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2,838,768

DRAIN VALVE FOR PLASTIC SWIMMING POOL

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Fig. 1

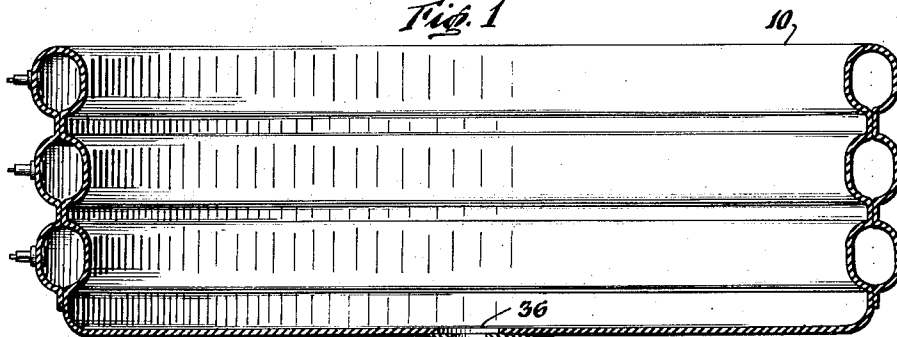


Fig. 2

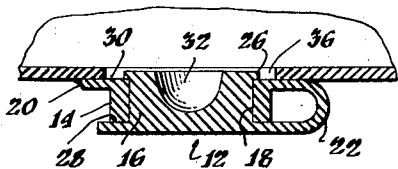


Fig. 3

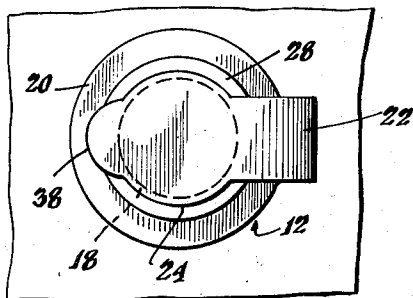


Fig. 4

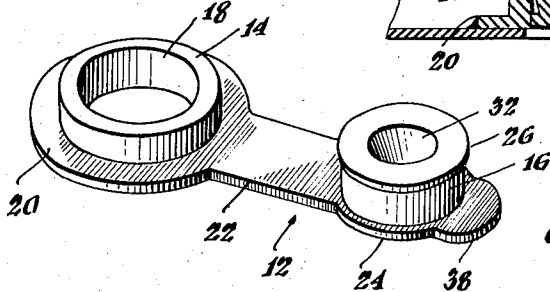


Fig. 5

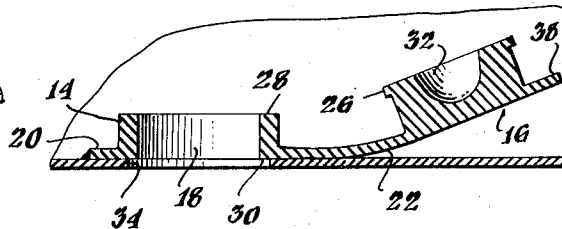


Fig. 6

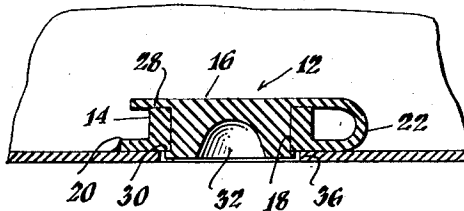
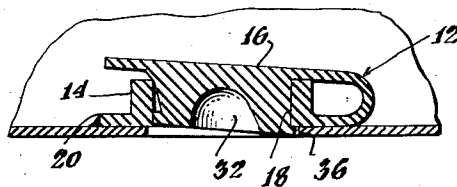


Fig. 7



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DRAIN VALVE FOR PLASTIC SWIMMING POOL

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2 Claims. (Cl. 4—177)

This invention relates to plastic swimming pools and in particular to a drain valve for the pool.

Drain valves for plastic swimming pools have been previously suggested, but these have not proven entirely satisfactory because the seal of the valve is either ineffective against the high water pressure in the pool or the projecting plug of the drain becomes undone when it is accidentally kicked in use.

In accordance with the present invention, there has been developed an entirely satisfactory form of drain valve which is especially constructed to form a seal against high water pressure, and special locking means have been provided for holding the plug in the drain so that it will not become undone in case it should be accidentally kicked in use. Sealing of the drain and locking the plug in place is achieved in the structure of my invention by providing the plug with a pair of flanges which are so arranged that when the plug is in place in the drain one flange overlaps the rim of the wall of the drain on top and the other flange overlaps the rim of the wall of the drain on the bottom. As a result, the flange of the plug on top is pushed down by the water pressure and firmly seated on the rim of the drain wall where it establishes a primary seal against the pressure of the water and the flange that overlaps the bottom of the drain wall locks the plug in place so that it will not become undone in case it should be accidentally kicked in use. In the preferred form of my invention I make one end of the plug hollow to give it great flexibility so that it can be readily distorted to allow the oversize flange to pass through the opening in the drain.

These and other advantages of my invention will be readily understood by reference to the accompanying drawings, in which—

Fig. 1 illustrates a side view of a section of a plastic swimming pool with the drain valve of my invention shown in section in position in the bottom of the pool;

Fig. 2 is an enlarged view of the drain valve of Fig. 1;

Fig. 3 is a top view of the drain valve of my invention;

Fig. 4 is an isometric view of the drain valve of Fig. 3;

Figs. 5 and 6 illustrate a second way in which the drain valve of my invention may be positioned in the bottom of the pool of Fig. 1; and

Fig. 7 illustrates the way the plug is distorted as it passes down through the opening in the drain.

Referring to the drawings, 10 is a plastic swimming pool and 12 is the drain valve of my invention as it appears in position in the bottom of the pool. Drain valve 12 is made of resilient material such as rubber, synthetic plastics, and the like, and the selected resilient material is preferably one that can be readily bonded to the plastic material of the pool. Drain valve 12 includes a cylindrical drain member 14 and a cylindrical plug 16, the body of which fits snugly into opening 18 in the drain member. An external annular flange 20 is positioned around the mouth at one end of drain member 14 and

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plug 16 is connected with the drain member by means of a resilient strip of material 22. The connecting strip of material is made just long enough so that it serves as a guide to assist in orienting plug 16 in opening 18 of drain member 14. In the preferred form of my invention shown, strip of material 22 is attached at one end to drain flange 20 and at the other end the strip of material is attached to an exterior annular flange 24 that projects out around the rim at one end of cylindrical plug 16. A second exterior annular flange 26 is positioned around the rim of the second end of plug 16. The length of the body of the plug between flanges 24 and 26 must be at least equal to the length of the cylindrical drain member 14 and preferably the length of the body of plug 16 between flanges 24 and 26 is made just long enough so that the flanges fit snugly against the rim of the wall of the drain at each end 28 and 30 respectively when the plug is in position in the drain. With this construction, annular flange 24 is seated against the rim 28 of cylindrical drain member 14, and the full force of the water pressure in pool 10 forces flange 24 down against the rim of the drain to provide a highly effective seal against the pressure of the water. In like manner, flange 26 is seated against rim 30 of drain 14 and this flange locks the plug in place so that it cannot accidentally be kicked loose and become undone. The center of plug 16 at the end that carries flange 26 is hollowed out as at 32 and the hollow portion extends in beyond the middle of the plug. As a result, the body of the plug is given great flexibility so that it can be readily distorted to allow flange 26 to pass through the opening in drain 14. Flexibility of the body of the plug is also of great advantage in those cases where the plug is carelessly placed in the drain and it is not pressed all the way home in the opening of the drain (see Fig. 7). In such case the plug will still effectively seal the drain and because it is flexible it tends to distort under the pressure of the water so that flange 24 is forced down against rim 28 of the cylindrical drain member to seal the opening in the drain.

As most clearly illustrated in Figs. 2 and 6, the drain valve of my invention may be positioned on the inside or on the outside of the pool. If the drain valve is positioned inside the pool, then flange 16 is bonded to the inside surface of the bottom of pool 10 around the drain opening 34 as shown in Fig. 5, and if it is to be positioned on the outside of the pool, flange 16 is bonded to the exterior surface of the bottom of the pool around drain opening 36 as shown in Fig. 2. In Fig. 2 flange 26 forms the primary water seal in the same manner as heretofore described for flange 24 shown in Fig. 4. If desired, a tab 38 may be positioned on flange 24 opposite the connecting strip of material 18, in order to provide a convenient means for opening and closing drain valve 12.

It will be understood that it is intended to cover all changes and modifications of the preferred embodiment of my invention chosen for the purpose of illustration which do not constitute departures from the spirit and scope of the invention.

I claim:

1. A plastic swimming pool having an opening in a wall thereof, a separate drain valve for the opening comprising a hollow cylindrical drain member having an exterior annular flange which projects out beyond the rim of the wall at one end of said hollow cylindrical drain member at right angles to the body thereof, said exterior annular flange being bonded to the wall of the swimming pool surrounding said opening, said hollow cylindrical drain member having an inside diameter smaller than that of the opening in the wall of the swimming pool to provide an annular surface at one end of the drain member that is positioned within the mouth of

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said opening in the wall of the pool, a drain plug in the hollow cylindrical drain member, said plug having a cylindrical body portion which fits snugly against the interior wall of the hollow cylindrical drain member, said cylindrical body portion of the plug being long enough to project slightly out beyond each end of the cylindrical drain member but not long enough to extend beyond the surface of the wall of the pool on the side opposite to that against which the said flange of the cylindrical drain member is bonded, said plug having a pair of spaced annular flanges each of which is positioned at right angles to the body of the plug around the exterior of the ends thereof where they overlap the rim of the interior wall of the drain member at each end and bear against the exterior end wall thereof to seal and lock the plug in position in the drain member, said flange on the plug which is positioned against the wall of the drain member within the mouth of the opening in the wall of the pool being small enough to remain within the confines of the opening in the wall of the pool without overlapping the pool wall and without extending beyond the surface of the wall of the pool on the side opposite to that against which the said flange of the cylindrical drain member is bonded and a strip of material that connects the plug with the cylindrical drain member, an open cavity centrally

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located on the line of the vertical axis of the body of the plug in that end which fits into the drain member, said open cavity extending through more than one-half the length of the body of the drain member with the opening in the end surface of the plug occupying about one-half of the surface area at such end of the plug.

2. A structure as specified in claim 1 which includes a tab attached to one flange of the plug to provide gripping means for inserting the plug in the drain member.

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