May 5, 1936. A. H. TINNERMAN 2,039,614

STOVE CONSTRUCTION

Filed Jan. 9, 1935

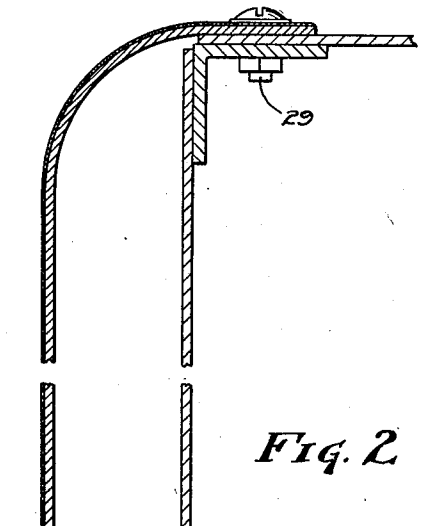


FIG. 2.

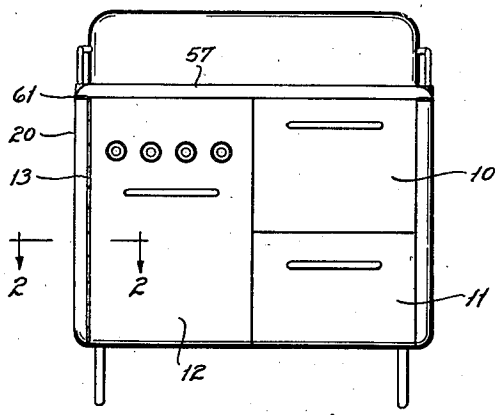


FIG. 1.

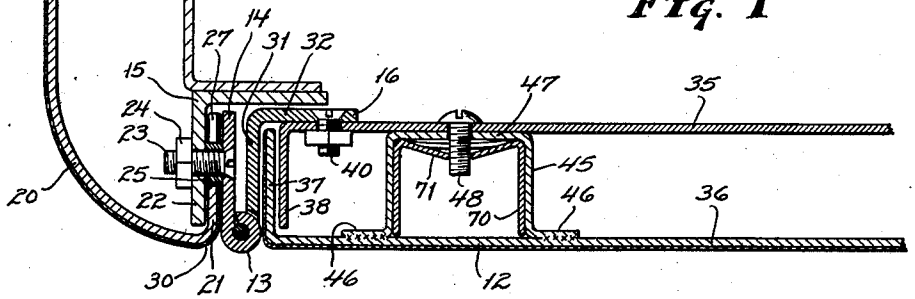
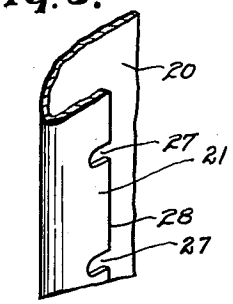


FIG. 3.



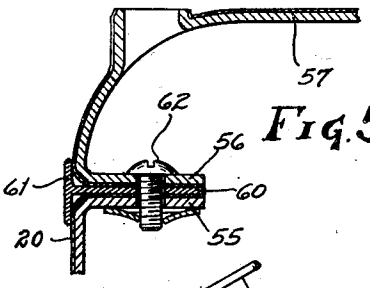


FIG. 5.

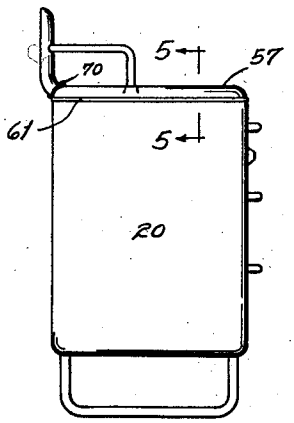


FIG. 4.

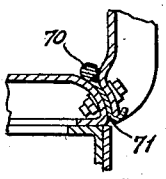


FIG. 7.

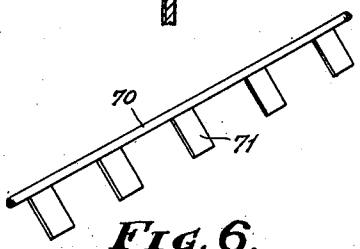


FIG. 6.

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STOVE CONSTRUCTION

Albert H. Tinnerman, Cleveland, Ohio

Application January 9, 1935, Serial No. 1,009

5 Claims. (Cl. 126—39)

This invention relates to stove construction and particularly to cooking ranges, which use either gas or electricity, as a source of fuel. The modern demand for ranges, which have enameled surfaces has necessitated the use of interfitting enameled panels but experience has shown that such panels are easily cracked, whenever two enameled parts are bolted together. The cracking may not be apparent at the time the range is assembled, but it quickly becomes noticeable, particularly after the range is used, for the expansion and contraction against metal under alternate conditions of heating and cooking causes relative movement in the parts. This is particularly apparent adjacent those panels, which must be securely held in position, as for example, those which are used on the front of a compartment closure that is mounted upon a vertical hinge. Objection to the cracking and chipping of enamel is not concerned alone with the cost of replacing the defective parts, but also with the fact that the colors cannot readily be matched after a range has once been in use.

An object of my invention therefore, is to so construct a range that the interfitting enameled parts will be held in proper relationship, and yet will not be subjected to mechanical pressure that prevents them from moving with relation to each other under the ordinary conditions of expansion and contraction during use.

My invention is particularly applicable to a range that has a door mounted upon a vertical hinge, where it is obvious that the door must be held with sufficient secureness to make it hang properly and where the end panel merges with those on the front to provide a smooth contour.

Referring now to the drawing, Fig. 1 is a front elevation of a range illustrating my invention; Fig. 2 is a section taken on an enlarged scale on a plane indicated in the line 2—2 in Fig. 1; Fig. 3 is a perspective fragmentary view of the end panel; Fig. 4 is an end view taken on an enlarged scale of the range; Fig. 5 is a section taken on the line 5—5 in Fig. 4, and Fig. 6 is a perspective view of the spacing strip that is positioned between the top of the range and the splash plate, and Fig. 7 is a sectional view on an enlarged scale of the connection between the top panel and the splash plate.

I have illustrated my invention in connection with a range that has an oven door 10, a broiler door 11, and a utensil compartment door 12. The utensil compartment door is mounted upon a vertical hinge 13, one leaf 14 of which is rigidly fastened on an angle bar 15 that is attached to the stove frame, and the other leaf 16, of which is rigidly fastened to the door. In Fig. 2, I have shown the details of construction by means of which the door is hinged to the frame, and in such illustration, the end panel 20 is shown as having a flange 21 disposed between the hinge leaf 14 and the leg 22 of the angle bar 15. The leaf may normally be held in place against the angle bar by bolts 23 and nuts 24.

If the flange of the enameled panel should be clamped between the hinge leaf and the angle bar, it is obvious that considerable mechanical pressure would be placed thereon, because of the rigidity with which the leaf must be fastened in order to support the weight of the door. I propose to hold the end panel firmly in place without subjecting it to mechanical pressure, while still obtaining the desired degree of pressure between the leaf and angle bar, through the medium of the bolts 23. This, I accomplish, by utilizing spacing sleeves 25, which surround the bolts, and are disposed between the leaf 14 and the leg 22. The sleeves are longer than the thickness of the flange 21 and the outer diameter of the sleeves is larger than the diameter of the openings in the leaf and leg respectively through which the bolts extend. Thus, the bolts may be tightened to any desired degree without imparting any pressure upon the flange. Moreover, to facilitate the assembly, I replace the usual bolt openings in the flange by slots 27, which extend horizontally, and which open at the inner edge 28, of the flange. In this way, the end panel may be assembled by hooking the flange into place at the front of the range, and then swinging the rearward end toward the frame, and fastening it in place with bolts 29. This construction facilitates, not only the assembly of the range, but also the shipping and use of it without endangering the enameled edge 30, as it is apparent that the flange is not subjected to any clamping pressure, regardless of the extent to which the bolts 23 are tightened.

To support the door 12, I make the leaf 16 L-shaped, in which one leg 31 is disposed substantially parallel to the leaf 14 when the door is closed and in which the other leg 32 extends substantially at right angles to the leg 31. The door which is illustrated has a back plate 35 and a front plate 36, the front one being enameled and having a flange 37, on all of its marginal edges, the flange being positioned around a corresponding flange 38 on the back plate.

The bank plate is securely attached to the hinge leaf by bolts 40, and the bolts are so positioned that there is no objectionable clamping pressure exerted between the flange 37 and the adjacent surfaces of the leg 31 and flange 38 respectively. Thus the bolts 40 may be sufficiently tightened to make the door hang properly.

To hold the front and back panels of the door in correct relationship to each other, I prefer to weld or otherwise securely fasten one or more brackets to the front panel and then to detachably fasten such brackets to the rear panel. One form of such bracket comprises a channel-shaped member 45, the flanges 46 of which may be welded to the rear face of the front panel and the intermediate portion 47 of which may be disposed in engagement with the inner surface of the back plate. Bolts 48 may then be used for attaching the back plate to the brackets, and to this end the arms of the bracket may hold a spring fastener 70, for receiving the threaded ends of the bolts. The fastener may be channel-shaped in form, so as to be complementary to the shape of the bracket, and may be held therein against movement by spring tension before the bolts are inserted. The fastener has flexible tongues 71 which yield to allow entrance of a bolt in an expeditious manner.

The range illustrated has a top flange 55 on the end panel 20, which is disposed in close proximity to a bottom flange 56 on the top panel 57. Accordingly, to hold such flanges in assembled relationship without subjecting them to mechanical pressure, I provide a non-enameled T-shaped strip of metal, such as stainless steel, the shank 60 of which is disposed between the flanges 55 and 56, and the head 61 of which is positioned across the joint between the two panels. The flanges may then be locked together by a bolt 62 and a nut 63. I have found that the interposition of the thin strip of stainless steel between the enameled surfaces of the two coacting flanges is sufficient to avoid fracture of the enameled surface as a result of strains that are set up therein, either during the assembly, or use of the range. I have also found that the head of the interposed strip operates to hold the panels in alignment, and yet allows the necessary slight degree of movement between the panels, which is incident to the uneven application of heat to them during use. The slight degree of movement is facilitated by utilizing a nut 63, which has bolt engaging tongues that are struck upwardly from the body portion of the nut. Thus, I have eliminated a strain, which has caused crazing and chipping of the enameled parts and have provided a range which can be handled without undue care in shipment.

To prevent cracking and chipping of the enamel between the top panel and the splash plate, I prefer to utilize a spacer preferably of stainless steel, which is illustrated in the form of a rod 70 that has a lateral extension preferably in the form of tongues 71. The tongues, as shown in Fig. 7 may be extended around the lowermost edge of the splash plate so as to hold the rod securely in place.

My invention, so far as I am aware, has resulted in a range, which can be completely assembled with enameled parts at the factory and transported in a shipping crate to a dealer without requiring the dealer to set up the range or tighten certain parts to hold the enameled panels together. This has been a marked advance in the range industry for it eliminates the necessity for a dealer to maintain a service department for the purpose of setting up ranges that are shipped to him in crates. Moreover, the invention has minimized the hazard of checking and crazing which has always attended the fastening together of two enameled parts.

I claim:—

1. In a range, the combination of a frame, an end panel having an enameled surface thereon, a closure disposed adjacent the front of the range, a leaf hinge for supporting the frame, means for fastening one leaf of the hinge in spaced relation to the frame, said panel having an inturned flange at the forward edge thereof and disposed between the frame and the hinge, the flange having clearance openings through which the hinge fastening means extend, whereby the panel is held in position between the frame and hinge independently of the clamping pressure that is utilized for attaching the hinge to the frame.

2. In a range, the combination of a frame, a leaf hinge, means for rigidly fastening one leaf of the hinge to the frame, while holding it in spaced relationship thereto, an end panel having an inturned flange, loosely fitted into the space between the frame and the leaf of said hinge, and means for rigidly fastening said panel to the frame adjacent the rear of the range.

3. In combination, a range having a door mounted on a vertical hinge, a frame having one leaf of the hinge affixed thereto, an enameled end panel having an inturned flange disposed between the hinge and the frame and means for retaining the panel in position without subjecting it to clamping pressure between the hinge and frame.

4. In a range, the combination of a frame, a door mounted on a vertical hinged pivot, the hinge having one leaf thereof rigidly attached to the frame, an end panel having an inturned flange disposed intermediate the frame and said leaf, and means for holding the flange in spaced relationship to the leaf and frame respectively.

5. In a range, the combination of a frame, a closure hinge, means for fastening one leaf of the hinge to the frame, a panel interposed between the leaf and frame, and having rearwardly extending slots therein, and spacing sleeves disposed in the slots and positioned between the leaf and frame for preventing the panel from being clamped against the leaf of the frame.

ALBERT H. TINNERMAN.