May 19, 1959 S. T. LATTUCA 2,886,828

PLASTIC SAND AND WATER POOL

Filed July 14, 1958

Fig. 1

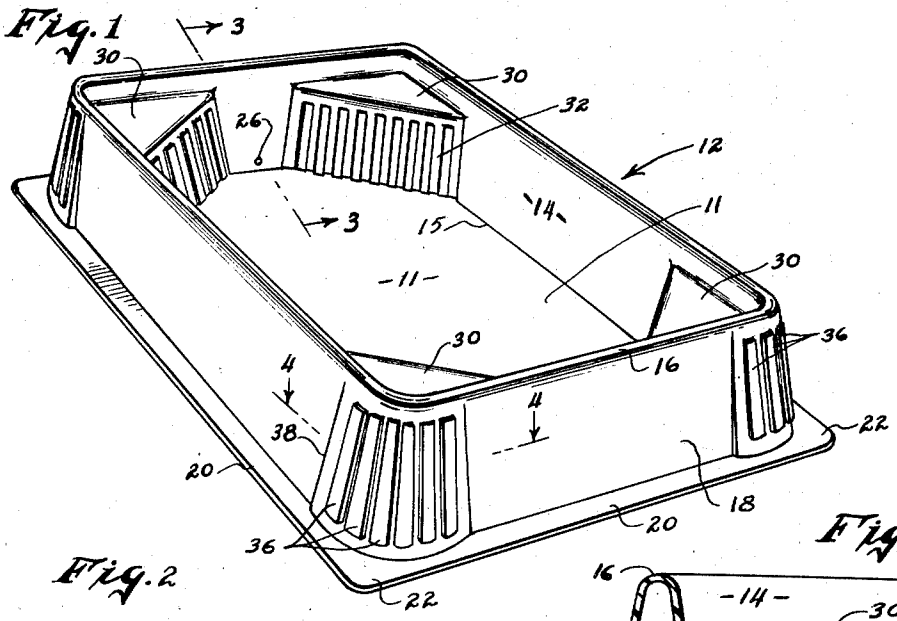


Fig. 2

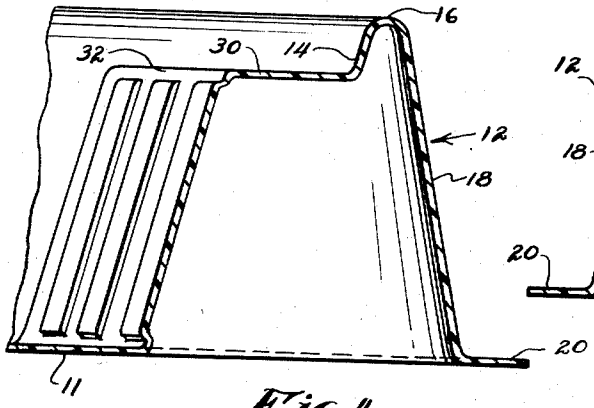


Fig. 3

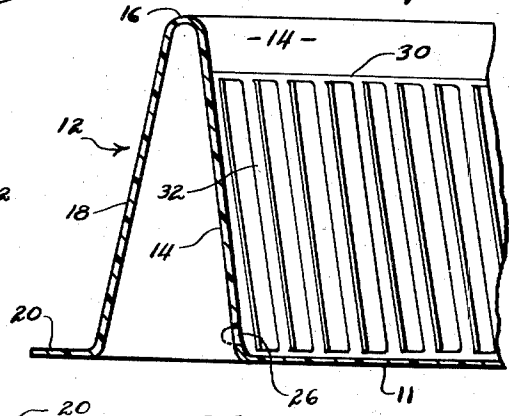


Fig. 4

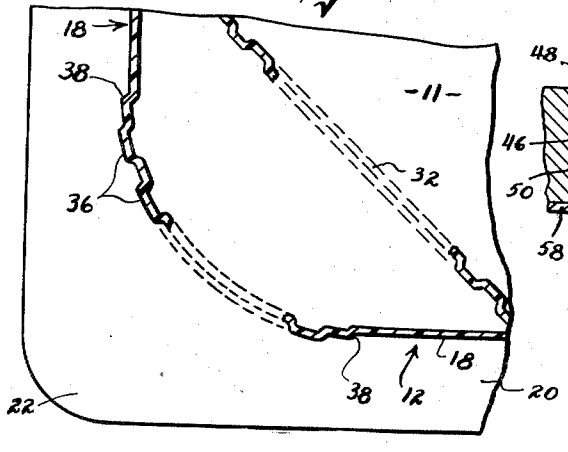
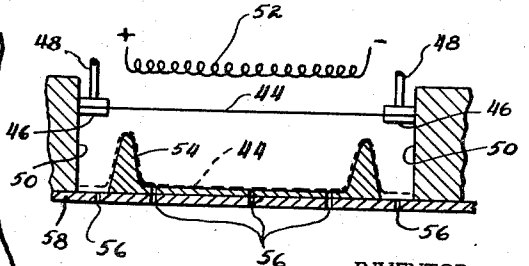


Fig. 5



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PLASTIC SAND AND WATER POOL

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10 Claims. (Cl. 4—172)

This invention relates to plastic pools for children. These pools can be used for sand boxes or wading pools. The invention is concerned more particularly with the construction of such a sand and water pool from a single piece of thermoplastic material.

One object of the invention is to provide an improvd sand and water play pool constructed in such a way as to have great strength even though made of relativly thin plastic sheet material. The invention is made with a draped side wall and provided with a bottom flange for imparting stiffness to the lower end of the side wall and around the edges of the plastic sheet of which the pool is formed.

The preferred construction of the invention includes also corrugated areas on the sides of the pool for imparting additional vertical strength at the corners of the pool and also at the location of seats which are formed at ends of the pool and from the same sheet of material of which the bottom and sides of the pool are made.

Another object of the invention is to provide a plastic sand and water pool constructed in such a way as to be made by vacuum forming. Features of the invention relate to the location of seats and corrugations at the corners of the pool without interfering with the removal of a formed pool from a mold over which it is draped in the vacuum forming operation. Another feature of the invention relates to the construction of a drain outlet near the bottom of the pool. This drain outlet is constructed in such a way that it can be incorporated in a vacuum-formed pool and the opening is made by sawing off one end of a depression formed in the plastic sheet.

Another object of the invention is to provide an improved method of making a pool of the character indicated.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

In the drawing, forming a part hereof, in which like reference characters indicate corresponding parts in all the views;

Figure 1 is a perspective view of a sand and water play pool made in accordance with this invention;

Figures 2, 3 and 4 are greatly enlarged sectional views taken on the lines 2—2, 3—3, and 4—4, respectively, of Figure 1; and

Figure 5 is a diagrammatic view showing the way in which the plastic pool is made in accordance with the invention.

The sand and water pool shown in Figure 1 is made of a single sheet of plastic material. Any thermoplastic sheet which does not become brittle when cold is suitable for purposes of this invention. Good results have been obtained with high-impact styrene. The pool can also be made from a sheet of acetate, or butyrate, or other thermoplastic materials.

The pool includes a bottom **11** and a side wall **12**. The side wall **12** includes inner portions **14** which extend upwardly from the bottom **11** along a juncture line **15**. The material forms a corner of relatively short radius at the

line **15**. At its upper end, the side wall **12** curves outwardly to form a top **16**, and outer portions **18** of the side wall extend downwardly to the level of the bottom **11**. There is an outwardly and horizontally extending flange **20** at the lower end of the downwardly extending portions **18** for imparting extra stiffness to the outer portions **18** of the side wall and for giving the pool a more finished and attractive appearance. This flange **20** has rounded corners **22**.

The bottom **11** and the flange **20** lie in substantially the same plane so that both of them rest upon the ground or other support on which the pool is placed. The bottom **11** is preferably formed with a quilted contour for decorative purposes and also to make the bottom less slippery when children are using it as a wading pool. The inner portions **14** of the side wall extend upwardly at a steep angle to the bottom **11**, but are preferably not at right angles to the bottom **11**. In the preferred construction, the inner portions **14** of the wall slope away from the vertical and makes an angle slightly greater than 90° with the bottom **11**. This facilitates the removal of the formed pool from the mold on which it is made.

The outer portions **18** of the side wall diverge from the inner portions **14** at a substantial angle for adding strength to the side of the pool and for producing a more attractive construction. The bottom **11** and the wall **12** are not of exactly the same thickness because, while the sheet from which the pool is made is originally of uniform thickness, the sheet becomes thinner at certain areas because of the drawing of the material in the vacuum-forming operation. It is a feature of the design, however, and of the method of the forming, that the flow of thermoplastic material is distributed in such a way as to prevent any areas of the wall from becoming excessively thin and weak in the finished pool.

A depression **26** is formed at one area near the bottom of the side wall **12**. This depression is quite shallow so that the flexibility of the side wall permits the formed pool to be stripped from the mold in spite of the fact that the depressed area **26** extends inwardly toward the mold. After the plastic material has cooled and hardened, a saw is used to cut off the end of the depressed area **26**; the cut-off portion being indicated by dotted lines in Figure 3. This leaves an opening at the depressed area **26** and the opening serves as a drain outlet for the pool when the pool is to be filled with water. A stopper is inserted into the opening at the depressed area **26**.

Seats **30** are formed at the corners of the pool. In the construction shown there is a seat **30** in each corner; but the desirability of this construction depends upon the size of the pool and for smaller pools seats are formed in only some of the corners, preferably diagonally opposite corners. These seats **30** are formed by having a mold which supports triangularly-shaped areas of what may be considered the bottom of the pool; that is when the pool is formed, the areas which comprise the seats **30** are not drawn down to the level of the bottom **11** but are supported between the upper and lower limits of the walls **12**, and preferably near the upper limits of the wall. The seats **30** could be level with the top of the pool but this would provide a less rigid construction and one which would be less attractive in appearance.

The inner portions **14** of the side wall extend diagonally across the corners at the front edges of the seats **30** and the diagonally extending areas **32** of the inner portions of the side wall are preferably corrugated in a vertical direction to impart additional stiffness to the plastic at the areas **32** so as to obtain the necessary strength for supporting a heavy person on the seats **30**. The construction is strong enough so that adults can sit on the seats **30** when playing with children in the sand and water pool.

Additional vertical strength is imparted to the side wall

12 at the corners of the pool by corrugations 36 formed in the outer portions 18 of the side walls. These corrugations 36 are in an area having additional bracing and reinforcing formed along its edges by an offset 38 similar to one side of a corrugation. Greater stiffness is obtained by having the corrugations 36 of channel cross section instead of having them rounded, but rounded corrugations can be used, if desired.

Figure 5 is a diagrammatic view showing the method by which the sand and water pool of the other views is made. A sheet 44 of thermoplastic material is firmly clamped around its peripheral portion between jaws 46 of a clamping frame. This frame is moved up and down by actuating rods 48. The clamp 46 moves within the confines of a side wall 50 of a vacuum-forming machine.

The sheet 44 is heated to a drawing temperature by a radiant heater 52. When the material of the sheet 44 has softened sufficiently for drawing over a mold 54, the frame 46 is moved downwardly and the sheet 44 comes in contact with the mold. In order to obtain a deep draw necessary for the draped side wall construction, and at the same time not stretch the sheet to excessively thin sections, a vacuum is drawn under the sheet 44 from the time that the sheet first comes in contact with the mold 54. Air is withdrawn from the space beneath the sheet 44 through orifices 56 which open into a vacuum chamber under a plate 58. The operation of vacuum-forming machines is well known and no further discussion of it is necessary for a complete understanding of this invention.

The portions of the sheet 44 which are clamped within the frame 46 are held in their horizontal orientation as they are moved downwardly; and the plastic sheet 44, after draping over the mold 54, is indicated in dotted lines. Actually, the plastic sheet is in firm contact with the mold so as to take all of the contours of the mold, but for purposes of clearer illustration, the sheet 44 is shown slightly spaced from the mold surface.

The mold 54 is shaped to provide the seats 30 and corrugations 31 and 36, and the other contour details as shown in the final product as illustrated in Figures 1–4.

The frame 46 moves up and down within the walls 50 as a piston to prevent leakage of air into space under the sheet 44 when the vacuum is drawn under the sheet, and there are additional air discharge openings at locations other than those illustrated in Figure 5, some of them being in the mold 54 itself.

The preferred construction of the invention and the preferred method of making it have been illustrated and described, but changes and modifications can be made, and some features can be used in different combinations without departing from the invention as defined in the claims.

I claim:

What is claimed is:

1. A sand and water play pool comprising a sheet of thermoplastic material formed with a horizontal bottom panel providing a bottom for the pool, and side walls, said side walls including inner portions extending upwardly from the bottom and then curving over and outwardly to form a top surface on which persons using the pool may sit, the outer portions of the side walls extending downwardly from said top surface and at a steep angle to form draped walls, a flange at the lower end of the outer portion of each wall in substantially the plane of the bottom panel and extending outwardly from the lower ends of the walls for a distance at least as great as the thickness of the sheet, for contact with the ground.

2. The sand and water play pool described in claim 1 and in which the outer portions of the side wall meet at rounded corners and the thermoplastic material is corrugated at the surfaces of the rounded corners with the corrugations extending up and down the wall to stiffen the wall at said corners.

3. The sand and water play pool described in claim 2 and in which the outer portions of the side wall diverge from the inner portions as the outer portions extend downwardly, and the depth of the corrugations is less than the divergence of the outer portions from the inner portions of the wall.

4. The sand and water play pool described in claim 1 and in which the inner portions of the side wall has a circular area of the thermoplastic sheet depressed in the direction of the outer portion of the side wall and at a location near the bottom of the pool, the outer end of the depressed area being open to provide a drain outlet for the pool.

5. The sand and water play pool described in claim 1 and in which the inner portions of the side wall are spaced further from the outer portions across the corners of the pool than at other locations so as to provide seats at the corners of the pool.

6. The sand and water play pool described in claim 1 and in which there are substantially triangular areas of the bottom panel at corners of the pool raised above the level of the major area of the bottom panel to form seats in the corners of the pool.

7. The sand and water play pool described in claim 6 and in which the side portions of the thermoplastic sheet between the seats and the major portion of the bottom panel are corrugated to provide a stiffer area of the sheet to support the front portions of the seats.

8. The sand and water play pool described in claim 6 and in which the seats are located at a level between the top of the side wall but substantially more than halfway up from the bottom of the pool to the top of the side wall.

9. The method of making a one-piece plastic sand and water play pool which comprises heating a horizontal piece of thermoplastic sheet to a drawing temperature, holding the edge portions in their horizontal orientation while lowering the softened sheet into contact with a mold, and then draping the sheet over the mold by vacuum forming while bringing the edge portions down to the level of the bottom of the mold.

10. The method of making a one-piece plastic sand and water play pool which comprises heating a horizontal piece of thermoplastic sheet to a drawing temperature, moving the heated sheet downwardly into contact with a mold supporting the sheet around a closed area located inward from the edge portions of the sheet, and after the closed area is so supported bringing the edge portions and the part of the sheet which is surrounded by the closed area down over the mold by vacuum to form a double wall with inner and outer portions connected together at their upper ends by said closed area, supporting areas of the sheet at the inside of the wall at levels intermediate the upper and lower limits of the wall to form integral seats adjacent to the wall, stiffening the wall by forming portions thereof into vertical corrugations, and stiffening the lower and outside edge portion of the wall by holding the edge regions of the sheet horizontal during and after forming of the side wall.

References Cited in the file of this patent

UNITED STATES PATENTS

D. 120,213	Carson	Apr. 30, 1940
1,844,988	Steinkamp	Feb. 16, 1932
1,936,398	Kienle	Nov. 21, 1933
2,784,455	Pulaski	Mar. 12, 1957
2,797,439	Borkland	July 2, 1957