Aug. 18, 1942. W. J. WEISSERT 2,293,184

SINK-TOP CONSTRUCTION

Filed June 4, 1941

FIG. I.

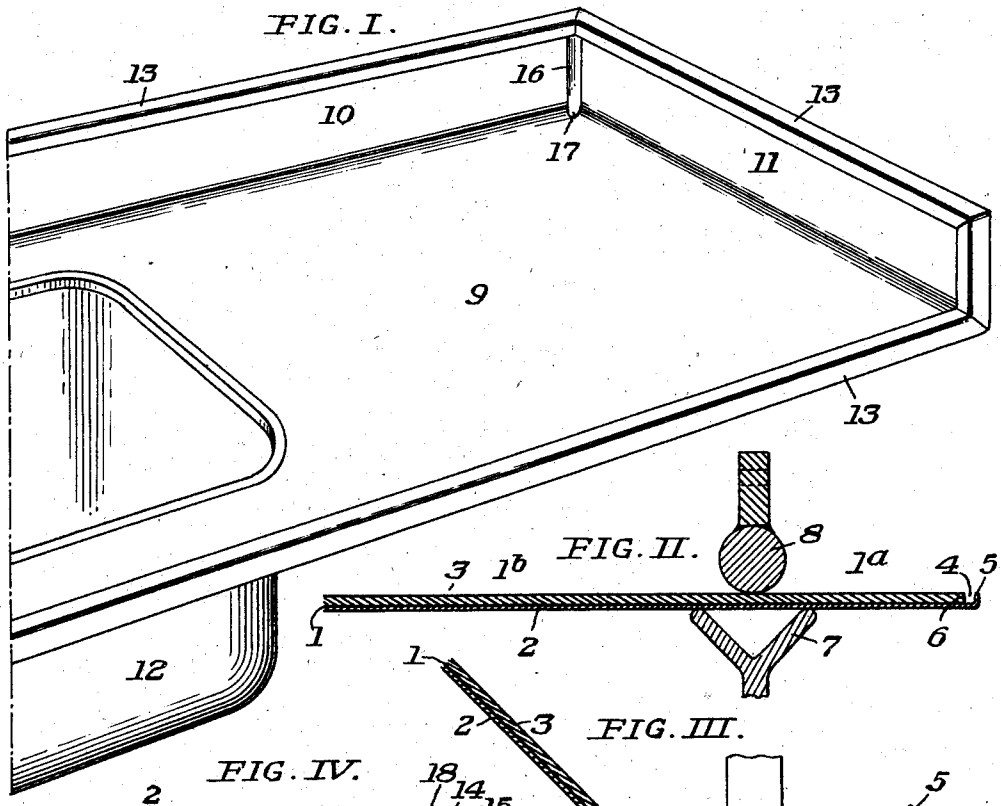


FIG. II.

FIG. III.

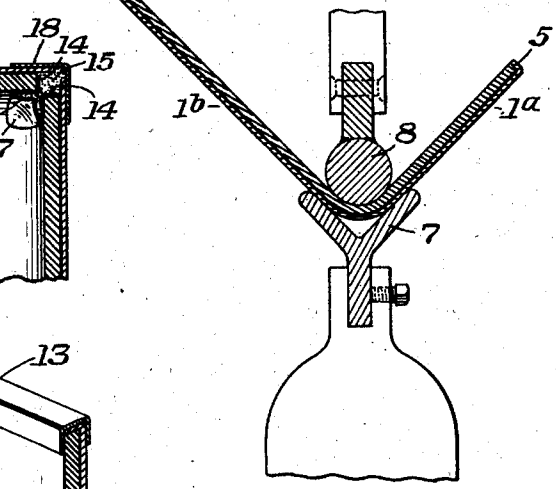


FIG. IV.

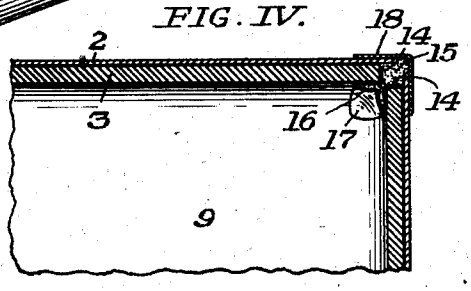
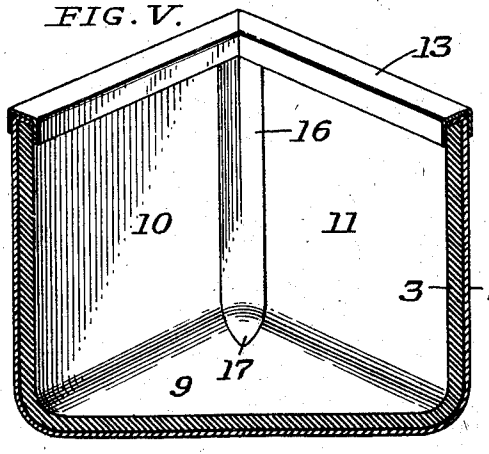


FIG. V.



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SINK-TOP CONSTRUCTION

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7 Claims. (Cl. 311—106)

This invention relates to sink-top construction and particularly to sink-top constructions in which the drainboard and splashboard of the structure are covered with a facing of linoleum or analogous shock-absorbent material.

In sink-tops, and other articles of furniture which may be considered to be of analogous sort, substantial advantage is obtained from a construction in which a base of metal, plywood, plastic composition or the like, is covered with a facing of some material of the sort which may be considered generically to respond to the designation linoleum. Such material, and this is particularly true of the material in its higher grades, is dense and non-absorbent of moisture, but does have shock-absorbent properties and thus serves greatly to decrease the breakage of china, glassware, and the like frangible articles which are handled on its surface. Sink-tops covered with a linoleum facing are also sightly when properly organized, regardless of the material of the base by which the facing is carried.

Sink-tops are commonly made with a splashboard rising from the rearward edge of the drainboard, and sometimes also from one or both its end edges. In making sink-tops of adequately rigid but comparatively deformable material, such as sheet metal, a single piece or sheet of the base material may be bent along one or more lines to provide a splashboard rising from one or more edges of the drainboard. It is desirable that there be applied to such single piece base structure a single piece linoleum covering; thus avoiding the manufacturing difficulties attendant upon binding the adjacent edges of two separate pieces or sheets of linoleum carried respectively by the drainboard proper and the splashboard, and increasing the water-tightness and pleasing appearance of the sink-top construction as a whole. Difficulty has arisen from the fact that linoleum cannot by itself be sharply bent without cracking or crazing the material. Even when linoleum has been applied in advance to a metal base and bent with it, such composite structure has not previously been bent upon a radius as short as is acceptable in sink-top construction.

Whereas the generic term "linoleum" includes a great number of products the components and organization of which differ substantially one from the other, there is a broad classification of linoleum into two different grades, or kinds, which is of moment in the manufacture of sink-tops, and analogous structures. The cheaper grades of linoleum which are frequently used as floor and wall coverings include a felt backing of substantial thickness, a layer of plastic material, and a printed coat of paint or enamel. The higher grades of linoleum which are acceptable as sink or table tops, protective mats and pads for tables and floors, and in all associations in which a high-grade dense and wear-resistant material is requisite or the higher cost of such material is justified, are differently composed. In accordance with the method usually followed in their manufacture, a very thin tough fabric, such as burlap is used as a backing on which the linoleum substance of geled oil, pigment and the like, is built up and rolled. Such linoleums contain their coloring pigment in admixture with the binder ingredients of the linoleum substance, and the finished linoleum is in effect composed wholly of that substance. Such linoleums, while being shock-absorbent, are also dense, water-resistant and wear-resistant materials. Herein I shall term such linoleums, arbitrarily but on the basis of their above-noted properties and uses as "furniture" linoleums.

It is the object of my invention to provide a sink-top construction, and in this connection I use the work "sink" as a term of general description and not of limitation, in which the material of the sink-top is composite of a one-piece metal base and a one-piece linoleum facing cemented on the metal base, the composite structure being bent upon a radius so short that the effect is pleasing in appearance, gives maximum useable area of the drainboard surface, and is acceptable structurally.

A more specific object of my invention is to obtain this effect in the use of those linoleums which are composed throughout their thickness of a single substance which in the finished linoleum is a dense, wear-resistant, and shock-absorbent body.

In the manufacture of sink-tops composite of a metal base and a facing of furniture linoleum, it has been necessary to solve several problems and to reconcile apparently inconsistent conditions in successfully bending the linoleum on an acceptably short radius to give a drainboard and splashboard composed of a single piece of the metal-linoleum composite material. A description of materials and procedure by which I have accomplished the desired end, and illustration of exemplary procedure and an exemplary product in which my invention finds embodiment are given in the following written description, and in the accompanying drawing. In this drawing:

Fig. I is a fragmentary isometric view of a sink-top showing a drainboard equipped with a

rear splashboard, or "splashback," and with an end splashboard; the sink-top shown consisting of a drainboard, rear splashboard, and end splashboard formed by bending an initially flat sheet composite of a sheet metal base and a linoleum facing, and equipped with a basin and with edge binding.

Fig. II is a cross-sectional view, on an enlarged scale, taken through the composite sheet of which the sink-top construction is primarily composed, and through bending dies, showing the sheet organized and positioned for bending.

Fig. III is a similar view, showing the sheet and the bending dies at the end of the bending operation.

Fig. IV is a fragmentary horizontal sectional view taken at a corner of the sink-top through the rear splashboard and end splashboard of the sink-top.

Fig. V is a fragmentary vertical sectional view taken at the same corner of the sink-top through the drainboard and both splashboards of the structure.

In pursuance of my invention I take a flat sheet of metal which may be any suitable metal and of any suitable thickness, but which is typically common sheet steel or black-iron of from 16 gauge to 20 gauge. A sheet of furniture linoleum is laid flat with its base of burlap or other suitable thin fabric uppermost. The surface of the linoleum which is to be presented to view in the assembly is desirably protected by being laid upon paper, cloth, or the like, and its backed surface is coated with elastic cement, or more properly an elastic pressure sensitive adhesive of some well known sort. The metal sheet is then placed upon the coated surface of the linoleum and pressure is applied upon it for a sufficient length of time to establish a good bond between the linoleum and the metal. I have found that such bond is adequately effected in from twelve to twenty-four hours to give a composite piece in which the linoleum facing is firmly but elastically cemented to the metal base.

This sheet, designated generally by reference numeral **1**, which is composite of the metal base **2** and linoleum facing **3**, is organized with particular reference to the bending operation to be performed on it. Along one edge extending parallel to the line on which the bend is to be made, the edge of the metal base and the linoleum facing may be, and desirably are, flush with each other. At the other edge of the composite sheet which extends parallel to the line on which the bend is to be made, the linoleum facing stops short of the edge of the metal base, and the edge of the metal base is provided with a rim or bead standing up from the body of the metal base in spaced relation to the edge of the linoleum facing. This rim or bead conveniently may be provided by a shallow upturned flange **5**, formed from the metal of the base. As appears clearly in Fig. II of the drawing, the interval **4** between this rim **5** and the adjacent edge **6** of the linoleum facing is substantial, and I have found it desirable in practice to make the width of this interval **4** substantially equal to the thickness of the linoleum. Like the sheet metal base, the linoleum facing may be of any suitable thickness, and is usually from $\frac{1}{16}$ to $\frac{3}{16}$ inch thick, being most commonly about $\frac{1}{8}$ inch in thickness.

The bending operation is then performed desirably by the instrumentalities and in the manner shown in Figs. II and III of the drawing. For this bending operation the sheet is placed between the female die **7** and male die **8** of a brake-press, in such position that the line of demarkation between the portion of the sheet which is to form the drainboard and the portion of the sheet which is to form the splashboard is indicated by the axial line between the dies. As shown, the width of the portions so defined is unequal, the portion **1***a* which is to form the splashboard being narrower than the portion **1***b* which is to form the drainboard. It is the narrower splashboard portion which is equipped at its edge with the rim **5**, and in which there is the interval **4** between the edge of the facing and the rim. As shown in these figures of the drawing, female die **7** of the brake-press is a Y-shape member which it is to be understood extends throughout the length of the sheet which is to be bent, the legs of the Y diverging from each other at a suitable angle, such as a 90° angle. The male die is in the form of a bar of circular cross-section, which also extends the length of the sheet in which the bend is to be made. The diameter of the male die **8** determines the radius of the bend which is to be formed in the sheet. That is, if the sheet is to be bent upon a half inch radius, the male die is a bar of circular section having a diameter of one inch.

In the bending operation, relative movement between the male and female die toward each other is caused, thereby exerting a bending pressure on the composite sheet along a well-defined line and upon a very short radius. During the bending, the substance of the linoleum itself flows or stretches sufficiently to make accommodation to the change of direction without cracking or otherwise injuring the linoleum. This flow or stretching takes place toward the narrower portion of the composite sheet, which is to form the splashboard, and is permitted by the elastic engagement between the linoleum facing and the sheet metal base, since the linoleum being of the furniture grade is dense and coherent throughout its entire structure and its thin fabric back yields only as an integral part of the facing body in the bending operation. In the bending, the edge of the composite sheet which extends parallel to the line of bend along the wider portion of the sheet remains in its initial condition with the edges of the base and the facing in line with each other. The creep being toward the edge of the narrower portion of the composite sheet, the linoleum facing stretches toward the rim **5**, which serves as a stop when the edge **6** of the linoleum reaches it in the concluding stage of the bending operation.

A theory which may account for the successful bending of the composite sheet without cracking the linoleum or breaking it away from the metal base is that, as above noted, there is a bodily creeping or stretching of the linoleum body, this stretch being toward the edges of the narrower portion of the composite sheet. The elastic bond between the linoleum facing and the metal base partakes in the elongation, and this permits stretching of the linoleum without breaking it loose from the base. At the end of the bending operation, contact of the edge of the linoleum facing with the rim of the base toward which it creeps tends to push the facing back into the curvature of the base. The interval **4** allows bodily creeping or stretching of the linoleum without pressure against the rim **5** throughout the major portion of the bending operation. I have found it impossible successfully to perform the bending operation without leaving such in-

terval. If the edge of the linoleum toward which the elongation naturally takes place were initially to abut the rim, the pressure of the linoleum against the rim would deform the rim, and break the linoleum loose in a marginal region adjacent its edge. If a rigidly setting cement is used to bond the linoleum facing to the base, the rigidity of such bond causes either the linoleum itself to be cracked, or causes it to be broken away from the base when the bending is attempted.

It has been noted that the elastic cement which I use is of well known sort, though not of the sort commonly employed in cementing down linoleum facings. A few of the many formulae which might be employed for the elastic cement may be given as follows:

Formula A

	Parts
Rubber crepe or smoked sheets	10
Coumarone resin	2
Zinc oxide	½

Formula B

	Parts
Crepe rubber	200
Coumarone resin	85
Wood rosin	10
Paraffin oil	5

Formula C

	Parts
Crepe rubber	50
Ester gum	18.5
Methyl abietate	17.5
Amorphous wax	13.5
Hydroquinone	.5

There are many elastic cements, including rubber, resin and plasticizer, commercially sold under various trade names, any of which may satisfactorily be used as the elastic cement in making sink-tops in accordance with my invention.

While the angle formed by the drainboard with the splashboard or splashboards of the sink-top may be varied, a 90° angle is the one most commonly used. I can bend a composite sheet, including a metal base and a linoleum facing, at a 90° angle on a radius of less than one inch. A one-half inch radius represents my standard practice, but I have been able to bend the composite sheets on smaller radii. It will have been noted that in the above description the splashboard is made of less width than the drainboard to stand up from the drainboard a height less than the drainboard width. If for use as the primary element of a sink-top or for other purpose, the composite sheet is bent intermediate its width, it should be understood that both edges of the composite sheet parallel to the line of bend should be equipped with rims positioned to serve as stops and that both edges of the linoleum facing should be spaced to leave an interval between the edge of the linoleum and the rim on the base. In the event of such centrally disposed bend being made, there is creep in both directions from the line of bend, and this is also the case if there be but slight difference between the width of the two portions of the sheet in their extent from the axial line of the bending dies.

Figs. I, IV and V of the drawing show a sink construction involving the integral drainboard and splashboard above described. In these figures of the drawing the sink-top 9 is shown with a rear splashboard 10 and an end splashboard 11. A sink basin 12 is mounted at a basin opening in the drainboard and a channel shape edge binding 13 is applied to the edges of the drainboard and the splashboards. Two splashboards being provided in the sink-top construction shown, it may be explained that these are formed by two individual and successive bending operations, a square piece being cut out at the corner of the composite sheet prior to the bending. Otherwise the operation is as above described. It will be readily understood that if the sink-top has but a single splashboard, mitered pieces of edge binding may be used at the corners to form the edging for the integral primary structure. In the construction shown, there is necessarily a joint between the linoleum facing of the rear splashboard 10 and the linoleum facing of the end splashboard 11. This joint may be sealed by luting or binding it with any suitable cement, caulking material, or trim.

In the drawing, I show a simple and readily applied trim element to close this joint in a manner which preserves the pleasing appearance of the construction. This trim element is a shaped member having diverging rearward wings 14 which lie against the vertical edges of the facing on splashboards 10 and 11, and which has diverging wings 16 arranged to extend from a constricted neck vertically and marginally along the inwardly presented surfaces of the facing on the two splashboards. A downwardly and outwardly curved foot 17 at the base of the wings 16 conforms to the change of direction between the horizontal drainboard and the vertical splashboards. Desirably a light angle member 18 is applied to cover the joint outwardly of the structure. A luting 15 of suitable caulking compound fills all the spaces at the joint between the trim and the other elements of the structure.

An advantage of the above-described binding element is that it may be slipped into place after the splashboards have been bent upwardly from the drainboard, so that its application involves no cutting or deformation of the splashboard structures. Desirably the edging 13 and the corner trim are made of aluminum, stainless steel, Monel metal, or other metal of continuingly attractive appearance. If desired, however, they may be made of plastic composition or other suitable material which may be readily shaped to the desired form.

While my invention in bending a sheet composite of a metal base and a facing of furniture linoleum on a small radius to provide at least two portions extending at a substantial angle from each other has been described as applied specifically to sink-top construction, it is to be understood that the word "sink-top" is used as descriptive of the currently most important embodiment of my invention and is not to be considered as a term of limitation. Various other articles of furniture, such as work tops, work benches, desks, counters, consoles, game boards, and the like, in which it is of importance that the linoleum facing be of high-grade furniture linoleum and that the radius of bend between a basal portion and one or more upstanding portions of the structure be short, may be made in accordance with my invention and come within its purview.

Since my invention finds its embodiment in many variant structures, the scope of the invention is to be restricted only by expressions of limitation contained in the definition of the appended claims.

I claim:

1. The herein described method of producing a composite sheet structure having portions diverging from each other at a substantial angle on a bend of short radius by elastically cementing a facing of linoleum of the kind which includes a thin, tough, fabric backing on a metal base having on an edge thereof a rim while providing a space between the said rim and the adjacent edge of the said linoleum facing, and bending the composite sheet by exerting bending pressure thereon along a narrow zone of less than one inch parallel to the rim on the base with flow of the linoleum facing toward the said rim.

2. The herein described method of producing a composite sheet structure having portions thereof diverging from each other at a substantial angle on a bend of short radius by elastically cementing a facing of linoleum of the kind which includes a thin, tough, fabric backing on a metal base having on an edge thereof a rim while providing a space between the said rim and the adjacent edge of the said linoleum facing, and bending the composite sheet into two portions of unequal width with the narrower of the two said portions extending between the rim on the base and the line of bend by exerting bending pressure along a narrow zone parallel to the said rim with flow of the linoleum facing toward the said rim.

3. The herein described method of producing a composite sheet structure having portions thereof diverging from each other at a substantial angle on a bend of short radius by elastically cementing a facing of linoleum of the kind which includes a thin, tough, fabric backing on a metal base having on an edge thereof a rim while providing a space between the said rim and the adjacent edge of the said linoleum facing, and bending the composite sheet into two portions of unequal width with the narrower of the two said portions extending between the rim on the base and the line of bend by exerting bending pressure along a narrow zone of less than one inch parallel to the said rim with flow of the linoleum facing toward the said rim.

4. The herein described method of producing a composite sheet structure having portions of approximately equal width diverging from each other at a substantial angle on a bend of short radius by elastically cementing a facing of linoleum of the kind which includes a thin, tough, fabric backing on a metal base having rims on opposite edges thereof while providing a space between both of said rims and the adjacent edges of the linoleum facing, and bending the composite sheet by exerting bending pressure thereon along a narrow zone parallel to both the said rims and approximately midway between them with flow of the linoleum facing toward the said rims.

5. The herein described method of producing a composite sheet structure having portions of approximately equal width diverging from each other at a substantial angle on a bend of short radius by elastically cementing a facing of linoleum of the kind which includes a thin, tough, fabric backing on a metal base having rims on opposite edges thereof while providing a space between both of said rims and the adjacent edges of the linoleum facing, and bending the composite sheet by exerting bending pressure thereon along a narrow zone of less than one inch parallel to both the said rims and approximately midway between them with flow of the linoleum facing toward the said rims.

6. The herein described method of producing a composite sheet structure having portions thereof diverging from each other at a substantial angle on a bend of short radius by elastically cementing a facing of linoleum of the kind which includes a thin, tough, fabric backing on a metal base having on an edge thereof a rim while providing a space between the said rim and the adjacent edge of the said linoleum facing, and bending the composite sheet by exerting bending pressure simultaneously throughout a narrow zone parallel to the rim on the base with flow of the linoleum facing toward the said rim.

7. The herein described method of producing a composite sheet structure having portions diverging from each other at a substantial angle on a bend of short radius by elastically cementing a facing of linoleum of the kind which includes a thin, tough, fabric backing on a metal base having on an edge thereof a rim while providing a space between the said rim and the adjacent edge of the said linoleum facing, and bending the composite sheet by exerting bending pressure in directions approximately normal to the surface of the sheet simultaneously throughout a narrow zone of less than one inch parallel to the rim on the base with flow of the linoleum facing toward the said rim.

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