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**Stegmeier**

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[54] **SKIMMER THROAT ENTRANCE FORM**


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[51] **Int. Cl.**..... **E02d 17/00**

[58] **Field of Search** .. 425/469, 465, 460, DIG. 124; 249/151, DIG. 3, 183, 10, 11, 27, 163, 144, 145, 146, 147, 148, 150, 152, 2, 83, 112, 165, 176, 178



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[57] **ABSTRACT**

A reusable skimmer throat entrance form to provide an inlet opening in an upwardly extending wall of a swimming pool to enable surface water from a filled pool to enter a surface skimmer through the throat thereof which communicates with the inlet opening. The reusable form has at its inner end a plug section removably insertable into the skimmer throat to substantially close the same. At its outer end portion the reusable form has a mouth-forming section extending outwardly from the plug section and enlarging transversely with respect thereto to define in the swimming pool wall an entrance opening of appropriate dimensions, configuration, and orientation. The form is equipped with stop structure adjacent the mergence of the plug and mouth-forming sections for cooperation with the skimmer to positionally relate the form and skimmer. The mouth-forming section of the form is provided with a sheath along at least certain wall surfaces to resist abrasion and impact of wet concrete, the sheath being resilient for the purpose of elastically receiving impact from wet concrete directed thereagainst.


**10 Claims, 5 Drawing Figures**

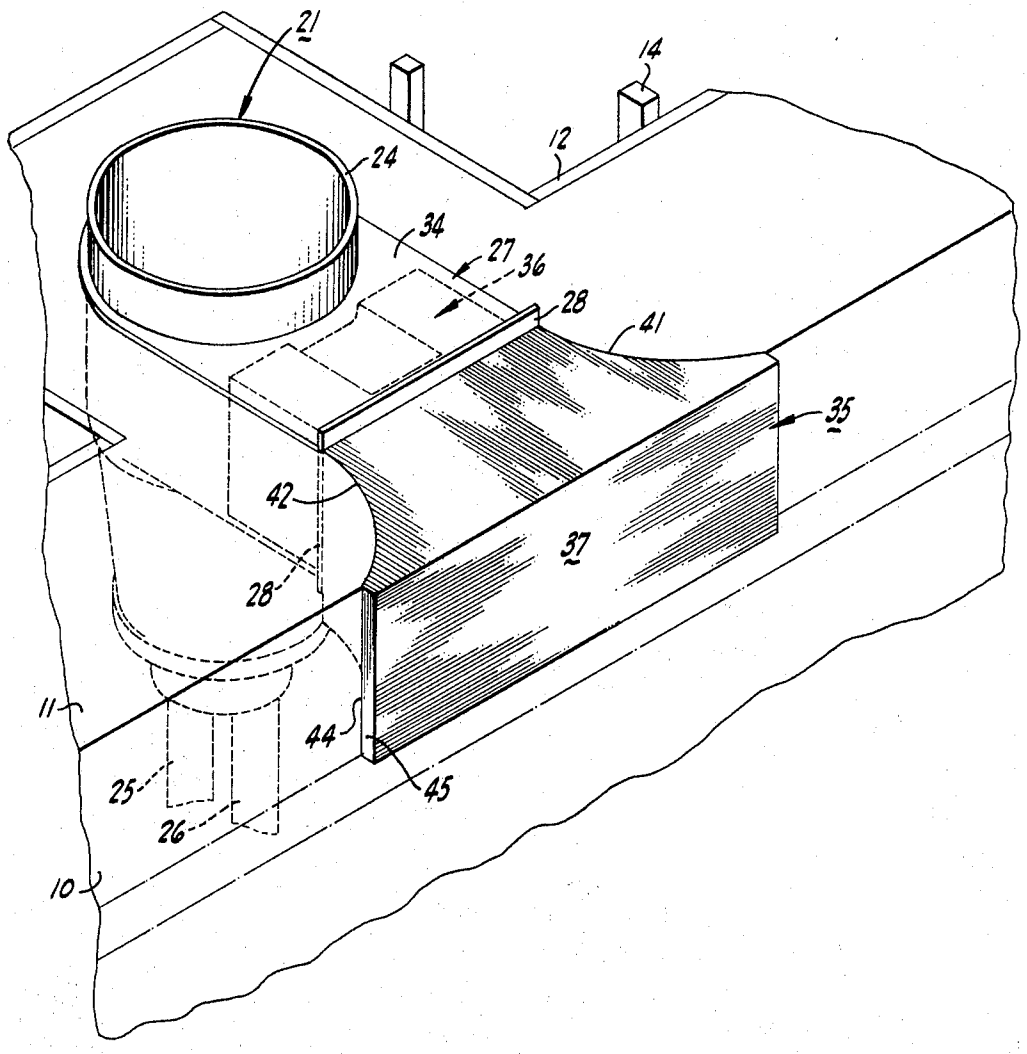


FIG. 1

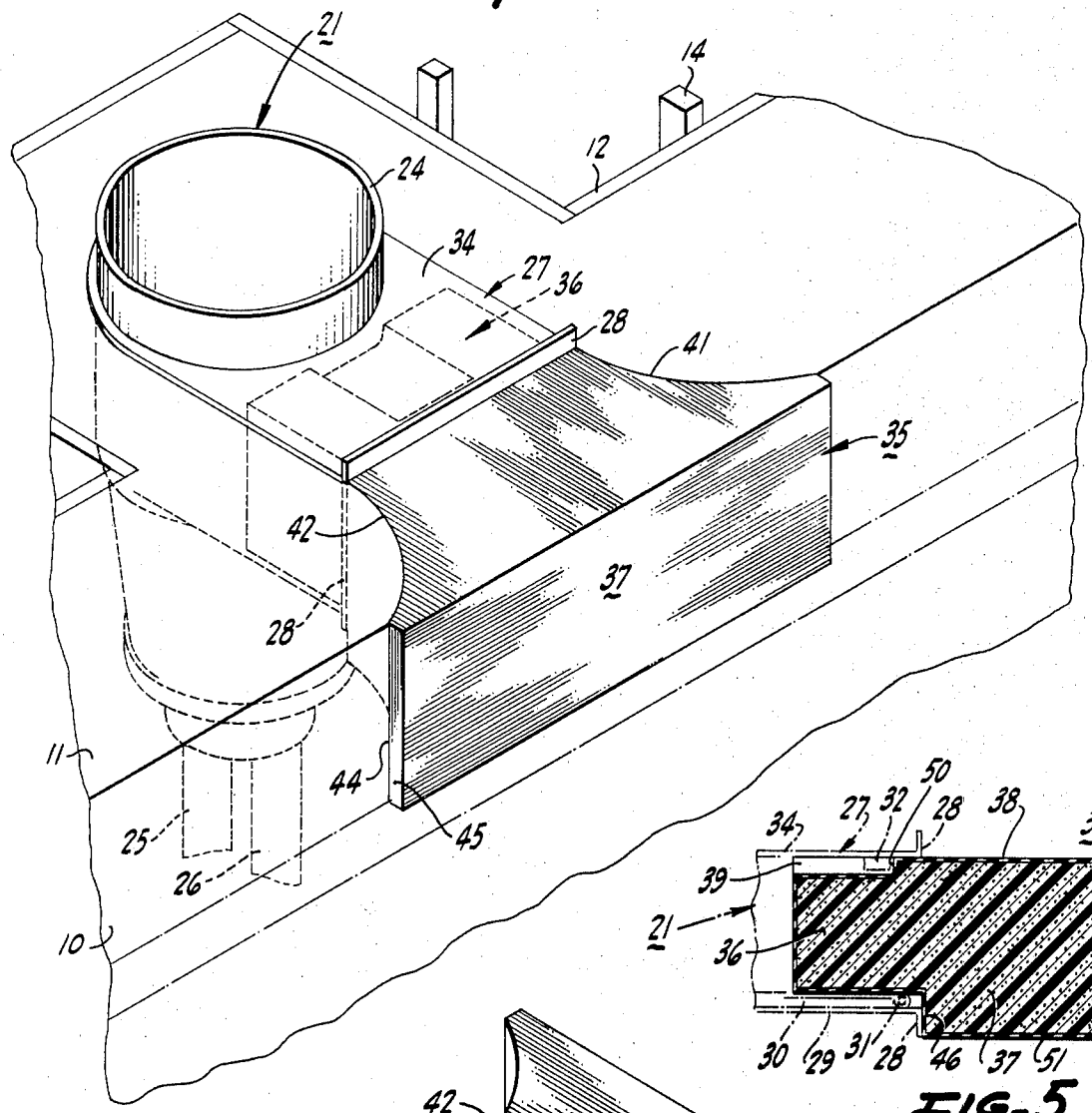






FIG. 5

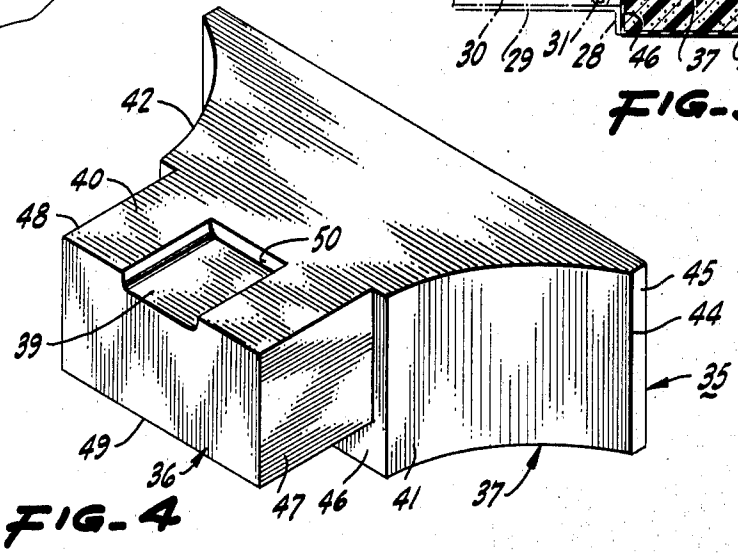
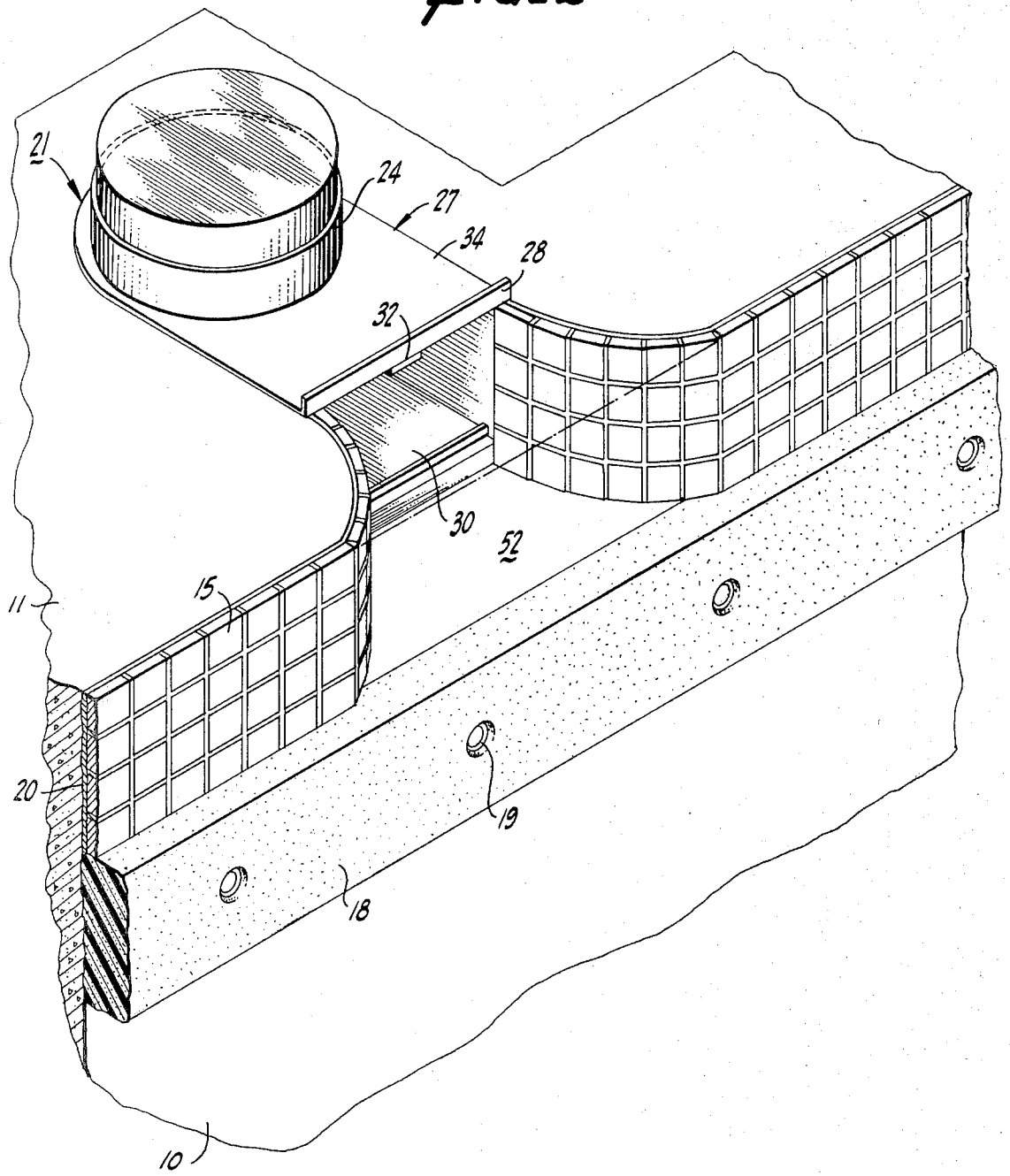



FIG. 4

FIG_2



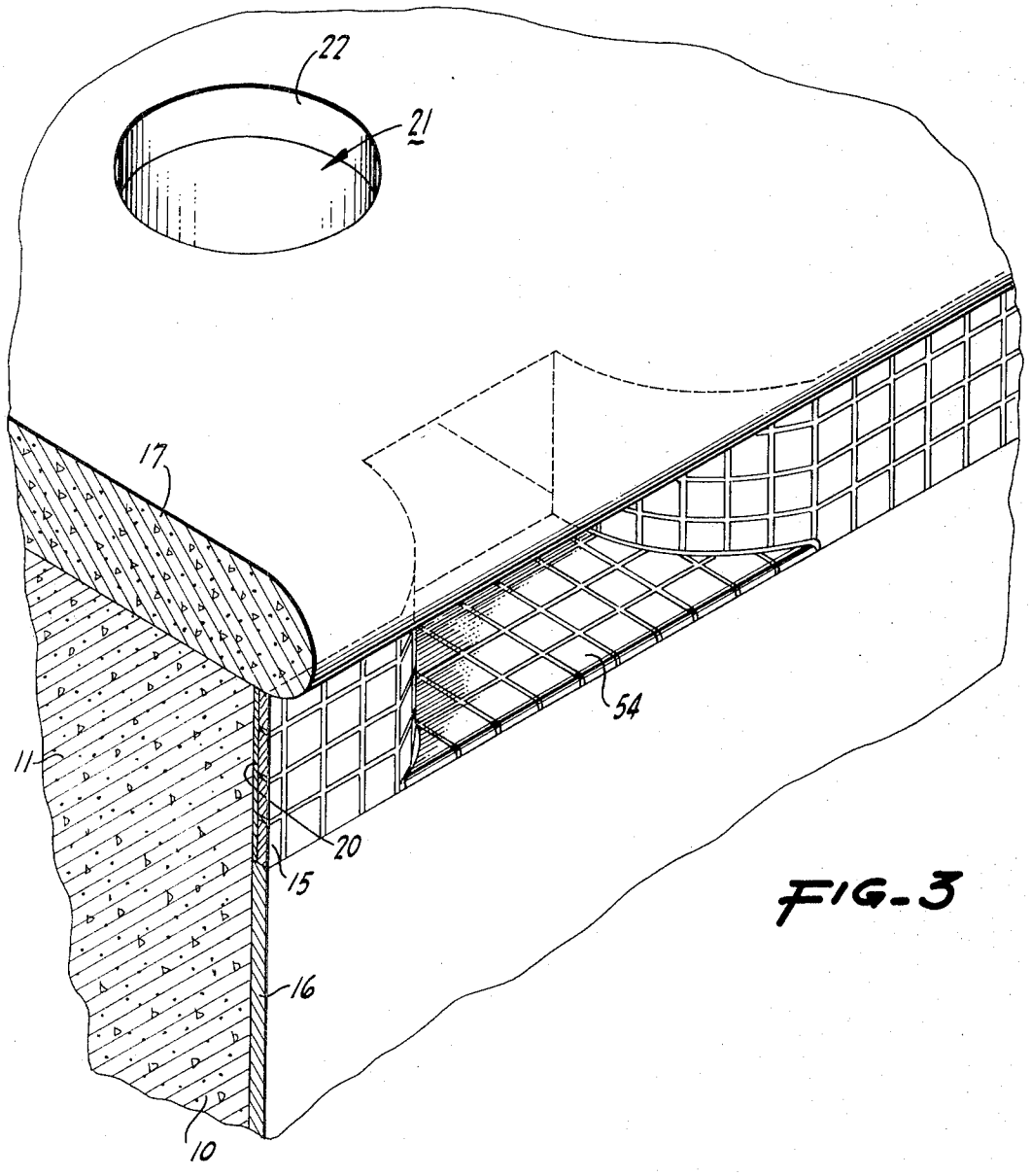



FIG-3

# SKIMMER THROAT ENTRANCE FORM

This invention relates generally to construction of swimming pools and the like and, more particularly, to a reusable mold form adapted to provide an opening of predetermined characteristics at a selected location along a pool wall during fabrication thereof. In still more particular terms, the invention is concerned with a skimmer throat entrance form adapted to establish in a pool wall an inlet opening for a surface skimmer and through which surface water from a filled pool enters the skimmer for cleaning purposes.

Considering the typical construction of a swimming pool, the technique now generally followed is to form the upward extending and bottom closure walls of the pool with concrete which is usually deposited by a gunite process in which the cement, water and aggregate are mixed at a nozzle and ejected under pressure against a prepared support or backing. After the gunite has cured sufficiently, the inner surfaces of the concrete that are intended to contain water are covered with a suitable finishing material, and a horizontal deck is provided at the top of the upwardly extending pool walls to form a walkway and drainage area about the pool, and to establish an aesthetically attractive frame thereabout. The deck may be poured concrete and is often a cantilever deck that overhangs the pool walls.

Substantially all outdoor pools are equipped with surface skimmers operative to filter or strain the surface water of a filled pool to remove leaves, twigs, and other floating debris therefrom. The skimmer is generally located outwardly from the pool walls in underlying relation with the deck, and it communicates with the interior of the pool at the water level through an inlet opening accommodating movement of surface water from the pool into the interior of the skimmer. A forced flow of water through the skimmer is effected by a pump, and the strained water may be discharged to waste upon leaving the skimmer, or it may be heated, chemically conditioned, or otherwise treated prior to being recirculated into the pool from the skimmer.

Such skimmer structures are placed in position and connected with the necessary flow lines prior to formation of the pool wall by the aforementioned gunite process, which encapsulates the skimmer structure and thereby makes it a permanent installation being embedded within the concrete wall in underlying relation with the subsequently-poured deck. In the past, the conventional practice is to cover the open throat of the skimmer with pressure sensitive tape or similar material to close the same and thereby prevent entrance of concrete thereinto. Thereafter, concrete is ejected from the gunite nozzle toward the skimmer structure and tape-equipped mouth thereof to embed the skimmer within the concrete. If the workman is skillful, he leaves a small opening adjacent the mouth of the skimmer which is subsequently enlarged manually by chipping or otherwise removing concrete in front of the throat of the skimmer to provide the inlet opening through which surface water flows thereinto.

It will be apparent that such fabrication techniques often result in an inlet opening that only approximates the size and configuration recommended by the manufacturer of the skimmer and/or specified by building codes. Further, inlet openings formed in this manner are often improperly oriented being skewed or otherwise angularly offset rather then being symmetrically disposed about a horizontal axis normal to the inlet opening for the skimmer. As a consequence, the inlet openings and surface skimmers associated therewith may not function properly, and they may not meet building code requirements, thereby necessitating costly reworking of the pool wall and inlet opening formed therein for the skimmer structure. In view thereof, a general object of the present invention is to provide an improved means for forming the inlet opening within a pool wall or the like for a surface skimmer so as to obviate the difficulties and limitations characterizing the aforementioned construction techniques.



Further objects, among others, of the present invention are in the provision of a mold form for use in establishing the inlet opening in a pool wall for a surface skimmer associated therewith; an improved form that is reusable and experiences very little deterioration from abrasion and impact thereagainst of wet concrete; a reusable mold form that is cooperative with the throat of a skimmer structure to keep the opening thereof clean, to define an accurately configurated inlet opening in a pool wall for the skimmer structure, and that cooperates with such skimmer structure to establish a predetermined positional relationship therewith and with an associated pool wall; and in the further provision of an improved reusable skimmer throat entrance form of the character described that is easy to use, requires substantially no skill in that the positioning and functioning thereof are essentially automatic, and that is both lightweight for convenient handling and inexpensive especially relative to the repetitive reuse capability thereof.

Additional objects and advantages of the invention, especially as concerns particular features and characteristics thereof, will become apparent as the specification continues.

An embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a broken perspective view illustrating a mold form embodying the invention in functional association with a surface-skimmer structure and with the wall of a swimming pool prior to the tile and deck being provided for the latter;

FIG. 2 is a broken perspective view similar to that of FIG. 1, illustrating the pool wall after the mold form has been removed and a horizontal row of tile secured in place along the pool wall;

FIG. 3 is a broken perspective view, similar to that of FIGS. 1 and 2, illustrating the pool wall after completion thereof with the deck in place;

FIG. 4 is a perspective view of the mold form shown in FIG. 1; and

FIG. 5 is a side view in elevation of the mold form shown in FIG. 4, the functional association of a skimmer with the mold form being illustrated by broken lines.

As respects the present invention, the pool wall and surface skimmer associated therewith may be substantially conventional in their structural and functional associations, and the pool wall shown in the drawings has such conventionality. For purposes of identification, the pool wall is denoted generally with the numeral **10**, and it has an enlarged upper end portion **11** that is often referred to in the art as a "bond beam". The pool wall **10** and bond beam **11** thereof may be formed by a conventional gunite process in which wet concrete is

discharged under pressure through a nozzle against a form or backing which, to a great extent, is provided by the earthen mass bordering the cavity therein within which the pool is to be constructed. The outer edge of the bond beam, however, may be defined by perimetrically disposed mold boards 12 held in place by stakes 14, as shown in FIG. 1.

Since concrete is a relatively rough and porous material, it is substantially standard practice in the construction of a swimming pool to provide a row of ceramic tile along the pool wall at the water level so that body oils and similar matter collecting along the surface of the water will tend to adhere to the hard finished surface of the tile from which it is readily removed rather than adhere to a concrete surface from which its removal would be very difficult. A row of tiles is shown in FIGS. 2 and 3, and the tiles may be conventional comprising individual tiles disposed in side-by-side adjacency, or sheets of small mosaic tiles 15, as shown in the drawings. The spaces between successive tiles are grouted in a conventional manner, and the inner surface of the pool wall 10 below the row of tiles 15 is covered with a finishing coating of concrete that is usually referred to as "plaster" and is identified in FIG. 3 with the numeral 16. Finally, a deck is provided in overlying relation with the bond beam 11, and the deck 17 shown in FIG. 3 is a cantilever deck in which the inner edge portion thereof overhangs the inner surface of the pool wall 10 and row of tiles 15 secured thereto.

The tiles 15 are positioned conventionally by use of a ledger board that is secured to the pool wall in a horizontal orientation a measured distance below the highest elevation therealong. A suitable mortar is then prepared, spread along the upper edge portion of the pool wall above the ledger board, and each sheet of mosaic tile (or each tile block) is seated upon the ledger board and pressed into the mortar, care being taken to align each tile or sheet vertically and in planar relationship with those tiles adjacent thereto. After the mortar has set, the ledger board is stripped from the wall and the surfaces below the tile are covered with the aforementioned finishing material 16. As respects the present invention, any ledger board may be employed (traditionally they are thin wooden boards), and they may be removably secured to the pool wall in any conventional manner. The ledger board shown in FIG. 2 (and in phantom in FIG. 1) is denoted with the numeral 18, and it is held in place by fasteners 19. The layer of mortar used to secure the tiles 15 to the pool wall is denoted with the numeral 20. The particular ledger board 18 is a reusable board constructed of an elastomeric material, and the fasteners 19 define specialized cooperation therewith. Such ledger board and fasteners do not per se form any part of the present invention, and should details concerning the same be desired, reference may be made to my copending patent application entitled "LEDGER BOARD OR THE LIKE AND METHOD OF USING THE SAME", Ser. No. 327,671, filed Jan. 29, 1973.

As previously indicated, the surface skimmer, denoted in its entirety with the numeral 21, may be completely conventional and, for example, may be a U-3 surface skimmer sold by Swimquip of El Monte, California. Skimmers of the type being considered are adapted to have a surface layer of water from a filled pool flow thereinto and through a filter contained therewithin which may be in the form of a sieve-like bucket effective to remove leaves, twigs, and similar debris from the water. The strained water leaving the skimmer structure may be discharged to waste or heated, chemically conditioned, or otherwise treated prior to being recirculated into the pool.

The skimmer structures are placed in position and connected with the necessary flow lines prior to formation of the pool wall 10 and bond beam 11 thereof, thereby making such skimmer structures' permanent installations which are embedded within the concrete wall. When the deck 17 is poured, it effectively conceals the skimmer structure, as shown in FIG. 3, except that the deck necessarily has an opening 22 therein provided with a removable cover (not shown) to close the opening but to permit access to the interior of the skimmer structure and strainer therewithin to enable debris to be removed. The typifying skimmer structure 21 is provided with a cover frame or flange 24 effectively defining the inner boundary of the opening 22 in the deck, and that portion of the skimmer structure below the flange 24 is essentially confined within the bond beam 11. A pair of conduits 25 and 26 are connected to the skimmer structure adjacent the bottom thereof, one such conduit being connected to the main drain line of the pool and the other being connected to the equalizer line. A suction line (not shown) is also connected with the skimmer structure adjacent the bottom thereof to initiate and maintain the circulation of pool water therethrough.

The skimmer structure 21 is equipped with a throat 27 of generally rectangular configuration that extends outwardly from the main casing portion of the skimmer toward the interior of the pool. The throat 27 is hollow, as shown best in FIGS. 2 and 5, and it defines the entrance through which pool water flows into the skimmer structure. The terminus of the throat 27 most proximate the interior of the pool has a perimetric flange 28 that extends laterally outwardly, as depicted in FIGS. 1, 2, and 5. The bottom wall 29 of the throat is provided with a gate valve 30 supported for angular displacements about a pivot axis 31 and movable relative thereto between the completely open position shown in FIG. 5 in which it lies along the bottom wall 29 and a generally vertical position (not shown) in which it abuts a stop 32 carried by the top wall 34 of the throat and extending downwardly therefrom at substantially the center line of the throat. As previously mentioned, such construction of the skimmer may be conventional, and need not be further elaborated.

The reusable mold form shown in FIGS. 1, 4, and 5 is denoted in its entirety with the numeral 35, and it includes a body equipped at the inner end thereof with a plug section 36 and also equipped adjacent the outer end thereof with a mouth-forming section 37. In the embodiment of the invention being considered, the form 35 is integral throughout, and it is a solid component although it may be provided in hollow or semihollow configurations, should this be desired. The form 35 may be fabricated from various materials, but advantageously it is lightweight and relatively inexpensive although durable for the purposes intended so that it can be reused repeatedly. By way of example, the form 35 may be made from one of the conventional plastic materials such as expanded polystyrene.

Wet concrete ejected under pressure in a gunite process is abbrasive, and it has been found that it is advantageous to provide exposed surfaces on the form 35

that are resistant to abrasion from wet concrete and that also tend to resist impact-embedding of the concrete particles therein. Thus, the exposed surfaces of the form **35** are coated with a material having the desired characteristics, and an example of a particular material used successfully with polysytrene forms is polyurethane. The polyurethane coating is shown in FIG. **5**, and is designated with the numeral **38**. The coating **38** may be applied in any conventional manner as, for example, by coating the appropriate surfaces of the form with polyurethane in a liquid form of the type that dries rapidly at atmospheric conditions. All of the exposed surface areas of the form **35** may be covered with the coating **38**, as indicated in FIG. **5**, or only those surfaces which are exposed to concrete impact which, in the usual instance, constitute the surfaces of the mouth-forming section **37**. However, the polyurethane coating has a relatively high coefficient of friction, thereby facilitating the desired interconnection between the form and skimmer structure **21**, as will be described hereinafter. It may be observed that the coating **38** is somewhat resilient, thereby tending to cause the wet concrete to rebound therefrom slightly, and it is also characterized by its tendency to resist concrete adhesion thereto.

The plug section **36** of the form is insertable into the throat **27** of the skimmer structure **21**, as shown in FIGS. **1** and **5**. In such position, the plug section **36** substantially closes the throat **27** to prevent admission of concrete thereinto, and the interconnection of the plug section and skimmer structure positionally relates these two components in both transverse and vertical directions (i.e., along the length of the pool and from top to bottom with respect thereto. Accordingly, the plug section **36** is dimensioned and shaped so as to conform to the throat **27**, and in the particular embodiment of the invention being considered, the throat and plug section are generally rectangular. After the pool wall **10** and bond beam **11** thereof are constructed by the usual techniques, the form **35** is removed for reuse, thereby establishing the removable interconnection of the plug section with the skimmer throat. In this latter reference, the plug section **36** is slidably receivable within the throat **27**, and it is advantageous to have a relatively tight frictional fit for the purpose of establishing and maintaining the desired positional relationship therebetween.

The plug section **36** along one surface thereof is provided with a recess adapted to pass therethrough a protuberance projecting from an inner face of the throat **27** toward the center thereof, and which protuberance constitutes the aforementioned stop **32** for the gate valve **30**. Thus, since the stop **32** is located along the top wall **34** of the skimmer throat, the recess (denoted with the numeral **39**) is disposed along the top wall **40** of the plug section. It will be evident that the recess **39** is adequately deep and wide that the stop **32** freely moves therethrough upon insertion of the plug section **36** into and removal thereof from the throat **27**.

The mouth-forming section **37** of the form **35** extends outwardly from the plug section **36** and enlarges transversely with respect thereto. In more particular terms, the section **35** has transversely spaced sidewalls **41** and **42** that are curvilinear and define a progressively increasing enlargement from the plug section **36** toward an orifice-forming element **44** that essentially corresponds to the large inlet orifice along the pool wall **10**, as illustrated in FIGS. **2** and **3**, and through which surface water flows from the pool into the skimmer structure **21**. The transversely spaced walls **41** and **42** may have other configurations, and in certain embodiments of the invention, such walls are generally planar and project outwardly along diverging paths from the throat **27** through the inlet-defining edge **44**. It will be observed in FIG. **1** that the form **35** has a restricted lip **45** that projects forwardly from the edge **44**, and the width or thickness of such lip corresponds essentially to the thickness of the tiles **15** and mortar bed **20** used to secure the tiles to the pool wall **10**. The lip **45** affords a convenient means for gripping the form to withdraw the same from the skimmer throat and adjacent pool walls **10**, as is evident in FIG. **1**. The lip **45** is also advantageous in properly orienting and positioning the form **35**, and therefore the skimmer structure **21**, with the indicia used by the contractor for establishing the elevation and orientation of the pool wall **10**.

That is to say, prior to initiating a gunite operation, it is necessary to establish the level at which the upper edge of the pool wall is to terminate and also to establish the horizontal placement of the wall (i.e., the precise horizontal location of the upper inner edge of the wall). In many instances this is accomplished by extending a relatively taut wire between two or more carefully located stakes. The upper surface of the form **35** can then be placed along such guide wire with the lip edge **44** extending in alignment therewith. Once such orienting of the form **35** is accomplished, the skimmer structure **21** is automatically located properly, and the workmen can then stake or otherwise fix the skimmer structure in the position thereof thusly established by the form section **35**.

The form **35** further includes stop structure for cooperative engagement with the skimmer **21** to positionally relate the form body and skimmer in longitudinal directions (i.e., inwardly and outwardly with respect to the pool and bowl thereof). In the particular form **35**, such stop structure is located along the mergence of the plug and mouth-forming sections **36** and **37**, and it takes the form of a laterally projecting shoulder **46** of generally perimetric disposition bordering the transversely spaced sidewalls **47** and **48** and bottom wall **49** of the plug section **36**. Thus, the stop structure **46** is positioned and located so as to substantially abut the laterally extending perimetric flange **28** of the skimmer **21** whenever the plug section **36** of the form is inserted to its fullest extent into the skimmer throat **27**, as is shown in both FIGS. **1** and **5**. It may also be noted, as is clear in FIG. **5**, that the stop **32** of the skimmer throat **27** substantially abuts the terminal wall **50** of the recess **39** when the plug section **36** is fully inserted into the skimmer throat so that such abutment of the stop **32** and wall **50** also augments or contributes to the positional relationship of the form and skimmer otherwise established by the stop structure **46** and skimmer flange **28**.

In use of the mold form **35**, the swimming pool contractor prepares for erecting the pool walls **10** and bond beam **11** thereof in the usual manner which includes positioning the skimmer structure **21** and connecting the same to the conduits therefor. Following this usual preparation, the form **35** is arranged with the skimmer **21**, as previously explained, by inserting the plug section **36** into the skimmer throat **27** to the maxi-

mum position, thereby bringing the stop structure 46 into contiguous abutment with the skimmer flange 28. As a result, the skimmer structure and form have a predetermined positional relationship which tends to be maintained because of the cooperative interfit of the plug section 36 with the throat 27. The contractor then positions and aligns the form in any convenient manner such as by bringing the upper surface of the form and edge 44 thereof into alignment with a guide line, as previously explained. The skimmer structure 21 is then fixedly located in such position, and the pool wall and bond beam are erected in the usual manner, generally a gunite process as explained.

After the pool wall has hardened sufficiently, the form 35 is withdrawn from its position within the pool wall and skimmer structure, and it is found that the form is substantially undamaged and is ready for reuse. The mouth or inlet opening defined by the form 35 in the concrete wall 10 is found to be clean and sharply bounded, thereby establishing well-formed surface areas to which the tile 15 can be attached, and surface areas that merge gracefully and accurately into the adjacent, usually planar or flat surface areas of the pool wall 10 which bound the skimmer inlet opening. Moreover, the finished surfaces established by the walls 41 and 42 of the form 35 are spaced laterally from the inner edges of the throat 27 so as to define a space adequate for receipt of a relatively thick mortar bed 20 used in attaching the tile 15 to the concrete wall surfaces. Provision of adequate space for the mortar bed and tile assures provision of a good water-tight seal with the edge portions of the skimmer structure or lateral flange 28 thereof which thereby obviates problems otherwise caused by water seepage into and about the concrete surrounding the skimmer structure. A similar condition is established by the form 35 along the bottom wall 51 (see FIG. 5) of the section 37 which is disposed below the bottom wall 29 of the skimmer throat and aligns generally with the lower edge of the perimetric flange 28. Thus, when the concrete wall surface 52 (FIG. 2) is provided with mortar and the covering of tiles 54 (FIG. 3) a high quality seal is effected with the skimmer throat and flange 28.

The form 35 also enforces on the contractor the desirable condition that the wall opening leading to the throat 27 of the skimmer be symmetrical, defined about an axis that is normal to the plane of the throat 27 and flange 28 thereof, and be of proper width which, in the usual instance, is approximately 18 inches at the form edge 44. This dimension is often established by local building codes, and is frequently a specification required by manufacturers of the skimmer structures. The accuracy with which the form 35 establishes the inlet opening in the pool wall also facilitates proper positioning of tile along the top of the inlet opening in those pool constructions where tile at such location is desired.

While in the foregoing specification an embodiment of the invention has been set forth in considerable detail for purposes of making a complete disclosure thereof, it will be apparent to those skilled in the art that numerous changes may be made in such details without departing from the spirit and principles of the invention.

What is claimed is:

1. In combination, a reusable form adapted to provide in the wall of a swimming pool or the like an inlet opening for a surface skimmer, and a surface skimmer having a throat communicable with such opening and through which surface water from a filled pool enters the skimmer for cleaning purposes, said form comprising: a body equipped at the inner end thereof with a plug section slidably insertable into said throat to establish a relatively tight frictional fit therewith and substantially close the same and positionally relate said body and skimmer in transverse and vertical directions; said body further being equipped with a mouthforming section extending outwardly from said plug section and enlarging transversely with respect thereto; and stop structure provided by said body for cooperative engagement with such skimmer to positionally relate the body and skimmer in longitudinal directions, whereby a predetermined positional relationship is established between said form and such skimmer and between the skimmer and inlet opening therefor in a pool wall associated with the skimmer.

2. The form of claim 1 in which said skimmer throat is equipped with a protuberance projecting from an inner face thereof toward the center of the throat to serve as a stop for a skimmer valve, and in which said plug section along one surface thereof is provided with a recess adapted to pass said protuberance therethrough upon insertion and removal of said plug section from said throat.

3. The form of claim 2 in which said recess is provided along the upper surface of said plug section and has an interior terminus abuttable by such throat protuberance, the interior terminus of said recess comprising a part of the aforesaid stop structure.

4. The form of claim 1 in which at least certain surfaces of said mouth-forming section are equipped therealong with a sheath resistive to abrasion and impact of wet concrete.

5. The form of claim 4 in which said sheath is resilient so as to elastically receive impact thereagainst of wet concrete.

6. The form of claim 1 in which said stop structure is located at the mergence of said plug and mouth-forming section.

7. The form of claim 6 in which said stop structure comprises laterally extending stop shoulders provided by said form body for engagement with the skimmer throat into which said plug section is insertable.

8. The form of claim 1 in which said body is a substantially unitary mass of material, and in which said mouth-forming section progressively enlarges transversely from adjacency with said plug section.

9. The form of claim 8 in which said mouth-forming section has transversely spaced curvilinear walls defining said progressive transverse enlargement.

10. The form of claim 2 in which at least certain surfaces of said mouth-forming section are equipped therealong with a sheath resistive to abrasion and impact of wet concrete, in which said sheath is resilient so as to elastically receive impact thereagainst of wet concrete, in which said stop structure is located at the mergence of said plug and mouth-forming section, and in which said stop structure comprises laterally extending stop shoulders provided by said form body for engagement with the skimmer throat into which said plug section is insertable.

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