United States Patent

[11] 3,590,181

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[45] Patented **June 29, 1971**

[54] **LANE SWITCH FOR SWIMMING TIMERS**
5 Claims, 10 Drawing Figs.

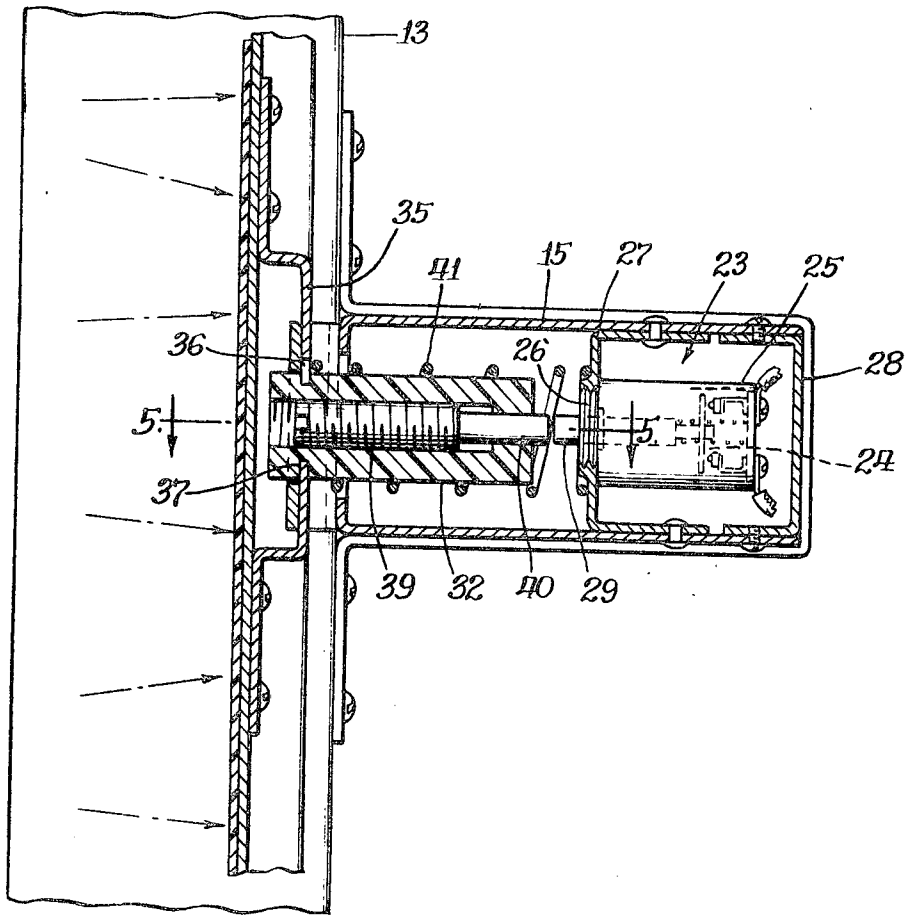
[52] **U.S. Cl.** **200/52,** 200/61.7, 200/86
[51] **Int. Cl.** **H01h 35/00,** H01h 3/16, H01h 3/02
[50] **Field of Search** 200/52, 86, 61.74, 61.43, 61.44

[56] **References Cited**
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ABSTRACT: A frame mounted on the side of a swimming pool has horizontal supports extending across one end of a swimming lane. Mounted on these supports for limited horizontal movement in line with the lane are a plurality of spaced, vertical panels positioned side-by-side across the end of the lane. These panels are biased outwardly and the supports carry an electrical switch for each panel so that when the panel is pushed inwardly by a swimmer arriving at the end of the lane, the switch will be actuated to supply an electrical indication to a timing apparatus.



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SHEET 1 OF 3

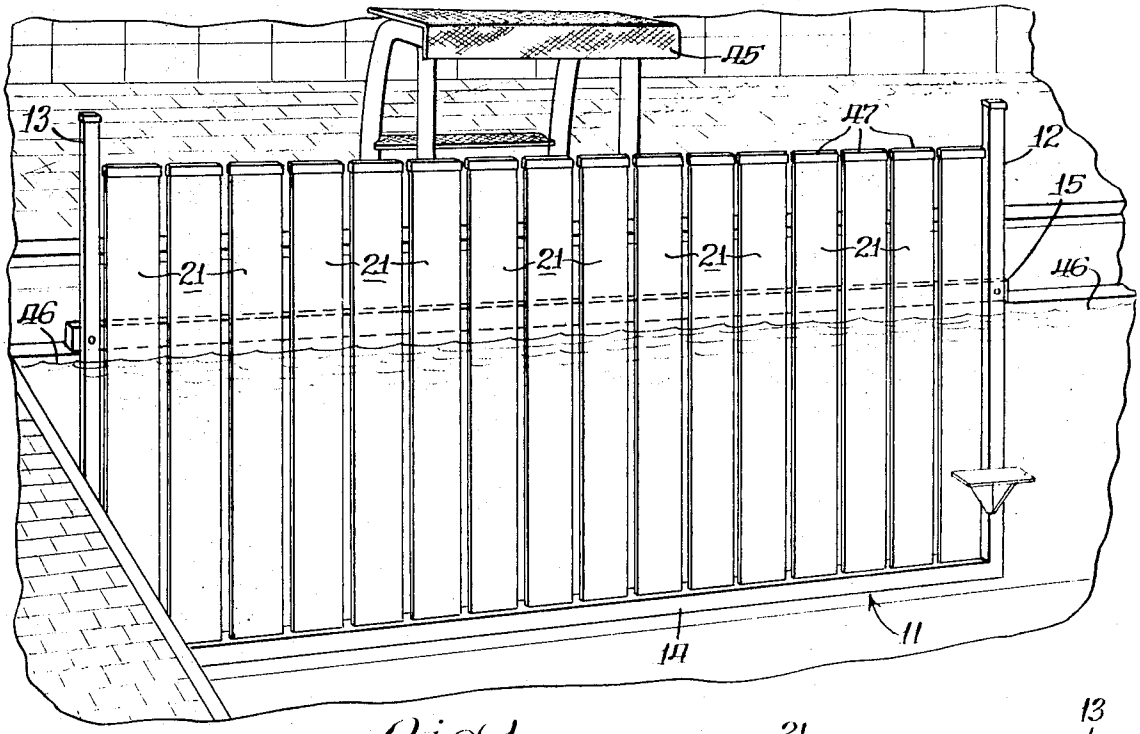


Fig. 1.

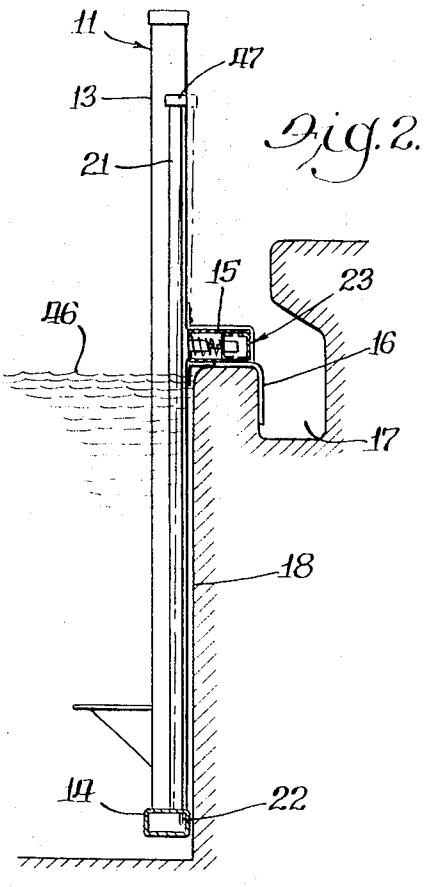


Fig. 2.

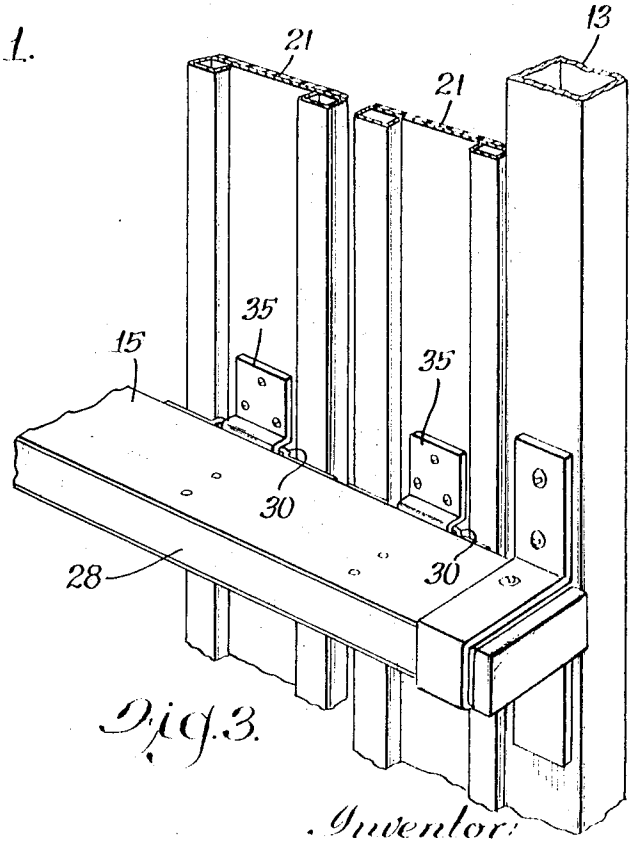


Fig. 3.

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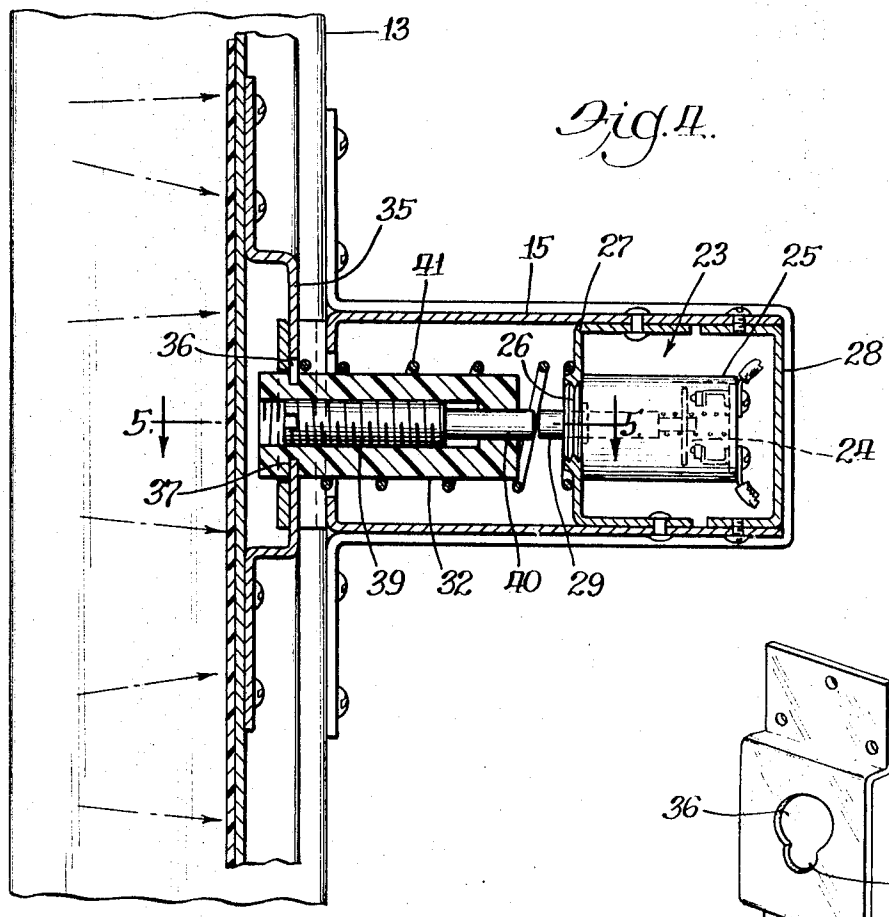


Fig. 4.

Fig. 6.

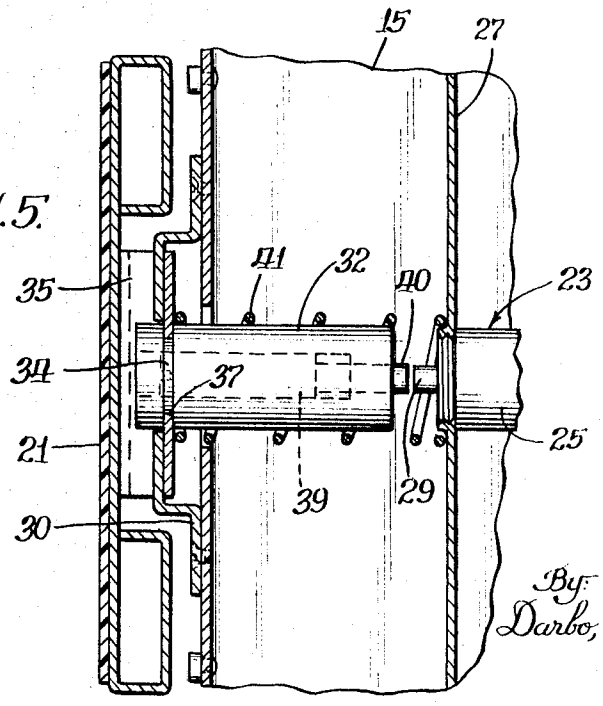


Fig. 5.

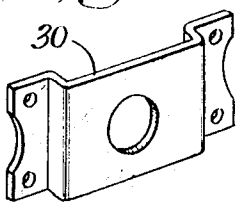


Fig. 7.

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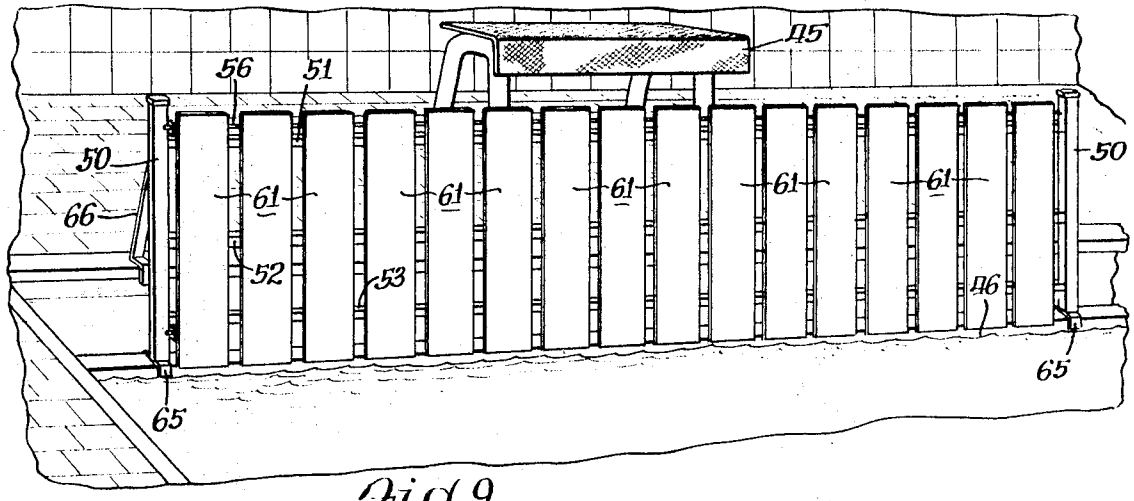


Fig. 9.

Fig. 8.

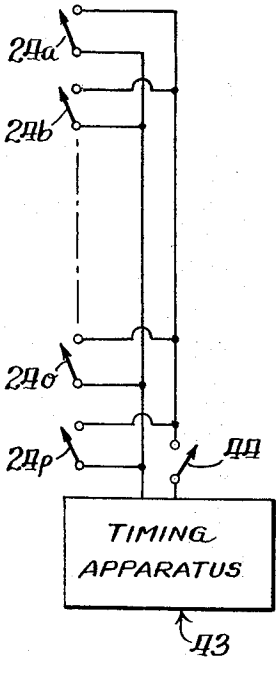


Fig. 10.

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LANE SWITCH FOR SWIMMING TIMERS

BACKGROUND AND SUMMARY OF THE INVENTION

Semiautomatic timing devices for swimming races utilizing a touch pad at one end of each swimming lane to actuate the timing device are known. See, for example, U.S. Pat. No. 3,230,325. Various types of touch pads have been employed. All of them that are known to me, suffer from a common defect, namely that when the race covers more than two lengths of the pool, the touch pad must be moved out of the way until after the start of the final lap. At that time, the touch pads for each of the lanes then must be put into operative position for use by the swimmers to signal their reaching the end of their swimming distance. This requirement is occasioned by the very construction of the touch pads that have been employed. The construction being such that the touch pads would interfere with the ability of the swimmer to properly make his turn at the end of the pool if the touch pad has not been moved out of place.

Another defect that is common to a number of the touch pads is that they are constructed as resilient "bags" containing a fluid, e.g. oil, so that when they are pressed the internal fluid pressure will be created which can serve as the actuating signal. The difficulty is that the oil tends to leak out or spill under the conditions of use. This, of course, is an undesirable contaminating factor in a swimming pool.

The present invention overcomes the difficulties with the prior art devices, particularly those difficulties noted above. The touch pads remain continuously in place during a race. There is no necessity for someone rushing about at each of the lanes to properly position the touch pads at each lane after the swimmer in the respective lane has started his final lap. Experience has proven that in the excitement of a race, the getting of all of the touch pads into proper place at the proper time is a difficult procedure, and one that is likely not to be done properly.

An additional advantage of embodiments of the present invention are that they extend a substantial distance above the water level and may be actuated by a portion of the swimmer's body contacting them other than at immediately adjacent the water level. For example, a swimmer coming in on a backstroke may be swinging his arms high and strike the touch pads with his hand while the hand is still relatively high above the water level. There is no fumbling around to find the touch pad, such as might occur under similar swimming conditions when the hand struck the side of the pool above the touch pad because of the particular positional relationship that the swimmer achieved in reaching the end of the pool while still looking in the other direction.

Another advantage of the embodiments of the present invention is that they can extend entirely across the end of the lane being used by the swimmer. Thus, should the swimmer stray from the center of the lane to one edge thereof, he can still find the touch pad in front of him so that he does not have to hunt around to locate it after reaching the end of the pool. At the same time, the construction is such that the wave motion created by the swimmer will not produce sufficient force to unintentionally actuate the touch pad before the swimmer reaches it. Obviously, actuation by anything other than the swimmer's body during a race cannot be tolerated. Particularly with some swimming styles, quite a substantial water wave motion is created in the pool. The touch pad must be such as to not be actuated by any such water forces.

Additional objects and advantages will be apparent from the following description of the invention.

The invention relates to a touch pad for timing devices used in swimming pools.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an embodiment of the invention in place in a swimming pool;

FIG. 2 is a transverse section of the embodiment of FIG. 1;

FIG. 3 is an enlarged partial rear view of the embodiment of FIG. 1;

FIG. 4 is a section taken horizontally showing the electrical switch and actuation structure therefor;

FIG. 5 is a partial view as seen at line 5–5 of FIG. 4;

FIGS. 6 and 7 are components of the switch actuation structure;

FIG. 8 is a schematic diagram showing the manner in which the electrical switches are connected to the timing apparatus;

FIG. 9 is a perspective view of an alternative embodiment; and

FIG. 10 is a vertical section through the embodiment of FIG. 9 showing the structure thereof.

DESCRIPTION OF SPECIFIC EMBODIMENTS

The following disclosure is offered for public dissemination in return for the grant of a patent. Although it is detailed to ensure adequacy and aid understanding, this is not intended to prejudice that purpose of a patent which is to cover each new inventive concept therein no matter how others may later disguise it by variations in form or additions or further improvements. The claims at the end hereof are intended as the chief aid toward this purpose, as it is these that meet the requirement of pointing out the parts, improvements, or combinations in which the inventive concepts are found.

Referring to FIGS. 1—7, the illustrated embodiment comprises a frame, generally 11, which includes end posts 12 and 13 connected by two horizontal members 14 and 15. The frame also includes a plurality of brackets 16 (FIG. 2) which hook into the gutter 17 of the pool so that the frame is supported in immediate juxtaposition to the pool wall 18.

The lower horizontal bar 14 provides a carrying means for a plurality of individual panels 21. Each of the panels has a toe 22 which projects loosely into a slot in carrying member 14 to provide what may be termed a hinge mounting for the panel. Each panel has an actuator device, generally 23, for producing a signal as the individual panel 21 is moved toward the side 18 of the pool. These actuator devices are housed in horizontal member 15, which forms a carrying means therefor.

As best seen in FIG. 4, the actuator device includes an electrical switch 24 enclosed in a housing 25. The neck 26 of the housing is threaded into a support bracket 27, riveted into the inside of horizontal member 15. At the point of mounting, the horizontal member 15 has an opening closed by a removable cover plate 28 to provide access to the switch terminals. The switch has an actuator button 29. It is so designed that some overtravel of the actuator is permitted after the switch contacts have been closed.

A cylinder 32 is mounted for axial movement in a bracket 30, secured to horizontal member 15. Cylinder 32 has a circumferential slot 34 by means of which the cylinder is engaged by a bracket 35 secured to panel 21. Bracket 35 has a large opening 36 (FIG. 6) joined by a smaller opening 37. Opening 36 is of a size to receive the full diameter of cylinder 32, while opening 37 is of a size to receive only the diameter of cylinder 32 at slot 34. Thus, the cylinder 32 may be slipped into opening 36 and when the bracket is aligned with slot 34, the cylinder may be moved sidewise so that the bracket 35 engages the slot 34.

An adjustable actuator pin 39 is threaded into the interior of cylinder 32 so that it may be moved longitudinally of the cylinder. Pin 39 has a nose 40 in juxtaposition to actuator button 29. A spring 41 encircles cylinder 32 and abuts against brackets 27 and 35. This spring thus urges the panel 21 away from the side of the pool.

As illustrated schematically in FIG. 8, the various switches 24 are all connected in parallel to a timing apparatus, generally 43. In series with all of the switches is a manually operable switch 44. The exact form of the timing apparatus 43 does not form a part of the present invention. It could, for example, be of a type such as that illustrated and described in connection with U.S. Pat. No. 3,230,325, provided adequate

provision were made so that the water in the swimming pool could not become charged with electricity if the wires connecting switches 24 were in contact with the water.

It is important to note that the touch pad apparatus, illustrated and described, is used only in conjunction with a single lane of a swimming pool, i.e., the lane being that area occupied by only one swimmer at a time. Similar touch pads will be used in conjunction with the remaining lanes, all being connected to a common timing apparatus in the usual instance. A starting block 45 is aligned with the center of the lane. Normally, several of the panels 21 positioned at the center of the lane also would have a contrasting color so as to aid a swimmer in keeping track of the center of his lane.

Assuming that a race is to cover a number of lengths of the pool, the apparatus is used by the swimmer as a bearing area against which to make his turns. Thus, the apparatus is in place during all of the race and any force applied thereto is resisted by the apparatus bearing against the wall 18 of the pool. For this purpose the panels 21 are provided with a nonskid or nonslippery surface so that the swimmer has no difficulty in making his turns. Each time a swimmer makes a turn he will, of course, depress one or two of the panels within their limited range of movement, but this has no effect on the timing apparatus 43 since the switch 44 is maintained open until after the final lap has started. After the final lap has started, switch 44 is closed so that now the closing of any one of switches 24*a* through 24*p* will actuate the timing apparatus.

The panels 21 are relatively narrow as measured across the width of the swimming lane, and a plurality of them are used, set a spaced distance apart. Each panel requires a predetermined amount of force to be applied thereto before the switch 24 associated therewith will be closed. In an actual embodiment this pressure was about 1½ pounds. However, because of the use of a plurality of panels and the provision of spaces therebetween, the water splashing about in the pool will not become sufficient to actuate the switch of any one panel.

Another feature is that the panels extend a substantial distance above the water level 46. The tops of the panels are protected by rubber pads 47. Thus, for example, a swimmer coming in to the finish line swimming the backstroke, will be looking the other direction. He will be flailing his arms over his head, and one of his arms may reach the finish line while it is well in the air. In that event, with the disclosed embodiment, the arm would strike an upper portion of one of the panels 21 causing the panel to move and actuate its associated switch 24. Thus, the swimmer's arm would not have to descent to approximately the water level before it could contact the touch pad and signal the fact that he had reached the finish line.

FIGS. 9 and 10 illustrate an embodiment in which the panels extend only above the waterline. Thus, the area below the waterline would be free for the swimmer to make his turns in the usual manner. In this embodiment there are a pair of end posts 50 between which are three crossmembers 51, 52 and 53. Crossmember 52 corresponds to the structure illustrated and described in connection with horizontal member 15, and includes a plurality of actuator devices 23, as previously described. At the upper and lower end of each panel are brackets 55 which carry pivot pins 56. Pins 56 extend through slots 57 in supports 58 attached to horizontal members 51 and 53 respectively. Springs 59 encircle pins 60 on the panel 61. The other end of the springs 59 are received in sockets 62 in horizontal members 51 and 53.

Thus, springs 59 urge the panels 61 away from the frame to an extent permitted by the movement of pins 56 in slots 57. The panel 61 may be pushed in at the top, middle or bottom or any place in between. For example, when it is pushed in at the bottom, it pivots on the pin 56 at the top of the panel. Any of these movements will result in an operation of the actuator 23.

At the bottom of the frame a U-shaped bracket 65 clips over the rim of the gutter 17. The frame also includes a rearwardly extending leg 66 to support the upper end of the apparatus.

I claim:

1. An apparatus for use in connection with one lane of a multilane swimming pool, having sides, for indicating the instant at which a swimmer reaches an end of said one lane, said apparatus including:

a frame having carrying means extending approximately the width of said lane, said frame including support means for mounting the frame on a side of the pool adjacent said end;

a plurality of touch pads positioned side by side across approximately the width of said lane at said end with spaces between adjacent pads, at least a portion of each pad extending upwardly from the waterline and being approximately vertical, each pad being mounted on said carrying means for limited horizontal movement and being biased to a normal position away from said side of the pool; and

a separate actuator device for each of said pads respectively, each device being mounted on said carrying means adjacent its respective pad for operation of the device as the respective pad is displaced from said normal position.

2. An apparatus as set forth in claim 1, wherein said carrying means comprises two horizontal members spaced vertically from each other, said parts being movably supported on one of said members, said devices being mounted on the other of said members.

3. An apparatus as set forth in claim 2, wherein said frame has two vertical sides extending down into the water, said one of said members connecting said frame sides adjacent the bottom of the pool, the other member connecting said frame sides above the water, said supporting means comprising hooks attached to said other member, extending over the pool edge and into the pool gutter.

4. An apparatus as set forth in claim 3, wherein said devices each include an electric switch, said switches being connected in parallel.

5. An apparatus as set forth in claim 2, wherein the sides of said pads facing the pool have a nonslip surface coating thereon.