Nov. 22, 1949 J. H. BRINKER ET AL 2,489,118

APPARATUS FOR THE CONSTRUCTION OF DESK, TABLE OR COUNTER TOPS

Filed Oct. 10, 1947

3 Sheets-Sheet 1

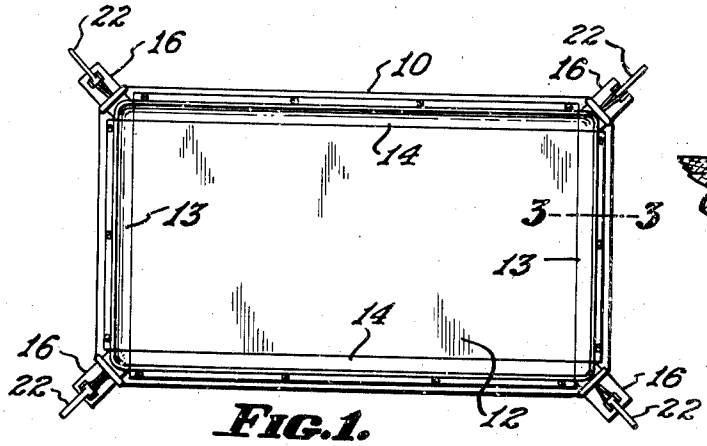


FIG. 1.

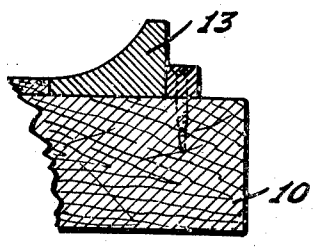


FIG. 3.

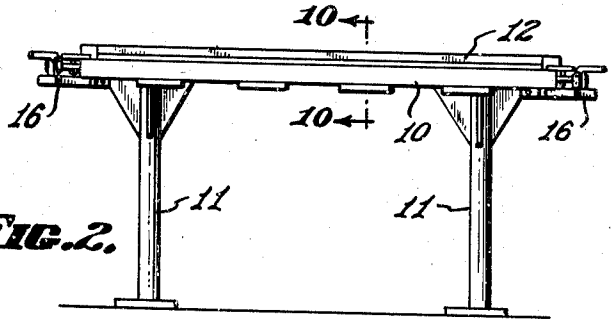


FIG. 2.

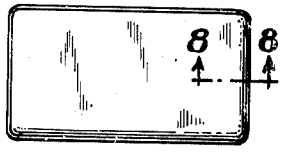


FIG. 6.

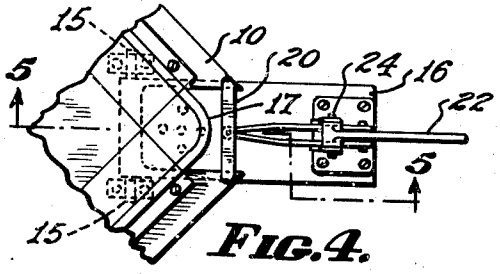


FIG. 4.

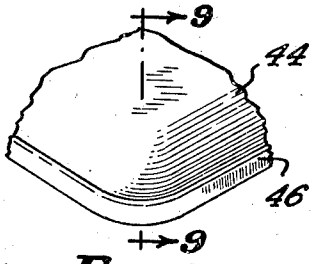


FIG. 7.

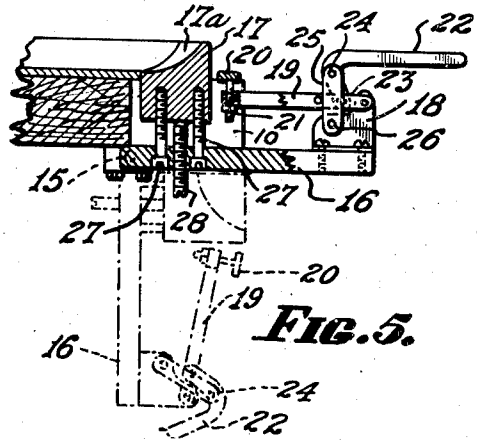


FIG. 5.

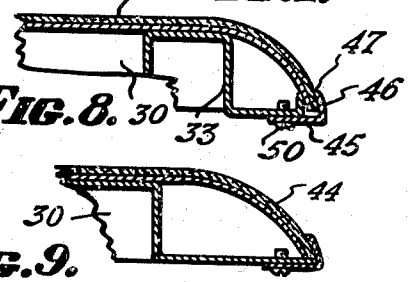


FIG. 8.

FIG. 9.

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Filed Oct. 10, 1947 3 Sheets-Sheet 2

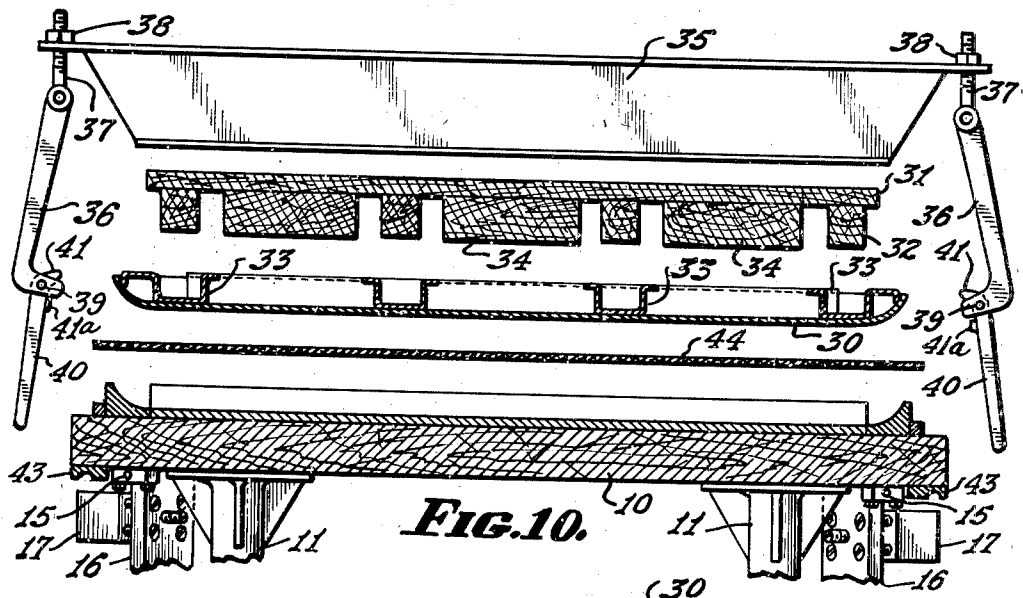


FIG. 10.

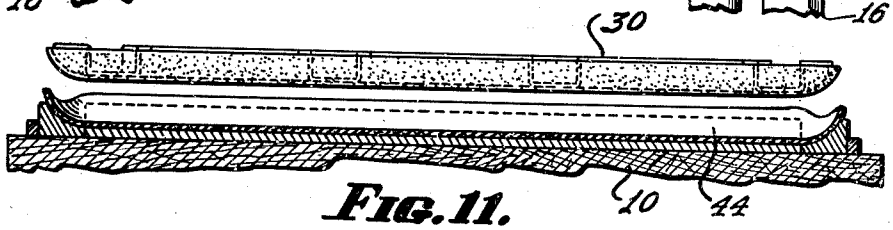


FIG. 11.

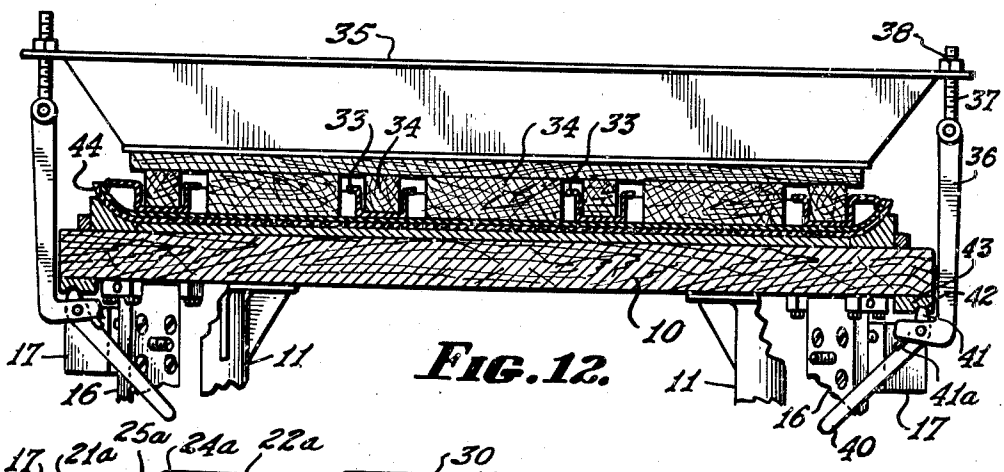


FIG. 12.

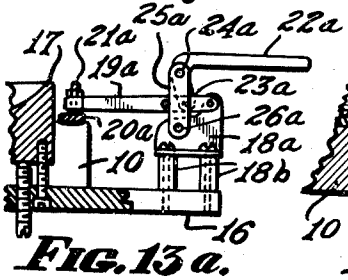


FIG. 13a.

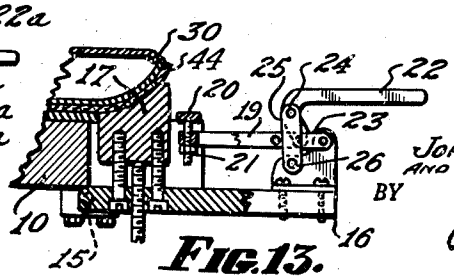


FIG. 13.

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APPARATUS FOR THE CONSTRUCTION OF DESK, TABLE OR COUNTER TOPS

Filed Oct. 10, 1947 3 Sheets-Sheet 3

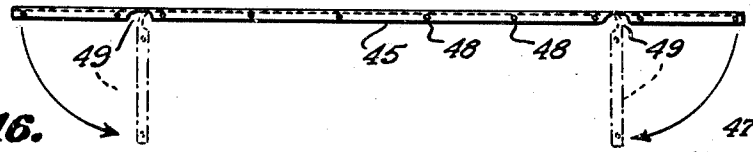


FIG. 16.

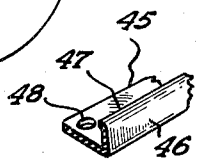


FIG. 15.

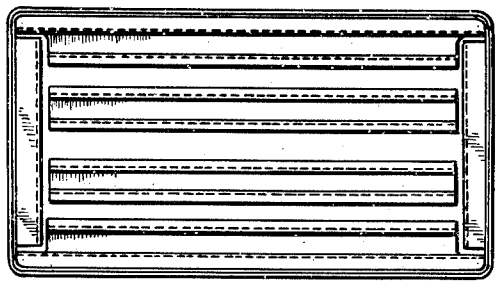


FIG. 14.

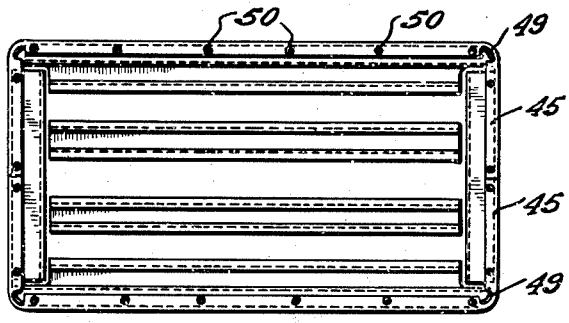


FIG. 17.

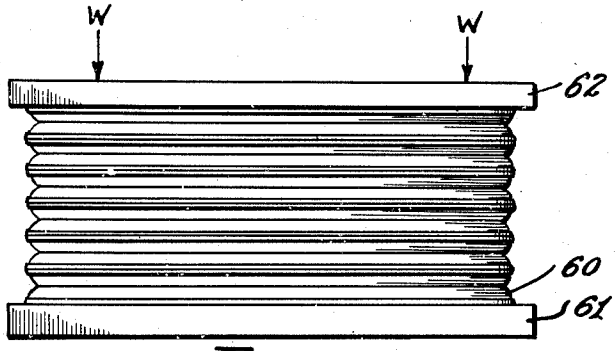


FIG. 18.

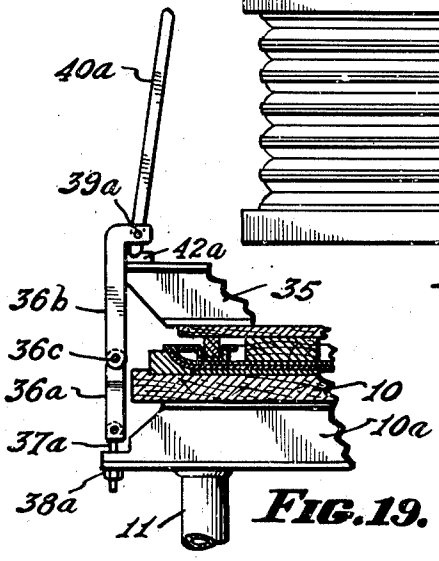


FIG. 19.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR THE CONSTRUCTION OF DESK, TABLE, OR COUNTER TOPS

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Application October 10, 1947, Serial No. 779,068

10 Claims. (Cl. 154—1.8)

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This invention relates to an apparatus for producing a desk, table or counter top having a flat working surface merging in smooth curves into side and end walls and having smoothly rounded corners, such top being covered with linoleum or similar material.

Linoleum covered desk tops have come into more and more prominent use in recent years because of the fact that linoleum affords an ideal writing surface, being relatively hard and yet very slightly yielding. It avoids the disadvantages of metal in that it is not cold to the touch and stands up better than a highly polished wood surface.

In the development of linoleum covered desk and table tops attempts have been made to provide a top with rounded upper edges and desks have been available on the market in which the front and rear edges of the desk at the top were rounded and covered with linoleum and the end edges and corners have been covered with a metallic trim strip.

Another development was a desk top having its four upper edges rounded and covered with linoleum, the linoleum having the corners cut out and covered with a metallic corner plate.

Heretofore, no one has been able to produce a desk or table top having smoothly rounded upper edges on all four sides and smoothly rounded corners, the whole being covered with a single piece of linoleum.

It is an object, therefore, of our invention to provide for a novel method of producing a desk top having smoothly rounded upper edges and corners, the whole being covered with a single piece of linoleum without notched or cut away corners, whereby all undesirable joints in the linoleum are eliminated, and manufacturing costs are reduced. The corners of the linoleum, however, are shaped with a suitable trim so that the edge of the linoleum will terminate approximately flush with the edge of the steel sub-top. It is another object of our invention to provide an apparatus by means of which the linoleum covering may be applied successfully in a single piece.

A further object of our invention includes the provision of a novel female mold element having hinged corner pieces whereby the side and end curves of the covering material may be effected before the corner portions are compressed into shape.

These and other objects of our invention which we shall describe in more detail hereinafter or which will appear to those skilled in the art as the description proceeds, we accomplish by that certain construction and arrangement of parts and by that series of method steps of which we shall now describe exemplary embodiments.

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It is to be understood that when we refer to a desk top hereinafter, we use the term as inclusive of table tops, counter tops, and that the word "linoleum" is inclusive of various materials on the market having qualities and characteristics similar to linoleum.

In the drawings which form a part hereof:

Figure 1 is a plan view of a female mold element and its supporting structure.

Figure 2 is a side elevational view of the same.

Figure 3 is a fragmentary cross sectional view on an enlarged scale taken on the line 3—3 of Figure 1.

Figure 4 is a fragmentary plan view of one corner of Figure 1 on an enlarged scale.

Figure 5 is a fragmentary cross sectional view taken on the line 5—5 of Figure 4.

Figure 6 is a plan view on a reduced scale of a desk top according to our invention.

Figure 7 is a fragmentary perspective view of a corner of a desk top on a greatly enlarged scale.

Figure 8 is a fragmentary cross sectional view taken on the line 8—8 of Figure 6 on an enlarged scale.

Figure 9 is a fragmentary cross sectional view taken on the line 9—9 of Figure 7.

Figure 10 is an exploded cross sectional view taken on the line 10—10 of Figure 2, but on an enlarged scale showing the female mold element with its supporting structure, a sheet of covering material, a desk top, a backing piece, and a clamp.

Figure 11 is a view similar to Figure 10 showing the sheet of linoleum in position in the female mold element and the desk top about to be placed thereon.

Figure 12 is a view similar to Figures 10 and 11 showing the entire assembly clamped together.

Figure 13 is a view similar to Figure 5, but showing the covering material and desk top in position.

Figure 13*a* is a view similar to Figure 13, showing a modified clamp.

Figure 14 is a bottom plan view of the desk top with the linoleum or covering material secured thereto.

Figure 15 is a fragmentary perspective view of a trim strip.

Figure 16 is a plan view of a trim strip showing the manner of forming it.

Figure 17 is a view similar to Figure 14 but showing the trim strip in place.

Figure 18 is a side elevational view of a stack of finished desk tops in storing position, while the adhesive material is setting.

Figure 19 is a view similar to the left hand end of Figure 12, showing a modified clamped assembly.

Briefly, in the practice of our invention, we provide a supporting structure indicated generally at 10 mounted on suitable legs 11 and carrying the female mold element indicated generally at 12. The female mold element has a flat bottom portion and curved pieces forming side and end members as indicated at 13 and 14, respectively. These terminate in vertical planes at right angles to each other at the ends of the adjacent side and end pieces.

In the particular embodiment illustrated, the bottom portion of the mold is made of wood or Masonite, while the members 13 and 14 are made of metal. It will be clear that the particular material used does not form a limitation upon our invention and that the structure was made in this particular way as a matter of convenience.

Hinged to the supporting structure as at 15 is a plate member 16 upon which is mounted a corner piece 17. The plate 16 carries a bracket 18 to which is pivoted a link 19 carrying a locking piece 20 by means of a bolt and lock nut indicated generally at 21. The locking arm 19 is actuated by means of a handle member 22 in the form of a bell crank having its short arm pivoted to the link 19 at 23 and being pivoted at 24 to a link 25 which has its other end pivoted on the bracket 18 at 26. It will be noted that the pivot point 23 (see Figure 5) is slightly to the right of the center between the pivot points 24 and 26, thus constituting what may be called a dead center locking mechanism. The locking piece 20 engages edges of the supporting structure 10 as best seen in Figure 4.

It will be clear, if the handle 22 is pushed down, as soon as the line connecting the pivot points 24 and 26 passes the pivot point 23, downward movement of the lever 22 lifts the arm 19 and the locking piece 20 so that the entire plate 16 may swing down about its pivot point 15 to the position shown in broken lines in Figure 5. In relocking, it is simply necessary to lift upward on the member 22 which carries the entire plate 16 upward until the corner piece 17 is in position, which also carries the locking piece 20 into position to engage the supporting structure 10, and then a final slightly upward movement of the handle 22 brings the linkage into the locked position shown in solid lines in Figure 5.

It is necessary that the corner piece be accurately adjusted so that it seats correctly at the corners of the female mold element and for this purpose we secure the corner piece 17 to the plate 16 by four screws 27 disposed in substantially square arrangement and opposed by a screw 28 which is threaded through the plate 16 and bears against the under side of the block 17. In this way, we are able to very accurately adjust the position of the corner piece 17.

It will be understood, of course, that the structure of Figures 4 and 5 is reproduced at each corner of the female mold element.

In Figure 13*a* we have shown a slight modification of the corner piece locking mechanism in which the parts are given reference numerals corresponding to those in Figures 5 and 13 with the suffix *a*. The linkage is the same as that described above, except that it is elevated on the plate member 16 by means of the spacers 18*b* so that the link 19*a* in locking position will be above the edges of the supporting structure 10, and the position of the locking piece 20*a* is inverted. We have found that this modified arrangement is somewhat easier to operate, since it eliminates possible interference between the locking piece 20*a* and the structure 10 during upward movement of the plate 16.

The desk top which is to be covered with linoleum is indicated at 30 in Figure 10 and it constitutes the male member of the mold. Because the surface of the top 30 is sheet metal and in order to secure thorough contact with the linoleum in the mold, we provide a backing piece indicated generally at 31 comprising a rectangular board or base bearing a series of blocks on its under side, certain of these blocks 32 being narrow so as to enter in the bracing channels 33 on the under side of the desk top and other blocks 34 of a size to fit between the bracing channels 33.

To clamp the desk top and backing member against the sheet of linoleum in the mold, we provide a number of clamps comprising I-beam members 35. The I-beams 35 are clamped in position by a structure comprising links 36 pivoted to adjusting screws 37 passing through holes in the I-beam 35 and secured by the nuts 38. Pivoted to the lower inturned end of the links as at 39 is a lever 40. The members 40 have slightly curved locking fingers 41 which engage in grooves 42 in metallic strips 43 suitably secured to the under side of the supporting structure 10. The lugs 41*a* abut against the lower inturned ends of the links 36, just past dead center position.

The nuts 38 are adjusted so that when the assembly is in the position of Figure 12, some pressure is required to move the lever 40 to the position shown in Figure 12 to lock the assembly together. The structure just described is repeated at the other end of the I-beam 5, and two or more of such I-beams are used to clamp the assembly together.

In Figure 19 we have shown a modified arrangement for clamping the assembly together. Here the supporting structure 10 rests on a number of transverse I-beams 10*a*. The link 36 is in two parts, 36*a* and 36*b*, which are pivoted together at 36*c*. The link 36*a* is secured to the end of the I-beam 10*a* by means of a bolt 37*a* and nut 38*a*. The end of the link 36*b* is inturned and has pivoted to it the locking lever 40*a* as at 39*a*. A notched block 42*a* is secured to the I-beam 35 at its end, and the short arm of the locking lever 40*a* engages the block 42*a* as shown, and effects a locking action of the dead center type. The structure of Figure 19 is of course repeated at both ends of each I-beam 10*a*.

The procedural steps in preparing the desk top are as follows:

A sheet of linoleum indicated at 44 is placed in the female mold member as shown in Figure 11. It will be noted that the corner pieces 17 are dropped down out of the way so that the sheet of linoleum may curve smoothly at the ends and sides with the corner portion extending out through the open corners of the female mold element. The surface of the desk top 30 is then coated with a suitable cement and it is placed on top of the sheet of linoleum in the mold as shown in Figure 11. The backing member 31 is then placed on the desk top 30 and the I-beams 35 are clamped in position as shown in Figure 12. Then

the corner pieces are swung into position as shown in Figure 13.

It will be noted that in following our procedure outlined above, the curves at the sides and ends of the desk top are first produced, while letting the corners of the linoleum take whatever shape is forced upon them; then by means of the corner pieces, the corners of the linoleum are compressed into position in adhesive engagement with the corners of the desk top. In this way, an entirely smooth unwrinkled covering of a desk top is achieved without notched or cut away corners in the linoleum and without having to cover the corners with metallic corner pieces or the like.

To finish the appearance and protect the linoleum around the bottom edges of the desk top, a narrow trim strip is applied, as is common practice on desk tops. The trim strip is indicated generally at 45 and is provided with an upstanding flange 46 having a slightly inturned edge 47. The portion 45 is drilled at suitable intervals as at 48. We prefer to make the trim strip for the entire periphery of the desk in two pieces with joints approximately at the centers of the opposite end edges of the desk. The piece of trim strip 45 shown in Figure 16 is therefore of a length substantially equivalent to one-half the periphery of the bottom edge of the desk top. At two points 49 at which the corner bends are to be made, we cut away the portion 45 to permit curving of the portions of the trim strip therebeyond at right angles to the center portion as indicated by the broken lines in Figure 16.

We prepare two such pieces and secure them to the desk top by driving self-threading screws through the holes 48 as indicated at 50, and the finished desk top will have the appearance from underneath shown in the Figure 17.

Referring back to Figures 6 and 9 inclusive, it will be noted that the radius of curvature in a vertical plane diagonally through the corners (Figure 9) is greater than the radius of curvature in a vertical plane normal to the side or end edges (Figure 8). We have found that by making the curvature diagonally through the corners gentler, we are able to secure not only a better appearance from the aesthetic viewpoint, but a better forming or molding of the linoleum at the corners. Thus, of course, the concavity of the corner pieces 17, and indicated at 17a, is not a spherical concavity, but the radius of curvature in the vertical planes of the edges of the corner pieces is sharper than it is in a vertical plane bisecting the vertical edge planes.

The desk top is left in the mold as shown in Figure 12 until the trim strip has been secured in position as shown in Figure 17. Once the trim strip is in position, it will hold the linoleum in place while the adhesive is setting; and we, therefore, remove the completed desk top from the mold and place it in a stack as shown in Figure 18 where the completed desk tops indicated generally at 60 are placed face to face and back to back on a supporting member 61. We finish off the stack with a board 62 and place suitable weights W thereon. Such a stack of desk tops may then be left for as many hours as necessary for the particular cement which is being used to set completely.

It will be clear that numerous modifications will suggest themselves to those skilled in the art and we therefore do not intend to limit ourselves as to the structure or method steps otherwise than as set forth in the claims which follow.

Having now fully described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. An apparatus for the purpose described, comprising a female mold member having a flat bottom merging into side and end walls by means of smooth curves, and having open corners, corner pieces for said female mold member merging side and end walls with said flat bottom in a smooth curve, said corner pieces being hingedly mounted whereby they may be placed in operative position or dropped down out of the way, and means for locking said corner pieces in operative position.

2. An apparatus according to claim 1, in which said hinged mounting comprises a plate hinged to said female mold member, said corner piece being adjustably mounted upon said plate whereby it may be accurately aligned with said female mold member.

3. An apparatus according to claim 2, in which said hinged plate is provided with a locking member and a linkage for actuating the same, said linkage being of the dead-center type.

4. An apparatus for the purpose described, comprising a female mold member having a flat bottom merging into side and end walls by means of smooth curves and having open corners defined by vertical planes at right angles to each other, a supporting structure for said mold member, said supporting structure having openings at the corners of said mold member, a plate hinged to said supporting structure at each corner, said plate having mounted thereon a corner piece for said mold member, said corner piece having a concave curvature merging smoothly into said side and end walls and flat bottom, and being defined by vertical planes at right angles to each other.

5. An apparatus according to claim 4, in which said corner pieces are adjustable with respect to said hinged plates, whereby said corner pieces may be accurately aligned with said mold member.

6. An apparatus according to claim 5, in which said hinged plates carry locking members adapted to engage said supporting structure adjacent said corners to hold said corner pieces in position against said mold member.

7. An apparatus according to claim 6, in which said locking members are actuated by a linkage of the dead center type for quick locking and releasing of said locking members.

8. An apparatus according to claim 7, in which the curvature of said corner pieces parallel to said vertical planes is sharper than their curvature in a plane bisecting said vertical planes.

9. An apparatus for the purpose described, comprising a support, a female mold member mounted on said support and having a flat bottom merging into side and end walls by means of smooth curves, and having open corners, corner pieces for said female mold member merging side and end walls with said flat bottom in a smooth curve, said corner pieces being hingedly mounted whereby they may be placed in operative position or dropped down out of the way, means for locking said corner pieces in operative position, a desk top to be covered constituting the male member for said mold, a backing member for said male member, and means for clamping said backing member to said support to bring said male member and female member into molding relationship.

10. An apparatus according to claim 9, in which said clamping means comprises a beam

member having an L-shaped link adjustably secured thereto at each end, and a locking lever pivotally secured to the transverse leg of each of said L-shaped links, said locking levers being pivoted adjacent their ends and having short angular locking legs extending beyond said pivot points, the adjustment of said L-shaped links being such that their transverse legs can extend under said support, locking being accomplished by pivoting said locking levers so that their locking legs wedge against the underside of said support.

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