

[72] Inventors **Julius Donald Schwarz**
Teanak and
Charles J. Kriss, Upper Saddle River, New
Jersey
[21] Appl. No. **751,993**
[22] Filed **Aug. 12, 1968**
[45] Patented **Nov. 10, 1970**
[73] Assignee **Hendon Construction Company**
Little Ferry, New Jersey
a corporation of New Jersey

2,059,240	11/1936	Johnston	182/20
2,333,849	11/1943	Driscoll	182/21
2,493,639	1/1950	Pellegrini	182/95
2,584,742	2/1952	Schilling	182/106
2,736,482	2/1956	Borden	182/78
2,907,402	10/1959	Lewis	182/106
3,305,045	2/1967	Schlecht	182/97
3,335,430	8/1967	Schwarz et al.	4/172

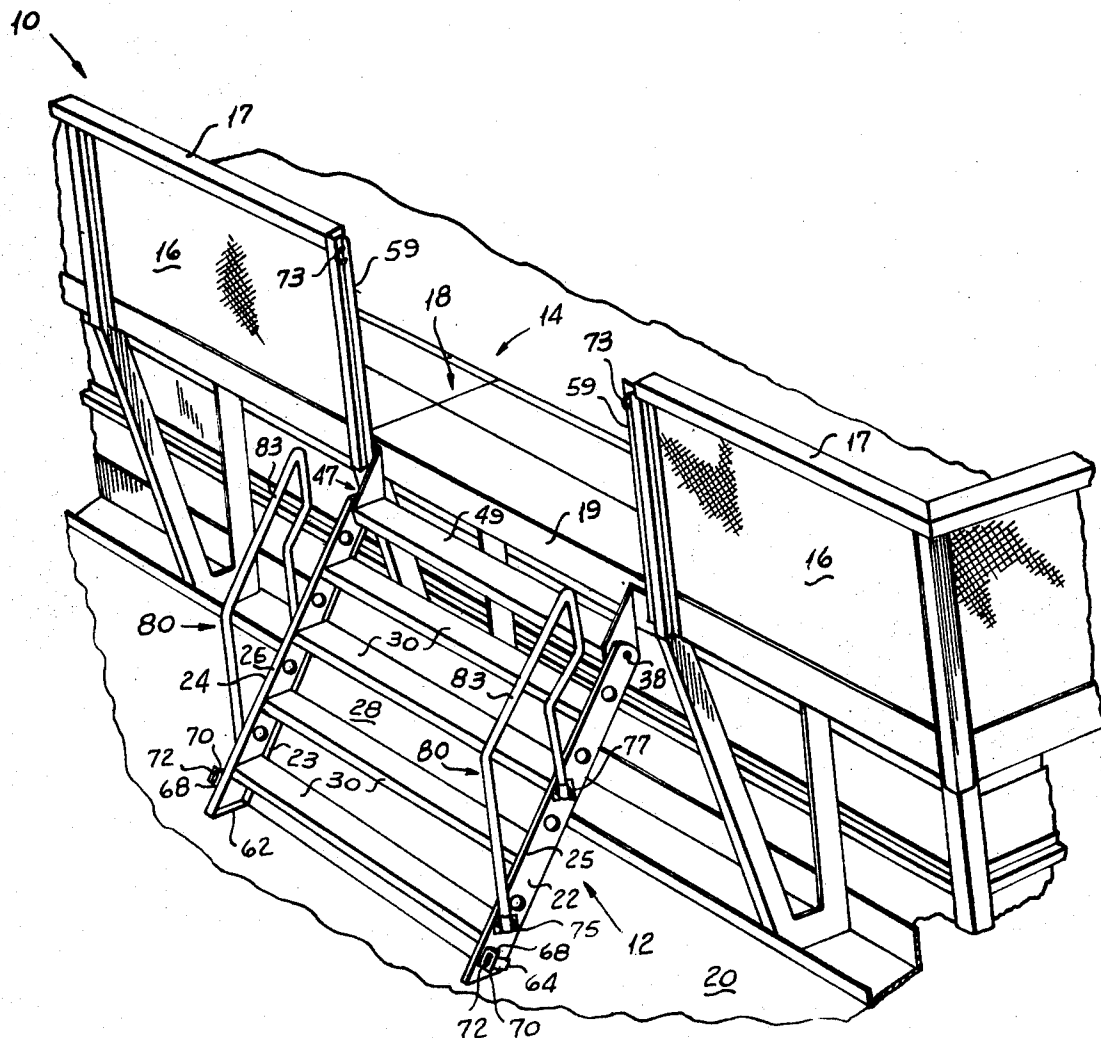
Primary Examiner—Reinaldo P. Machado
Attorney—Richard J. Cowling

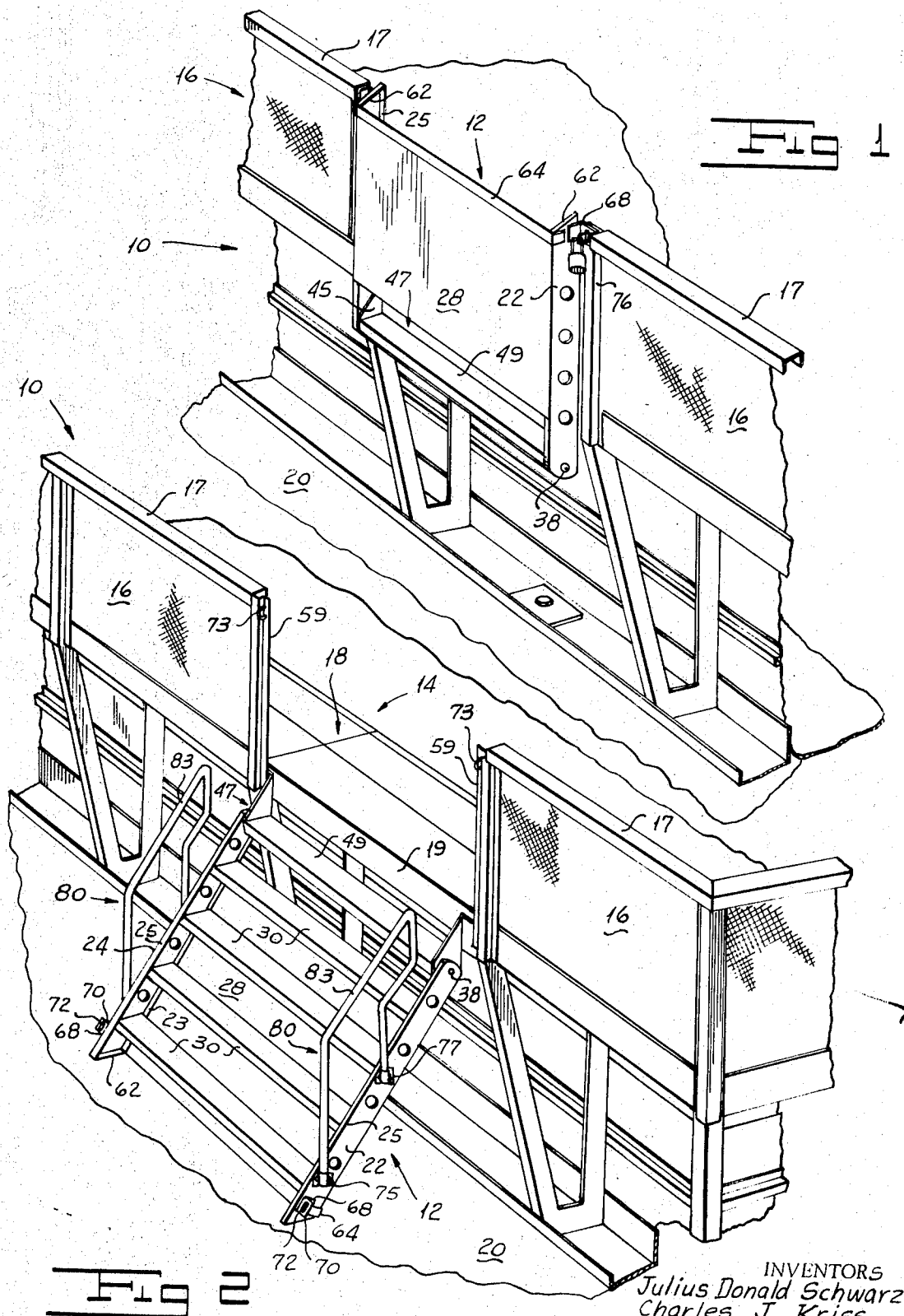
[54] **RETRACTABLE LADDER AND CLOSURE FOR AN**
ABOVE GROUND SWIMMING POOL
2 Claims, 11 Drawing Figs.

[52] U.S. Cl. **182/77,**
182/97
[51] Int. Cl. **E06c 9/08**
[50] Field of Search **182/77, 21,**
20, 95, 106, 78, 97; 4/172

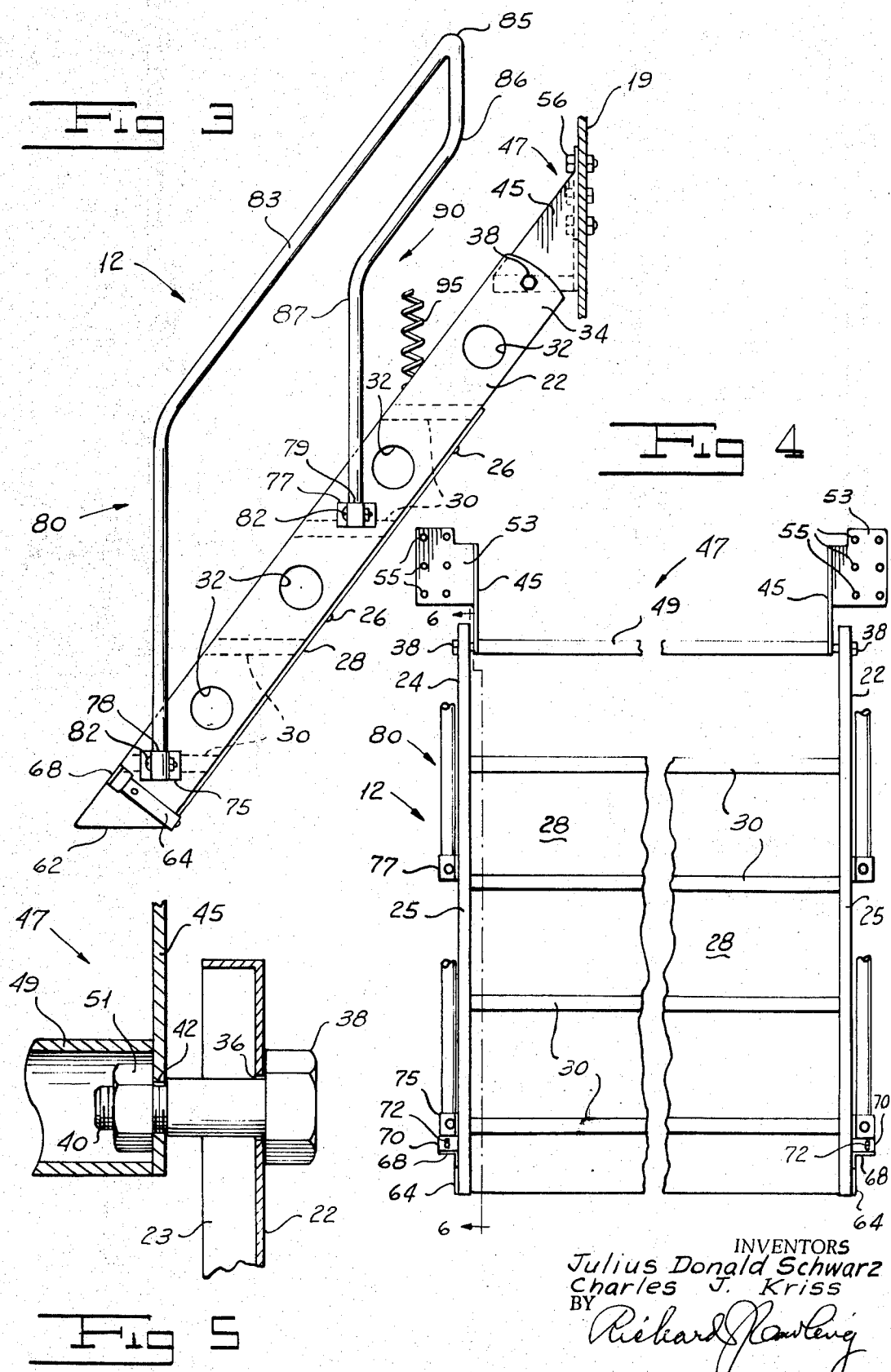
[56] **References Cited**
UNITED STATES PATENTS
1,629,541 5/1927 Scholer **182/21**

ABSTRACT: A retractable ladder and closure means for an above ground level swimming pool, particularly adapted to be operably positioned so as to lead from a ground level to an opening in a safety fence extending around the pool and a pool deck above the ground level, which retractable means is so constructed and arranged as to be raised from the ground level position into a cooperative relation with the opening in the safety fence to effectively close the opening and thereby prevent a nonpermissive access to the pool from the ground level while simultaneously effecting by the closure of the fence opening an additional protection to persons on the above ground pool deck.

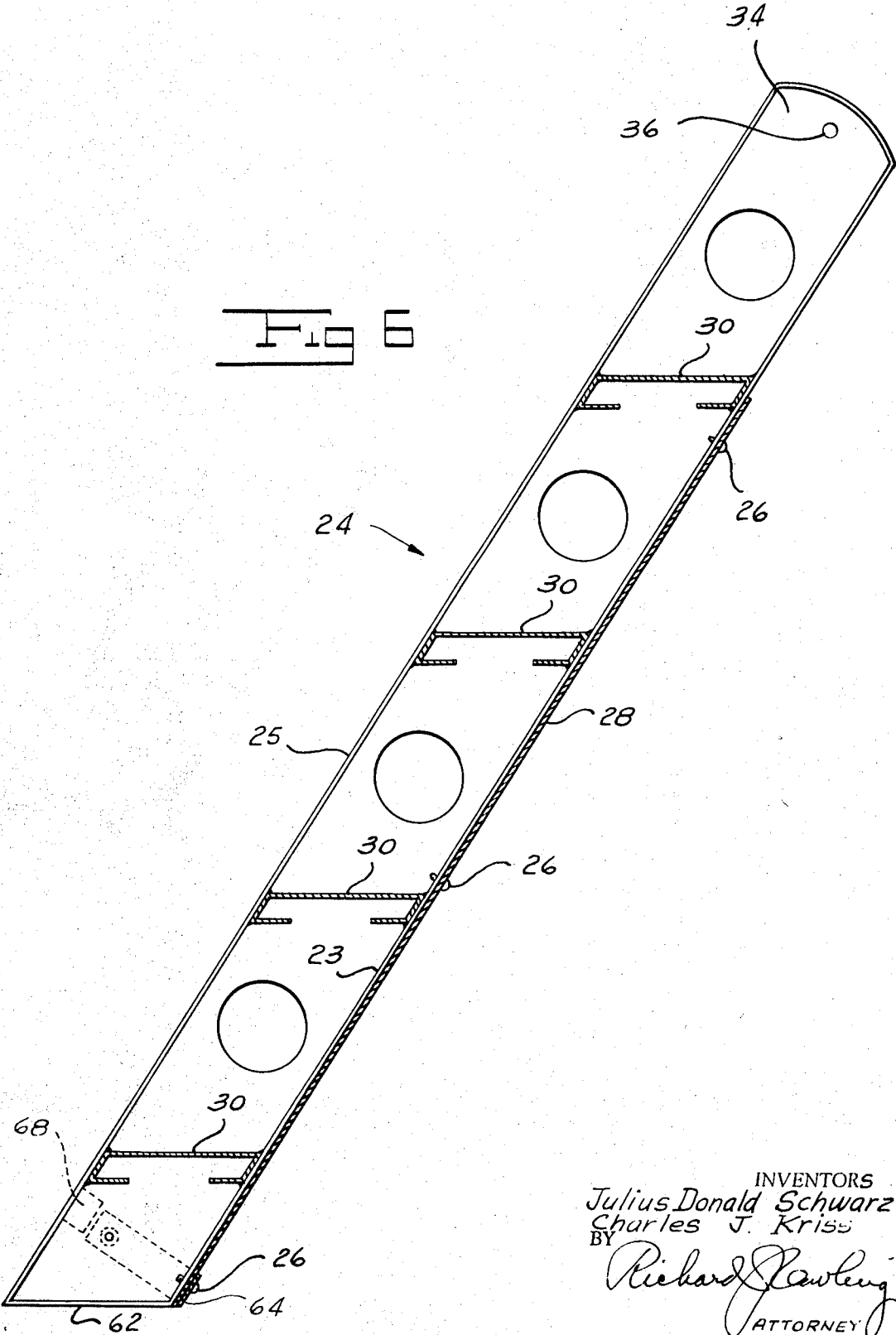




INVENTORS
 Julius Donald Schwarz
 Charles J. Kriss
 BY *Richard J. Hawley*
 ATTORNEY



INVENTORS
Julius Donald Schwarz
Charles J. Kriss
BY
Richard J. Kowling
ATTORNEY



INVENTORS
Julius Donald Schwarz
Charles J. Kriss
BY
Richard J. Pawling
ATTORNEY

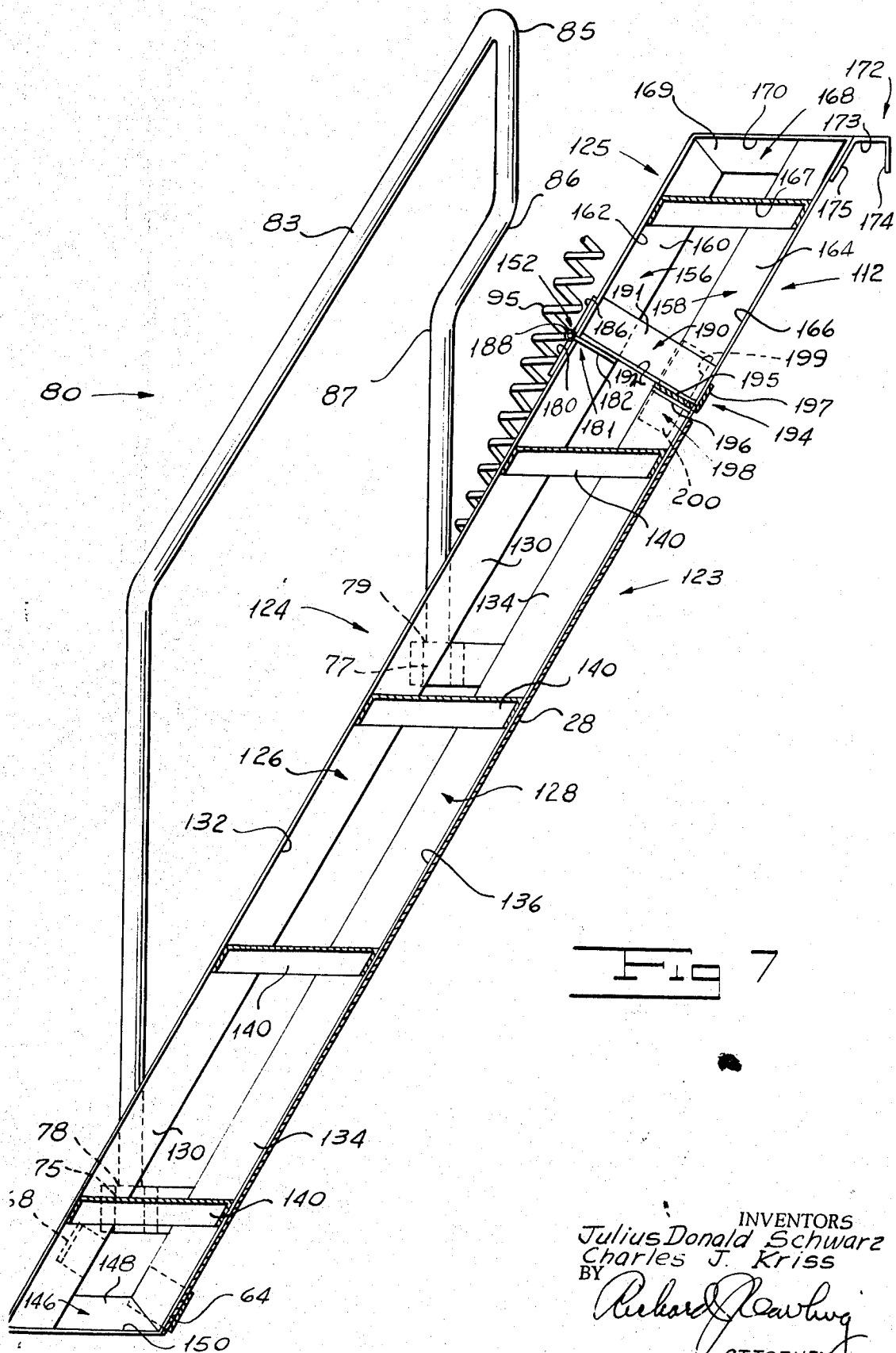
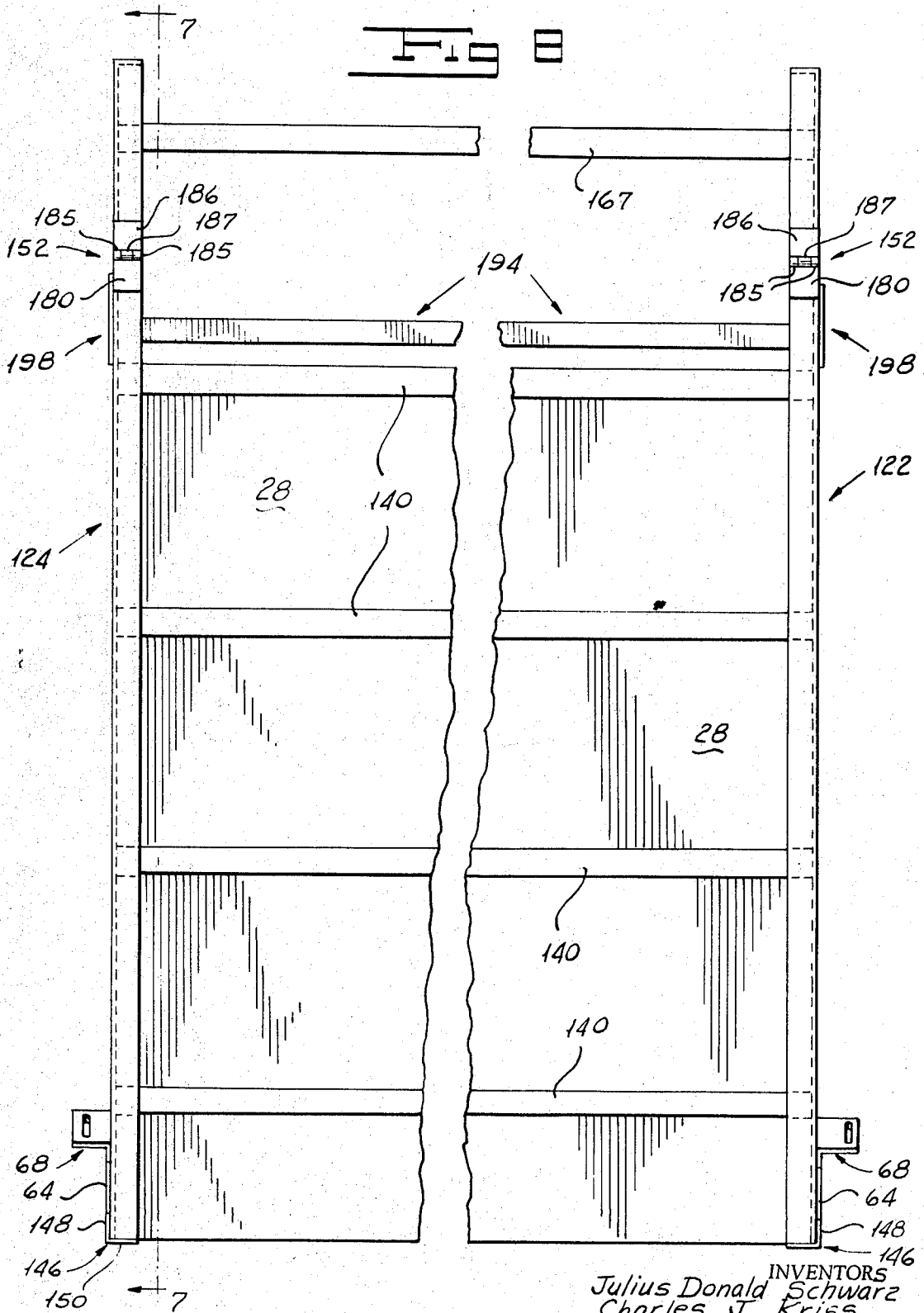
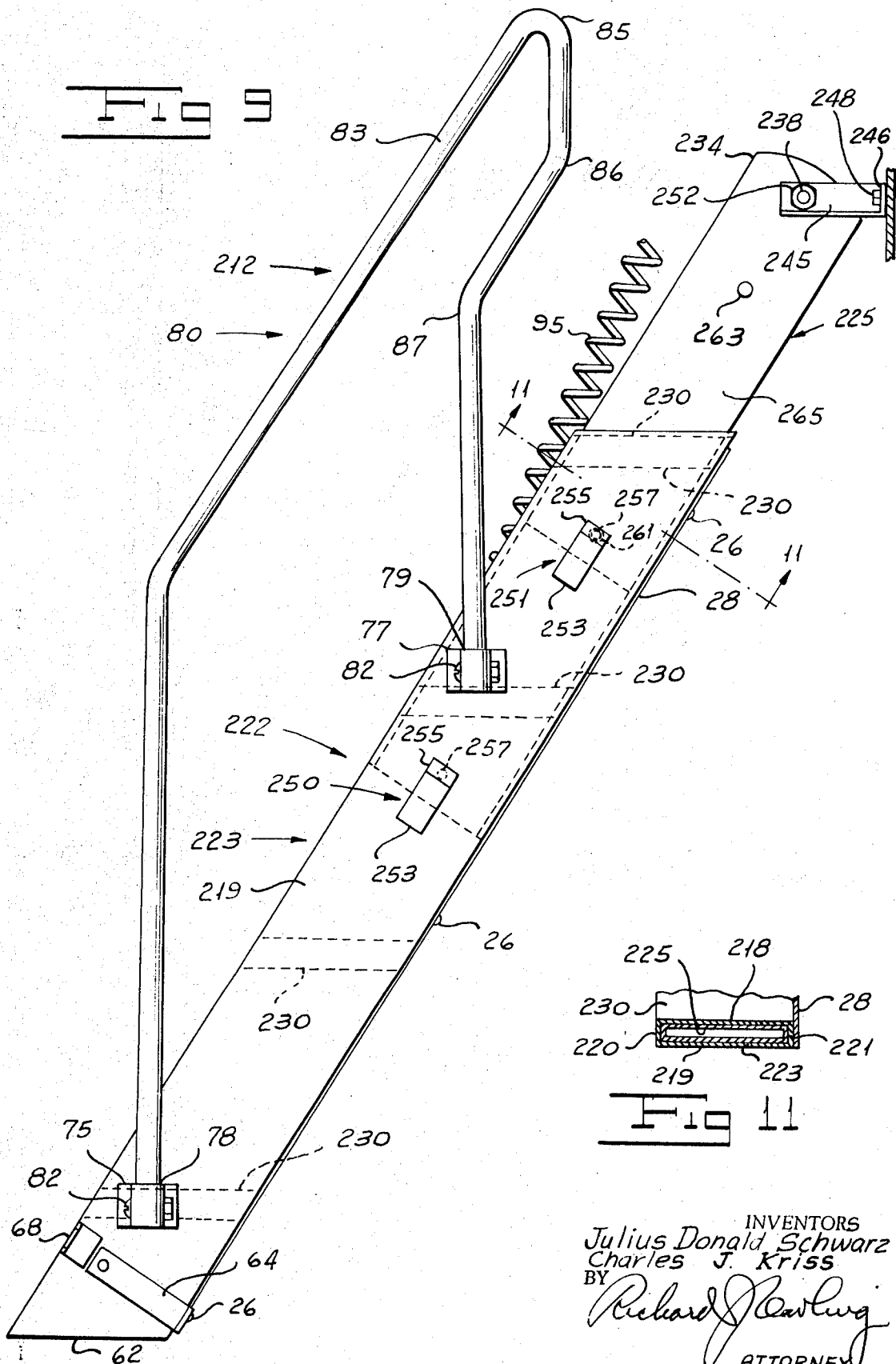


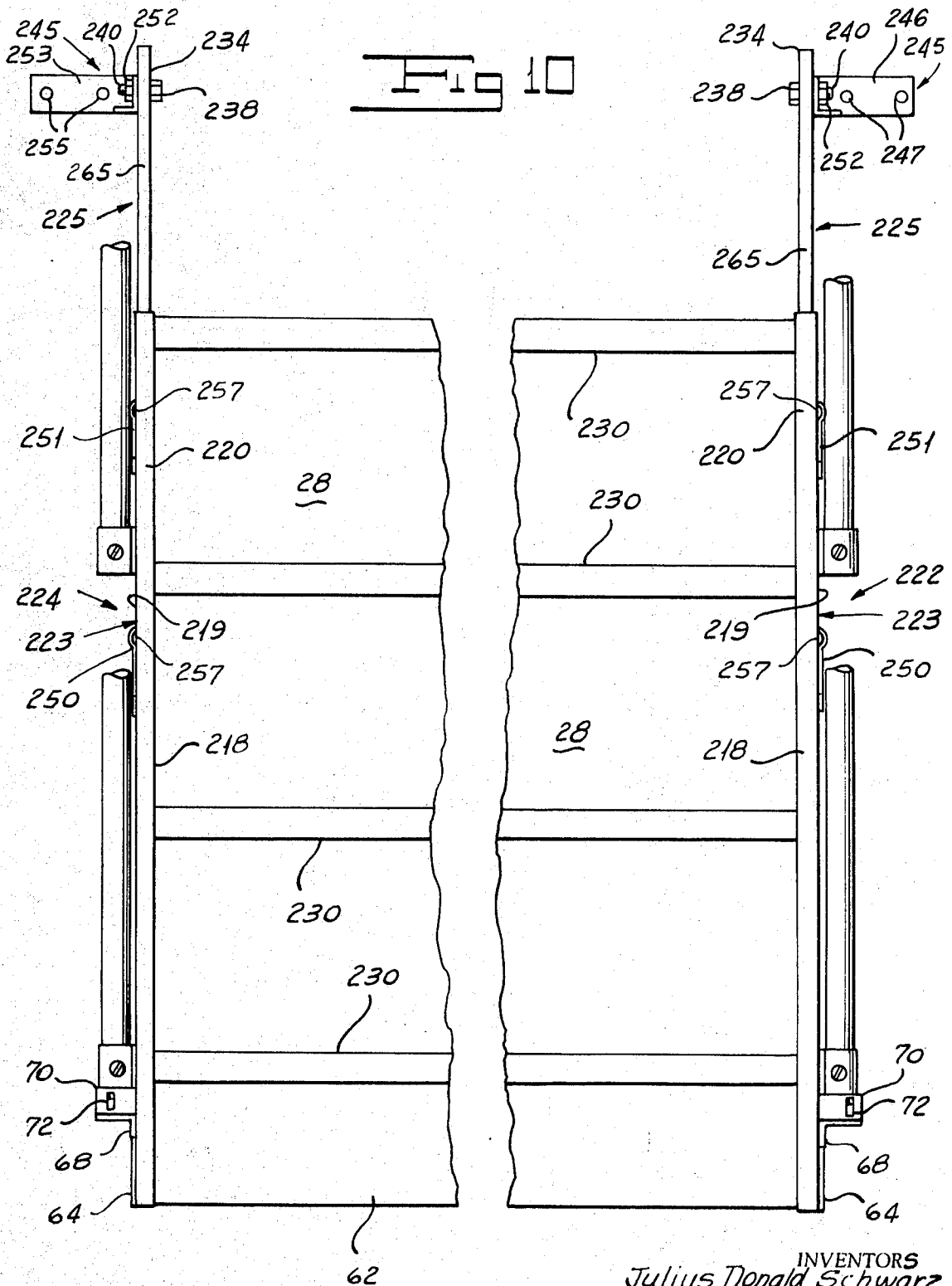
FIG 7

INVENTORS
 Julius Donald Schwarz
 Charles J. Kriss
 BY
 Richard J. Hawley
 ATTORNEY



INVENTORS
 Julius Donald Schwarz
 Charles J. Kriss
 BY
Richard J. Rawling
 ATTORNEY





INVENTORS
 Julius Donald Schwarz
 Charles J. Kriss
 BY *Richard J. Rawling*
 ATTORNEY

RETRACTABLE LADDER AND CLOSURE FOR AN ABOVE GROUND SWIMMING POOL

CROSS REFERENCE TO RELATED APPLICATION

The present invention relates in part to an improved hinged ladder structure such as disclosed, but not claimed, in copending U.S. Pat. application Ser. No. 692,406, filed Dec. 21, 1967, by Julius Donald Schwarz, George E. Dokes and Charles J. Kriss, for a Modular Swimming Pool Assembly of a type which may embody features of the retractable ladder and closure means of the present invention, which application has been assigned to the Hendon Construction Company, Little Ferry, N. J., the assignee of the present invention.

BACKGROUND OF THE INVENTION

This invention relates generally to ladders, and more particularly to a swimming pool ladder operable in a lowered position to provide access to an above ground pool having an upwardly projecting peripheral wall, said ladder being cooperatively arranged in relation to an opening in a safety fence surrounding a deck of the pool to provide a convenient closure means for the opening in the safety fence upon the ladder being adjusted to a second raised position.

THE PRIOR ART

Heretofore, as described in U.S. Pat. No. 2,962,112, granted Nov. 29, 1960, to Harry F. Ramsberger and William D. Ramsberger, for a Cantilever Stile, and in U.S. Pat. No. 3,288,248, granted Nov. 29, 1966, to Steven D. Gurian and Morton M. Bernstein, for a Pool Ladder, there have been provided stile type ladders having ladder portions arranged to be positioned at opposite sides of a peripheral wall of the pool so as to permit access to the pool by a person climbing over the wall by means of the stile type ladder.

Furthermore, in an above ground level pool assembly, such as described and claimed in U.S. Pat. No. 3,335,430, granted Aug. 15, 1967, to Julius Donald Schwarz and George E. Dokes, there may be provided a ladder adapted to be operably positioned so as to lead from a ground level to an opening in a safety fence extending around an above ground deck of the pool. It is also disclosed in U.S. Pat. No. 3,335,430 that the ladder may be conveniently hinged so as to permit the same to be readily raised to prevent non-permissive access to the deck and pool, as by small children, to protect persons from accidentally falling into the pool. The aforementioned U.S. patent has been assigned to the Hendon Construction Company, Little Ferry, N.J., the assignee of the present invention.

These prior art patents fail to suggest the improvements of the present invention in a retractable ladder and closure means for an above ground level swimming pool, particularly in the construction and arrangement of the retractable ladder in cooperative relation with the opening in the safety fence so as to provide in a raised position of the ladder a closure of the opening in the safety fence, the ladder in the closing of the fence opening being of a height substantially equal to the height of the safety fence to protect persons on the above ground pool deck from accidentally falling through the opening to the ground level.

SUMMARY OF THE INVENTION

In the present invention, there is provided an improved retractable ladder and closure means for an above ground level swimming pool of a type having a safety fence extending around the pool and a deck adjacent the pool, the ladder being adapted to be lowered to a position leading from the ground level to an opening in the fence leading to the deck and alternately to be raised to a position to close the opening in the fence to prevent non-permissive access to the deck and pool and to protect persons on the deck from accidentally falling from the above ground level deck to the ground.

An object of the present invention is to provide a simplified ladder construction so arranged that, upon the ladder being al-

ternately raised from the lowered position to the position to close the opening to the fence, the effective portion of the ladder in its closed raised position will be of such a dimension as to be substantially equal to the height of the safety fence.

Another object of the invention is the provision at the lowered end portion of the ladder of a mock hand rail which upon the ladder being swung into the upper raised position will be aligned with an upper hand rail portion of the safety fence.

A further object of the invention is to provide a fixed step adjacent an opening in the safety fence to pivotally support a retractable ladder in an arrangement which reduces the required length and weight of the ladder for greater ease of operation, the step being so dimensioned that the effective closure portion of the ladder will be equal to the height of the safety fence; while in an alternate arrangement the swimming pool assembly may be partially embedded in the terrain to such an extent that the fixed step may provide a simple step up to the deck from the ground level.

Another object of the invention is the provision of a modified form of the improved retractable ladder and closure means for an above ground level swimming pool including hinged portions arranged to permit the ladder to be folded at a lower point than the level of the pool deck so as to shorten the overall height of the closure portion of the ladder and permit the mock hand rail adjacent footed portions of the ladder to effectively align with the hand rail of the safety fence upon the retractable ladder being folded upwardly about the hinged portions into a position for effectively closing the opening in the safety fence.

A further object of the invention is to provide a modified form of the improved retractable ladder and closure means for an above ground level swimming pool, including tubular telescopic outer and inner runner portions so constructed and arranged that the outer runner may be extended to a lowered open position of the ladder means and retained in such extended position by suitable spring detent stop means, which allow the ladder means to reach the ground level at a proper angle so as to permit ready access to an opening in the safety fence surrounding the pool and the above ground level deck; and the inner runner portion having an upper end pivotally supported by a hinge bracket arranged to permit the ladder means to be alternately pivoted about the hinge bracket and raised to an upper position while the spring detent stop means may be thereupon operated to release the outer runner portion to permit a retraction of the outer runner in relation to the inner runner so as to shorten the overall height of the closure portion of the ladder and cause the mock hand rail adjacent footed portions of the ladder to effectively align with the hand rail of the safety fence upon the retractable ladder being folded upwardly about the hinged bracket into a position for effectively closing the opening in the safety fence.

Another object of the invention is the provision of a hand rail for the ladder to afford maximum safety to persons using the ladder in an extended lowered position for ascending to or descending from the opening in the safety fence surrounding an above ground level walk-around deck of the pool, but which hand rail is so uniquely shaped as to clear the deck upon the ladder and closure means being retracted to a raised position at which the opening in the safety fence is effectively closed, and which ladder assembly includes simple and effective means for detachably fastening the hand rail to the legs or runners of the ladder in an operative relation to the opening in the safety fence and deck.

A further object of the invention is to provide a hand rail for the ladder which is uniquely looped and fastened at opposite ends in spaced relation to one portion of the ladder to permit such portion of the ladder to be folded or slidably retracted by a telescopic action relative to another portion of the ladder without obstruction from the uniquely looped hand rail.

These and other objects and advantages of the invention are pointed out in the following description in terms of the embodiments thereof, which are shown in the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

In the drawings, in which corresponding numerals indicate corresponding parts, in the several views:

FIG. 1 is a fragmentary perspective plan view of an above ground level swimming pool including a retractable ladder and closure means embodying the present invention and which is shown in a retracted raised closure position;

FIG. 2 is a fragmentary plan view of the swimming pool, showing the retractable ladder and closure means of FIG. 1 in an extended lowered position;

FIG. 3 is an enlarged side view of the retractable ladder and closure means of FIG. 2, the same being shown in an operative relation with the fixed upper step hinge;

FIG. 4 is a front plan view of the retractable ladder and closing means of FIG. 3, the same being shown in operative relation with the fixed upper step hinge;

FIG. 5 is an enlarged fragmentary sectional view showing the pivotal connection between the ladder means and fixed step hinge of FIGS. 3 and 4;

FIG. 6 is an enlarged sectional view of the ladder and closure means taken along the lines 6-6 of FIG. 4 and looking in the direction of the arrows;

FIG. 7 is a side sectional view of a modified form of the retractable ladder and closure means including hinged portions arranged to permit the ladder to be folded at a lower point than the level of the pool deck, the same having been taken substantially along the lines 7-7 of FIG. 8 and looking in the direction of the arrows;

FIG. 8 is a front plan view of the modified form of the retractable ladder and closure means of FIG. 7;

FIG. 9 is a side view of another modified form of the retractable ladder and closure means including tubular telescopic outer and inner runner portions, spring detent stop means to alternately lock the inner and outer runner portions in extended and retracted positions with the outer runner portion being shown in an extended relation to the inner runner portion and the inner runner portion being shown in an operative relation with a hinge bracket; and

FIG. 10 is a front plan view of the retractable ladder and closure means of FIG. 9 in an operative relation with the hinge bracket; and

FIG. 11 is a sectional view taken substantially along the line 11-11 of FIG. 9, looking in the direction of the arrows, across one leg of the ladder means and showing the relation of the inner and outer runner portions of the leg of the ladder means.

DESCRIPTION OF THE INVENTION

Referring now to the drawings and particularly FIGS. 1 and 2 thereof, there is shown a fragmentary view of an above ground level swimming pool assembly 10, which may be of a type described and claimed in the aforementioned copending U.S. Pat. application Ser. No. 692,406, and which may include a retractable ladder and closure means of a type, indicated by the numeral 12, such as is disclosed but not claimed in said above-identified application.

The retractable ladder and closure means 12 is the subject matter of the invention described and claimed herein, and is shown in FIG. 1 in a retracted raised position, wherein the closure means 12 serves to effectively close an opening 14 in a safety fence 16, having an upper hand rail 17. The safety fence 16 surrounds the pool assembly 10 and an adjacent above ground level deck 18 comprised of suitable metal deck plates 19.

In FIG. 2, the retractable ladder and closure means 12 is shown in an extended lowered position so as to render the opening 14 in the safety fence 16 open and accessible to persons at the outer ground level 20 by climbing the ladder means 12.

Referring now to the drawings of FIGS. 3, 4, 5 and 6, it will be seen that the retractable ladder and closure means 12 includes a pair of runners or legs 22 and 24 formed of suitable steel channel bars, each having flange portions 23 and 25. Between the flange portions 23 of each of the runners 22 and

24 there are secured by rivets or bolts 26 a closure means or shield device 28, which may be in the form of a steel plate, mesh screen or grill. The shield device 28 extends between the flange portions 23 of each of the runners 22 and 24 to provide a closure means to effectively close the back of the ladder 12 and the opening 14 between the safety fence 16 when the ladder and closure means 12 is adjusted to the retracted raised position shown by FIG. 1. The shield device 28 provides the back of the steps of the ladder 12 when the ladder 12 is adjusted to the extended lowered position, as best shown in FIG. 2, with the front of the ladder 12 being open between the flange portions 25 of the runners 22 and 24.

Furthermore, between the flange portions 23 and 25 of the runners 22 and 24, there are mounted by welding or other suitable fastening means rectangular steel tubing or channel bar treads 30, which form the steps of the ladder 12, as shown by FIGS. 3, 4 and 6. Suitable openings 32 are formed in the runners 22 and 24 of the ladder 12 to reduce its weight and to facilitate ease in the raising and lowering thereof.

Referring now to FIGS. 3, 4, 5 and 6, at a pivotal end portion 34 of each of the runners 22 and 24, there is provided an aperture 36 for receiving a pivotal bolt 38, having an inner threaded end portion 40 projecting through an aperture 42 in steel side plates 45 of a fixed step hinge 47. A rectangular steel tubing or channel bar tread 49 is fastened by welding or other suitable means to the steel side plates 45. The threaded end portion 40 of the pivotal bolt 38 is engaged in each instance by a nut 51 at the inner side of the plate 45 and within the channel bar tread 49 so as to pivotally mount the end portions 34 of the runners 22 and 24 at the fixed step hinge 47, as best shown in FIG. 5.

Projecting from the side plates 45 are fastening ears 53, having suitable apertures 55 therein for receiving fastening bolts 56, which secure the fixed step hinge 47 to the deck plate 19 adjacent steel gate posts 59, defining the opening 14 in the safety fence 16. The fixed step hinge 47 thus serves to pivotally support the runners 22 and 24 of the ladder 12 at the end portion 34.

At the opposite free end of the runners 22 and 24 there is provided an angular base or runner pad 62, which is arranged to rest along the ground level upon the ladder being extended to the lowered position, while a mock hand rail strap 64 is mounted at the side surfaces of the runners 22 and 24 adjacent the base 62 so as to extend perpendicular to the steel plate 28 and across an end portion of the closure device 28 adjacent the free end of the pivotal runners 22 and 24.

The fixed hinge step 47, ladder hinge bolts 38 and runner structure 22 and 24 are dimensionally arranged in relation to the opening 14, upper rail 17 of the safety fence 16 and the mock hand rail 64 so that, upon the ladder 12 being retracted to the raised position, the overall length of that portion of the ladder 12 and closure device 28 that is swung upward into the opening 14 of the safety fence provides a height substantially equal to the height of the safety fence 16. Moreover, the mock hand rail 64 will be thereupon substantially aligned with the upper rail 17 of the safety fence 16 so that the closure device 28 of the retractable ladder and closure means 12, in such retracted position, completely closes the opening 14 in the safety fence 16, as shown in FIG. 1.

There is provided adjacent the opposite ends of the mock hand rail strap 64 and adjacent the flange 25 of the runners 22 and 24 steel angle straps 68 secured to the free end side surfaces of the runners 22 and 24. The angle straps 68 have projecting ear portions 70 in which there is formed a longitudinal slot 72 arranged to coincide with a fastening loop 73 projecting from each of the gate posts 59. The fastening loop 73 is arranged to pass through the slot 72 so that the closure means 12 may be locked in the closed position by a suitable lock 76, as shown in FIG. 1.

Furthermore, secured to the outer side surfaces of the runners 22 and 24 in spaced relation are fixed supporting brackets 75 and 77 adapted to receive end portions 78 and 79 of a rigid looped steel tubular hand rail 80. The end portions

78 and 79 are secured in the supporting brackets 75 and 77 by suitable fastening bolts and nuts 82. The tubular hand rail 80 is uniquely looped so as to provide a functional hand rail portion 83, which extends in parallel spaced relation to the flange portions 25 of the corresponding runners 22 and 24.

At a point corresponding substantially to a vertical extension of the end portion 34 of the runners 22 and 24 the hand rail 80 is uniquely looped, as indicated at 85, towards the runners 22 and 24, and, as indicated at 86, in a reverse direction extending parallel to the functional hand rail portion 83 to a point 87 at which the hand rail 80 is looped towards the corresponding runner with the end portion 79 thereof being secured in the supporting bracket 77. The loop in the tubular rail 80 formed at 85, 86 and 87 provides a recess at 90, and is so shaped as to clear the walk-around deck 18 upon the ladder and closure means 12 being retracted and pivoted to a raised position at which the opening 14 in the safety fence 16 is effectively closed, as shown by FIG. 1, which in the extended lowered position the functional hand rail portion 83 affords maximum safety to persons in using the ladder 12 for ascending to or descending from the opening 14 in the safety fence 16 of the deck 18.

The simple supporting brackets 75 and 77 and the fastening nut and bolt arrangement 82 not only provides for the simple assembly and removal of the unique hand rail 80, but also permits those who do not feel the necessity for a hand rail to eliminate the cost thereof. While the supporting brackets 75 and 77 are shown on the outer surface of the ladder runners 22 and 24, they may also be placed on the opposite inner surface of the ladder runners.

While the ladder and closure means 12 may be manually retracted to the closure position shown in FIG. 1, or extended to the lowered position shown in FIG. 2, there may be provided a suitable ladder tension spring 95 on each runner 22 and 24 to facilitate the lifting by the operator of the ladder and closure means 12 to the raised closure position of FIG. 1 from the lowered extended position of FIG. 2.

MODIFIED FORM OF THE INVENTION OF FIGS. 7 AND 8

Referring now to the modified form of the invention shown by FIGS. 7 and 8, corresponding parts to those heretofore described with reference to FIGS. 1, 2, 3, 4, 5 and 6 have been indicated by corresponding numerals. In this modified form of the invention, the fixed step hinge 47 has been eliminated and instead, in the modified form of the retractable ladder and closure means 112, as shown in FIGS. 7 and 8, there is included a pair of legs or runners 122 and 124, each being comprised of a main section 123 and an auxiliary section 125.

Each main section 123 includes a pair of longitudinally extending steel angle bars 126 and 128. The angle bar 126 has a side flange 130 and a front flange 132 extending at a right angle thereto. The angle bar 128 has a side flange 134 and a rear flange 136 extending at a right angle to the side flange 134.

Secured to the outer surface of the rear flange 136 of the main sections 123 of the runners 122 and 124 by suitable means is the closure device 28, which extends between the rear flanges 136 of each of the runners 122 and 124 to effectively close the back of the ladder 112 and the opening 14 between the safety fence 16, when the ladder and closure means 112 is adjusted to a retracted raised position, corresponding to that shown in FIG. 1, as hereinafter explained.

Between the inner surfaces of the angle bars 126 and 128 of the runners 122 and 124, there are mounted by welding or other suitable fastening means rectangular steel channel bar treads 140, which extend between the main sections 123 of the runners 122 and 124 to provide steps of the ladder 112, as shown by FIGS. 7 and 8. The closure device 28 provides the back of the steps 140 of the ladder 112 upon the ladder 112 being swung to the extended lowered position shown by FIG. 7 and corresponding to that shown by FIG. 2, with the front of

the ladder 112 being open between the front flanges 132 of the main sections 123 of each of the runners 122 and 124.

At the free end of the main section 123, there is secured to opposite end portions of the side flanges 130 and 134, by welding or other suitable fastening means, a steel angle bar strap 146, which extends diagonally across the corresponding end portions of the angle bars 126 and 128. The angle bar strap 146 has a side flange 148 and a base flange 150 extending at a right angle to the side flange 148. The base flange 150 provides a runner pad which is so arranged as to rest along the ground level upon the ladder 112 being extended to its lowered position, as shown best in FIG. 7. While a mock hand rail strap 64 is mounted on the outer side surfaces of the side flanges 134 and adjacent the base flange 150 so as to extend perpendicular to the steel plate 38 and across an end portion of the closure device 128 adjacent the free end of the runners 122 and 124, as hereinbefore described with reference to FIG. 3. Similarly, there is also affixed to the outer side surface of the side flange 130 of each of the runners 122 and 124, the angle straps 68 in alignment with the ends of the mock hand rail strap 64, as shown by FIGS. 7 and 8, and as heretofore explained with reference to Figure 4.

Furthermore, at an end of each of the main sections 123 opposite from the free end of the runners 122 and 124, the main section 123 is connected by a hinge 152 to one end of the auxiliary section 125. Each auxiliary section 125 includes a pair of longitudinally extending steel angle bars 156 and 158. The angle bar 156 has a side flange 160 and a front flange 162 extending at a right angle to the side flange 160. The angle bar 158 has a side flange 164 and a rear flange 166 extending at a right angle to the side flange 164. A rectangular steel channel bar tread 167 is mounted by welding or other suitable fastening means between the inner surfaces of the angle bars 156 and 158 of the auxiliary sections 125 so as to extend between the runners 122 and 124 of the ladder 112, as best shown in FIG. 8.

At an opposite end of the auxiliary section 125 from the hinge 152, there is secured to opposite end portions of the side flanges 160 and 164 a steel angle bar strap 168, which extends diagonally across the corresponding end portions of the angle bars 156 and 158. The angle bar strap 168 has a side flange 169 and an end base flange 170. A ladder hook 172 formed of a steel channel bar has a base member 173 aligned with the base flange 170 and flange portions 174 and 175 projecting from opposite sides of the base member 173 to form the ladder hook 172. The flange portion 175 is secured by welding or other suitable fastening means to a corresponding end portion of the outer surface of the rear flange 166.

The flange portion 174 and the base member 173 of the ladder hook 172 of each of the runners 122 and 124 are secured by suitable means to the underside of the deck plate 19 and adjacent the gate posts 59, defining the opening 14 in the safety fence 16, as shown by FIG. 2. Thus, the hinge 152 serves to pivotally support the main sections 123 of each of the runners 122 and 124 at the opposite end of the auxiliary section 125 and in cooperative relation to the gate posts 59 and deck plate 19, defining the opening 14 in the safety fence 16 so that the retractable ladder and closure means 112 may be folded at the hinge 152 at a lower point than the height of the walk-around deck 18 to cause the mock hand rail 64 to effect a substantial alignment with the fence rail 17 when the closure means 112 is in an upper or closed position corresponding to that illustrated by FIG. 1.

The hinge 152, as shown by FIG. 7, includes a right angle hinge strap 181, having a flange portion 180 secured to an outer surface of the flange 132 and a flange portion 182 extending at a right angle to the flange portion 180 and secured to the end of the flange 132 of the main section 123. Carried by the hinge strap 181 are hinge elements 185, shown by FIG. 8. The hinge 152 further includes a hinge strap 186 secured to an outer end surface portion of the flange 162 of the auxiliary section 125 and carrying a hinge element 187 pivotally connected to the bolt 188.

Further extending across the hinge end of the auxiliary section 125 is a steel angle bar 190, having a flange portion 191 welded or secured by suitable means to inner end surfaces of the flanges 160 and 164. A flange portion 192, extending at a right angle to the flange 191, provides a base plate at the hinge end of the auxiliary section 125, and is arranged in cooperative relation with the adjacent end of the main section 123 to seat the hinge end of the auxiliary section 125 in relation to the main section 123. An angle bar 194 has a flange portion 195 suitably secured to a flange 196 projecting at a right angle from the inner surface of the flange 134 of the main section 123, while a flange portion 197 of the angle bar 194 projects at a right angle to the flange portion 195. The angle bar 194, as shown by FIG. 8, extends between the respective main sections 123 of the runners 122 and 124, and serves to accurately guide the seating of the ends of the main sections 123 in relation to the auxiliary sections 125 of the respective runners 122 and 124 of the ladder and closure means 112.

A plate 198 is secured at one end portion 199 to an outer side surface of an end portion of the side flange 164 of the auxiliary section 125 while an opposite end portion 200 of the plate 198 extends in floating relation to the outer surface of the side flange 134 of the main section 123 so as to serve as an antifold fastener acting to guide the hinged ends of the auxiliary sections 125 and main sections 123 of the runners 122 and 124 into the extended relation shown by FIGS. 7 and 8, and to prevent a folding or bowing of the runners 122 and 124 at the hinged ends thereof in a lateral sense upon the runners being in an extended position corresponding to that illustrated by FIG. 2.

Moreover, as will be readily apparent from the foregoing description with reference to FIG. 1, the main sections 123 of the ladder and closure means 112 may be readily pivoted about the pivot bolt 188 of the hinge 152 and raised to a closure position in relation to the opening 14 of the safety fence 16, corresponding to that shown by FIG. 1 as heretofore fully explained.

A detail description of the corresponding structure theretofore described and explained with reference to FIGS. 1, 2, 3, 4, 5 and 6, and, bearing like numerals in the modified form of the invention illustrated by FIGS. 7 and 8, has not been deemed necessary with reference to the modified form of the invention.

MODIFIED FORM OF THE INVENTION OF FIGS. 9 AND 10

Referring now to the modified form of the invention shown by FIGS. 9 and 10, corresponding parts to those heretofore described with reference to FIGS. 1, 2, 3, 4, 5 and 6 have been indicated by corresponding numerals. In this modified form of the invention, the fixed step hinge 47 has been eliminated and instead, in the modified form of the retractable ladder and closure means 212 shown in FIGS. 9 and 10, there is included a pair of legs or runners 222 and 224, each being comprised of an outer tubular portion 223 and an inner tubular portion 225 slidably mounted relative one to the other. The tubular portions 223 and 225 may be formed of a rectangular steel tubing or channel member, as shown by the sectional view of FIG. 11.

Each outer tubular portion 223 has an inner side surface 218 and an outer side surface 219, a front surface 220 and a rear surface 221. Secured to rear surface 221 of the outer tubular portions 223 of the runners 222 and 224 by rivets or bolts 26 is a closure device 28, such as a steel plate, mesh screen or grill, which extends between the rear surfaces 221 of the outer tubular portions 223 of each of the runners 222 and 224 to provide a device to effectively close the back of the ladder 212 and the opening 14 between the safety fence 16, when the ladder and closure means 212 is adjusted to a retracted raised position, corresponding to that shown by FIG. 1, as hereinafter to be explained. Similarly, the closure device 28 provides the back of the steps of the ladder 212, when the ladder 212 is adjusted to an extended lowered position, cor-

responding to that shown by FIG. 2, with the front of the ladder being open between the front surfaces 220 of the outer tubular portions 223 of each of the runners 222 and 224.

Furthermore, between the inner side surfaces 218 of the outer tubular portions 223 of the runners 222 and 224, there are mounted by welding or other suitable fastening means rectangular steel tubing or channel bar treads 230, which form the steps of the ladder 212, as shown by FIGS. 9 and 10.

There is provided at a pivotal end portion 234 of the inner tubular portion 225 of each of the runners 222 and 225 an aperture through which extends a pivotal bolt 238, having a threaded end portion 240 projecting through an aperture in a steel hinge bracket 245. The threaded end portion 240 of the pivotal bolt 238 is engaged in each instance by a fastening nut 252 at the opposite side of the hinge bracket 245.

Projecting at a right angle to the hinge bracket 245 is a fastening plate 246, having suitable apertures 247 therein for receiving fastening bolts 248 for securing the hinge brackets 245 in each instance to the steel deck plate 19 and adjacent the steel gate posts 59, defining the opening 14 in the safety fence 16, as shown by FIG. 2. The hinge bracket 245 serves to pivotally support the runners 222 and 224 of the ladder 212 at the end portion 234 in cooperative relation to the gate posts 59 and deck plate 19, which define the opening in the safety fence 16.

The arrangement of the relatively slidable outer and inner tubular portions 223 and 225 of the runners 222 and 224 is such that the outer tubular portion 223 is slidably extended relative to the inner tubular portion 225 upon the runners 222 and 224 being extended to the lowered open position, as shown by FIG. 4. The outer tubular portion 225 is then releasably retained in such a lowered and open position by the effective latching operation of a pair of spring detent stops 250 and 251.

Each of the detent stops 250 and 251 include a leaf spring having an end portion 253 suitably secured to the outer side surface 219 of the tubular portion 223 and a free spring head portion 255 bearing upon a detent latching ball 257, which may be biased thereby into a locking recess in the outer side of the outer tubular portion 223. The balls 257 are so arranged as to selectively latch in detent recesses 261 and 263 provided in a side surface 265 of the inner tubular portion 225 dependent upon the operative position of the outer tubular portion 223 relative to the inner tubular portion 225.

Thus, prior to pivoting the runners 222 and 224 from the lowered open position to the raised closure position, sufficient force is applied to cause the leaf spring head portion 255 of the spring detent stop 251 to release the detent balls 257 from the locking relation in the detent recess 261, whereupon the outer tubular portions 223 of the runners 222 and 224 may be slidably retracted relative to the inner tubular portions 225 until the detent balls 257 of the spring detent stops 250 and 251 are biased by the spring head portions 255 into latching relation in the respective detent recesses 261 and 263 in the side surface 265 of the inner tubular portion 225 as the ladder and closure means 212 is pivoted to a raised closure position, corresponding to that illustrated by FIG. 1.

The present arrangement of the spring detent stops 250 and 251 is such as to allow the ladder 212 to reach the ground at a predetermined correct angle in its open position, and conversely to automatically align the mock fence rail 64 with the upper rail 17 of the safety fence 16 in its raised position, thereby effectively closing the opening 14 in a position corresponding to that illustrated by FIG. 1. In pivoting the ladder and closure means from the raised closed position, corresponding to FIG. 1, to the open lowered position, corresponding to FIG. 2, sufficient biasing force is again applied to the ladder and closure means 212 to cause the leaf spring head portions 255 of the spring detent stops 250 and 251 to release the detent balls 257 from locking relation in the respective detent recesses 261 and 263, whereupon the tubular portions 223 of the runners 222 and 224 may once again be slidably extended to the lowered open position corresponding to that illustrated by FIG. 2.

A detailed description of corresponding structure heretofore described and explained with reference to FIGS. 1, 2, 3, 4, 5 and 6 and bearing like numerals in the modified form of the invention illustrated by FIGS. 9 and 10 has not been deemed necessary with reference to this modified form of the invention.

However, it may be noted that in the modified form of FIGS. 9 and 10 both of the supporting brackets 75 and 77 for the end portions 78 and 79 of the uniquely shaped hand rail 80 have been secured in spaced relation to the outer surface 219 of the outer tubular portion 223. Thus, through this arrangement and the unique loop in the tubular rail 80 formed at 85, 86 and 87, the retraction and extension of the outer tubular portion 223 relative to the inner tubular portion 225 in raising and lowering of the ladder and closure means 212 may be effected clear of the looped tubular hand rail 80. Moreover, in addition, this loop in the hand rail 80 formed at 85, 86 and 87 provides the recess 90 of such a shape as to clear the walk-around deck 18 upon the ladder and closure means 212 being retracted and pivoted to a raised position at which the opening 14 in the safety fence 16 is effectively closed, as heretofore noted with reference to the corresponding position shown by FIG. 1. Furthermore, in the extended lowered position the functional hand rail portion 83, in the modified form of the invention of FIGS. 9 and 10, still affords maximum safety to persons in using the ladder 212 for ascending to or descending from the opening 14 in the safety fence 16 of the deck 18, as in the corresponding position illustrated by FIG. 2.

Although several embodiments of the invention have been illustrated and described, various changes in the form and relative arrangements of the parts, which will now appear to those skilled in the art, may be made without departing from the scope of the invention. Reference is therefore to be had to the appended claims for a definition of the limits of the invention.

I claim:

1. For use with a swimming pool assembly of an above ground level type including a fence having a gate opening

therein at said above ground level; the improvement comprising a combined ladder and closure means, means to pivotally mount said combined ladder and closure means relative to said gate opening, said combined ladder and closure means being pivotally adjustable about said pivotal mounting means in one sense to a first lowered position effective to cause the closure means to open the gate and cause the ladder means to be lowered to the ground level to permit access to the above ground level type swimming pool assembly by the ladder means and through the gate opening in the fence, said combined ladder and closure means being pivotally adjustable about said pivotal mounting means in another sense to a second raised position effective to cause said closure means to close the gate opening and cause the ladder means to be raised to the above ground level of the gate opening of said fence, and a hand rail for use of persons using the ladder means upon the combined ladder and closure means being pivoted in said first sense to said first lowered position, the hand rail having opposite end portions secured in spaced relation on said combined ladder and closure means and arranged in cooperative relation to said ladder means, said hand rail having an extended looped portion for increasing the effective hand rail portion thereof and providing a recess in the hand rail effective to permit the hand rail to clear a pool deck adjacent said gate opening upon said combined ladder and closure means being pivoted in said other sense to said second raised position.

2. The improvement defined by claim 1 in which the combined ladder and closure means includes inner and outer runner portions slidably mounted relative one to the other to extend the ladder means to reach said first lowered position upon said combined ladder and closure means being pivotally adjusted in said one sense to the first lowered position, said inner and outer runner portions being retracted to cause said closure means to close the gate opening upon said combined ladder and closure means being pivotally adjusted in said other sense to the second raised position.

40

45

50

55

60

65

70

75