July 18, 1961 B. C. BATEMAN ET AL 2,992,872

PANEL RETAINING MEANS

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Fig. 1

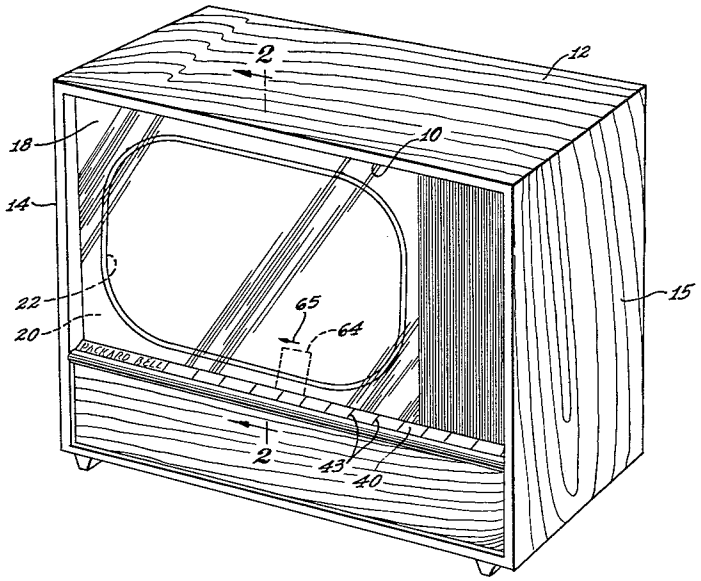
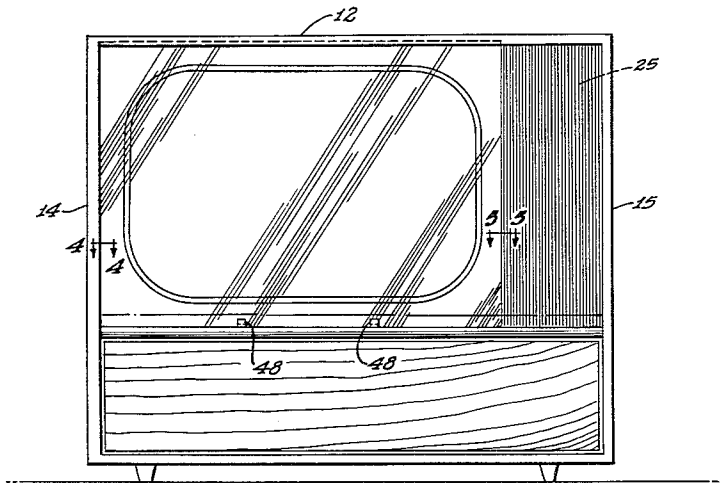


Fig. 3



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Fig. 2

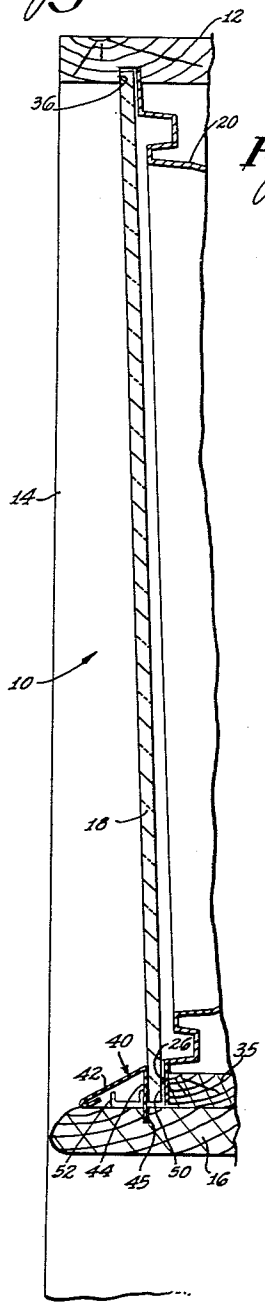


Fig. 9

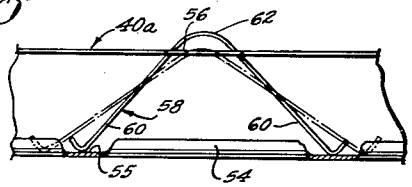


Fig. 10

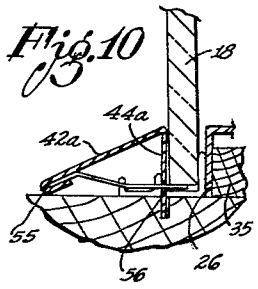


Fig. 6

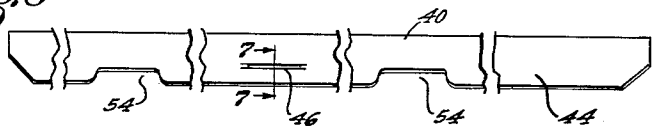


Fig. 7

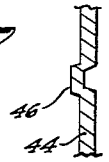


Fig. 8

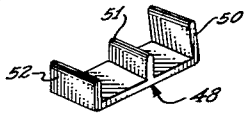


Fig. 4

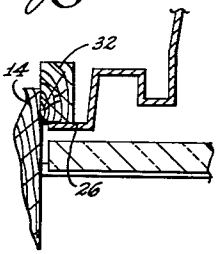
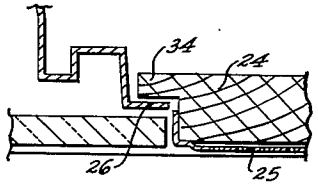


Fig. 5



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United States Patent Office 2,992,872 Patented July 18, 1961

2,992,872

PANEL RETAINING MEANS

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Filed May 12, 1958, Ser. No. 734,617
5 Claims. (Cl. 312—7)

This invention relates to means for retaining a light-transmitting panel in assembled position across a window opening of a cabinet or the like in a manner to facilitate both initial installation of the panel and subsequent temporary removal of the panel for access to the rear of the panel.

While the invention is widely applicable for its purpose, it has special utility for the retention of the glass window panel of a television receiver and the invention has been initially embodied for this purpose. This initial embodiment of the invention is described herein for the purpose of disclosure and to provide guidance for those skilled in the art who may have occasion to apply the same principles to other specific purposes.

In a typical television receiver, the cabinet or housing has a large window opening for viewing the picture tube and this window opening is spanned by a light-transmitting panel of glass or other substantially transparent material. One problem is to provide means for retaining the transparent panel which retaining means is expensive in itself and also reduces the assembly labor.

Once a television set is placed in service, it becomes necessary from time to time to gain access to the back surface of the window glass to replace the picture tube and the transparent panel must be temporarily removed for this purpose. Usually the removal and replacement of the transparent panel is a time consuming procedure. In many instances, moreover, it is necessary to remove wood screws and too often the threaded bores in the wood become stripped and fail to anchor the replaced screws.

A second problem, therefore, is to provide a panel-retaining means that facilitates ready removal of the panel and does so without involving impairment or deterioration of the retaining means. In this regard, a feature of the preferred practice of the invention is that it completely eliminates the necessity for wood screws or any other type of conventional fasteners.

In general, the invention accomplishes its purpose by providing a retainer means or assembly that functions by releasable mechanical interlocking of parts instead of relying on fasteners such as screws. In the preferred practice of the invention, the upper end of the transparent panel simply slides into a retaining groove formed in the cabinet itself, and the retainer means of the present invention is used only at the lower edge of the panel. When the retainer means is disengaged to release the lower edge of the installed panel, it is a simple matter to swing the lower edge of the panel forward and then to withdraw the upper edge from the upper retaining groove to free the panel completely.

The retainer means of the invention includes a rail that extends across the lower outer margin of the panel and has the appearance of a decorative molding or fillet member. This rail is anchored against outward withdrawal from the window opening by seating in a recess in the cabinet structure in an interlocking manner and is anchored against upward withdrawal from the recess by releasable interlocking engagement with the lower edge of the panel itself. Thus, the rail retains the panel and the panel, in turn, retains the rail.

The preferred practices of the invention are further characterized by the inclusion of support means beneath the lower edge of the panel which support means is forwardly slidable. This support means may be in the form

of a plurality of spaced clips that extend forward from the lower edge of the panel and are shaped to provide forward finger pieces for manipulation in removing the panel. These slidable clips extend into the interior of the interlocking rail and are concealed thereby. A second and important function of these clips is to serve as spacer means to form a dust pocket, as will be explained.

The various features and advantages of the invention may be understood from the following detailed description together with the accompanying drawings.

In the drawings, which are to be regarded as merely illustrative:

FIG. 1 is a perspective view of a typical console model television receiver embodying a selected practice of the invention;

FIG. 2 is a vertical transverse section on a larger scale taken as indicated by the line 2—2 of FIG. 1 and showing how the upper and lower edges of the transparent panel are releasably secured in place;

FIG. 3 is a front elevational view of the television receiver with the retainer rail removed from the bottom edge of the window opening;

FIG. 4 is a fragmentary horizontal section taken as indicated by the line 4—4 of FIG. 3 showing how one side edge of the installed panel is backed up by supporting structure;

FIG. 5 is a similar fragmentary horizontal sectional view showing how the opposite side edge of the installed panel is backed up by supporting structure;

FIG. 6 is a rear elevational view of the retainer rail;

FIG. 7 is a greatly enlarged fragmentary section of the rail along the line 7—7 of FIG. 6 showing how the rail is formed with a rearward offset for engagement with the lower edge of the transparent panel;

FIG. 8 is a perspective view of one of the plurality of slidable supports that extend under the lower edge of the panel in the preferred practice of the invention;

FIG. 9 is a fragmentary bottom view of a modification of the retainer rail with parts broken away, which retainer rail has a wire spring to serve as means for releasably engaging the lower edge of the glass panel;

FIG. 10 is a fragmentary vertical sectional view showing the modified rail in its installed position.

FIG. 1 shows a typical console model television cabinet incorporating the presently preferred embodiment of the invention. The cabinet has the usual large rectangular window opening 10 which is defined by the top wall 12 and the two side walls 14 and 15 of the cabinet together with an intermediate horizontal wall 16 (FIG. 2) at the bottom of the window opening. The window opening 10 is spanned by a light-transmitting panel 18 which, in this instance, is a piece of glass. The glass panel 18 is inclined slightly forward in the usual manner as may be seen in FIG. 2 to cause all reflections by the glass to be directed downward.

Rearward of the glass panel 18, the window opening 10 is spanned, in part, by the usual mask 20 that has the usual opening 22 with rounded corners to frame the television picture tube. The remaining portion of the window opening rearward of the glass panel 18 is covered by an upright wood plate 24 (FIG. 5) which has the usual opening (not shown) for a loud speaker and which is covered by a decorative perforated metal sheet 25.

The mask 20 which comprises a formed sheet of suitable material has a peripheral flange 26 by means of which it is anchored in its assembled position. As indicated in FIG. 4, the peripheral flange 26 on one side of the mask backs against an upright block 32 of wood that is suitably anchored to the side wall 14 of the cabinet. As indicated in FIG. 5, the peripheral flange 26 on the other side of the mask backs against a tongue 34 of the wood plate 24, the wood plate being rabbited to form

the tongue. The peripheral flange **26** at the bottom edge of the mask is backed in the same manner against a pair of spaced wood blocks **35** that are suitably secured to the horizontal wall **16**. It is apparent that with the mask **20** peripherally backed up in this manner, the mask itself serves as a backing for the transparent panel **18**.

Any suitable means may be provided to confine the upper edges of the panel **18** and the mask **20** in a releasable manner. In the present embodiment of the invention, the top wall **12** of the cabinet is formed with a transverse groove **36** for this purpose, as shown in FIG. 2. It is apparent that the mask **20** may be installed simply by inclining the upper end of the mask towards the cabinet, inserting the upper peripheral flange **26** of the mask into the top groove **36** and then swinging the lower end of the mask inward until the mask reaches its assembled position against the block **32**, the blocks **35** and the tongue **34** of the wood plate **24**. The mask may then be stapled in place in a well known manner. It is apparent that the glass panel **18** may be installed by the same procedure to take an assembled position, backed against the peripheral flange **26** of the mask **20**. All that is needed to complete the installation of the panel **18** is suitable means to releasably retain the lower edge of the glass panel **18**. This means will now be described.

A retainer rail, generally designated by numeral **40**, extends across the bottom of the window opening **10** in releasable interlocking engagement with the horizontal wall **16**, the horizontal wall being recessed for this purpose. In the preferred practice of the invention, the retainer rail **40** is a sheet metal member of angular cross-sectional configuration as best shown in FIG. 2. The angular configuration of the rail **40** provides an inclined forward leg **42** and a rearward vertical leg or downwardly extending flange **44**. The surface of the forwardly inclined leg **42** is decorative and for this purpose may be provided with a decorative series of transverse stripes **43**. In the present construction, the recess in the cabinet structure for engagement by the retainer rail **40** comprises a slot or groove **45** that extends across the width of the window opening **10** and is dimensioned for relatively snug fit around the bottom edge of the rail flange **44**.

The engagement of the rail flange **44** with the groove **45** effectively anchors the rail **40** against withdrawal forwardly from the window opening and, as heretofore stated, the retainer rail is provided with a shoulder for releasable engagement with the edge of the panel **18** to anchor the rail against upward withdrawal from the groove **45**. For this purpose, the flange **44** of the rail may be offset to form a short horizontal rib **46** as indicated in FIGS. 6 and 7. It is contemplated that when the glass panel **18** is locked in place by the rail **40**, the glass panel and the bottom flange of the mask **20** will exert pressure against the wood blocks **35** at the lower edge of the window opening, the result being that the bottom edge of the glass panel is firmly clamped. The mechanical properties of the glass will allow the glass to be bent, so that it is only necessary to press against the glass panel to move the glass panel out of engagement with the rib **46** of the rail **40** thereby to permit the rail to be lifted from the groove **45**.

While the invention as described to this point is self-sufficient and adequate for its purpose, the preferred practice of the invention further includes slidable support means under the lower edge of the panel **18** to facilitate the removal of the panel when the retainer rail **40** is removed for access to the interior of the cabinet. In the present embodiment of the invention, such support means comprises a pair of clips **48** which function as slidable shoes under the edge of the panel **18**. These clips **48** may be made of any suitable material selected from various metals and plastics.

As best shown in FIG. 8, each of the clips **48** may have a rearward upstanding flange **50** to form a shoulder for abutment against the rear margin of the glass panel **18** and an intermediate upstanding flange **51** for positioning in front of the glass panel, and a forward upstanding flange **52** to serve as a finger piece for manipulation of the clip. Preferably these clips **48** are made of a suitable plastic material that is slightly resilient. The two clips **48** are spaced apart as shown in FIG. 3 to support the panel **18** in a stable manner. The clips **48** extend forward into the interior of the retainer rail **40** as shown in FIG. 2. To permit the clips **48** to extend forward in this manner, the downward extending flange **44** of the retainer rail is recessed to form notches **54** as best shown in FIG. 6 to clear the two clips.

It is apparent that the rail **40** completely conceals the two clips **48** since the forward portions of the clips extend into the interior of the rail and since the upstanding rear flanges **50** of the clips are so short they are effectively masked by the retainer rail **40**. It is further apparent that the rear upstanding flanges **50** of the two clips **48** space the lower margin of the mask **20** rearward from the glass panel **18** and thus form a pocket to receive and conceal dust particles. Such dust particles are electrostatically attracted by the picture tube. The provision of this pocket also provides space into which the lower edge of the glass panel may be flexed to release the retainer rail.

The manner in which the invention serves its purpose is apparent from the foregoing description. It can be readily appreciated that initial assembly of the panel is an exceedingly simple procedure, once the mask **20** is in its assembled position. No skill is required to insert the upper edge of the panel **18** into the top groove **36** and then to use the groove as a fulcrum for swinging the lower edge of the panel into its assembled position. In making this swinging movement, the clips **48** are positioned on the horizontal wall **16** for engagement by the lower edge of the panel so that the clips are slid by the swinging movement of the panel into their assembled positions at which time the upstanding rear flanges **50** of the clips are interposed between the panel and the peripheral flange **26** of the mask **20**. Once the panel **18** is moved into position in this manner, the assembly is completed by merely pressing the retainer rail **40** against the lower outer margin of the panel against the resistance of the wood blocks **35** and then lightly pressing the retainer rail downward into the groove **45** until the rib **46** of the rail flange **44** snaps into engagement with the lower edge of the panel.

The procedure for removing the panel **18** and the mask **20** for free access to the interior of the television cabinet is just as simple. Light inward manual pressure against the glass panel **18** in the region of the rib **46** flexes the panel inward against the resistance of the wood blocks **35** to disengage the panel from the rib to permit the retainer rail to be removed. Removal of the retainer rail **40** exposes the slidable support clips **48** as shown in FIG. 3 so that clips may be slid forward manually to swing the lower edge of the panel **18** forward clear of the opening **18**. The panel may then be disengaged from the top groove **36** and removed. The exposed mask **20** is then free to be moved forward out of the window opening.

FIGS. 9 and 10 show the construction of a retainer rail, generally designated **40*a***, that may be substituted for the previously described retainer rail **40**. The retainer rail **40*a*** is of substantially the same angular construction as the retainer rail **40**, having an inclined forward leg **42*a*** and a downwardly extending vertical leg or flange **44*a***. The inclined forward leg **42*a*** is folded back to form a groove **55** that opens into the interior of the rail.

In this modification of the retainer rail the previously described rib **46** for engagement with the lower edge of the glass panel **18** is replaced by a slot **56** of substantially the same length and at substantially the same location. A suitable yieldable means extends retractably through the slot **56** to provide the required engagement with the lower edge of the glass panel **18**. In this particular prac-

tice of the invention, a piece of spring wire, generally designated 58, is employed for this purpose. The spring wire is formed with two legs 60 and an intermedite loop 62, the loop extending through the slot 56 and the two legs resting in the groove 55 in a slidable manner. The ends of the legs 60 are bent back as shown to provide free sliding action with minimum friction.

By virtue of this configuration the loop 62 may be pressed back into the interior of the angular rail as indicated in broken lines in FIG. 9. When the retainer rail 40*a* is in its installed position as shown in section in FIG. 10, it serves the same purpose and functions in the same general manner as the previously described retainer rail 40. Thus, the loop 62 of the spring wire 58 extends under the bottom edge of the glass panel 18 to releasably secure the retainer rail in position with the vertical flange 44*a* extending into the previously mentioned groove 45 in the bottom of the window opening.

An advantage of substituting the retainer rail 44*a* for the previously described retainer rail 40 is that it may be disengaged from the bottom edge of the glass panel 18 with a minimum of flexural displacement of the bottom edge of the glass panel 18. To retract the wire loop 62 out of engagement with the bottom of the glass panel 18, it is necessary merely to insert a card or piece of similar thin sheet material downward between the retainer rail and the front surface of the glass panel and then move the card or the like laterally. FIG. 1 shows such a card 64 in phantom, and the small arrow 65 indicates how the card may be shifted laterally after it is inserted. The lateral shift of the card 64 against the inclined side surface of the wire loop 62 causes the wire loop to be retracted by what may be termed a cam action. Thus, merely inserting and shifting the card releases the retainer rail 40*a* for retraction from the groove 45.

Our description in specific detail of the selected embodiments of the invention will suggest various changes, substitutions and other departures from our disclosure within the spirit and scope of the appended claims.

We claim:

1. In a cabinet or the like with a forward window opening spanned by a panel of light-transmitting material, means retaining the panel in a manner for rapid initial installation of the panel and for subsequent ready removal of the panel for access to the rear of the panel, said means comprising: means at the upper region of the window opening confining the upper portion of the panel by engagement with the inner and outer margins of the panel; means at the lower region of the window opening backing up the lower inner marginal portion of the panel; an upwardly opening recess in said cabinet at the lower side of said window opening adjacent the forward face of the panel; a retaining rail extending across the lower side of said window opening in abutment with the lower outer margin of the panel, at least a portion of said rail seating in said recess to anchor the rail against forward withdrawal, said rail having a shoulder releasably engaging the lower edge of the panel to anchor the rail against upward withdrawal from the recess, said shoulder of the rail being yieldingly retractable relative to the rail and having a surface slanting from the plane of the front face of the panel towards the rear of the panel whereby a sheet of material may be inserted between the rail and the panel and shifted laterally to retract said shoulder by cam action on said slanting surface.

2. A combination as set forth in claim 1 in which said shoulder is provided by a spring wire member yieldingly mounted on the rail.

3. In a cabinet or the like with a forward window opening spanned by a panel of light-transmitting material, means retaining the panel in a manner for rapid initial installation of the panel and for subsequent ready removal of the panel for access to the rear of the panel, said means comprising: means at the upper region of the window opening confining the upper portion of the panel by engagement with inner and outer margins of the panel; means at the lower region of the window opening backing up the lower inner marginal portion of the panel; an upwardly opening recess in said cabinet at the lower side of said window opening adjacent the forward face of the panel; a retaining rail extending across the lower side of said window opening in abutment with the lower outer margin of the panel, at least a portion of said rail seating in said recess to anchor the rail against forward withdrawal, said rail having a shoulder releasably engaging the lower edge of the panel to anchor the rail against upward withdrawal from the recess; and means separate from said rail supporting the panel and extending under the lower edge of the panel, said support means being slidably mounted on the cabinet to be pulled forward thereby to shift the lower edge of the panel forward from the window opening, said support means extending forward from the panel and said retaining rail being recessed to clear and conceal the forwardly extending portion of the support means.

4. In a cabinet or the like with a forward window opening spanned by a panel of light-transmitting material, means retaining the panel in a manner for rapid initial installation of the panel and for subsequent ready removal of the panel for access to the rear of the panel, said means comprising: means at the upper region of the window opening confining the upper portion of the panel by engagement with inner and outer margins of the panel; means at the lower region of the window opening backing up the lower inner marginal portion of the panel; an upwardly opening recess in said cabinet at the lower side of said window opening adjacent the forward face of the panel; a retaining rail extending across the lower side of said window opening in abutment with the lower outer margin of the panel, at least a portion of said rail seating in said recess to anchor the rail against forward withdrawal, said rail having a longitudinal slot on the side of the rail adjacent said panel; and a spring wire member yieldingly mounted in said slot to serve as a shoulder for releasably engaging the lower edge of the panel to anchor the rail against upward withdrawal from the recess, said spring wire member having a portion slanting from the plane of the front face of the panel towards the rear of the panel whereby a sheet of material may be inserted between the rail and the panel and shifted laterally to retract said spring wire member into said slot by cam action on the slanting portion of the spring wire member thereby to disengage the spring wire member from the bottom edge of the panel.

5. In a cabinet or the like with a forward window opening spanned by a panel of light-transmitting material, means retaining the panel in a manner for rapid initial installation of the panel and for subsequent ready removal of the panel for access to the rear of the panel, said means comprising: means at the upper region of the window opening confining the upper portion of the panel by engagement with inner and outer margins of the panel; means at the lower region of the window opening backing up the lower inner marginal portion of the panel; an upwardly opening recess in said cabinet at the lower side of said window opening adjacent the forward face of the panel; a retaining rail extending across the lower side of said window opening in abutment with the lower outer margin of the panel, at least a portion of said rail seating in said recess to anchor the rail against forward withdrawal; and yielding means mounted on said rail to engage the lower edge of the panel to anchor the rail against withdrawal from the recess, said yielding means being yieldably retractable into the interior of the rail out of engagement with the panel, said yielding means having a side surface inclined relative to the plane of the panel whereby a sheet of material may be inserted between the rail and the panel and shifted laterally to retract the yielding means by cam ac-

tion on said side surface thereby to disengage the yielding means from the bottom edge of the panel.

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