

May 5, 1959

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2,884,649

STAINLESS SHEET METAL WORK SURFACES

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2 Sheets-Sheet 1

Fig. 1.

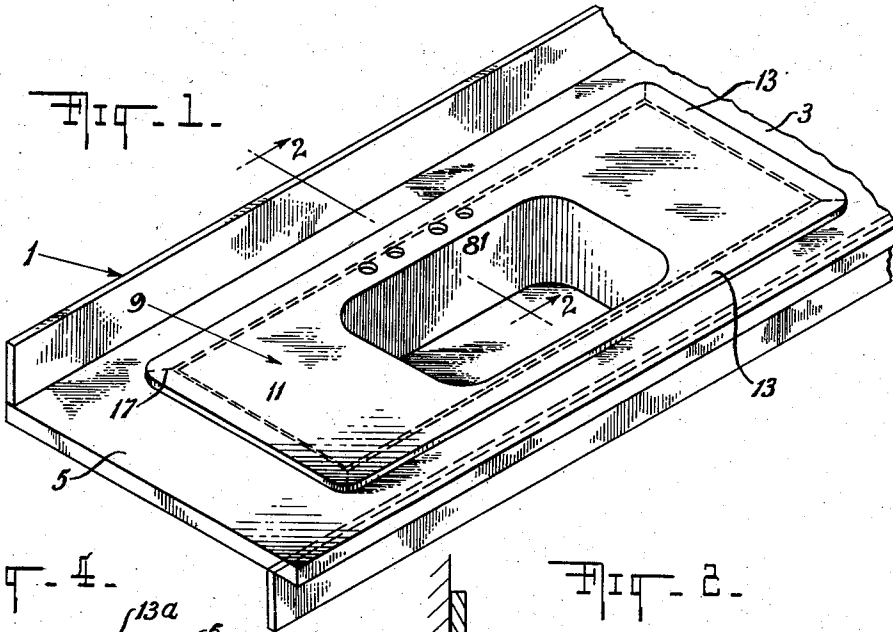


Fig. 4.

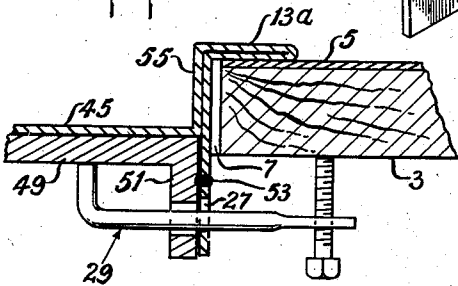


Fig. 2.

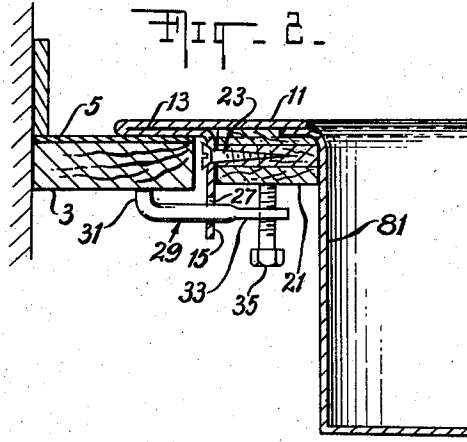


Fig. 3.

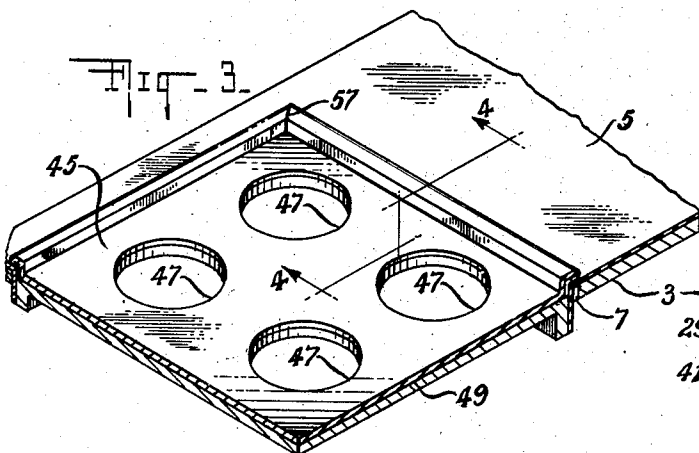
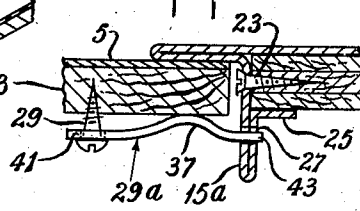


Fig. 5.



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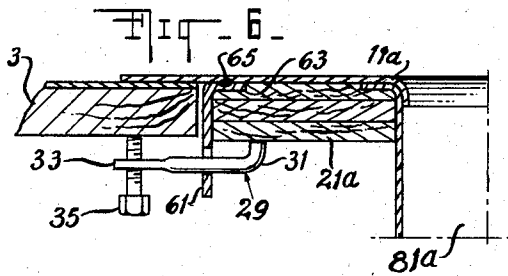
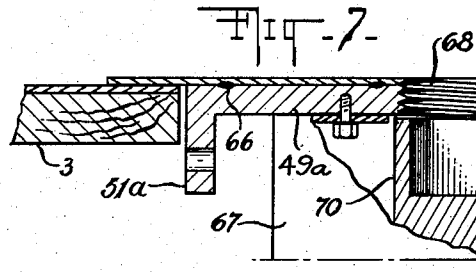
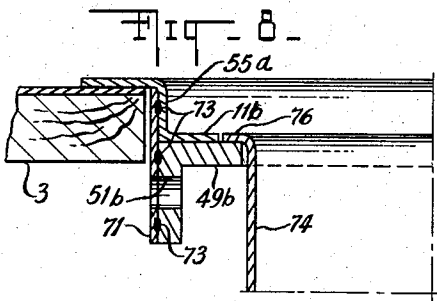
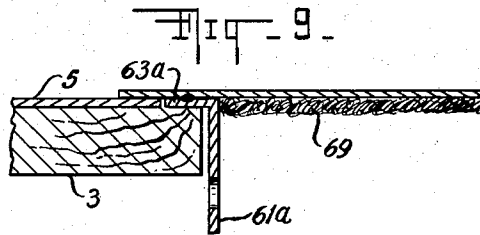
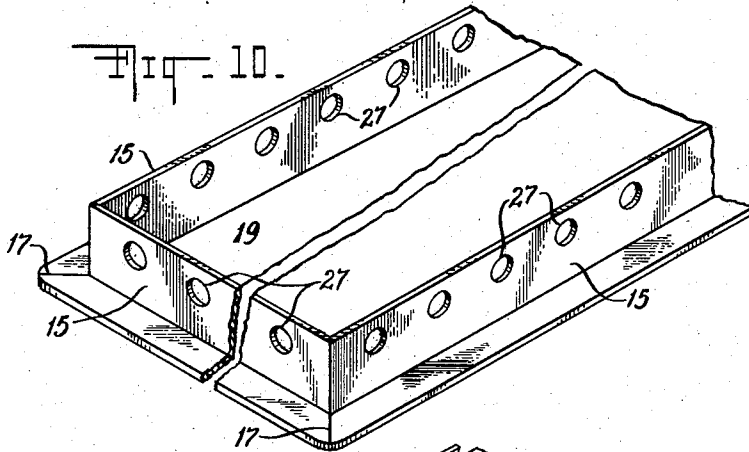
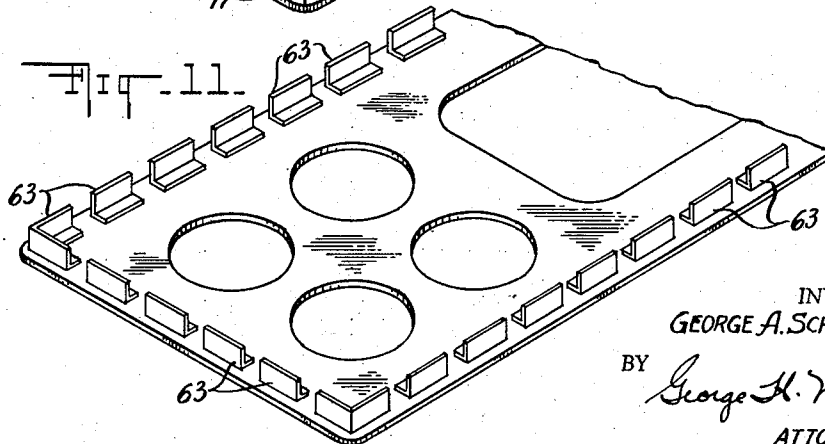
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STAINLESS SHEET METAL WORK SURFACES

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13 Claims. (Cl. 4—187)

The present invention relates to stainless sheet metal work surfaces adapted to be set into an opening in the top of a kitchen cabinet and to be removably clamped to the top. More particularly the work surface preferably is part of a kitchen appliance, or provides access to a kitchen appliance, such as the drainboard for a sink, a stove, a container for deep fat frying or for scraps, a knife sharpener, a blender-mixer, and the like.

Modern kitchens are provided with a number of appliances which are installed in cabinets having plywood tops covered with linoleum, formica, and the like. In general the work surface of said appliance, or through which access to the appliance is had, is made of stainless sheet metal. The joint between the metal sheet and the cabinet or counter top has been a source of difficulty both in installation and during use of the appliance.

The present invention provides a sheet metal work surface having attaching means which makes installation easy and rapid and which overcomes the difficulties heretofore experienced in use of the appliances. Various embodiments of the principles of the invention are shown in the accompanying drawings in which:

Fig. 1 is an isometric fragmentary view of a kitchen cabinet having a sink and drainboard constructed in accordance with the invention installed in the top thereof;

Fig. 2 is a fragmentary sectional view on the line 2—2 of Fig. 1;

Fig. 3 is an isometric fragmentary view of a kitchen cabinet with a stove top constructed in accordance with another embodiment of the invention installed therein;

Fig. 4 is a fragmentary sectional view on the line 4—4 of Fig. 3;

Figs. 5, 6, 7, 8 and 9 are fragmentary views similar to Figs. 2 and 4 showing different embodiments of the supporting flange and attaching web of the work surface and the way in which the joint with the cabinet top may be made, as well as different embodiments of appliances which may be used with the work surface;

Fig. 10 is an isometric fragmentary view of the bottom of the drainboard of Fig. 1; and

Fig. 11 is a similar isometric view of the back of a different embodiment of work surface for sink and stove.

The work surface or appliance top of the invention is made of stainless sheet metal such as Monel, chromium-nickel steel and the like. The thickness of the sheet metal may vary considerably but usually will be within the range of 14 to 24 gauge. Material of 20 to 24 gauge is preferred for reasons of cost and ease of working but it has insufficient strength to resist bending stresses to which it is subjected in use or is too weak to stand the work which is to be carried out upon it. With such light gauge metal the sheet is reinforced in any desired way, preferably by a backing sheet, e.g., of plywood, composition board, asbestos board, heavier gauge mild or plain carbon steel, or the like to give it the necessary strength. The backing sheet also serves as sound deadening material. With metal sheets of heavier gauge, such as 14 to 18, a reinforcing sheet may not be necessary

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and where it is not used it is preferred to deaden the sound of the work surface in some other way, e.g., by applying a coating of material such as is used to undercoat automobile bodies which is usually a rubber or asphalt base composition.

Each edge of the stainless sheet which is to form a joint with the cabinet top extends beyond the opening in the top onto the linoleum or other covering and forms a supporting marginal flange for the work surface and associated parts. There may be only one such edge where the work surface is at the end of the counter and extends the full width thereof, or there may be two, three or four of such edges. Attaching means extend downwardly from the underside of the metal sheet adjacent to but spaced from each edge which lies on the cabinet top, thus defining the supporting flange which extends the full length of the edge. Clamping devices of any of various types cooperate with the attaching means on the metal sheet to clamp the marginal flange tightly against the covering on the counter top and thereby form a tight joint which can easily be made waterproof by the use of a composition such as linseed oil putty between the flange and the covering. Means are provided to hold the reinforcing sheet in supporting relation against the underside of the stainless metal sheet. The sheet is provided with such openings as are required to mount or provide access to the appliance or appliances such as a sink, stove burners, metal containers for deep fat frying or garbage, knife sharpeners, blender-mixers, or any other appliance or device useful on, in or under a work surface in a kitchen. Some of the benefits and advantages of the sheet metal work surface of the present invention will be pointed out hereinafter and others will be apparent to those skilled in the art from the detailed description of the various embodiments of the invention illustrated in the drawings.

Referring now to Figs. 1 and 2, the kitchen cabinet 1 which is fragmentarily shown has a top 3 covered with a thin sheet 5 which may be linoleum, formica or any other suitable material. A hole 7 is cut into the top to receive the sink and drainboard combination 9. The hole 7 is about an inch less in width and length than the drainboard 11 so that about 1/2 inch of the margins of the edges of the drainboard rest on the covering and form supporting flanges 13 therefor.

As seen more clearly in Figs. 2 and 10, each margin is bent down and back upon itself to form the rounded edge and supporting flange 13 and then down to form an attaching web or leg 15. The corners of the sheet are properly cut out to form a mitre joint 17 at the ends of the supporting flange and a box-like recess 19 within the attaching flanges or webs for the sheet of reinforcing material 21 which in this embodiment is a piece of plywood substantially coextensive with the sheet inside the webs. Wood screws 23 passing through the web into the plywood hold the same in supporting relation against the underside of the metal sheet.

Fig. 5 shows a modified structure in which the lower margin of the attaching web 15a is bent inwardly and upwardly against the attaching web and then outwardly to form a supporting flange 25 for the reinforcing sheet.

The attaching web 15 is provided with a plurality of openings 27 to receive clamping devices 29 for clamping the supporting flange 13 tightly against the covering 5. In Fig. 2 the clamping device 29 is a piece of steel rod bent up on one end 31 to engage the under surface of the plywood counter top 3 and flattened at the other end 33 to receive in a tapped hole therein a machine screw 35 which engages the underside of the reinforcing sheet and imparts an upward component of force thereto. By turning the screw inwardly (upwardly) the supporting flange 13 is pulled down tightly against the covering 5 and forms a neat, attractive joint between the drainboard

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9 and the covering 5 on the counter top 3. Obviously the position of the clamp can be reversed so that the screw engages the counter top, as shown in Fig. 6, without changing the operation.

In Fig. 5 the clamp 29a is made of resilient metal rod with an offset 37 which serves as a fulcrum by engaging the underside of the counter top 3 when a screw 39 is driven into counter top 3 through an opening 41 in the one end of the rod while the other end 43 is placed in one of the openings 27 in the attaching leg.

The work surface shown in Figs. 3 and 4 is a stove top 45 having a plurality of openings 47 to provide access to the heating units of a stove (not shown) which may be gas burners or electric resistance heaters. In this case the work surface is shown offset downwardly from the plane of the top of the counter. This is a desirable structure for certain installations, especially where liquids may be spilt, as with a stove where pots may boil over, or with drainboards where water may tend to flow over the edge onto the counter top and cause deterioration of the linoleum cover. In this case the reinforcing material 49 is fireproof, e.g., asbestos board or preferably a sheet of heavier gauge mild or carbon steel, e.g., 16 gauge steel sheet. The edge 51 of the reinforcing sheet 49 is bent downwardly and perforated to register with the openings 27 in the attaching flange so that the clamp 29 may pass through both of them, as shown in Fig. 4. Means such as a plurality of spot welds 53 serve to hold the reinforcing sheet 49 in supporting relation to the stainless sheet 45. To form the offset of the work surface from the plane of the covering on the counter top it is necessary only to bend the margins of the stainless metal sheet upwardly to form a vertical wall 55 and then outwardly before forming the reverse bend and attaching web as previously described. The surface of the supporting flange 13a formed in this way is offset vertically above the plane of the work surface 45 by the height of the vertical wall 55 which usually is between about 1/4 to 1 inch. Suitable cut outs are made at the corners to form the mitre joint 57, as seen in Fig. 3.

The mitre joints 17 and 57 may be, and preferably are, welded together and polished to make the parts integral and where this is done the corners may be square as illustrated in Fig. 3 or rounded as shown in Figs. 1 and 10.

The marginal structure of Figs. 1 to 5 and 10 is preferred because it provides a rounded reinforced supporting flange of integral construction utilizing the edges of the stainless metal sheet but many of the advantages of the invention can be had by the embodiments of Figs. 6, 7, 8, 9 and 11. In each of these embodiments heavier gauge metal is preferred, e.g., 14 to 18 gauge, the single edge of the sheet of stainless metal forms the supporting flange and the attaching web is formed of a separate piece or of separate pieces of metal suitably secured to the under surface of the stainless metal sheet, e.g., by spot welding.

In Fig. 6 the attaching web is an angle bracket 61 having its horizontal flange 63 directed inwardly and spot welded at 65 to the stainless metal sheet. This bracket may be a single piece of the same length as the attaching web in the embodiment of Fig. 10 or it may be a plurality of short brackets as shown in Fig. 11.

In Fig. 7 the reinforcing material is a sheet of heavy gauge metal 49a similar to 49 of Fig. 4 and the attaching web 51a is formed by bending the margin thereof downwardly. The stainless and reinforcing sheets are shown spot welded together at 66. Fig. 7 also illustrates how the power unit 67 of a blender-mixer can be mounted beneath the work surface which has a threaded access opening 68 for removably connecting grinders, mixers, blenders and the like to the motor driven shaft 70. When not in use a threaded plug (not shown) may be screwed into opening 68 flush with the top of the work surface.

In Fig. 8, in which the plane of the work surface is

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offset downwardly as in Fig. 3, and the reinforcing material is a heavy gauge metal sheet 49b similar to 49 and 49a in Figs. 4 and 7, the attaching web and means to secure the two sheets together may comprise a strip of metal 71 spot welded at 73 to both the outside of the upwardly bent wall 55a of the stainless sheet and the downwardly bent edge 51b of the reinforcing sheet 49b. Fig. 8 also shows how a container 74, which could be used for deep fat frying or as a scrap or garbage receptacle, may be mounted in registering openings in the stainless sheet 11b and the reinforcing sheet. Here the opening in the sheet 11b is somewhat larger than the opening in the reinforcing sheet so that the flange 76 at the top of the container rests on the edge of the reinforcing sheet substantially flush with the top of the stainless metal sheet 11b.

Fig. 9 is similar to Fig. 6 except that the horizontal flange 63a of the angle bracket 61a is turned outwardly. This gives a reinforcement to the supporting flange but since the bracket is preferably made of cheap steel it should not extend to the edge of the stainless sheet and the covering 5 on the counter top must be cut away to receive this flange while permitting the stainless sheet to engage the cover 5 and make a tight joint. The underside of the sheet inside the attaching means is coated with sound deadening composition 69.

Referring again to Fig. 2, the sink 81 is shown welded to the drainboard so as to be integral therewith but this is not essential since the sink and drainboard may be drawn from the same sheet, or the sink may be a separate unit of the flat rim type suitably held in engagement with the drainboard, e.g., as illustrated in Fig. 6 where the flat rim sink 81a rests on the shaped edge of the reinforcing sheet 21a and the stainless metal sheet 11a is bent down and over the edges of the sink which is thus removably secured to the sheet 11a. While a single sink is shown, double or triple bowl sinks can be used in the same general way.

An outstanding advantage of the structure of the work surface of the invention is that the whole unit, e.g., including sink, stove, blender-mixer, etc., can be assembled before installation of the work surface in a kitchen cabinet. This makes it practical, if desired, to assemble the appliances and work surfaces at a remote point, e.g., a factory or warehouse, and ship them to the point of final installation where such an assembled unit can be dropped as a package into a suitably prepared opening in a conventional counter top. This opening need not be accurately cut since the supporting flange gives adequate leeway for deviations from the exact size. The marginal flanges support the unit on the counter top which can be accurately positioned by the workman from above. Then he may apply the clamps from below without having to make further adjustments or to struggle to support the unit while clamps are being installed.

A further significant advantage is that the stainless sheet metal used may be light gauge. In addition to the cost benefit over the use of stainless metal sheets of adequate strength to bear the stresses incident to work being performed thereon the margins of the lighter gauge metal can be bent more easily for forming the attaching web where this is integral with the work surface. The present structure gives great flexibility in the choice of reinforcing and sound deadening materials so that full advantage can be taken of cost and physical properties of material suitable for different uses.

Those skilled in the art will appreciate that there are many possible modifications of the various embodiments which have been described and illustrated herein without departing from the principles of the invention and it is intended to cover all such as fall within the scope of the claims.

Having thus described the invention and the manner of constructing and using the same, what is claimed is:

1. A sheet metal top for a kitchen appliance, said top

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being adapted to be set into an opening in a kitchen cabinet top, comprising a sheet of stainless metal having an opening to provide access to said appliance, a margin of said sheet being bent down and back on itself and then down to form an attaching web with a double thickness supporting marginal flange at the outside of said web, a sheet of reinforcing material substantially coextensive with said sheet inside said web, said reinforcing sheet having an access opening registering with the access opening in the stainless metal sheet, and means for holding said reinforcing sheet in engagement with the under side of said stainless metal sheet.

2. A combined appliance top and work surface comprising a sheet of stainless metal of such light gauge as to have insufficient strength to resist bending stresses in use, each margin of said sheet being bent down and back upon itself to form a rounded edge and supporting flange and then down to form an attaching web, a sheet of reinforcing material substantially coextensive with said sheet inside said web, said sheets having registering openings to provide access to a kitchen appliance, and means for holding the reinforcing sheet in supporting relation against the under side of said stainless metal sheet.

3. A kitchen cabinet top having a top provided with an opening, an appliance top comprising a sheet of stainless metal somewhat longer and wider than said opening having its marginal edges resting on the cabinet top around the opening, attaching means on the under side of said sheet adjacent to the edges of the opening and extending below the cabinet top, a reinforcing sheet for said sheet of stainless metal, clamping means engaging said attaching means and the underside of said cabinet top pulling the marginal edges tightly into contact with said cabinet top, and means for holding said reinforcing sheet in supporting relation to said stainless metal sheet.

4. A sheet metal work surface adapted to be set into an opening in the top of a kitchen cabinet comprising a sheet of stainless steel having a plane surface of substantial extent adapted to serve as a work surface, an attaching web extending downwardly from said sheet adjacent to but spaced from an outside edge thereof to provide a supporting marginal flange on one side of said attaching web along the full length of said edge, a sheet of reinforcing material substantially coextensive with said stainless metal sheet on the other side of said attaching web, and means for holding said sheet of reinforcing material in supporting relation to the under side of said stainless metal sheet.

5. A sheet metal work surface adapted to be set into an opening in the top of a kitchen cabinet comprising a sheet of stainless metal having a plane surface of substantial extent, at least one edge of said sheet being bent down and back upon itself to form a double thickness supporting marginal flange and then down to form an attaching web.

6. A sheet metal work surface adapted to be set into an opening in the top of a kitchen cabinet comprising a sheet of stainless metal having a plane surface of substantial extent, at least one edge of said sheet being bent up, out, down and back to form a double thickness supporting marginal flange offset vertically above said plane surface and then down below the surface to form an attaching web.

7. A sheet metal work surface adapted to be set into an opening in the top of a kitchen cabinet comprising a sheet of stainless metal having a plane surface of substantial extent, an attaching web secured to the under side of said sheet adjacent to but spaced from at least one edge which forms a supporting marginal flange on one side of said web, a reinforcing sheet substantially coextensive with said sheet on the other of said web, and means for holding said reinforcing sheet in supporting relation against the under side of said sheet.

8. A sheet metal work surface adapted to be set into an opening in the top of a kitchen cabinet comprising a

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sheet of stainless metal having a plane surface of substantial extent, at least one edge of said sheet being bent up and out to form a supporting marginal flange offset vertically above said plane surface, and an attaching web secured to and extending down from said sheet in the plane of said bent up portion.

9. A sheet metal work surface adapted to be set into an opening in the top of a kitchen cabinet comprising a sheet of stainless metal having a plane surface of substantial extent, a reinforcing metal sheet of heavier gauge than said stainless metal sheet secured thereto and substantially coextensive therewith except adjacent to at least one edge where it leaves a supporting marginal flange of said stainless metal sheet only, and an attaching web extending downwardly from said reinforcing metal sheet near said edge.

10. A sheet metal work surface adapted to be set into an opening in the top of a kitchen cabinet comprising a sheet of stainless metal having a plane surface of substantial extent, at least one edge of said sheet being bent down and back upon itself to form a double thickness supporting marginal flange, then down, in, up and in to form an attaching web and a supporting flange spaced from the under surface of said sheet, and a sheet of reinforcing material held in supporting relation to the under surface of said sheet by said supporting flange.

11. A sheet metal work surface adapted to be set into an opening in the top of a kitchen cabinet comprising a sheet of stainless metal having a plane surface of substantial extent, at least one edge of said sheet being bent down and back upon itself to form a double thickness supporting marginal flange and then down to form an attaching web, sound deadening material substantially coextensive with and engaging the under side of said sheet inside said attaching web, said web extending below said sound deadening material and having a plurality of openings in said extending portion, and clamping devices adapted to pass through said openings to engage at one end said sound deadening material and at the other and the under side of said kitchen cabinet top whereby said supporting marginal flange can be tightly clamped against the upper surface of said top.

12. A stainless sheet metal drainboard having a sink opening spaced from the edges of the drainboard, each edge of said drainboard being bent down and back upon itself to form a rounded edge and supporting flange and then down to form an attaching web, a sheet of plywood extending between said webs, and having a registering sink opening, a flat rim stainless metal sink set in the opening in said plywood and having its rim engaging the under side of the drainboard around the periphery of the sink opening therein and means for holding said plywood sheet in supporting relation against said flat rim and the under surface of said drainboard.

13. A stainless sheet metal stove top having a plurality of openings for burners spaced from the edges of said top, each edge of said top being bent down and back upon itself to form a rounded edge and supporting flange and then down to form an attaching web, a fireproof sheet of reinforcing material extending between said webs and having openings registering with said burner openings, and means for holding said fireproof sheet in supporting relation against the under side of said stove top.

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