Aug. 1, 1967 W. F. ELDER 3,333,621

ENCLOSURE FOR SWIMMING POOL

Filed Nov. 5, 1965 7 Sheets-Sheet 1

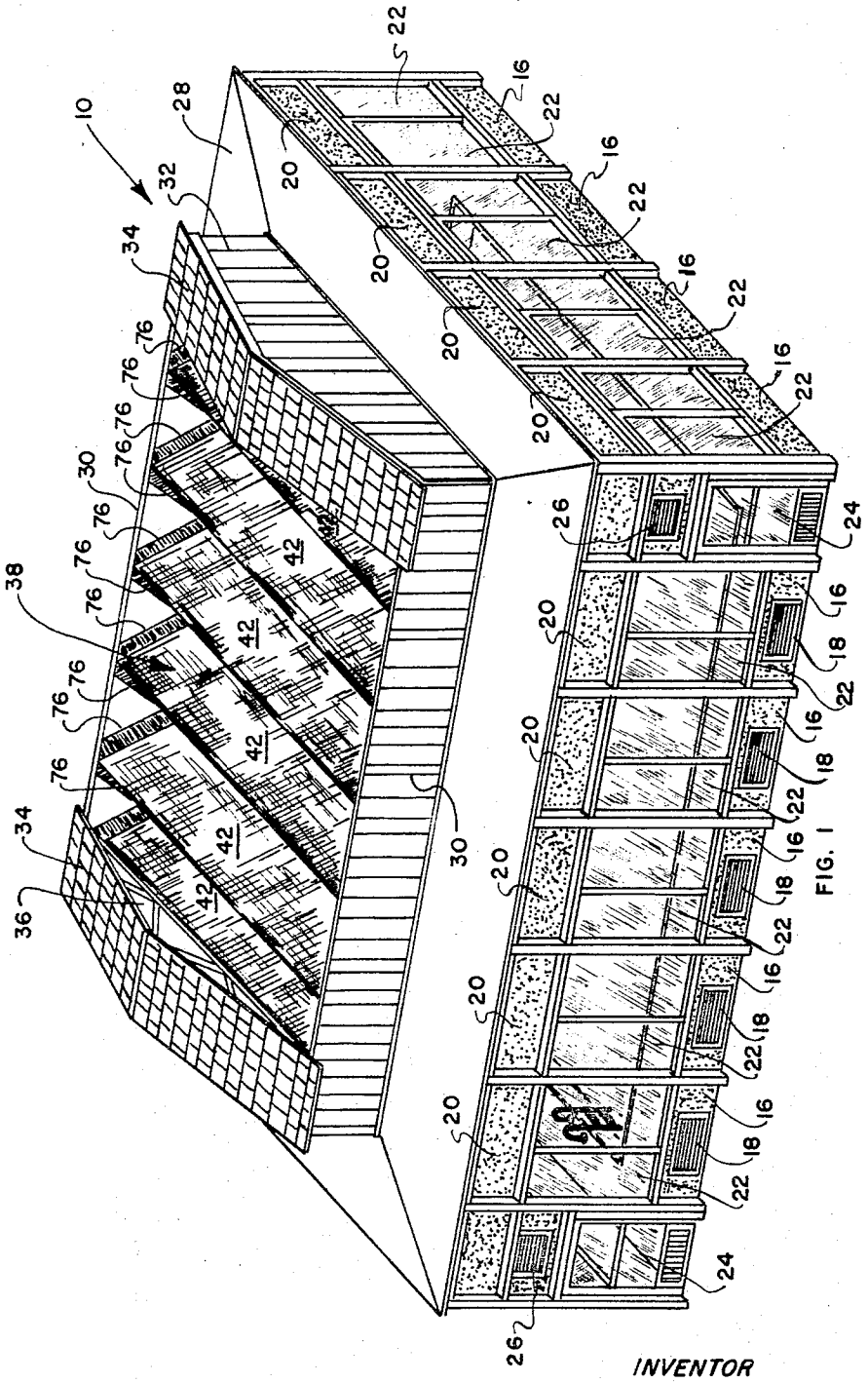

FIG. 1

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ENCLOSURE FOR SWIMMING POOL

Filed Nov. 5, 1965 7 Sheets-Sheet 2

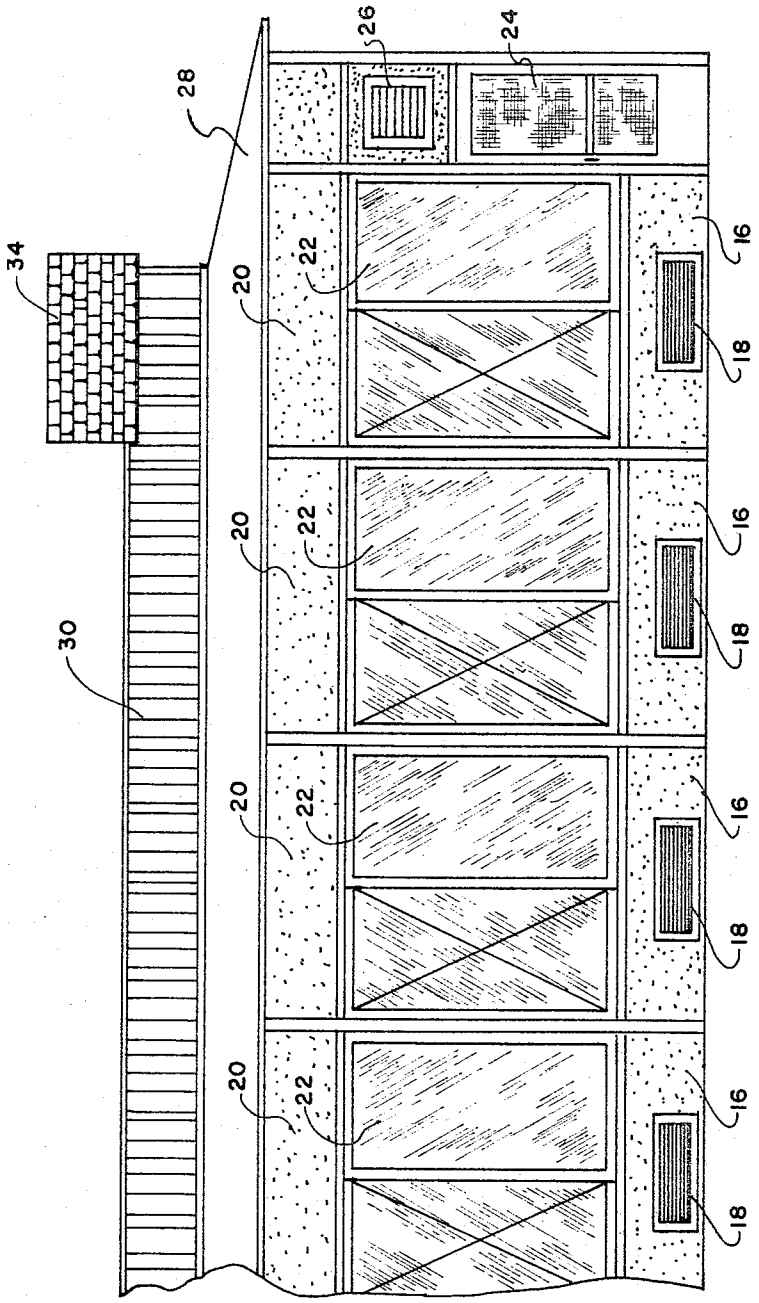

FIG. 2

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ENCLOSURE FOR SWIMMING POOL

Filed Nov. 5, 1965 7 Sheets-Sheet 3

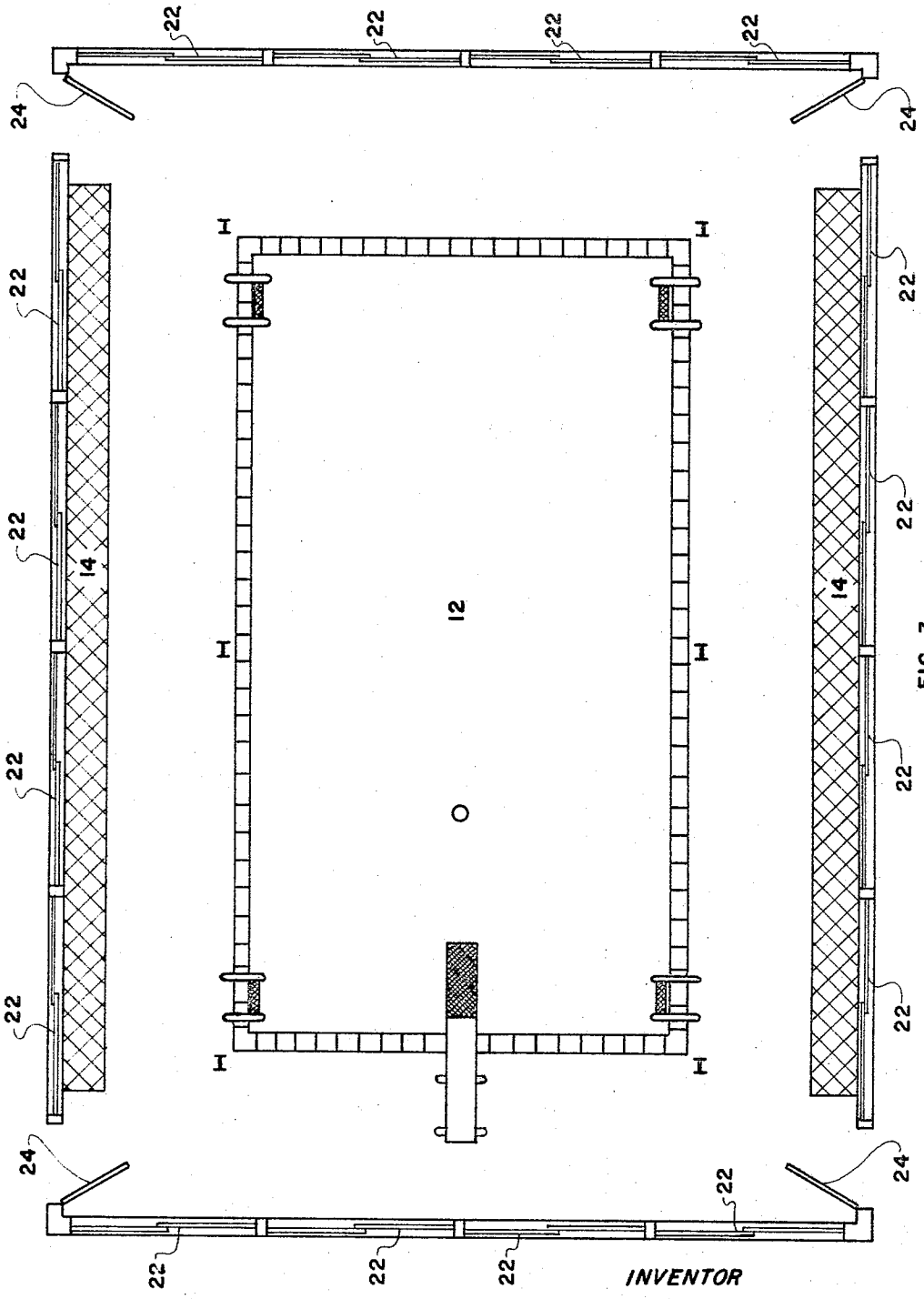

FIG. 3

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ENCLOSURE FOR SWIMMING POOL

Filed Nov. 5, 1965 7 Sheets-Sheet 4

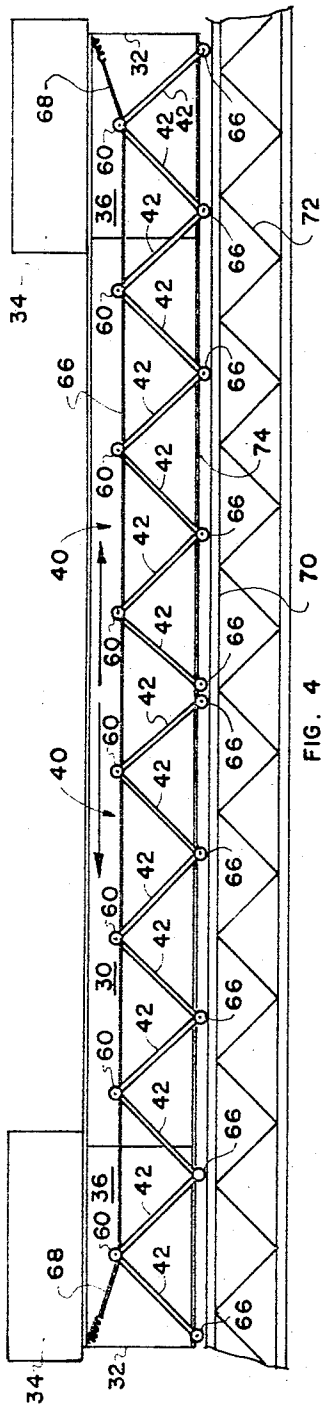

FIG. 4

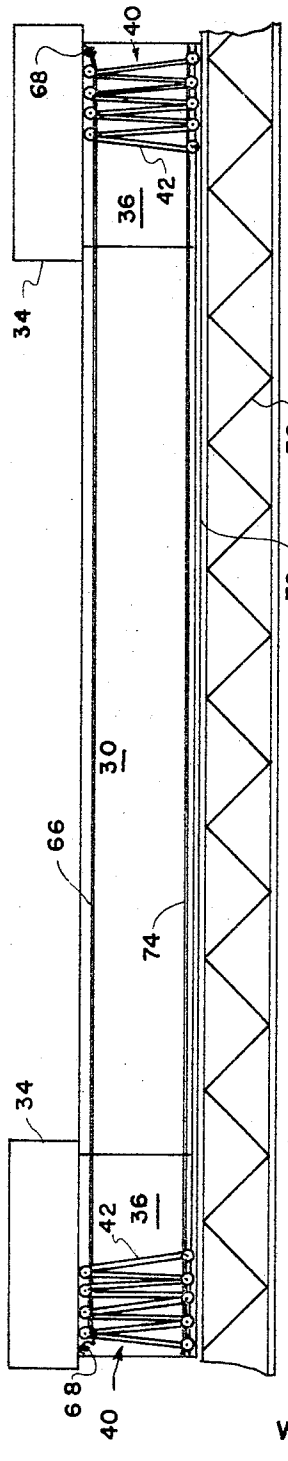

FIG. 5

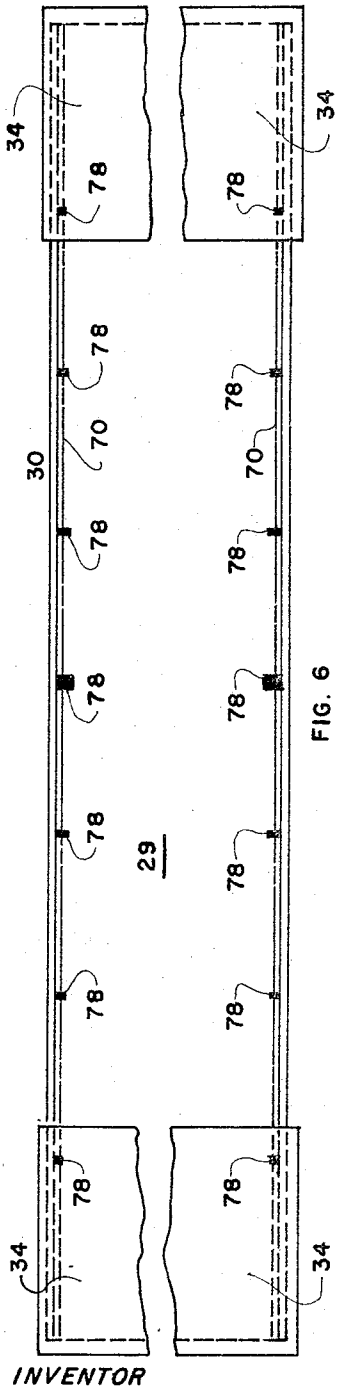

FIG. 6

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Aug. 1, 1967 W. F. ELDER 3,333,621

ENCLOSURE FOR SWIMMING POOL

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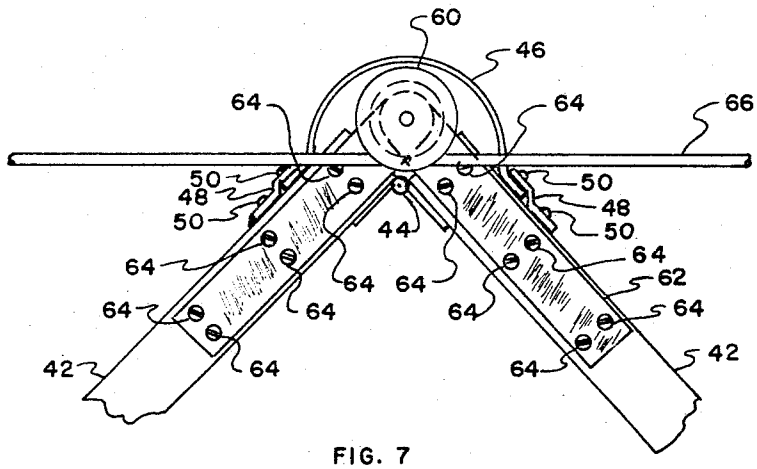

FIG. 7

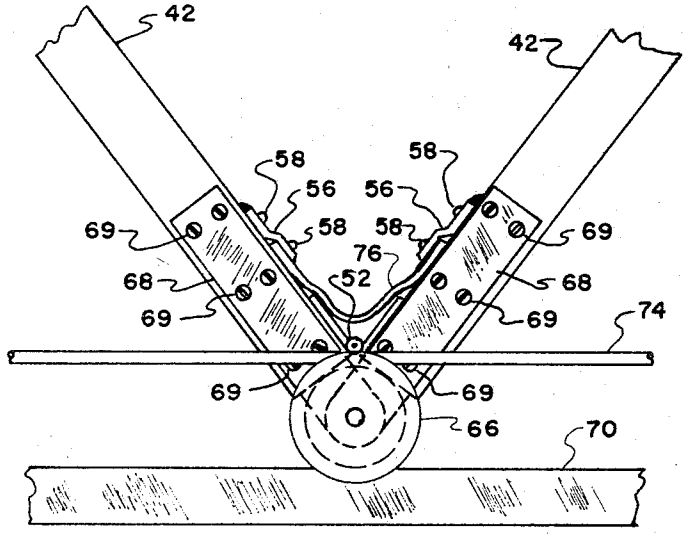

FIG. 8

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ENCLOSURE FOR SWIMMING POOL

Filed Nov. 5, 1965 7 Sheets-Sheet 6

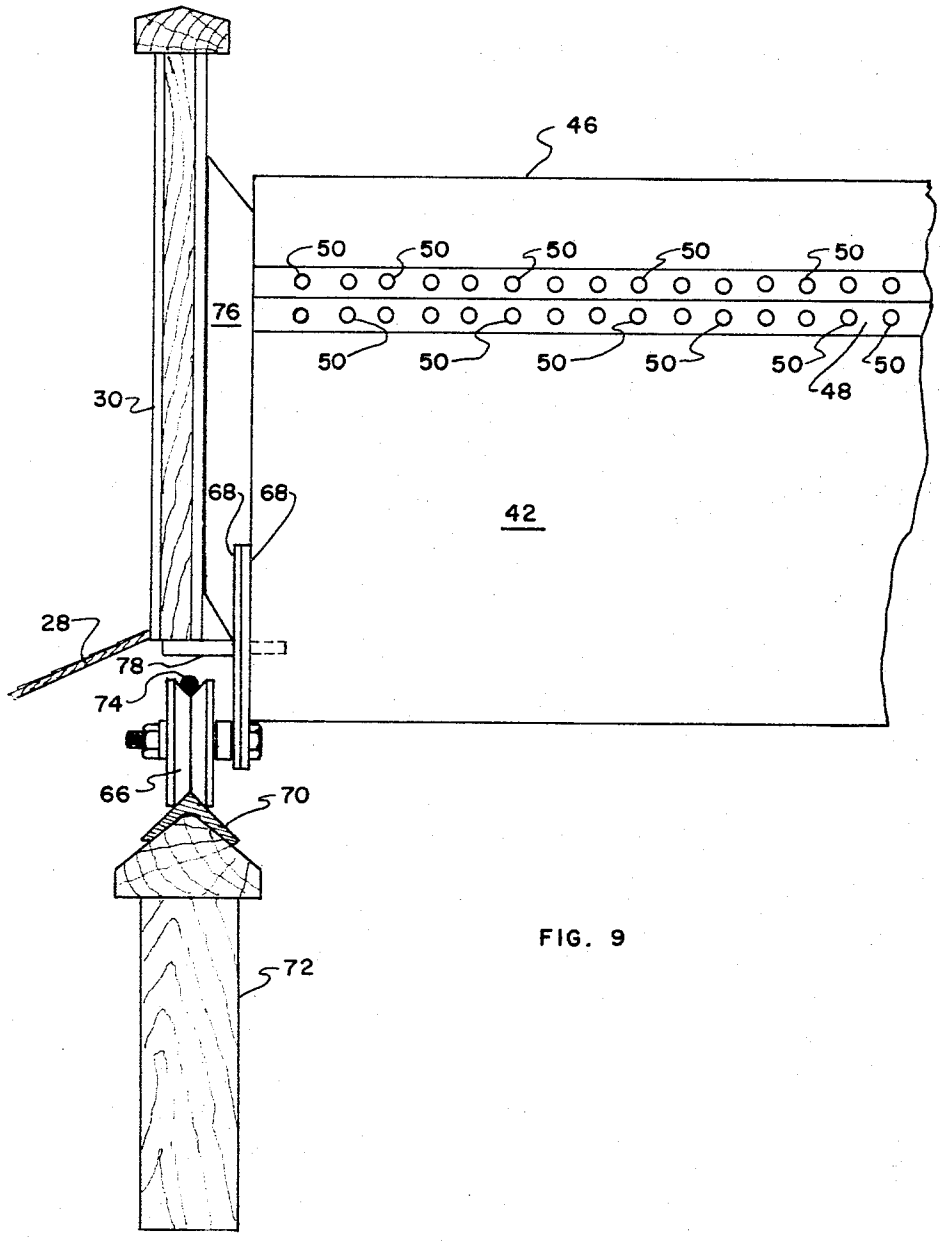

FIG. 9

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ENCLOSURE FOR SWIMMING POOL

Filed Nov. 5, 1965 7 Sheets-Sheet 7

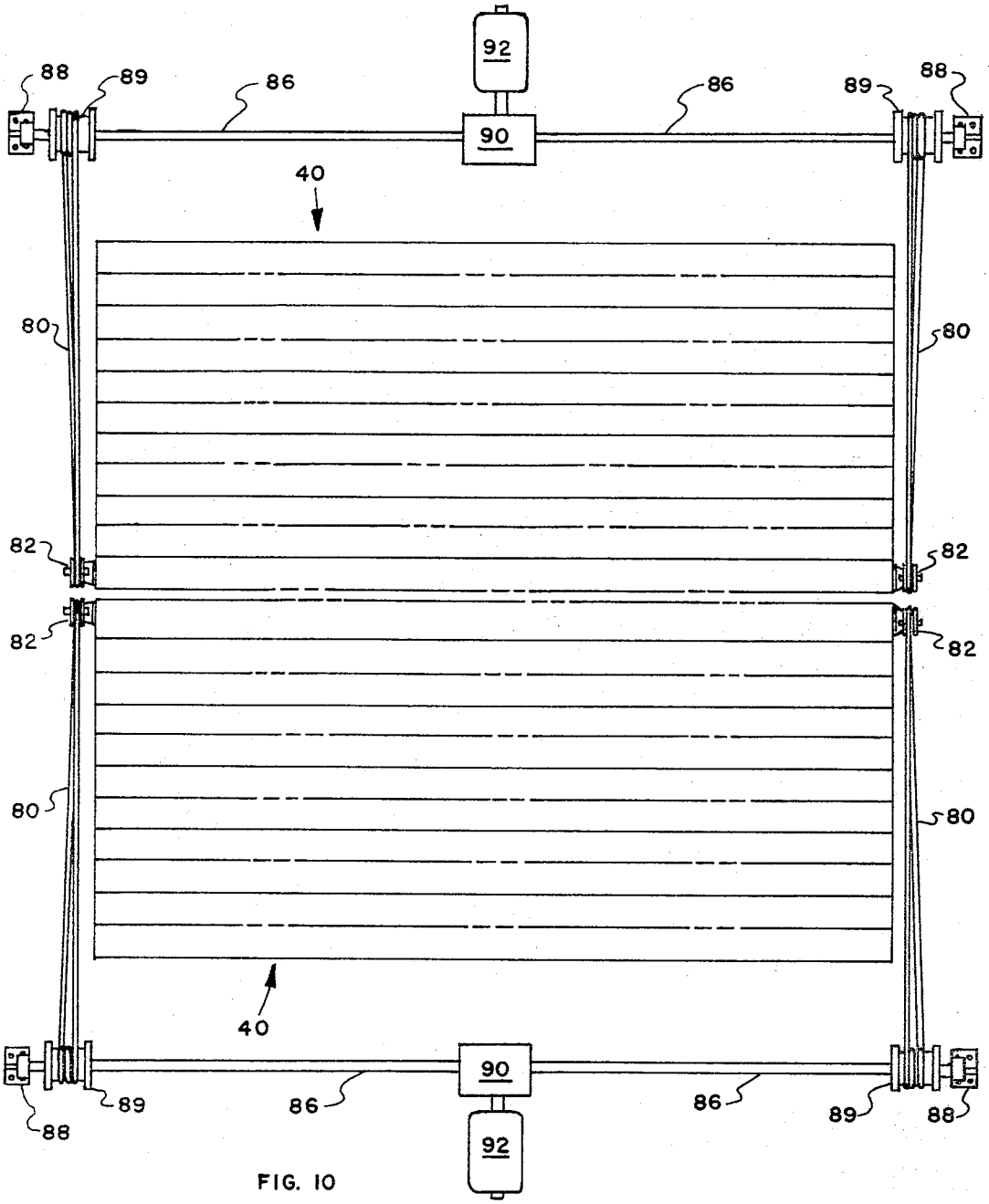

FIG. 10

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United States Patent Office 3,333,621 Patented Aug. 1, 1967

3,333,621

ENCLOSURE FOR SWIMMING POOL

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Filed Nov. 5, 1965, Ser. No. 506,509
2 Claims. (Cl. 160—206)

The present invention relates to swimming pool enclosures and more particularly to an improved retractable and extendable cover for a swimming pool.

An object of the invention is to provide improved means for enclosing a swimimng pool.

Another object is to provide improved retractable means for covering a swimimng pool.

Another object of the invention is to provide in a retractable swimming pool cover of the hinged panel type means for maintaining said cover in an accordion arrangement.

A further object of the invention is to provide means for positioning the lower hinged joints of the sections of a folding, accordion type, hinged panel cover at equally spaced stations when said roof is extended.

Still a further object of the invention is to provide means for supporting the upper hinged joints of the sections of a folding accordion type, hinged panel cover.

Broadly, the invention includes a building surrounding a swimmng pool and having a rectangular aperture in the roof directly over and substantially the same size as the pool. A retractable cover of the hinged panel type is provided for the aperture and consists of two opposing hinged arrays of panels adapted to be respectively extended longitudinally from each end of the aperture to meet at the transverse centerline of the aperture to cover the pool, and to be partially or completely withdrawn toward the respective ends of the aperture to expose the pool to the sun and other elements when desired. Each of the two arrays includes a plurality of transverse waterproof panels, each hingeably joined to each adjacent panel in accordion arrangement, providing alternate ridges and valleys, and disposed to expand when extended and to contract compactly when retracted. Novel means are provided for positioning each inverted, V-shaped section of the arrays at its respective station when the arrays are extended, to provide additional strength and support for loads of rain, snow, and ice deposited thereon while the pool is covered.

The above and other objects of the invention which will later become apparent as the following description proceeds, are obtained by the present invention, a preferred embodiment of which has been illustrated, by way of example only, in the accompanying drawings, forming a part of the specification in which like characters are employed to designate like parts throughout the same, and wherein:

FIGURE 1 is a perspective view of a swimming pool enclosure embodying my invention.

FIGURE 2 is a side elevation of a portion of a swimming pool enclosure embodying my invention.

FIGURE 3 is a plan view of a swimming pool enclosure with the roof removed.

FIGURE 4 is a side elevation of the hinged panel cover of my invention when completely extended.

FIGURE 5 is a side elevation of the hinged panel cover of my invention when completely retracted.

FIGURE 6 is a plan view of the roof aperture, supporting structure for the hinged panel cover, and means for positioning the lower hinged portion of the cover sections at regular stations when extended.

FIGURE 7 is a side elevation of the upper hinged join of a section of the hinged panel cover of my invention

FIGURE 8 is a side elevation of the lower hinged join of a section of the hinged panel cover of my invention.

FIGURE 9 is an end view of a portion of a section o the hinged panel cover of my invention.

FIGURE 10 is a plan view of the hinged panel cover o my invention in extended position and showing means for retracting and extending same.

Referring now more particularly to the drawings, I provide a rectangular building generally indicated at **10** and surrounding a conventional swimming pool **12** and colored, plastic covered benches **14**. The sides of building **10** include a lower tier of panels **16**, preferably formed of colored Masonite or asbestos, with adjustable aluminum louvres **18** therein, an upper tier of similar panels **20**, and combination aluminum screens and sliding glass windows **22**, preferably of the Thermopane type, or conventional folding doors, powered or manually operated, supported therebetween. A plurality of aluminum and glass doors **34** provide entrance to the building, and an adjustable, aluminm, louvred port **26** for an exhaust fan is mounted above each door.

The roof structure of building **10** includes an inclined, overhanging apron portion **28** surrounding a rectangular aperture **29** directly over substantially the same width, and slightly longer than pool **12**. A pair of upstanding sidewalls **30, 30** and a pair of gable end walls **32, 32** preferably formed of colored Masonite hardboard, surround aperture **29** and support a pair of relatively narrow shingled roofs **34, 34** which respectively cover a pair of enclosures **36, 36** which extend over the ends of aperture **29** and provide storage of the hinged panel cover assembly of my invention as more particularly hereinafter described.

I provide in my invention a novel hinged panel cover generally indicated at **38** which consists of two identical arrays **40, 40** arranged to be extended from enclosures **36, 36**, respectively, to meet at the transverse centerline of aperture **29** to cover the pool, and to be partially or completely withdrawn toward the ends of the aperture to uncover the pool when desired. Each array includes a plurality of identical, elongated, waterproof, transverse cover panels **42**, preferably formed of fiberglass or similar weatherproof material which permits the passage of sunlight therethrough, and arranged in accordion fashion, providing alternate ridges and valleys. A transverse piano hinge **44** hingeably joins the upper ends of each contiguous pair of panels **42, 42** which form what is hereinafter termed a section. A transverse rubber boot **46** extends the entire length of the upper joint formed by hinge **44** and is fastened to the contiguous panels **42, 42** by a clip **48**, screws **50**, and waterproof cement (not shown) or the like. A similar transverse piano hinge **52**, hingeably joins the lower ends of each contiguous pair of cover panels **42, 42** and the lower joint thereby formed is protected by a similar rubber boot **54** which is fastened to the panels by similar clips **56** and screws **58** in a similar manner.

A pair of rotatable grooved wheels **60** are mounted coaxially with the hinge axis of upper hinge **44** and upon two pivotally joined hinge plates **62, 62** fastened by screws **64** or the like to each end of panels **42, 42**, respectively. Each wheel **60** is engaged by and supported upon a longitudinal cable **66** connected at its ends to a pair of tension springs **68, 68** which are anchored to end walls **32, 32**.

Another pair of rotatable grooved wheels **66** are mounted coaxially with the hinge axis of lower hinge **52** upon two similar pivotally joined hinge plates **68, 68**, fastened

by screws **69** or the like to each end of roof panels **42, 42,** and are arranged to engage and ride respectively upon a pair of inverted, V-shaped tracks **70** supported upon a pair of longitudinal girders **72** which extend the length of aperture **29** and below sidewall **30**, as best shown in FIGURE 9. A second cable **74** extends longitudinally above each track **70**, is anchored to end walls **32, 32,** and engages the upper portion of wheels **66** to retain the wheels in contact with the track and to hold down the cover in the event of windstorm. A rubber end boot **76** is fastened to each end of each panel **42** to slidingly seal the space between the panel and the proximate sidewall **30** against the elements.

Another novel feature of my invention resides in the provision of a plurality of stop members **78** to position each inverted, V-shaped section of the cover assembly at its respective station when the cover assembly is extended. Stop members **78** are formed of metal plates fastened securely to side wall **30** and extend inward to engage panels **42**. Stops **78** are graduated in length, from a maximum length near the transverse centerline of the pool to a shorter length near the ends of aperture **29**, and panels **42** are formed to have complementary differential lengths so that the lead panel of each pair of panels forming an inverted, V-shaped section will contact only that stop **78** which halts its forward movement at the proper position when the cover is extended. Thus the forwardmost panel **42** of each of the two opposing arrays **40, 40** of panels will contact only that stop **47** which lies near the transverse centerline of the enclosure and extends furthest from sidewall **30**, and will clear all intermediate stops; the lead panel of the next panel section will contact and its forward motion be halted by the next stop in the roof **34**, will engage only one of the next pair endward series of stops, and so on, so that each section of panels will be halted and maintained at the same, single position each time cover **38** is extended. When the two arrays **40, 40** of panels are withdrawn toward enclosures **36**, respectively, each stop **78** permits all panels **42** forwardly of it to clear it during their rearward movement.

As best shown in FIGURE 10, the opposite arrays **40, 40** of the cover **38** are caused to be extended and retracted by cables **80** and pulleys **82**, arranged in conventional manner to cause both arrays of panels **42** simultaneously to traverse aperture **29** longitudinally in mutually opposite directions, and coiling drums **84** arranged to be rotated by shaft **86** journaled at their extreme ends upon journals **88** and supported at their other ends by speed reducers and gear boxes **90** which, in turn, are powered by a pair of synchronized reversible electric motors **92**. Conventional electrical power and control means, including electrical switches and limit switches (not shown), are provided to enable the operator to extend and retract the roof assembly.

In operation, when the cover **38** is in an open position, if the operator wishes to extend and close the cover he actuates electrical motor **92** in one direction thereby causing arrays **40, 40** to be drawn toward the transverse centerline of aperture **29**, and covering the aperture, as best shown in FIGURE 4. Each stop **78** then contacts the lead panel **42** of each panel section at the proper position and maintains it against further forward movement. The swimming pool is then completely covered and enclosed when it is desired to retract and open cover **38**, the operator actuates motor **92** in the opposite direction, thereby causing arrays **40, 40** to be drawn toward and folded compactly into enclosures **36** and opening aperture **29**, as best shown in FIGURE 4. The swimming pool is then uncovered and exposed to the sunlight and other elements from above.

It will be particularly noted that each hinged section is supported in inverted, V-shaped configuration by stop plates **78** and cables **80**, thereby providing strength to support loads of rain, snow and ice when the pool is covered while permitting panels **42** to be formed of material of light weight and hence to be easily traversed. It will also be noted that spring-loaded cable **66** yieldingly urges each panel **42** toward an upright position, thus preventing collapse of the sections during traverse or storage.

The improved enclosure of my invention surrounds and protects the pool against the elements and the entrance of dirt, rodents, and other foreign matter, thus reducing the cost of filtering, cleaning and vacuuming the pool. Further, it prevents entry of unauthorized persons except through the locked door, and accidentatl drownings of such persons are eliminated. Still further, heat loss from the pool by dissipation during winter or the cool hours of night is reduced by reason of the complete enclosure of the pool. In the case of a heated pool, and with thermostatic control, the expense of maintaining the water at the desired temperature is thus reduced.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the same and that resort may be had to various changes in construction without departing from the scope of the subjoined claims.

What is claimed is:

1. An extendable and retractable cover for a swimming pool comprising,

a plurality of transverse panels each hingeably connected to the adjacent panel to form an array disposed in accordion fold arrangement with alternate ridges and valleys;

a plurality of grooved lower wheels rotatably mounted upon said panels and arranged to support said array upon a pair of longitudinal tracks above said pool;

a pair of cables engaging the top of the grooves of said lower wheels to retain same upon said tracks;

a plurality of grooved upper wheels rotatably mounted upon said panels above said lower wheels;

a spring-loaded cable engaging the bottom of the grooves of said upper wheels and disposed to yieldingly urge said panels toward an upright position;

and means for drawing said panels in one direction to extend said array and to cover said pool, and for withdrawing said panels in an opposite direction to retract said array and to uncover said pool.

2. An extendable and retractable cover for a swimming pool comprising,

a plurality of transverse panels each hingeably connected to the adjacent panel to form an array disposed in accordian fold arrangement with alternate ridges and valleys;

a plurality of grooved lower wheels rotatably mounted upon said panels and arranged to support said array upon a pair of longitudinal tracks above said pool;

a pair of cables engaging the top of the grooves of said lower wheels to retain same upon said tracks;

a plurality of grooved upper wheels rotatably mounted upon said panels above said lower wheels;

a spring-loaded cable engaging the bottom of the grooves of said upper grooved wheels and disposed to yieldingly urge said panels toward an upright position;

means for drawing said panels in one direction to extend said array and to cover said pool, and for withdrawing said panels in an opposite direction to retract said array and to uncover said pool;

a plurality of stop plates arranged at equal intervals longitudinally of said cover and supported in horizontal position transverse to and above said tracks, said stop plates respectively extending across the nearest said track distances graduated in length from the foremost of said panels to the rearmost, the foremost extending the greatest distance;

and said panels having transverse widths inversely corresponding with the distances of extension of said stop plates and arranged to cause engagement of each stop plate with but one panel and at the position of maximum extension of said array, to prevent exten-

sion of said array and to maintain said panels in said accordian fold arrangement when fully extended.

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