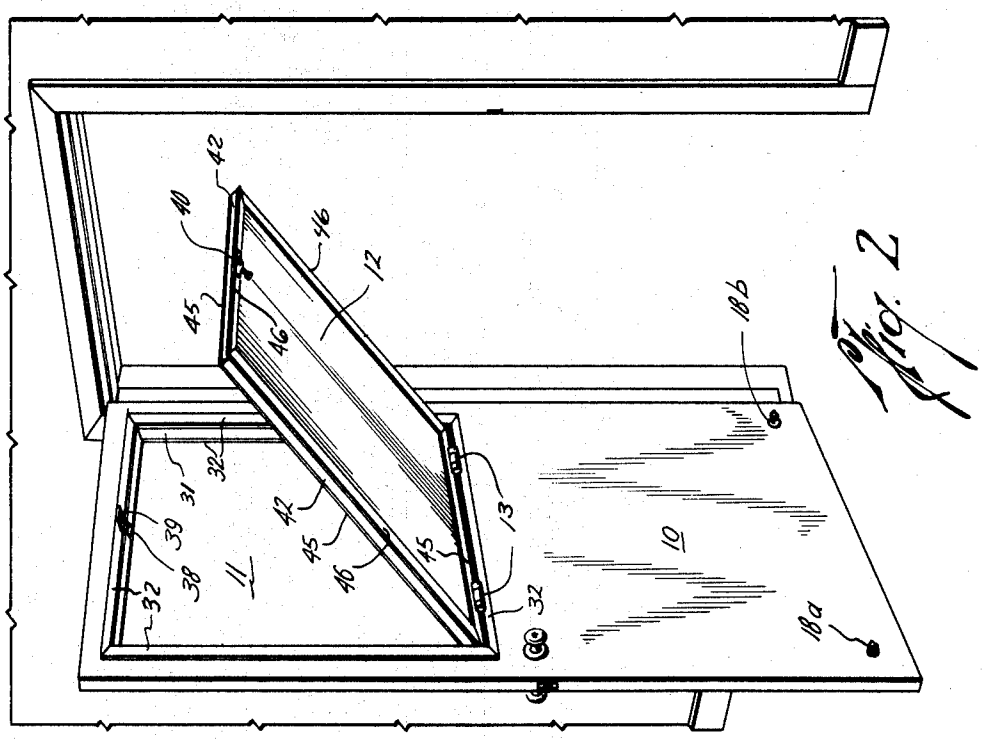


Fig. 2

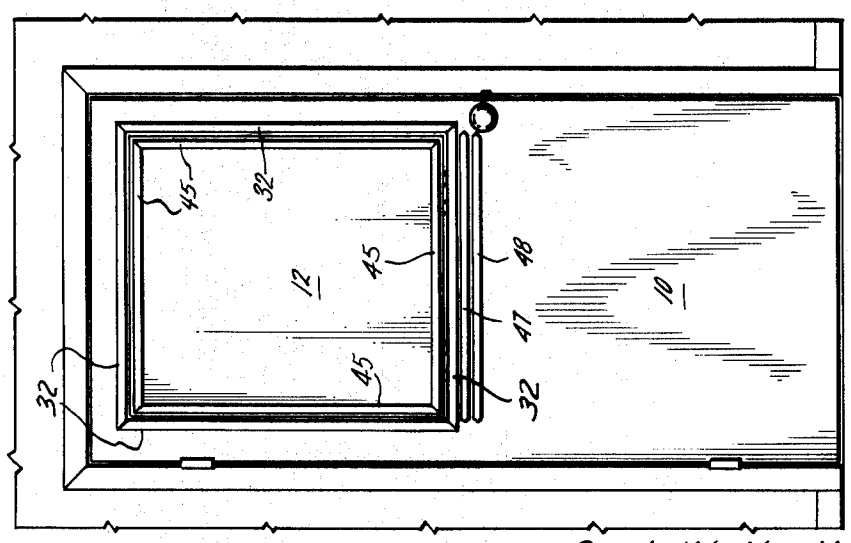


Fig. 1

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Fig. 4

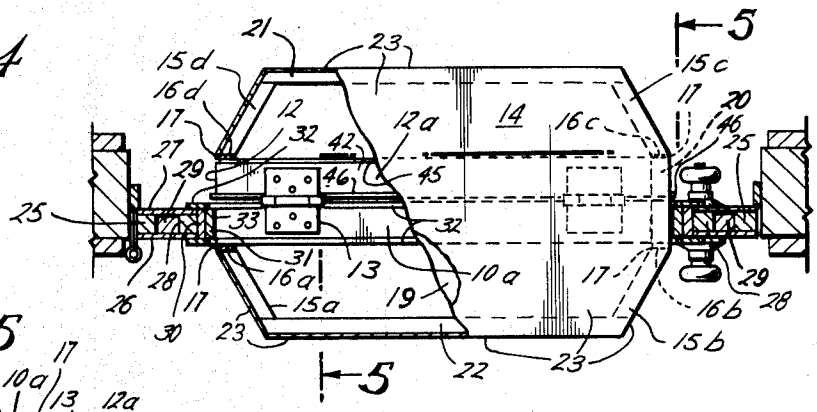


Fig. 5

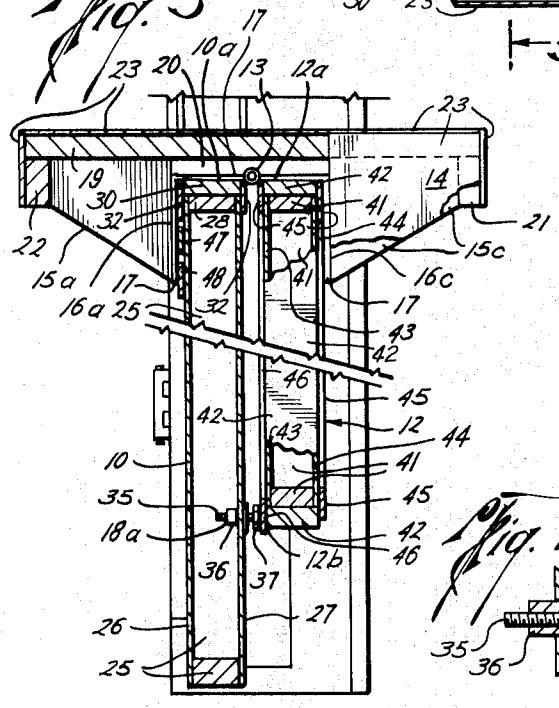


Fig. 3

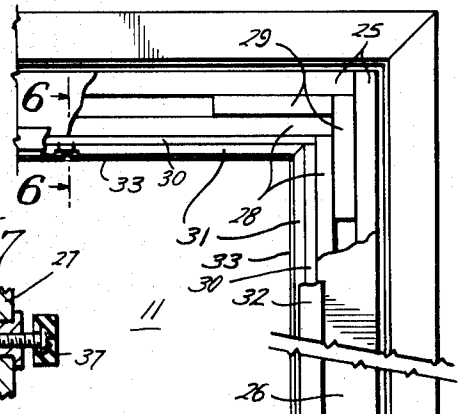
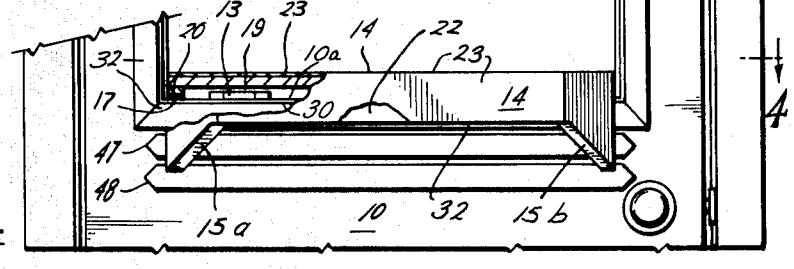


Fig. 7



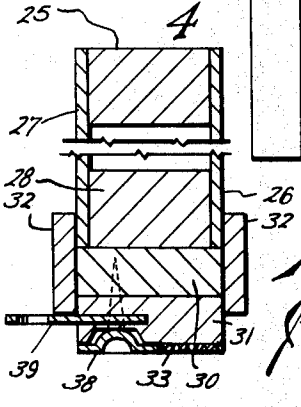


Fig. 6

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United States Patent Office 3,226,776
Patented Jan. 4, 1966

3,226,776

CONVERTIBLE SERVING WINDOW

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Filed Aug. 16, 1963, Ser. No. 302,692
13 Claims. (Cl. 20—16)

This invention relates to serving windows generally, and, in particular, to a serving window which can be converted to a partition closing off the two areas previously connected by the serving window.

Generally speaking, most service windows are closed by simply sliding a door across the opening. Thus, they look like service windows whether they are open and in use or closed. This is not objectionable in certain places, however, there is a need for a service window which can be installed in homes, apartments, offices, etc. which, when not in use, will appear to be a part of the partition in which it is located but which can be quickly and easily converted into a functional service window when desired.

It is an object of this invention to provide such a serving window. It is a further object of this invention to provide a convertible service window which can be quickly and easily installed in an existing door or partition. It is also an object of this invention to provide a service window which can be converted quickly and easily from a partition to a service window with a minimum of labor and without requiring any special tools or equipment.

It is another object of this invention to provide interior framing for a serving window which can be quickly and easily removed to allow the interior surfaces of the window to be changed when desired, quickly and easily.

These and other objects are accomplished in accordance with this invention by pivotally connecting a panel in an opening in a partition to allow the panel to either close the opening separating the areas on each side or to pivot downwardly to a position generally parallel to the partition, thereby interconnecting the areas on each side of the partition through the opening, and also providing a supporting surface which combines with the partition to support a removable serving platform, which when installed completes the conversion of the partition from one separating two areas to one interconnecting two areas through a serving window. The removable platform is provided with support members which extend downwardly and engage the partition and the panel and keep the platform from rocking in the window. In addition, the support members also serve to hold the panel in position with respect to the partition. Thus, the partition, panel, and serving platform when assembled in accordance with this invention combine to provide a convertible serving window which is sufficiently stable for all purposes.

One embodiment of the invention will be described below, in connection with the attached drawings in which:

FIG. 1 is a front view in elevation of an ordinary panel door provided with an opening for a serving window with a panel pivotally connected to the door in accordance with this invention with the panel in position closing the opening;

FIG. 2 is a view of the door shown in FIG. 1 with the door open and the panel, partially pivoted from its position in FIG. 1 closing the opening toward a position generally parallel to the door which is the first step in converting the door of FIG. 1 to a door having a serving window;

FIG. 3 is a view partly in section and partly in elevation of the door as it appears from the side shown in FIG. 1 after the panel has been pivoted downwardly and the serving platform installed in the opening;

FIG. 4 is a view taken along line **4—4** of FIG. 3 looking down on the serving platform in place in the window with a portion of the platform broken away to show the surfaces of the door and panel employed to support the platform;

FIG. 5 is a partial vertical sectional view taken along line **5—5** of FIG. 4, but on a larger scale;

FIG. 6 is a view taken along line **6—6** of FIG. 3 but on a larger scale, showing the arrangement of the framing members around the opening in the door and also showing a part of a latch and part of a retaining detent which can be used to hold the panel in place closing the window when the serving window is not in use; and

FIG. 7 is an enlarged sectional view of the adjustable means employed to hold the panel generally parallel to the door.

The invention is shown in the drawings and will be described below in connection with a door since this is one place where serving windows are commonly installed. However, the invention has utility and can be employed in any partition dividing two areas such as a wall, partial partition, room divider, etc.

As shown in the drawings door **10** is provided with an opening **11** which is closed in FIG. 1 by panel **12**. Panel **12** is pivotally connected to the door by hinges **13** which allow the panel to pivot from a first position (FIG. 1) closing opening **11** to a second position (FIG. 5) where it is spaced from and approximately parallel to the door. In its second position the exposed edge surface **12***a* of outer facing member **42** of the panel lies in generally the same horizontal plane as the exposed surface **10***a* of outer facing member **30** which forms the lower boundary of the opening in the door. As shown in FIGS. 4 and 5 these surfaces, **10***a* and **12***a*, combine to provide a horizontal support for serving platform **14** which extends horizontally through opening **11** and rests on these surfaces.

Thus with panel **12** in the position shown in FIG. 1, closing opening **11**, door **10** can serve as a door in the conventional manner. Then by simply pivoting panel **12** downwardly to a position generally parallel to the door and placing serving platform **14** in opening **11** so it is supported by parallel surfaces **10***a* and **12***a*, the door is quickly and easily converted into a serving window.

Means are provided to hold the serving platform in position on surfaces **10***a* and **12***a* and to keep it from tilting should be something be set on its outer edge. In the embodiment illustrated, platform **14** is held in position by support members **15***a*, **15***b*, **15***c* and **15***d*. Each support member has a flat end surface which, through the coating **17**, serves to engage the door or the panel as the case may be and support the platform. Thus, support members **15***a* and **15***b* are attached to and extend downwardly from one side of the platform with surfaces **16***a* and **16***b* in engagement with the door whereas support members **15***c* and **15***d* are attached to and extend downwardly from the other side of the platform where their surfaces **16***c* and **16***d* are in engagement with the panel.

The platform **14** is interchangeable in position. That is, the platform may be turned around and the support members **15***a* and **15***b* may then be in engagement with the panel. Likewise, supporting members **15***c* and **15***d* will then be in engagement with the door.

Actually, in the preferred embodiment, these surfaces, **16***a*, **16***b*, **16***c* and **16***d*, are covered with a thin coating **17** of felt, or cork, or some similar type of coating to protect the surface of the door and panel from being marred by the support members.

To provide the maximum stability to the platform the support members are preferably located, as shown on the drawings, at opposite ends of the platform in opposing pairs. The members in each pair are spaced apart to provide a vertical slot between them in which the door and the panel are located when the serving platform is placed in the opening.

Since with conventional hinges, like those shown in the drawings, space must be provided for the hinge pin, there will be a gap between surfaces **10***a* and **12***a* when the panel is in its open position. This gap will also result in the panel tending to pivot by its own weight until the lowermost edge **12***b* (as viewed in FIG. 5) is in engagement with the door. This would, of course, cause surface **12***a* to move out of horizontal alignment with surface **10***a* and platform **14** would not be properly supported. To prevent this, adjustable stops **18***a* and **18***b* are located between the panel and the door to space the panel the desired distance from the door. So that the panel will be adequately supported, a plurality of stops are preferably used. Two are employed in the embodiment shown in the drawings and located adjacent the lower corners of the panel for easy access.

The desired distance may be or may not be such that the panel is exactly parallel to the door. For example, it may be desirable to obtain a slight wedging action between the support members on the platform and the door and panel. After the platform **14** has been placed within the opening **11**, the lower end of the panel can be spaced outwardly far enough from the door to cause the panel to make a very slight angle with the door. This outward movement of the panel, which is the preferred method of creating a slightly wedge effect, can be accomplished by a simple adjustment of adjustable stops **18***a* and **18***b*. Because of the slight wedge effect involved in this procedure, it is not considered necessary or desirable for the opposing surfaces **16***a* and **16***d* and opposing surfaces **16***b* and **16***c* of the support members to be changed from essentially parallel planes to slightly diverging planes.

The platform **14** may be removed without difficulty from its position within the opening **11** without the necessity of readjusting the adjustable stops **18***a* and **18***b*. However for best results and to place the panel in optimum position to receive the platform **14** when it is reinstalled within the opening **11**, it is preferred that adjustable stops **18***a* and **18***b* be adjusted to allow the panel to move inwardly towards the door, thereby releasing any pressure which might be exerted by the panel upon the surfaces **16***a*, **16***d*, **16***b* and **16***c* of the support members. The platform may then be freely removed from the opening **11**. Likewise, upon replacing the platform **14** within the panel **11**, the support members will move freely and easily into position over the door and the panel and then by a readjustment of the adjustable stops **18***a* and **18***b* the panel may again be forced outwardly into snug engagement with the support members. In this way all possible play between the support members and the door panel can be removed.

Additional wedging means may be provided, if desired, on the door **10** by slightly and progressively thickening downwardly the strips **32**, **47** and **48** which are located at the base of the opening **11**. In this event, it may be desirable to change the essentially vertical, parallel planes of the surfaces **16***a*, **16***b*, **16***c* and **16***d* of the support members to a slightly diverging angle, which should be slightly less than the diverging angle formed by downwardly thickening the strips **32**, **47** and **48**. This slightly diverging angle on the opposing surfaces **16***a*, **16***d*, **16***b* and **16***c* can be provided by decreasing downwardly the thickness of the coating **17** which is secured to each surface **16***a*, **16***d*, **16***b* and **16***c*, the slightly diverging angle thus obtained being the same for each surface and obviating the need for changing the essentially vertical planes of the surfaces **16***a*, **16***d*, **16***b* and **16***c* of the support members. This arrangement would provide ample clearance between the suport members and the door and panel when the platform is initially being placed into position, which might make it somewhat easier to assemble in the window.

The adjustable stops as illustrated in FIG. 7 consist of externally threaded shafts or screws **35** which engage internally threaded nuts or cylinders attached to the door through holes in sheet **27** of the door **10**. In the embodiment shown in FIGURES 2 and 5, the internally threaded member **36** consists of a recessed cylinder or stem, attached to a flange, with the cylinder portion being inserted through a hole provided in the door a sufficient distance until the flange attached thereto is in snug contact with the outer surface of sheet **27**. Pads **37** of resilient material such as rubber are attached to the shafts or screws between them and the panel. By rotating the shafts the distance the panel is held away from the door can be adjusted.

Serving platform **14** includes, in addition to support members **15**, a table member **19** which extends horizontally through the window and which is supported by surface **10***a* on the door and surface **12***a* on the panel, through the bearing strips **20**. Because of the hinge pins of hinges **13** the table member cannot rest directly on these surfaces so a plurality of bearing strips **20** (only one of which is shown in the drawing in FIG. 5) are arranged to support the table member above the hinge pins, thereby giving clearance between the hinge pins and the under surface of table member **19**. Of course, by making other provision on the under side of table member **19**, to accomodate the hinge pins, the need for these bearings strips **20**, insofar as their use in raising the table member above the hinge pins is concerned, could be eliminated. However, the bearing strips **20**, provide a minimum yet adequate area of bearing contact between the table member and the surfaces **10***a* and **12***a* and because of this limited bearing contact the greater portion of uneven bearing resulting from possible irregularities in the surfaces **10***a* and **12***a* and also in the under surface of the table member would be eliminated, thereby insuring a much more satisfactory and stable contact between these members.

Preferably, each bearing strip has its exposed lower surface, which is in contact with, and bearing upon, surface **10***a* of the door and **12***a* of the panel, covered by the same coating **17**, described above in connection with surfaces **16***a*–**16***d*, to provide a cushioning effect between the strips and exposed surfaces **10***a* and **12***a*, and to protect the latter surfaces from being damaged.

The shape of the table member can be varied as desired for practical as well as esthetic purposes. In the embodiment shown its corners are beveled, requiring the support members **15***a*, **15***b*, **15***c* and **15***d* to extend away from the door and panel at an angle. This beveled arrangement of the supporting members allows for wider opening of the door than would be possible with a platform of substantially rectangular shape, also possible danger of injury from a projecting sharp edge would be considerably minimized. Lateral reinforcing is provided to the support members by means of members **21** and **22** which extend between the outer edges of the support members along each side edge of the table member and may be optionally secured either to the outer edges of the support members or between the support members, as well as to the table member **19**.

To protect the serving platform, a thin layer **23** of plastic, such as Formica, can be used to cover its exposed surfaces.

In the drawings the serving window is shown installed in a hollow panel door which consists of an outer rectangular frame **25** which supports two flat rectangular sheets **26** and **27** on each side thereof. Sheets **26** and **27** are normally veneered plywood and relatively thin as compared to the outer frame to which they are attached. Thus when window **11** is cut in the door through the sheets the peripheral edges of the opening should be supported in the same manner as the outer edges of the sheets are supported by frame **25**. Therefore inner frame **28** is provided to support the edges of sheets **26** and **27** adjacent opening **11**.

To help add rigidity to this inner frame around the opening, spacers **29** are placed between the inner frame and the outer frame to tie the two frames together in the manner illustrated in FIG. 3.

The inner frame is located with its inner surface adjacent the edge of the opening **11**. This is best shown in FIG. 6 when a typical section from the outside edge of the door to the inside edge of the opening is shown. Thus, outer framing member **25** is flush with the outer edge of the side panels or sheets **26** and **27** and inner framing member **28** is flush with the inner edge of the sheets adjacent opening **11**. Preferably, the inner edges of sheets **26** and **27** are protected by attaching facing members **30** and **31** thereto. Facing member **30** extends completely around the inner periphery of opening **11**, whereas facing member **31** extends only along the sides and top of the opening and in firm engagement with facing member **30**. The joint between these facing members and between the facing members and the edges of sheets **26** and **27** is then covered with strip moulding **32** to give a neat appearance, and, as explained below, in the preferred embodiment, to frictionally hold facing member **31** in position. This arrangement is clearly illustrated in FIG. 6 where the facing member **30** is shown abutting the perpiheral edges of sheets **26** and **27** with strip moulding **32** covering both sides of the joint between them. Facing members **30** are preferably nonremovable and are adequately secured in any desired manner to inner framing members **28**.

Preferably the outer facing members **31** are removably installed in the groove provided between the opposite strip moulding **32** for easy removal and replacement when they become marred or dirty through use. These members can be either held in position by friction between them and the strip moulding with the side members supporting the upper member (as shown in FIG. 3) or they can be attached with any suitable holdfast means. The exposed, inwardly facing surface of these members **31** may optionally be covered with a layer **33** of the same plastic as is used to cover the serving platform (as shown in FIG. 3 and FIG. 6) so that the inner periphery of the window and the serving platform match.

FIG. 6 also shows the keeper parts of a latch and detent arrangement which can be employed to either hold or latch the panel in place closing the opening. To hold the panel in position in the opening, a spring loaded ball (not shown) is carried by the panel and arranged to engage spherical socket **38** located in the top of opening **11**. This arrangement simply retains the panel in position closing the opening **11**. To secure the panel closed hasp **39** (as shown in FIG. 2) is provided to cooperate with a similar, suitable slidable bolt or the like **40** carried by the panel to allow the panel to be secured in the opening in the conventional manner. If the plastic layer **33** is used on the top facing member **31**, the socket **38** will preferably be flush with the outer surface of the plastic layer.

In the embodiment illustrated, panel **12** is constructed similar to the door and may actually be formed of the portions of the door removed to provide the opening **11**. It consists of a rectangular frame **41** to which are attached outer facing members **42** and covering sheets **43** and **44**. The joint between the facing members and the sheets are here also covered with interiorly set back strip mouldings **45** on the outside perimeter of the panel and also on the bottom of the inside of the panel, while along the top and sides of the inside of the panel, exteriorly projecting strip mouldings **46** (as shown in FIGURES 4 and 5) are used.

When the panel **12** is closed into its position as shown in FIG. 1, the projecting lip on these strip mouldings **46** make contact with the members **31** and serve as stops to prevent the panel **12** from progressing beyond its correct closing position in the opening **11**. They also function to seal up the gap between the panel **12** and the opening **11** on the top and both sides of the panel.

As shown in FIG. 1, additional moulding strips **47** and **48** are located below strip **32**. These added strips improve the appearance of the door when the opening is closed but their primary purpose is to provide the necessary and essential additional surfaces on the door for engaging the support members on the serving platform.

Additional strips can also be provided on the panel for decorative purposes, also to provide a base for installing the sliding bolt lock.

From the foregoing, it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth, together with other advantages which are obvious and which are inherent to the apparatus and structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

The invention have been described, what is claimed is:

1. Apparatus of the character described comprising in combination, a member adapted to form a partition between two separate areas, said partition member having an opening therein; a movable panel adapted to close the opening, said panel having its lower end pivotally connected to the member adjacent the lower edge of the opening to allow the panel to move between a first position closing the opening to a second position generally parallel to and spaced from the partition member below the opening, and a removable server platform located in the opening when the panel is in said second position and supported by portions of the partition member and the panel, in a position transverse to the partition member on the lower edge of the opening.

2. The combination of claim **1** in which the server platform is provided with four support members extending downwardly therefrom with two support members on the same side of the server platform arranged to engage the partition and the other two arranged to engage the panel.

3. The combination of claim **2** further provided with adjustable spacer means located between the partition and the panel when the panel is in its second position to allow the space between the panel and the partition to be adjusted.

4. The combination of claim **2** in which the support members have opposed generally vertical, parallel surfaces which enage the partition and the panel.

5. The combination of claim **4** further provided with means for causing the panel to pivot away from the partition member toward its first position to thereby move the panel into firm engagement with the support members to remove any tendency of the platform to pivot on its support.

6. A convertible server door adapted to be converted from a door capable of closing the opening between two areas to a door having a serving window through which the areas may be served, comprising, a door having an opening therein, a panel adapted to close the opening, said panel having its lower end pivotally attached to the door to move from a first position closing the opening to a second position clear of the opening, a serving platform removably located in the lower end of the opening and supported by the door and the panel when the panel is in its second position, said platform comprising a platform member extending through the opening having a substantially horizontal surface, and support members attached to the platform member and extending downwardly therefrom on opposite sides of the opening, the support members on one side being in engagement with the door and the members on the opposite side being in engagement with the panel.

7. The combination of claim **6** wherein the outer surface of the door, immediately below the opening therein, has secured thereto a plurality of strips to receive the

two support members of the server platform which are in contact with the door.

8. The combination of claim 6 in which the server platform is further provided with a plurality of bearing plates attached to the underside of the platform member and bearing directly upon the door and the panel, raising the platform to clear the connecting hinges between door and panel, and forming the contact points between server platform, door and panel.

9. The combination of claim 8, in which the bearing plates and the inner surface of each support member of the server platform are lined with a coating of cushioning material for protection of the door and panel against damage.

10. In a partition having an opening therein, a convertible serving window, comprising, in combination therewith a panel pivotally connected to the partition to move from a first position closing the opening to a second position generally parallel to the partition, adjustable means located between the partition and the panel when the panel is in its second position to adjust the angle the panel makes with the partition when in its second position; a removable serving platform located in the opening when the panel is in its second position and directly supported by the partition and the panel, and four support members attached to and extending downwardly from the serving platform, said members being arranged in pairs each having two opposed spaced surfaces adapted to engage the partition and panel respectively and keep the platform from pivoting in the opening.

11. The combination of claim 10 in which the portion of the peripheral edge of the opening which is at the side and above the serving platform when the serving platform is installed, is provided with a groove, in which facing members are located which extend out of the groove to thereby tend to protect the peripheral edge of the opening from damage when the serving window is in use, said facing members being removably installed in the groove to allow the members to be readily replaced when damaged or soiled.

12. The combination of claim 11 in which the facing members are frictionally held in the grooves.

13. The combination of claim 11 in which the grooves are formed by molding strips attached to the partition on both sides of the opening with one edge extending beyond the peripheral edge of the opening.

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