Feb. 20, 1962 H. E. MILLS 3,021,832

STOVE DOOR WINDOW UNIT

Filed Jan. 12, 1959

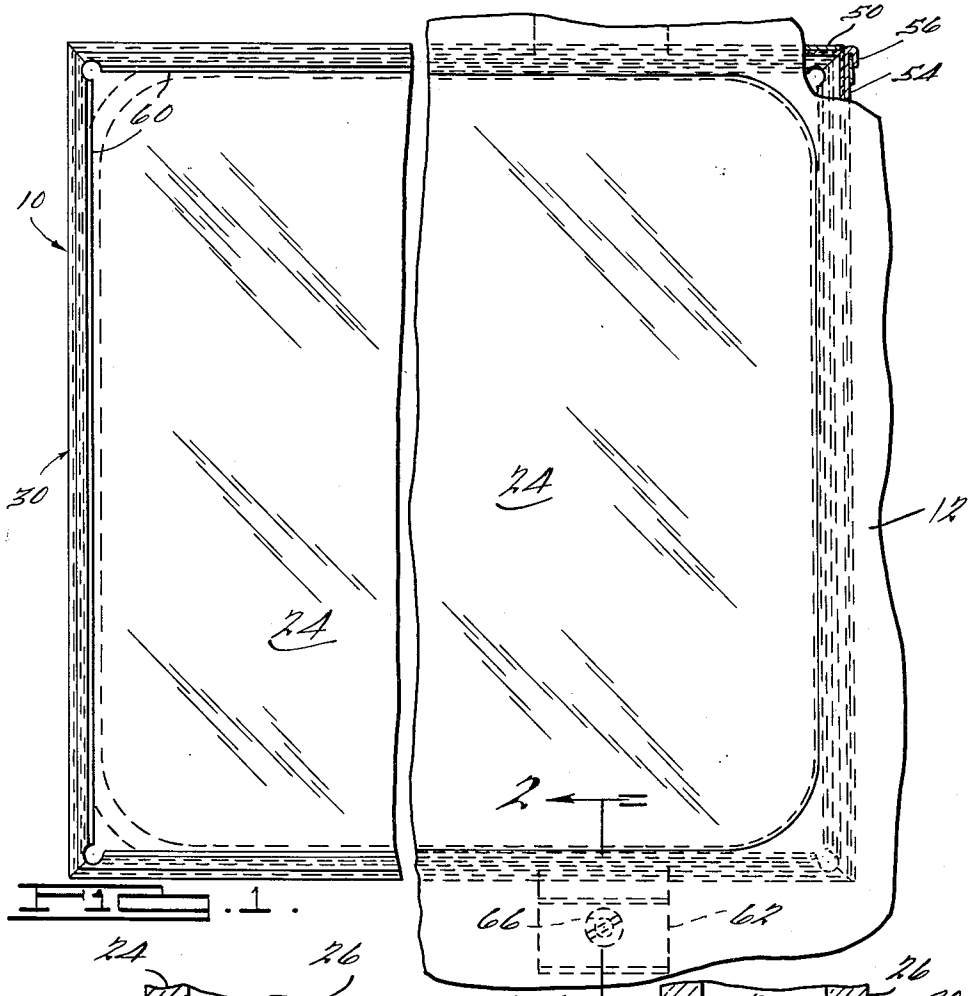


FIG. 1.

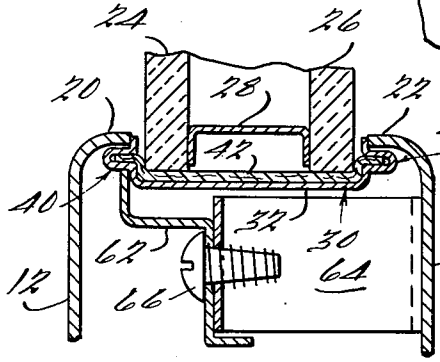


FIG. 2.

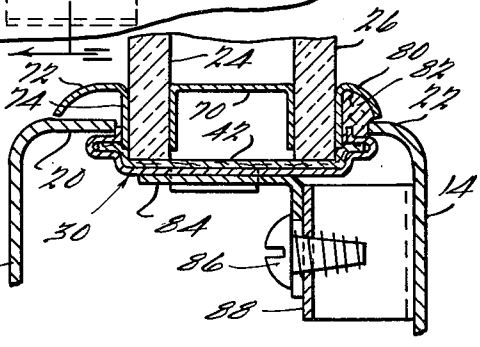


FIG. 4.

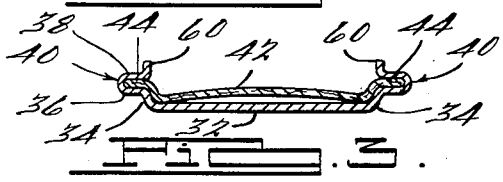


FIG. 3.

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STOVE DOOR WINDOW UNIT

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This invention relates to window units and has particular reference to a new and improved window unit of the type adapted for use in an oven door or the like.

In general, the window unit of the present invention consists of a pair of spaced glass window panels having a continuous spacer therebetween and a clamping member surrounding or wrapped around the peripheral edges of the window panels for clamping the same against the spacer, the clamping frame having lateral flanges adapted for engagement with complementary flanges on the door panels forming the oven door in which the window unit is located. A strip of sealing material is provided between the peripheral edges of the window panels and the clamping frame and, in the preferred form of the invention, the construction of the clamping frame is such that the sealing strip may be secured thereto while the frame is being formed in suitable lengths which may thereafter be cut off in lengths sufficient to wrap completely around the peripheral edges of the window panels.

A principal object of the invention is to provide a new and improved window unit for a stove door.

Another object of the invention is to provide a window unit for an oven door which embodies a novel clamping frame having a sealing strip secured thereto.

A further object of the invention is to provide a window unit of the type described which is inexpensive to manufacture and assemble.

Other and further objects of the invention will be apparent from the following description and claims and may be understood by reference to the accompanying drawing, which by way of illustration shows preferred embodiments of the invention and what I now consider to be the best mode in which I have contemplated applying the principles of my invention. Other embodiments of the invention may be used without departing from the scope of the present invention as set forth in the appended claims.

In the drawing:

FIG. 1 is a fragmentary front elevational view of a window unit embodying the present invention;

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1;

FIG. 3 is an enlarged sectional view of the clamping frame and sealing strip assembly employed in the invention; and

FIG. 4 is a fragmentary sectional view similar to FIG. 2 and showing a modified form of the invention.

Referring to the drawing, a window unit 10 is adapted to be arranged within and supported by spaced front and back door panels 12 and 14 which together comprise an oven door or the like. The front and back door panels 12 and 14 may be secured together in any suitable manner. The front door panel 12 is provided with an inwardly directed continuous flange 20 defining an opening therein and the back door panel 14 is provided with a similar flange 22 defining an opening in alignment with the opening of the front panel 12.

The window unit 10 comprising the present invention includes a pair of spaced glass panels 24 and 26 which are separated and maintained in spaced relation by a continuous spacer 28 arranged between the window panels 24 and 26 at their peripheral edges. A clamping frame 30 surrounds the peripheral edges of the window panels and spacer 28 and is adapted to secure the panels against the spacer.

In the form of the invention shown in FIG. 2, the clamping frame 30 is generally channel shaped in cross section and has a base portion 32 and opposing side walls 34 which are bent laterally outwardly as at 36 and then inwardly as at 38 into overlapped relation with the outwardly bent portions 36. The portions 36 and 38 of the clamping frame 30 form lateral flanges 40. The stock from which the clamping frame 30 is formed may be made in relatively long lengths and as shown in FIG. 3 an elongated strip of sealing material such as asbestos tape 42 is adapted to line the inner side of the base 32 and opposite sides 34 of the channel. The side edges 44 of the sealing strip 42 are clamped between the reversely bent portions 36 and 38 of the flanges 40, and it is contemplated that the sealing strip 42 may be laid upon the stock from which the clamping frame is being formed prior to the time that the edges of the stock are rolled over as at 38 so that, when the edges of the frame are finally formed as shown in FIG. 3, the side edges of the sealing strip will be clamped between the portions 36 and 38 as illustrated. The assembly thus formed may be cut off in suitable lengths and then bent as required in order that the same may be wrapped completely around the glass panels 24 and 26 with the sealing strip sealingly engaging the peripheral edges of the glass panels and also engaging the outer sides of the panels adjacent their peripheries as indicated in FIG. 2. As shown in FIG. 3, the sealing strip may bulge upwardly to some extent within the base 32 prior to the time that the frame is wrapped around the panels. The material of the seal may be compressed to some extent when the ends of the frame are secured together in a manner to be described so as to provide an efficient seal between the panels 24 and 26. The formation of the clamping frame 30 and the sealing strip 42 in the manner described greatly facilitates assembly of the window unit and substantially reduces the labor involved in such assembly, as well as providing an effective sealing and clamping arrangement for the window unit.

The ends of the frame 30 may be secured together in the manner illustrated in FIG. 1 from which it will be seen that one end 50 of the frame is provided with a slot and the other end 54 of the frame is provided with a tongue 56 which is projected through the slot and then bent over against the other end of the frame to securely clamp the several parts of the window unit together.

It will be noted that the sealing strip 42 engages the plane faces of the window panels 24 and 26 adjacent their peripheral edges, as well as sealingly engaging the peripheral edges of the panels. By means of this construction the metal of the clamping frame 30 does not contact the glass panels and the seal 42 provides a cushion between the edges of the glass and the clamping frame as well as a seal. The cushioning effect provided by the seal 42 will prevent much breakage or chipping of the glass, both during manufacture and assembly of the window unit per se and during use thereof in an oven door. In addition, the sealing strip 42 provides insulation between the glass and the metal clamping frame so that there will be no direct conduction of heat from the frame to the glass panels, with the result that the outer glass panel will be substantially cooler than it

would if such panel directly engaged the metal clamping frame.

The ends 60 of the flange 40 on the clamping frame 30 terminate in parallel and spaced relation to the adjacent window panels and provide stops engageable by the door flanges 20 and 22 to prevent engagement of the latter with the glass panels 24 and 26. The provision of the stops 60 will substantially reduce the possibility of breakage of the glass both during assembly of the oven door and when the same is in use. In the form of the invention shown in FIG. 2, the window unit may be clamped to the back door panel 14 by a series of clamps 62 having one end engaging one of the side walls 34 on the frame member and secured to supporting brackets 64 by screws 66. Other suitable means for supporting the door may be supplied as desired.

FIG. 4 illustrates a modified form of the invention in which the clamping frame 30 is constructed in the same manner as described in the FIG. 2 embodiment of the invention. The glass panels 24 and 26 are separated by a spacer 70, and the clamping frame is wrapped around the peripheral edges of the glass panels with the asbestos strip 42 sealingly engaging the edges of the panels and also providing a cushion and insulation as previously described. In this form of the invention, a continuous trim strip 72 has one leg 74 confined and clamped between the glass panel 24 and one of the ends 60 of the clamping frame. The other leg of the trim strip 72 is curved over toward the door flange 20 and overlaps the door flange to cover the joint between the door and the window unit to provide an attractive appearance. The door flange 20 engages the adjacent end 60 of the clamping frame as in the previous modification. At the inner or oven side of the unit, a continuous strip 80 has one leg seated flat against the inner glass panel 26 and its other leg extending toward the door flange 22. A continuous strip of insulating material 82 is confined between the strip 80 and the door flange 22 and provides additional insulation for the window unit. An alternative arrangement for securing the window unit to the door panel 14 is illustrated in FIG. 4 and includes a series of lugs 84 secured at suitable points around the periphery of the clamping frame 30 threadedly secured by screws 86 to supporting brackets 88 secured to the back door panel 14.

This application is a continuation-in-part of my copending application Serial No. 567,865, filed February 27, 1956, now abandoned, for "Stove Door Window Unit."

While I have illustrated and described preferred embodiments of my invention, it is understood that these are capable of modification, and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A window unit for use with a stove door, comprising a pair of spaced window panels, a continuous spacer between said panels at the edges thereof, a continuous clamping and sealing element for clamping said panels against said spacer, said element comprising a one-piece clamping frame of channel shaped cross section with the opposing sides of the channel having flanges bent laterally outwardly and then inwardly to overlap said outwardly bent portions, and a strip of flexible, heat resistant sealing material lining the base and opposing sides of the channel and having its side edges clamped between said overlapped portions of the flanges on said clamping frame to secure said strip to said frame, said frame with said strip secured thereto being wrapped entirely around the peripheral edges of said window panels with said strip sealingly engaging the outer sides of said panels adjacent said peripheral edges to cushion and insulate said panels from contact with said frame.

2. A window unit for use with a stove door having spaced door panels each provided with an opening therein and inwardly projecting flanges surrounding said opening, comprising a pair of spaced window panels, a continuous spacer between said panels at the edges thereof, a continuous clamping and sealing element for clamping said panels against said spacer, said element comprising a one-piece clamping frame of channel shaped cross section with the opposing sides of the channel having flanges bent laterally outwardly and then inwardly to overlap said outwardly bent portions, and a strip of flexible, heat resistant sealing material lining the base and opposing sides of the channel and having its side edges clamped between said overlapped portions of the flanges on said clamping frame to secure said strip to said frame, said frame with said strip secured thereto being wrapped entirely around the peripheral edges of said window panels with said strip sealingly engaging the outer sides of said panels adjacent said peripheral edges to cushion and insulate said panels from contact with said frame, the end of one of said flanges on said frame terminating in parallel and spaced relation to the adjacent window panel and being engageable by the flange on one of said door panels to prevent engagement of the latter with said adjacent window panel.

3. A window unit according to claim 2 wherein the end of the other of said flanges on said frame terminates in parallel and spaced relation to the other of said window panels so as to be engaged by the flange on the other of said door panels.

4. A window unit according to claim 2 including a strip of heat insulating and sealing material between the other of said window panels and the inwardly projecting flange on the other of said door panels.

5. A window unit for a window opening of a stove door, said unit comprising a pair of spaced window panels, a continuous integral sheet metal spacer between and sealingly engaging said panels at the edges thereof, a continuous clamping and sealing element independent of said spacer for clamping said panels against said spacer, said clamping and sealing element comprising a single integral strip of sheet metal forming a wrap-around clamping frame of channel shaped cross section with at least one of the opposing sides of the channel having an integral laterally outwardly extending flange, and a strip of thin flexible heat-resistant sealing material lining the base of the channel, said frame with the strip of sealing material therein forming the outer periphery of said window unit and being wrapped entirely around the peripheral edges of said window panels with said strip of sealing material sealingly engaging the outer periphery of said panels and with the outer periphery of said panels seated on the sealing material and in said channel so as to be located by the channel, said laterally outwardly extending flange being cooperable with a part of the stove door around the window opening for removably locating said window unit with respect to the window opening in said door, said clamping frame including only a single joint joining the ends of the sheet metal strip thereof and thereby securely clamping the parts of the window unit together, said lining being secured in said channel so as to form therewith a unitary component for assembly with the glass panels and spacer to form said window unit, said clamping frame surrounding said spacer and the edges of said window panels and preventing movement of either of said panels relative to each other and to said spacer.

6. A window unit according to claim 5 wherein said joint comprises a slot in one end of said sheet metal strip and a tongue at the other end thereof extending into said slot and bent over for locking the ends of said frame together.

7. A window unit according to claim 5 wherein said clamping frame is provided with portions thereof bent over into overlapping engagement with portions of said

strip of sealing material thereby to secure said strip of sealing material to said clamping frame.

8. A window unit according to claim 1 wherein said clamping frame is provided with a single joint joining the ends thereof and thereby securely clamping the parts of the window unit together, said joint comprising a slot in one end of said frame and a tongue at the other end thereof extending through said slot and bent over for locking the ends of said frame together.

References Cited in the file of this patent

UNITED STATES PATENTS

2,182,687	Bailey	Dec. 5, 1939
2,278,694	Firner	Apr. 7, 1942
2,319,004	Lotter	May 11, 1943
2,535,589	Mills	Dec. 26, 1950
2,565,937	Verhagan	Aug. 28, 1951
2,612,154	Mills	Sept. 30, 1952
2,710,994	Mills	June 21, 1955