

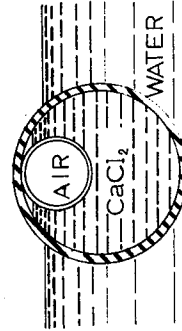
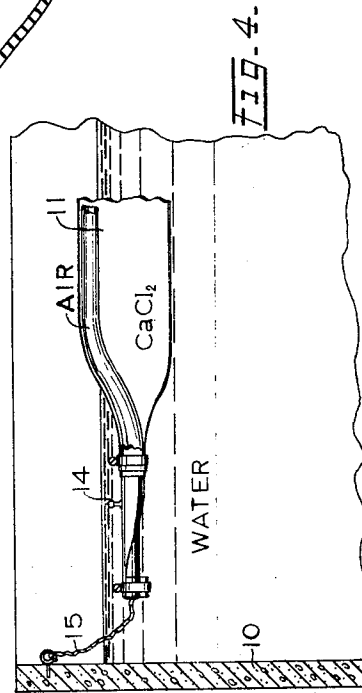
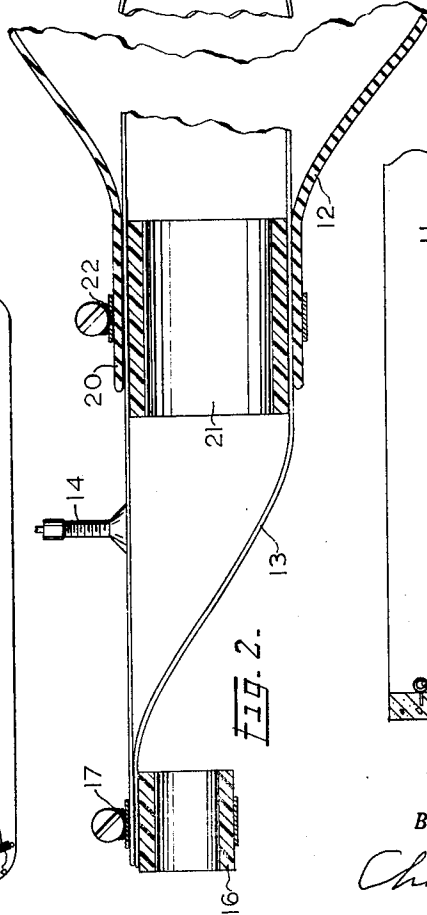
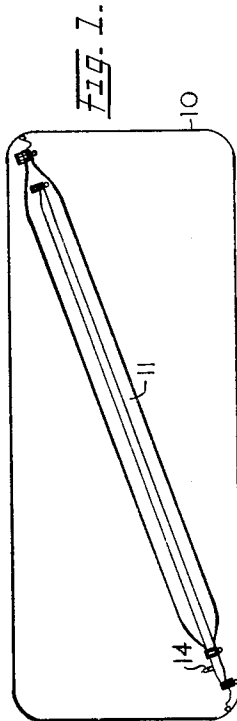
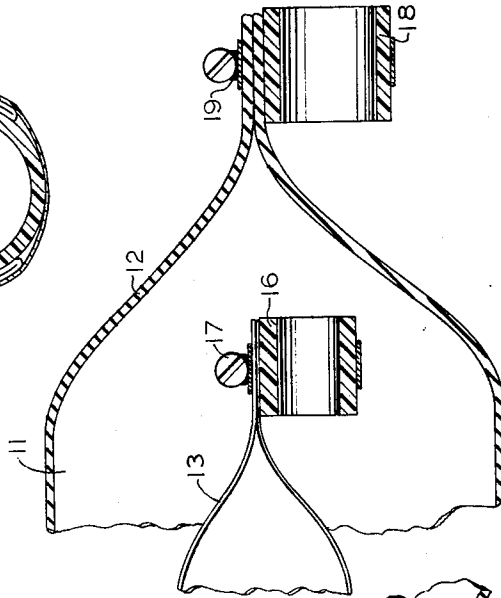
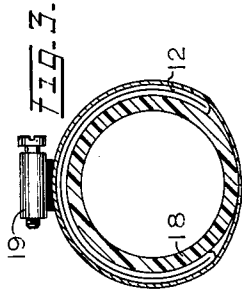
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PROTECTIVE DEVICE FOR SWIMMING POOLS

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PROTECTIVE DEVICE FOR SWIMMING POOLS

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The present invention relates to a device and method for absorbing pressure from expansion due to the formation of ice from nature's temperatures, and more particularly to a protective device and method for use in "winterizing" outdoor swimming pools.

With the exceptional increase in construction of outdoor swimming pools for public as well as private use, a grave problem has arisen. This problem is the maintenance and protection of the pool walls and bottom during the winter months, when not in use. For many years, it was standard practice to drain all the water from the pool and leave it to the whims of the elements, in a necked condition, so to speak.

More recently however, the bottom and greater portion of the side walls have been protected from cracking by permitting the water to remain in the pool. This had the advantage of protecting the submerged areas from ice forming on those areas and cracks resulting. To supplement this protective method, it was necessary to protect the pool walls at water level from rupture from surface ice forming in an unbroken cake from side to side. As an incident to such ice cover, formed by below freezing temperatures, expansion of the ice occurs with the result that the side walls of the pool were subjected to pressure and became cracked or ruptured, causing leaks the following season. Moreover, repairs of such leaks were not always satisfactory, and draining of the pool to make additional repairs could be necessary, time and again.

A common expedient which has been used to provide protection against ice expansion, is the floating of a solid wooden log or logs, on top of the water. Such log, being partly submerged, occupied a surface area in the water which could not freeze. Consequently, when the ice cover formed from side to side, it consisted of two ice covers, one on each side of the log, with an unfrozen channel or path across the middle, occupied by the log. Upon freezing solid from side to side, the expansion of the ice was in the direction of the log and not outwardly against the pool walls.

From this phenomenon, the wooden log served as a "cushion" or pressure and expansion absorber, with the result that the log was chipped or slightly pressed upwardly or downwardly along its length, thereby permitting the two ice covers to expand inwardly and harmlessly. In such situations, the logs had inherent floating qualities.

While the method described was satisfactory to a great degree, the installation, handling and storage of the log or logs presented difficulties. Moreover, the logs which usually were discarded utility poles, were frequently creosoted, which contaminated the water. The problem of removing the heavy logs, their storage, and then again transporting them for winter installation, was tedious and expensive.

The present improvements have been designed to overcome these and other difficulties. Accordingly, applicant has developed a novel device and method for "winterizing" such pools. The device is cheap, easily installed, efficient in operation, light weight, and lends itself to easy and convenient storage.

In employing the coined phrase "winterizing," in the present improvements, the term is meant to embrace the installation of an ice-expansion, pressure-absorbing device, capable of preventing the rupture of swimming pool

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walls, while such pools are filled with water throughout the winter subfreezing season.

A primary object of the invention therefore is to "winterize" an open, water filled pool, by the provision of a flexible tubular member floated on the water surface while containing an anti freeze solution.

A further object is to provide an artificial log for floating on swimming pools during the winter season, comprising a flexible tubular member filled with a calcium chloride solution, to which is attached means for suspending the log in a floating position, partly submerged in the water surface.

Another object is to provide an artificial log for floating on swimming pools, comprising a plurality of flexible tubular members telescoped in spaced relation, so that air may occupy one member and anti freeze solution may occupy the other, together with an anchoring means to steady the unit in operative position relative to the water surface and pool walls.

A further object is to provide a simplified method of "winterizing" open surface outdoor swimming pools which comprises easy installation steps employing light weight apparatus and producing reliable fool-proof results.

These and other objects will be apparent to those skilled in the art, upon reference to the accompanying drawings, in which:

FIG. 1 presents a miniature diagrammatic view of the preferred embodiment of the improvements installed in a pool, illustrated in outline.

FIG. 2 is an enlarged sectional view of opposite ends of the telescope "log," the central area of the "log" removed for convenience in illustration.

FIG. 3 is a sectional view of a preferred manner of sealing the ends of the "log."

FIG. 4 is a fragmentary side view of a portion of a swimming pool, illustrating a portion of the "log" in position on the water surface.

FIG. 5 is a view merely in outline, showing the relationship of the "log" to the water level, the outline of the "log" being a transverse view.

In achieving the novel results of the present improvements, the preferred form has been illustrated in the drawings. Modifications and alternative forms will be referred to as the description proceeds.

FIG. 1 represents a plan view of a receptacle or pool having the walls or perimeter 10 shown in outline form. An artificial log 11, of the preferred form of the improvements is shown in a diagonal position with respect to the pool. This log 11, consists of an outer butyl rubber tube 12, of approximately 6 inches in diameter and an inner tube 13 of similar material having a diameter of approximately 2½ inches. The rubber tubing is preferably of 55 gauge. As later described more specifically, the inner tube 13 is charged with air, while the outer tube 12, is charged with an anti freeze solution. The inner tube is provided with a suitable valve 14, for charging it with air. The anti freeze solution is poured into the outer tube, as later described. Any suitable means, such as rope 15, may be provided for anchoring the artificial log unit relative to the pool.

Fragments of the artificial log 11 are shown in FIG. 2, with the portion intermediate the ends omitted for convenience. The inner air tube 13 is sealed at both ends in any desired manner. However, in the illustrated form, the rubber tubing is lapped upon itself at the ends, and wrapped around collars 16 to which it is secured by removable clamps 17. This expedient insures an air-tight seal. The collar and clamp relation is illustrated in FIG. 3. The collars 16 are preferably plastic, but may be made of any suitable material. The air valve 14, is conveniently provided at the exposed end of inner tube 13.

Referring further to FIG. 2, the outer tube 12, has one

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end lapped over a collar 18, and sealed by clamp 19. While this clamp renders the end of the tube leak proof, it is readily removable for the purpose of pouring the anti freeze solution into the tube 12.

The manner of clamping the ends of the tubes to the collars in leak proof relationship is illustrated in FIG. 3.

In assembling the artificial log, opposite ends of the inner air tube are sealed with the aforementioned clamps, the air tube is thereupon fed into the larger outer tube in telescopic relationship. Since the diameters are about 2½ inches and 6 inches respectively, this step is done with ease. It is noteworthy that both inner and outer tubes are of substantially the same length, but in assembling these tubes the end of the inner tube 13, having the air valve 14, protrudes from one end of the outer tube 12, with the result that the innermost end of the inner tube is a slight distance from the corresponding end of the outer tube. When this relationship is achieved the end of the tube 13, adjacent the valve 14, is opened by releasing the clamp 17, and a collar 21 is inserted inside the inner tube until it is in a position opposite to the end 20 of the outer tube. In this position a further clamp 22 is applied so as to envelope the end 20, the collar 21, and the inner tube 13. This clamp is then tightened around the collar to leak proof relationship. This expedient serves to keep the air chamber of the inner tube 13 open at all times for access of air from the air valve. Following these steps, the end of the air tube 13, near the valve, is again sealed by replacing the collar and clamp. The artificial log is now in condition for its intended use.

It is understood that the position of the parts illustrated in FIG. 2 presents the relationship of the tubes at the time the tubes are secured in telescoped assembly and without having been charged with either air or anti freeze solution. They are not shown in FIG. 2 in position on top of a pool.

Although the solution for use in the outer tube has been referred to as "anti freeze solution," the preferable liquid is a solution of calcium chloride because it is inexpensive. It is understood, however, that other anti freeze solutions such as "Zerex" and "Prestone," or the equivalent, may serve the intended purpose.

The artificial log as described above is now ready to be charged with air and calcium chloride solution. The log in its empty state may be stretched out on the deck of the pool. The next step will therefore be to pump air into the inner tube 13, through the valve 14. Sufficient air should be supplied to fill the inner tube, but not to cause it to "balloon." The amount of air pressure supplied in this manner will govern the level at which the artificial log will float with respect to the water level of the pool. The next step is to place the artificial log on the surface of the pool, either from end to end or from side to side, or in a diagonal relationship as shown in FIG. 1. These artificial logs may be of any extent, such as 100 feet, and if desired smaller logs placed end to end may be employed.

As indicated in FIG. 1, the log is disposed in a diagonal position on top of the water in the pool, and by virtue of the air present in both inner and outer tubes, the log will obviously float on the surface. The next step is to anchor that end of the log having the air valve 14, to the edge of the pool. This may be done in any desired manner by means of a rope 15, or other anchoring means. The opposite end of the log may now be opened by removing the clamp 19 on outer tube 12. The anti freeze solution, preferably a calcium chloride solution, may now be poured into the outer tube 12 until it is completely filled. The requirements for a six inch diameter outer tube is a gallon of solution for each foot of tubing.

It is significant that the calcium chloride serves a double purpose. It is employed primarily because it will not freeze in temperatures in which the present improvements are intended for use. The additional function

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which it serves is to supply weight to the artificial log. In performing this service, the outer log which is completely filled with calcium chloride solution, and which of course surrounds the air filled inner tube, causes the entire unit to float on the water with about ¼ of its circumference submerged, with the remaining portion exposed. This relationship is shown in fragmentary views in FIGS. 4 and 5. By placing the artificial log into the water before charging it with the calcium chloride solution, and then adding the solution, the liquid is thereby evenly distributed throughout the outer tube 12. This eliminates the danger of a large amount of the solution rushing to one area in the tube and causing that section to sink.

After the calcium chloride solution has completely filled the outer tube 12, the open end of that tube should be folded over or lapped upon itself. This end may thereupon be wrapped around collar 18. Several turns of friction tape should be wrapped around the tube and the collar. This expedient will temporarily hold these members in place. The clamp 19 may now be placed around the members so that it covers the friction tape, and the clamp may then be tightened in leak proof relationship. The use of friction tape is preferable to prevent the clamp from mutilating the rubber tubing.

The following suggestion is made for preparing a suitable calcium chloride solution. For each gallon of water, two pounds of calcium chloride should be poured into it and thoroughly stirred. When completely dissolved, this solution is ready for charging into outer tube 12. Any suitable method may be employed for charging the tube, such as an auxiliary drum or container having a faucet.

When the log is in actual use and floating on the water surface of the pool, the inner air tube assumes the position indicated in FIGS. 4 and 5. Obviously, when the calcium chloride solution is charged into the outer tube 12, the inner tube 13 being charged with air, will be pushed to the surface where it will reside in contact with the upper inner wall as shown in FIG. 5. This inner air tube 13, which extends substantially the full length of the artificial log, serves to maintain the log in floating relationship, with about a fifth of the surface exposed. When freezing temperatures set in, the ice will form on the surface of the pool and will expand inwardly from both directions, and either squeeze and compress the artificial log, or press it downwardly. In any event the phenomenon of disastrous pressure resulting from expansion of the ice will be overcome by the use of the present improvements, because such pressure will harmlessly be exerted upon the artificial log. The side walls of the pool will thereupon receive no damage.

In the practice of the present method, it is significant that some pools during the winter months may be used for skating or other ice sports. In such circumstances the artificial log of the present improvements may be anchored along several sides of the pool rather than in a diagonal position. It is found that this expedient will serve to protect the pool walls in the same efficient manner.

When the winter season is over and danger of freezing is past, the artificial log of the present improvements lends itself to easy removal, transportation and storage, because of its flexibility and light weight. For example, the clamp 19 may be removed at the end 20 of tube 12, and the calcium chloride solution poured out. The air may then be released by opening valve 14 in inner tube 13, and then the entire rubber tubing comprising the artificial log may be rolled up in a bundle or coil for easy transportation to "summer quarters," and storage in a relatively small space. The log of the present improvements is then ready and available for charging and use the following winter.

While the use of inner air tube 13 is preferable, it is apparent that it may be supplemented or replaced by cork or plastic floats suitably attached to the exterior of the

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outer tube. Furthermore, the inner air tube 13 may be dispensed with and replaced by tubing of plastic material, which would serve to supply the floating qualities. As aforesaid, however, the preferred embodiment as illustrated is believed to be the most convenient for installation, charging, and storage purposes and handling.

As previously noted, the dimensions of the artificial log may be varied. The sections may be made in smaller lengths and the diameters modified as desired. It will be apparent to those skilled in the art, that other substitutions and modifications may be made without departing from the scope of the appended claims.

What I claim as my invention is:

1. A device comprising an outer flexible and readily collapsible tubular member initially open at each end, an inner flexible and readily collapsible tubular member at least partially received within said outer member, said inner tubular member having an end portion protruding out through one of the open ends of said outer tubular member, means securing said outer tubular member at its one open end to said inner tubular member, said inner tubular member being closed at each end and having valve means in said protruding portion whereby air may be inserted into and removed from said inner tubular member, said other end of the outer tubular member having means to receive anti-freeze solution therethrough for filling the space between the inner and outer tubular

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members, and clamping means for sealing off said last mentioned end of the outer tubular member.

2. A device according to claim 1 wherein the means securing the inner tubular member to the outer tubular member comprises a collar means received in said inner tubular member to hold said inner tubular member in tubular form and a clamp means surrounding said one open end of the outer tubular member to clamp the same in fluid tight relation about the inner tubular member and said collar therewithin.

3. A device according to claim 2 including anchoring means at the exposed ends of said device for securing the same in operative position in an outdoor pool.

4. A device according to claim 1 wherein said inner and outer tubular members are fabricated of rubber and the like and canvas and the like material.

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