(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 July 2010 (15.07.2010)

PCT

(10) International Publication Number
WO 2010/080827 A1

(51) International Patent Classification:
B65H 75/00 (2006.01)

(21) International Application Number:
PCT/US2010/020250

(22) International Filing Date:
6 January 2010 (06.01.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/143,042 7 January 2009 (07.01.2009) US

(71) Applicant *(for all designated States except US)*: **DAYS CORPORATION** [US/US]; 55169 County Road 3, P.O. Box 668, Elkhart, IN 46515 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **SPROATT, James, N.** [US/US]; 1514 Greenleaf Boulevard, Elkhart, IN 46514 (US). **EICHHORN, Mark, M.** [US/US]; 51899 Miller Drive, Granger, IN 46530 (US).

(74) Agent: **CONARD, Richard, D.**; Barnes & Thornburg LLP, 11 South Meridian Street, Indianapolis, IN 46204 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

WO 2010/080827 A1

(54) Title: POWERED POOL BLANKET REEL ASSEMBLY

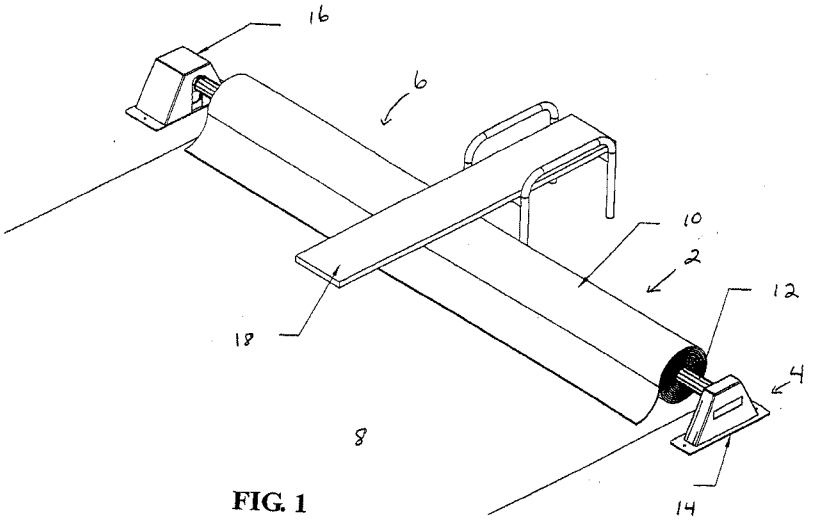

FIG. 1

(57) Abstract: A pool blanket reel assembly is provided that includes a motor base, an idler base, a roller bar, a motor bracket, a motor, an idler bracket, an idler hub, a power supply, a switch, a remote control, and a remote control timer.

POWERED POOL BLANKET REEL ASSEMBLY

RELATED APPLICATIONS

The present application is related to and claims priority to U.S. Provisional Patent Application, Serial No. 61/143042, filed on January 7, 2009, entitled "Adjustable Pool Cover Reel." The subject matter disclosed in that provisional application is hereby expressly incorporated into the present application.

TECHNICAL FIELD AND SUMMARY

The present disclosure is related to pool blanket cover reels. More particularly, the present disclosure is related to a powered pool blanket reel that, through user activation, covers or uncovers a swimming pool.

Pool blankets have become a popular accessory for swimming pools. A pool blanket is a large shroud made of materials, such as polyethylene or vinyl, that selectively covers the open top of the swimming pool. Typically the blanket is rolled up onto a spool or roller to uncover the swimming pool while in use. The blanket can then unroll and cover the pool while not in use. Pool blankets are beneficial because they reduce evaporation which reduces heat loss in the pool. In addition, such blankets may allow sunlight to penetrate to heat the surface of the water. These blankets also keep debris such as leaves and dirt out of the water, thereby reducing maintenance.

The pool blanket of the present disclosure illustratively includes a pool blanket that extends the width of the pool and is wound on a roller suspended from each side of the pool. To cover the pool, the blanket is unwound and floated on the water from one end to the other. To use the pool, the roller winds the blanket up exposing the water underneath. This is a contrast to automatic pool safety covers that are built into in-ground pools that provide a load-bearing cover over the pool.

A pool reel assembly of this disclosure illustratively includes a roller that is vertically adjustable between the pool and the diving board. This adjustability

allows the same pool reel to be used with different pools having a variety of widths and distances between the top of the pool and the bottom of the diving board. This configuration is useful even when the distance is unknown. The adjustability and height of the roller assure that the blanket will fit underneath the diving board.

Another illustrative embodiment of the present disclosure includes a safety control system built into the operation of the blanket reel assembly. The safety features encourage the operator to visually inspect the pool prior to operating the blanket reel.

Another illustrative embodiment of the present disclosure provides a pool blanket reel assembly that comprises a motor base, an idler base, a roller bar, a motor bracket, a motor, an idler bracket, an idler hub, a power supply, a switch, a remote control, and a remote control timer. The motor bracket extends from the motor base. The motor is adjustably mountable to the motor bracket. The motor bracket includes a slot with which the motor is selectively attachable adjacent the periphery of the slot. The idler bracket extends from the idler base. The idler hub is adjustably mountable to the idler bracket. The idler bracket includes a slot with which the idler hub is selectively attachable adjacent the periphery of the slot. One end of the roller bar is attachable to the motor and another end is attachable to the idler hub. The roller bar is suspendable between the motor and idler bases. The motor is configured to selectively rotate the roller bar in either clockwise or counterclockwise directions. The roller bar is configurable to attach to a pool blanket to roll and unroll the blanket. The roller bar also comprises a first bar portion and second bar portion such that each of the bar portions are connectable to make the roller bar's length selectively adjustable. The motor and idler are attachable to a plurality of positions along the length of the slots in both the motor and idler brackets so the roller bar can be adjusted to a plurality of heights above the motor and idler bases. The power supply is attached to the motor to rotate the motor in clockwise and counterclockwise directions. The switch has on and off positions and is in communication with the power supply to selectively permit or deny power to the

motor. The remote control illustratively includes retract and extend button. When the switch is in the on position, the switch is configured to activate a first timer which limits the available time a remote control can activate the motor to a first predetermined period of time. During periods when power is permitted to be supplied to the motor, the remote control is configured so that if both buttons on the remote control become depressed simultaneously, power can be supplied to the motor for a second predetermined period of time. Subsequently, depressing either the retract or extend button during this second predetermined period of time will activate the motor causing it to rotate in either clockwise or counterclockwise directions. The motor will not rotate without the sequence of the switch moved to the on position, followed by the depressing both buttons on the remote control and then pressing either one of the buttons on the remote control again. The remote control receiver includes a remote control timer that limits activation of the motor for a third predetermined period of time; and wherein the power to the motor is uninterrupted by the first or second predetermined periods of time.

Further embodiments may comprise the slot in the motor bracket and in the idler bracket each including a periphery having a plurality of holes located adjacent thereto on each side of the slots. The holes on each side of the slot of the motor bracket may be configured to position the motor at different locations on the motor bracket. The holes on each side of the slot of the idler bracket are configured to position the idler hub at different locations on the idler bracket. Fasteners can engage the holes to secure the motor on the motor bracket and the idler hub on the idler bracket.

Additional features and advantages of the powered pool blanket reel assembly will become apparent to those skilled in the art upon consideration of the following detailed descriptions exemplifying the best mode of carrying out the powered pool blanket reel assembly as presently perceived.

BRIEF DESCRIPTION OF DRAWINGS

The present disclosure will be described hereafter with reference to the attached drawings which are given as non-limiting examples only, in which:

Fig. 1 is a perspective view of a pool blanket reel assembly placed onto a pool deck with a diving board extending therefrom;

Fig. 2 is a perspective view of the pool blanket reel assembly of Fig. 1 with the blanket material removed;

Fig. 3 is a forward elevational view of a portion of the pool blanket reel as part of progression views shown in Figs. 3 through 6;

Fig. 4 is another forward elevational view of the portion of the pool blanket reel of Fig. 3 from the progression views of Figs. 3 through 6 showing the reel able to be further elevated above the water;

Fig. 5 is another forward elevational view of the portion of the pool blanket shown in Fig. 3 as part of the progression views of Figs. 3 through 6, further showing the pool blanket even more elevated;

Fig. 6 is another forward elevational view of the portion of the pool blanket reel shown in Fig. 4 as part of the progression views of Figs. 3 through 6, this view showing the pool blanket elevated even further than the prior views;

Figs. 7a and b are top and elevational views of the pool blanket reel assembly, respectively;

Fig. 8 is an exploded view of the pool blanket reel assembly;

Fig. 9 is a detailed exploded view of the drive assembly portion of the pool blanket reel assembly;

Figs. 10a and b are perspective and side views of the drive assembly;

Figs. 11a and b are additional perspective and side views of the drive assembly showing the motor located in a different position from that shown in Fig. 10;

Figs. 12a and b show another perspective and side view of the drive assembly with the motor positioned in still a different position from that shown in Figs. 11 and 10;

Figs. 13a and b are perspective and side views of the drive assembly showing the motor in yet a different position than that shown in Figs. 10 through 12;

Fig. 14 is an exploded view of the gear motor and associated components of the pool blanket reel assembly;

Fig. 15 is an electrical schematic of an illustrative control system for operating the pool blanket reel assembly;

Fig. 16 is another electric schematic showing an illustrative control system for operating the pool blanket reel assembly;

Fig. 17 is a perspective view of a power supply assembly;

Fig. 18 is a perspective exploded view of the power supply assembly of Fig. 17;

Fig. 19 is an electrical schematic of the power supply assembly of Fig. 17 and 18;

Fig. 20 is a chart demonstrating the operational flow of the reel assembly;

Fig. 21 shows a key switch assembly moveable between "off," "key," and "on" positions;

Fig. 22 is an illustrative embodiment of a remote control; and

Fig. 23 is a perspective view of the idler portion of the reel assembly and in particular the manual override feature.

Corresponding reference characters indicate corresponding parts throughout the several views. The exemplification set out herein illustrates embodiments of the powered pool blanket reel assembly, and such exemplification is not to be construed as limiting the scope of the powered pool blanket reel assembly in any manner.

DISCLOSURE OF ILLUSTRATIVE EMBODIMENTS

The present disclosure will be described hereafter with reference to the attached drawings which are given as non-limiting examples.

A perspective view of pool blanket reel assembly 2 placed onto a pool deck 4 illustratively at the diving board end 6 of pool 8, is shown in Fig. 1. As illustratively depicted, pool blanket assembly 2 includes a pool blanket 10 shown here in the stored rolled position on roller 12. Idler assembly 14 and drive assembly 16 are placed onto pool deck 4 suspending roller 12 above the water in pool 8 and below diving board 18. As illustratively shown, the rolled pool blanket 10 is tucked between the diving board and the water which is illustratively considered to be an out-of-the-way place for the wound pool blanket to be stored.

A perspective view of pool blanket assembly 2 is shown in Fig. 2. This view shows idler and drive assemblies 14 and 16, respectively, suspending roller 12 therebetween. This view also shows roller tube 20 attaching roller portions 22 and 24 together. In this illustrative embodiment, roller 12 is a multi-piece unit, so roller portions of varying lengths can be attached to pool blanket assembly 2 to accommodate covers of varying widths. Roller tube 20 is affixed to roller portions 22 and 24 via pins 26 and 28. As shown in this view, idler assembly 14 includes a housing 30 having a slot 32 allowing roller 12 to be adjusted vertically in directions

34 and 36. Housing 38 of drive assembly 16 includes a slot (not shown) disposed in housing 38 similar to slot 32 of housing 30.

Progression elevation views of a portion of pool blanket assembly 2 installed on pool 8 are shown in Figs. 3-6. These views show how the same pool blanket 10 can be used in a variety of pool configurations having different diving board heights. The view shown in Fig. 3, for example, shows diving board 18 in a relatively low position indicated by reference numeral 40. This requires roller 12 to suspend pool blanket 10 in a relatively close proximity to pool 8. Drive assembly 16 that is placed onto pool deck 4 positions roller 12 at a relatively low position as indicated by reference numeral 42.

As shown in Fig. 4, when diving board 18 is positioned at a higher location 44 relative to the distance indicated by reference numeral 40 of Fig. 3, ultimately pool blanket 10 on roller 12 may be positioned higher relative to the distance indicated by reference numeral 42, also of Fig. 3. In other words, the same pool blanket assembly 2 can be adjusted to a different height relative to the pool. In this example the position shown in Fig. 4 is higher with respect to pool deck 4 and that shown in Fig. 3.

As similarly shown in Fig. 5, the relative distance of diving board 18, as indicated by reference numeral 48, is a greater distance from pool deck 4 than the distance indicated by reference numeral 44 in Fig. 4. This allows distance 50 to be greater than that indicated by reference numeral 46 in Fig. 4, as well. As a consequence, roller 12 can be positioned farther above pool 8.

The elevation view shown in Fig. 6, similar to Figs. 3-5, again shows how when diving board 18 is located a greater distance 52 above pool deck 4 than that shown by reference numeral 48 in Fig. 5, roller 12 similarly sits at a greater height, as indicated by reference numeral 54, than the height indicated by reference numeral 50 in Fig. 5.

As demonstrated by these figures, the height of roller 12 with pool blanket 10 can be adjusted as needed. This flexibility in pool blanket assembly 2 allows it to accommodate the variety of pool and diving board configurations.

Top and elevation views of pool blanket assembly 2 are shown in Figs. 7a and b. For illustrative purposes, pool blanket 10 is removed. The top view in Fig. 7a shows idler assembly 14 and drive assembly 16 with roller 12 spanning therebetween. In this illustrative embodiment, idler assembly 14 includes a base 60 that supports housing 30 for receiving one end of roller 12. Similarly, drive assembly 16 includes a base 62 that is placed onto the pool deck and supports the drive assembly for receiving the other end 66 of roller 12. As shown in the elevation view of Fig. 7b, the distance indicated by reference numeral 68 is dependent on the width of the pool, and roller tube 20 and roller portions 22 and 24 can be dimensioned accordingly. Also the height indicated by reference numeral 70 is aligned with roller 12 which is adjustable in directions 34 and 36.

An exploded view of pool blanket assembly 2 is shown in Fig. 8. This view shows idler assembly 14 including a bracket 76 extending upwardly therefrom. A longitudinally-extending opening or slot 78 is disposed through the bracket 76. In this illustrative embodiment, end 65 of roller portion 22 extends onto idler hub 80 which itself engages mount 82. Illustratively, bushings 84 can be disposed about collar 86 extending from idler hub 80 to assist in better rotation of roller 12. The position within slot 78 that mounts 82 is fastened to determine the height of roller 12. Housing 30 includes slot 32, as previously discussed, to accommodate the vertical positioning of roller 12.

Drive assembly 16 includes base 62 with its own bracket assembly 90 extending therefrom. In this illustrative embodiment, a slot 92 is disposed through a bracket, similar to slot 78 of bracket 76 from idler assembly 14. Roller 12 can position anywhere along the length of slot 92 to affect the height of roller 12 above the pool. In this illustrative embodiment, a gear motor 94 attaches to a motor mount 96 that attaches to bracket assembly 90. Roller portion 24 attaches to drive hub 98 via

fastener 100. Collar 102 attaches to gear motor 94 via pin 104 to connect gear motor 94 to roller 12.

A detailed exploded view of drive assembly 16 is shown in Fig. 9. This perspective view shows gear motor 94 attaching to motor mount 96. An opening 106 in motor mount 96 allows drive rod 108 extending from gear motor 94 to extend therethrough. A bushing 110 extends into bore 106. As previously discussed, drive hub 98 fastens to roller portion 24 via fastener 100 and illustratively nut 112. Hub mount pin 104 disposes through collar 102 that engages drive rod 108. Hub mount pin 104 connects drive hub 98 to gear motor 94 so as the motor spins, so too does roller 12.

To position motor mount 96 to a desired height above the pool, it is attached to bracket face 120 via holes 122 disposed about the periphery of slot 92. Mounting bolts 126 illustratively dispose through star washers 124 and extend through holes 122. Holes 122 extend the periphery of each side of slot 92 in order to allow motor mount and, thus, roller 12 to be raised or lowered as desired. It is contemplated that the position of these holes 122 corresponds to holes 85 on the periphery of opening 78 of bracket 76 on idler assembly 14. (See Fig. 8.)

The perspective, end, and side views of drive assembly 16 are shown in the progressive views of Figs. 10-13. The views of drive assembly 16 in Figs. 10a and b, for example, show motor mount 96 attached to the lower most holes 122 disposed about slot 92 via bolts 126. Hub drive 98, and consequently roller 12, is in the lower most position similar to the configuration shown in Fig. 3. Similarly, as motor mount 96 is attached to holes 122 slightly higher about the periphery of slot 92, as shown in Figs. 11a and b, drive hub 98 is also raised, as further demonstrated in Fig. 4. Consistently, Figs. 12a and b show motor mount 96 raised even farther up along slot 92 raising drive hub 98 and roller 12 higher, similar to that shown in Fig. 5. Lastly, Figs. 13a and b show motor mount 96 attached to the upper most holes 122 along the periphery of slot 92. This results in roller 12 being located at its upper most extent, as also shown in Fig. 6.

An exploded view of gear motor 94 and associated components are shown in Fig. 14. Gear motor 94 is shown attaching to motor mount 96 via bolts 126 illustratively disposed through star washers 124. (See also Fig. 9.) This view also shows how drive rod 108 extending from gear motor 94 disposes through bore 106 of drive mount plate 96. Drive rod 108 is also inserted into a bore 134 of collar 102. Hub mount pin or dowel 104 is inserted into an opening 136 on collar 102 and extends through a corresponding hole 138 on drive rod 108. This connection causes drive hub 98 to rotate as drive rod 108 rotates. Of course as discussed previously, as drive hub 98 rotates, roller 12 also rotates.

Figs. 15 and 16 show a block diagram and electrical schematic of an illustrative control system for operating pool blanket assembly 2. As particularly shown in Fig. 15, an illustrative embodiment includes a remote control 150 wherein depressing signal button 152 transmits a signal 161 to receiver 154 through antenna 156. In this illustrative embodiment the system is configured so button 152 only needs to be depressed momentarily to roll up the blanket. There is no requirement that button 152 be continuously depressed to completely roll up the blanket. In alternative embodiments, it is possible to use standard systems that require a continuous signal to roll and unroll the blanket. When signal 161 is received by receiver 154, it is transmitted to a relay 162 that further transmits signal 161 to gear motor 94. The result is motor 94 turning roller 12. Without the need to continually depress button 152, an operator is free to pull on the blanket or adjust it while being rolled up.

Conversely, to roll out the blanket, button 160 can be momentarily depressed. In this instance, an extension signal 159 is sent to antenna 156 from remote control 150 and into receiver 154 which sends signal 159 to relay 158. Unroll signal 159 is then transmitted to gear motor 94 to initiate the roll up process. Gear motor 94 then rotates in the opposite direction unrolling the blanket.

An illustrative electrical schematic in Fig. 16 shows a more detailed view of this system. Receiver 154 receives power from power supply 170 which

houses a transformer 172 that receives power from a central power supply (not shown) through a power plug and cord 174. Power from transformer 172 is then sent to the receiver 154 via wires 176 and 178. When receiver 154 receives a signal from remote control 150, it transmits unroll signal 159 through line 180 which goes back through power supply 170 and out through line 182, relay 158, line 184, an illustrative plug connector 186, line 188, and into gear motor 94 to unroll the blanket. Conversely, upon receipt of a roll up signal, receiver sends signal 161 (see Fig. 15) through line 190 which illustratively passes through power supply 170, line 192, relay 162, line 194, plug connector 196, line 198, and into gear motor 94 to begin rolling up the blanket through roller 12. (See Fig. 1.)

Another illustrative embodiment of the present disclosure includes a safety control system built into the operation of the blanket reel assembly. In an illustrative embodiment, the reel assembly includes a power system located within a reasonable proximity of the pool. Thus, even though a remote control is used, in order to get the remote control to operate the reel, a switch on the power supply is activated manually. Because the switch is in proximity to the pool, an operator can visually inspect the pool to confirm no one is still in the pool before activating the reel. Further, and in an illustrative embodiment, by switching the power supply "on," a timer limits the amount of time within which to activate the remote control to move the reel. For example, by manually activating the switch to the "on" position, the system will provide power for illustratively five minutes before shutting off. Within that time the remote control needs to be activated. If not, the power will shut off requiring the operator to confirm no one is in the pool again before reactivating the blanket. It is appreciated that the time interval before shutting off power to the reel can be adjusted. Activating the remote control illustratively restarts the timer sequence. A new time limit to actually activate the motor begins. The motor is activated by illustratively activating one of the buttons on the remote again. The motor will continue to be activated for a predetermined amount of time (illustratively 60 seconds). The first two timed sessions are canceled allowing the motor to be activated for the full predetermined length of time. This last period of time, however,

can be cut short if the button on the remote is depressed again. Otherwise it will continue for the 60 second predetermined period of time.

In an another illustrative embodiment, an off switch, which may or may not be part of the same switching system as the "on" switch, can be used to easily and manually shut the system down if needed. As another illustrative embodiment, the remote control itself may be equipped with multiple buttons or similar activators that require simultaneous activation in order to move the reel. For example, the remote control may include two buttons, both of which must be depressed simultaneously in order to activate the reel. This feature may make it difficult for younger persons to activate the reel.

A perspective view of a power supply assembly 200 is shown in Fig. 17. Supply 200 includes casing 202 configured to fasten to another structure such as a wall or post. A cover 204 shrouds the internal structures within casing 202. Extending from casing 202 includes a pigtail output 206 that leads or connects to the motor 94 for supplying power thereto. A power cord 208 also extends from casing 202 and includes a plug 210 configured to insert into a power outlet to supply power to power supply assembly 200. An illustrative key switch 212 extends from casing 202 to control functionality of the power supply. In an illustrative embodiment, the key switch can allow or cut off power supplied from cord 208 from operating motor 94.

An exploded view of power supply assembly 200 is shown in Fig. 18. In addition to structures previously discussed with respect to Fig. 17, this view shows internal components such as a transformer 214, remote control kit 216, relays 218, rectifier 220, filter 222 along with a variety of fasteners 224, washers 226, and nuts 228 to hold the components in the assembly together. Also shown are collars 230 that couple cords 206 and 208 to casing 202.

An electrical schematic showing the operation of parts by assembly 200 is shown in Fig. 19. Key switch 212 is illustratively a three position spring to

center switch. Turning switch 212 to the "on" position sends a 12VDC signal to the remote control receiver 216 to activate the five minute timer. After five minutes the remote control receiver will automatically shut off. Turning the key 212 to the off position sends a 12VDC signal to the remote control receiver 216 that turns off the remote and cancels the timer.

Power cord 208, line filter 222, transformer 214, rectifier 220, and capacitors and resistors 221 take conventional 120VAC and convert it into 12VDC. Relays 218 are controlled by the remote control kit 216 to run reel motor 94. In an illustrative embodiment, a thermal breaker 217 will cut power to the motor if an overload occurs.

The chart in Fig. 20 shows the operational flow of power supply 200 using remote control 150 (see also Fig. 15). As shown at 250, the first step is turning the key to the "on," position. This starts a software timer that enables remote control 150 to operate for a predetermined period of time. In an illustrative embodiment, that period of time is about five minutes. With the remote receiver 216 activated, simultaneously pushing extension and retraction buttons on the remote control for a predetermined period of time (illustratively two seconds), as indicated at reference numeral 254, enables the remote control to become active for a predetermined period of time (illustratively five minutes). As a safety feature, at the end of any of these time periods, failure to accomplish either the next step or moving the pool blanket will ultimately result in system shut down requiring the operator to start over. This lessens the time the operator will be away from the pool. In fact, these operations assist in keeping the operator in proximity of the pool area to confirm no one is in the water before and during operation of reel assembly 2.

After the remote control 150 has been activated, the operator has the choice to either push the retract button to start motor 94 to uncover the pool, or, conversely, push the extension button to start motor 94 in the opposite direction to cover the pool. The motor will continue for, illustratively, a predetermined period of time to either cover or uncover the pool. In an illustrative embodiment, that time may

be about 60 seconds. It is appreciated that this time may change, depending on the needs of the reel assembly. As indicated by reference numerals 264 and 266, pushing either the retraction or extension buttons again during that 60 second period will cause the motor to stop. If either button is not pressed a second time to stop the motor as indicated by reference numeral 267, the motor will continue to run until the 60 second timer times out. This timer will essentially cancel the prior timers. At the end of the process, the key adjacent the power supply can be moved to the "off" position as indicated by reference numeral 268. This can be done at any time during the retraction or extension process. Indeed, this can serve as a master shut off if needed. If the power supply is not manually turned "off," the remote will remain operational until the five minute timer times out or after the predetermined time allotted for the motor to run.

An illustrative embodiment of key switch 212 is shown in Fig. 21. With a key inserted, rotating it clockwise as indicated by reference numeral 280 activates the remote control receiver 216. Conversely, rotating the key in the opposite direction 282 deactivates the remote control receiver 216. It is appreciated that other types of buttons or switches can be used. It is notable that whatever switch is used it has a safety feature associated with it to limit access to the ability to activate the remote control receiver 216.

A view of remote control or fob 150 is shown in Fig. 22. This view shows the extend and retract buttons 160 and 152, respectively, on remote control 150. It is appreciated that other safety mechanisms can be used to limit unauthorized use of the reel assembly, particularly by children. In this embodiment, the remote control is the only mechanism to activate the motor. Alternate embodiments, however, may include a programmable code system.

A perspective view of idler assembly 14 is shown in Fig. 23. This view demonstrates an illustrative embodiment of a manual override feature to reel assembly 2. If a loss of power to the motor occurs or the motor breaks, the blanket can still be wound or unwound as desired. Extending from bushing 84 of idler

assembly 14 is hex head bolt 594. This hex head bolt is attached to roller portion 22 so both rotate in concert. Under a loss of power, a wrench can be used to grip and rotate nut 594, thereby rotating roller portion 22.

Corresponding reference characters indicate corresponding parts throughout the several views. Although the present disclosure has been described with reference to particular means, materials, and embodiments, from the foregoing description one skilled in the art can easily ascertain the essential characteristics of the invention and various changes and modifications may be made to adapt the various uses and characteristics without departing from the spirit and scope of the invention set forth in the claims that follow.

WHAT IS CLAIMED IS:

1. A powered pool blanket reel system comprising:

a pool blanket reel assembly which comprises:

a motor base;

an idler base;

a roller bar;

a motor bracket extending from the motor base;

a motor adjustably mountable to the motor bracket;

wherein the motor bracket includes a slot with which the motor is selectively attachable adjacent the periphery of the slot;

an idler bracket extending from the idler base;

an idler hub adjustably mountable to the idler bracket;

wherein the idler bracket includes a slot with which the idler hub is selectively attachable adjacent the periphery of the slot;

wherein one end of the roller bar is attachable to the motor and another end attachable to the idler hub;

wherein the roller bar is suspendable between the motor and idler bases;

wherein the motor is configured to selectively rotate the roller bar in either clockwise or counterclockwise directions;

wherein the roller bar is configurable to attach to a pool blanket to roll and unroll the blanket;

wherein the roller bar comprises a first bar portion and second bar portion;

wherein each of the bar portions are connectable to make the roller bar's length selectively adjustable;

wherein the motor and idler are attachable to a plurality of positions along the length of the slots in both the motor and idler brackets so the roller bar can be adjusted to a plurality of heights above the motor and idler bases;

a power supply attached to a remote control receiver and the motor to rotate the motor in the clockwise and counterclockwise directions;

a switch having on and off positions, the switch being in communication with the remote control receiver to selectively permit or deny power to the motor;

a remote control having a retract button and an extend button;

wherein when the switch is in the on position, the switch is configured to activate a first timer which limits the available time a remote control can activate the motor to a first predetermined period of time;

wherein during periods when power is permitted to be supplied to the motor, the remote control is configured so that if both buttons on the remote control become depressed simultaneously, power can be supplied to the motor for a second predetermined period of time;

wherein depressing either the retract or extend button during this second predetermined period of time will activate the motor causing it to rotate in either clockwise or counterclockwise directions;

wherein the motor will not rotate without the sequence of the switch moved to the on position, followed by the depressing both buttons on the remote control and then pressing either one of the buttons on the remote control again; and

wherein the remote control receiver includes a remote control timer that limits activation of the motor for a third predetermined period of time; and wherein the power to the motor is uninterrupted by the first or second predetermined periods of time.

2. The powered pool blanket reel system of Claim 1, wherein the slot in the motor bracket and in the idler bracket each includes a periphery having a plurality of holes located adjacent thereto on each side of the slots; wherein the holes on each side of the slot of the motor bracket are configured to position the motor at different locations on the motor bracket; wherein the holes on each side of the slot of the idler bracket are configured to position the idler hub at different locations on the idler bracket; and wherein fasteners can engage the holes to secure the motor on the motor bracket and the idler hub on the idler bracket.

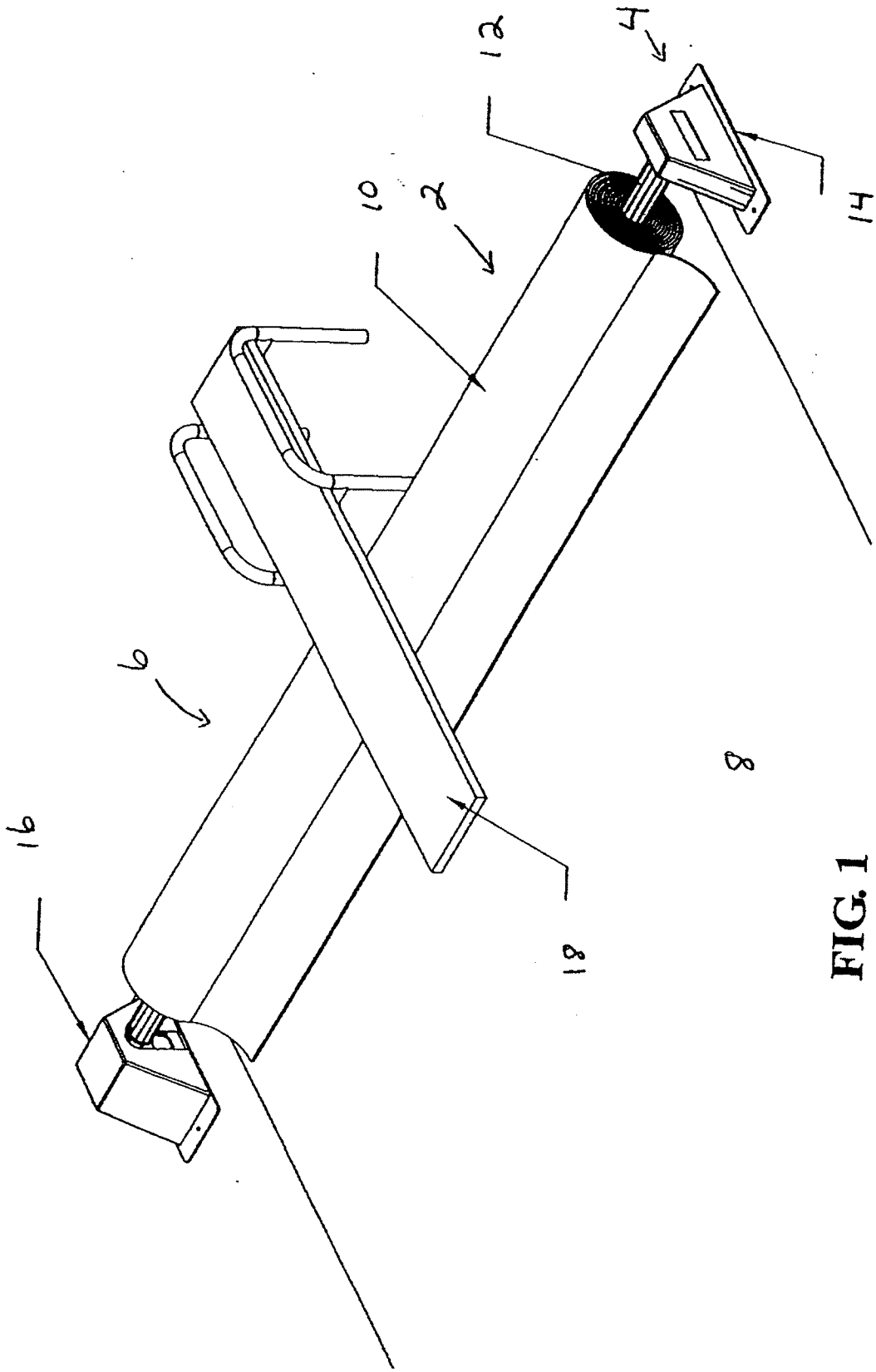

FIG. 1

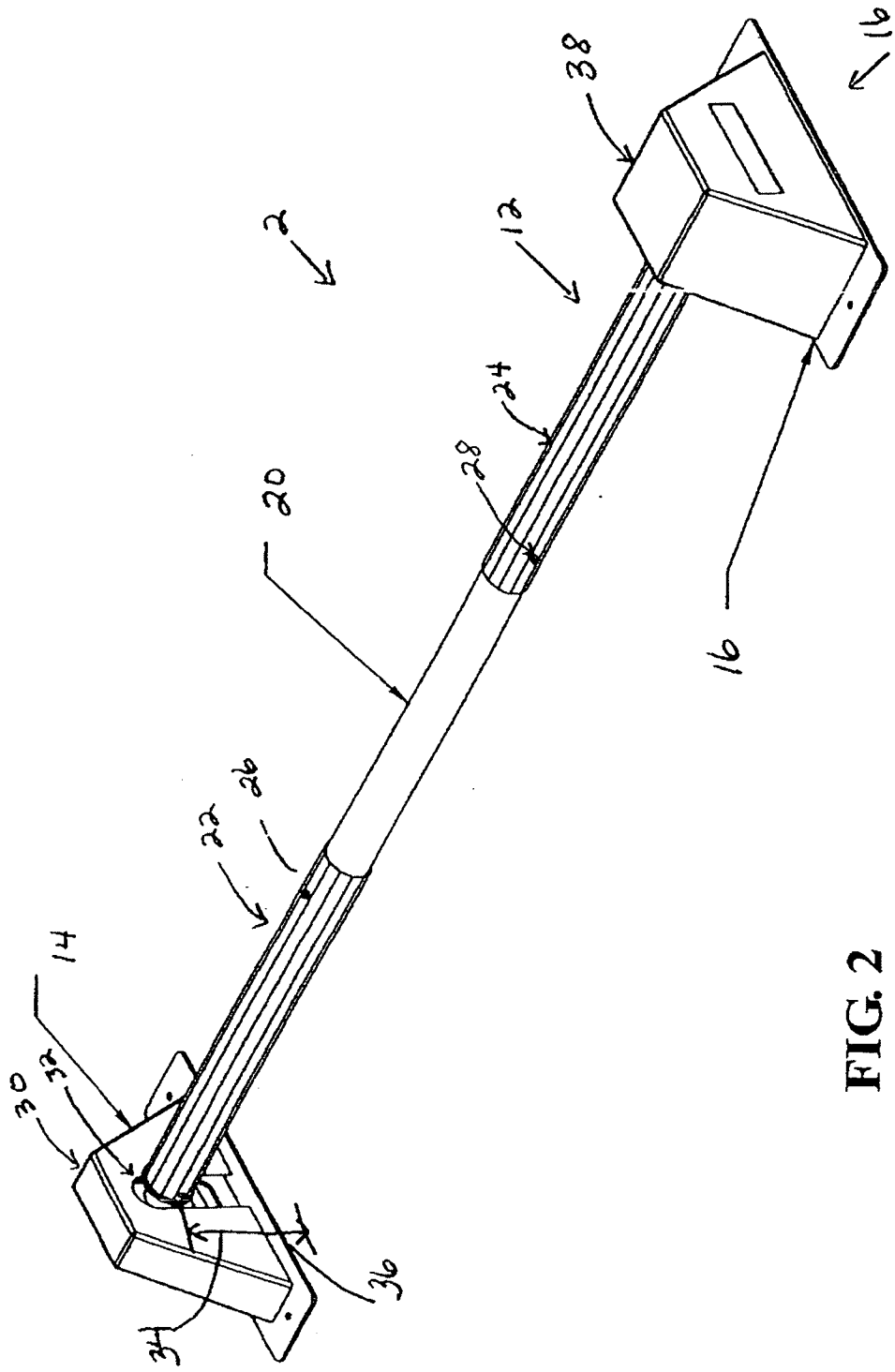

FIG. 2

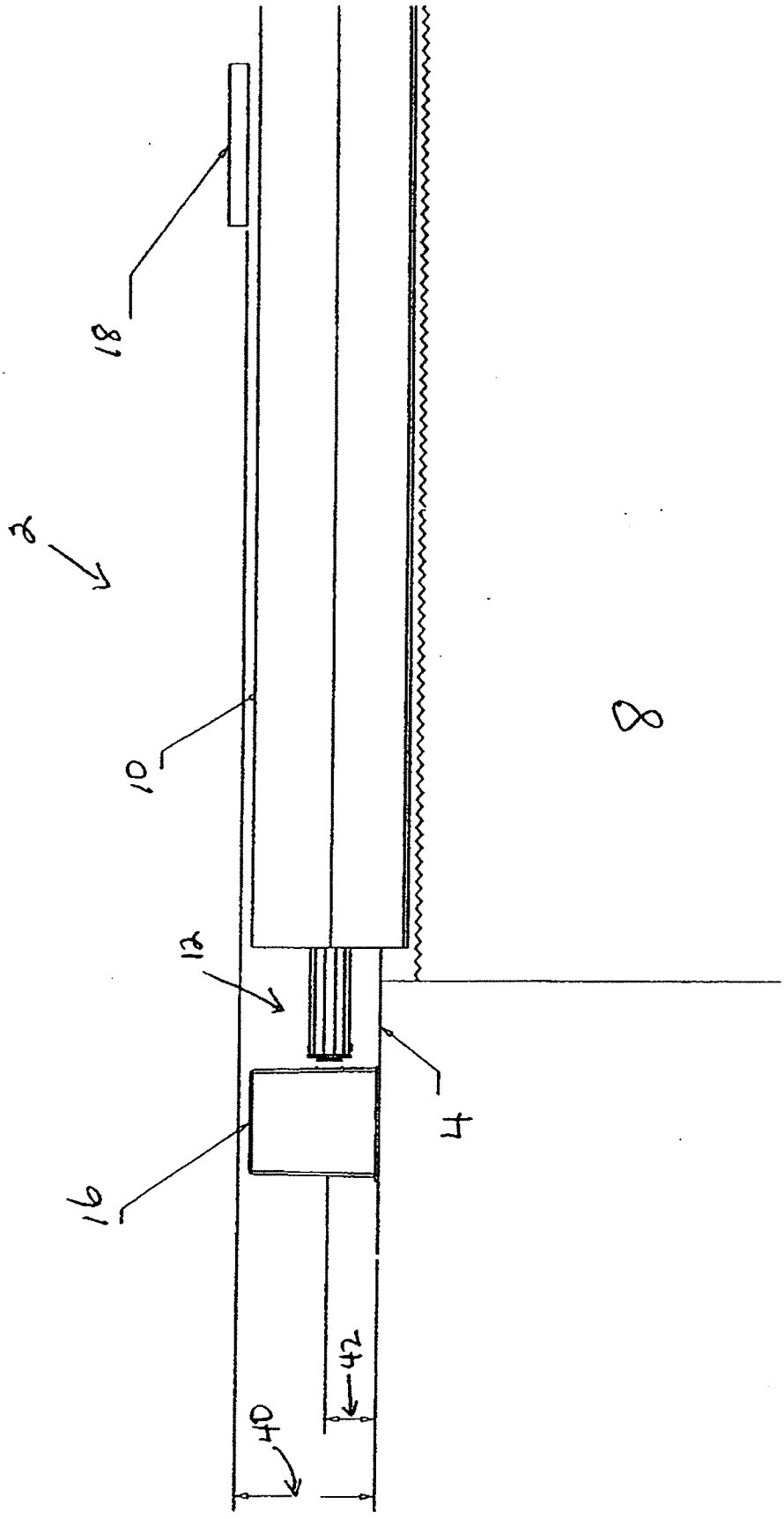

FIG. 3

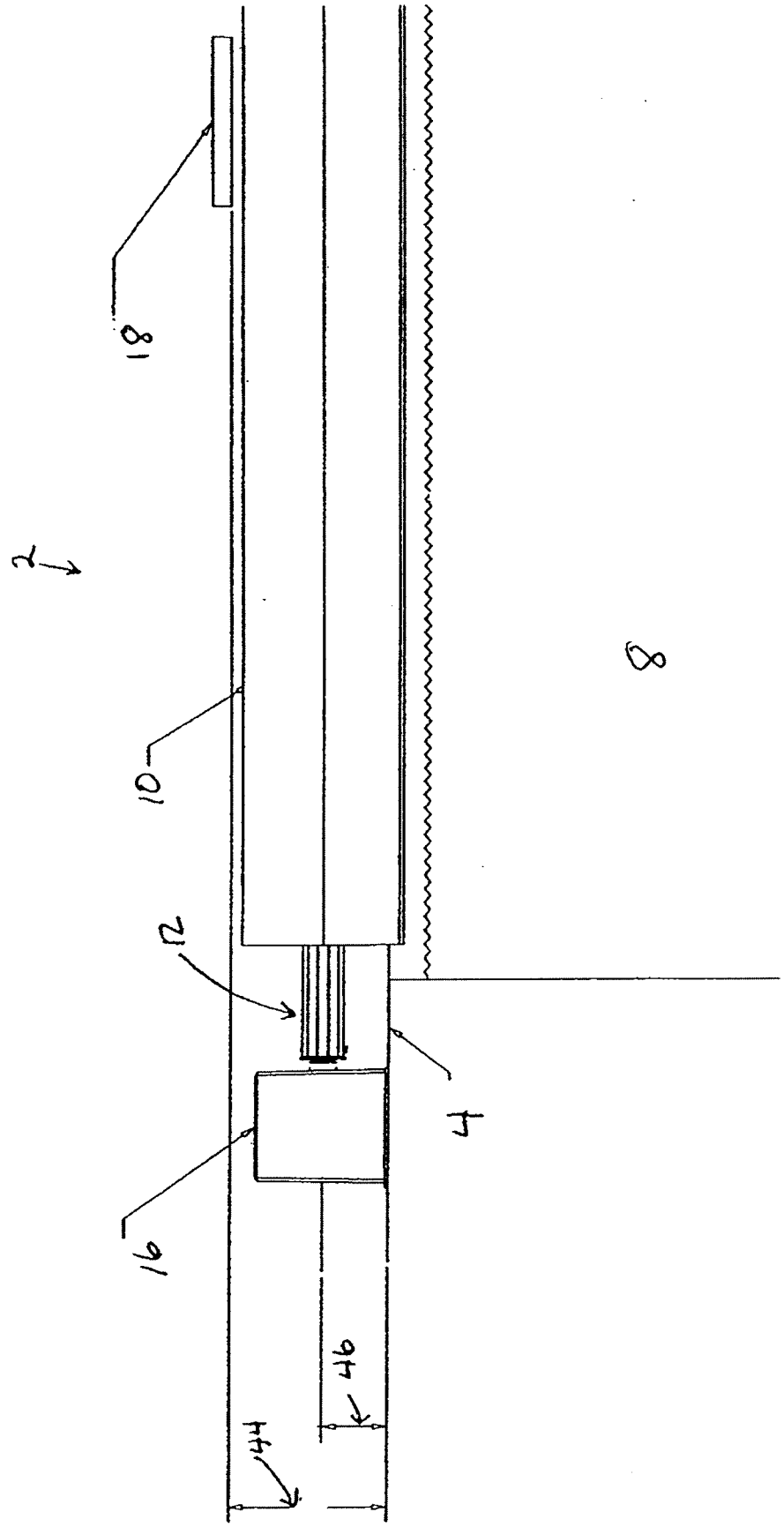

FIG. 4

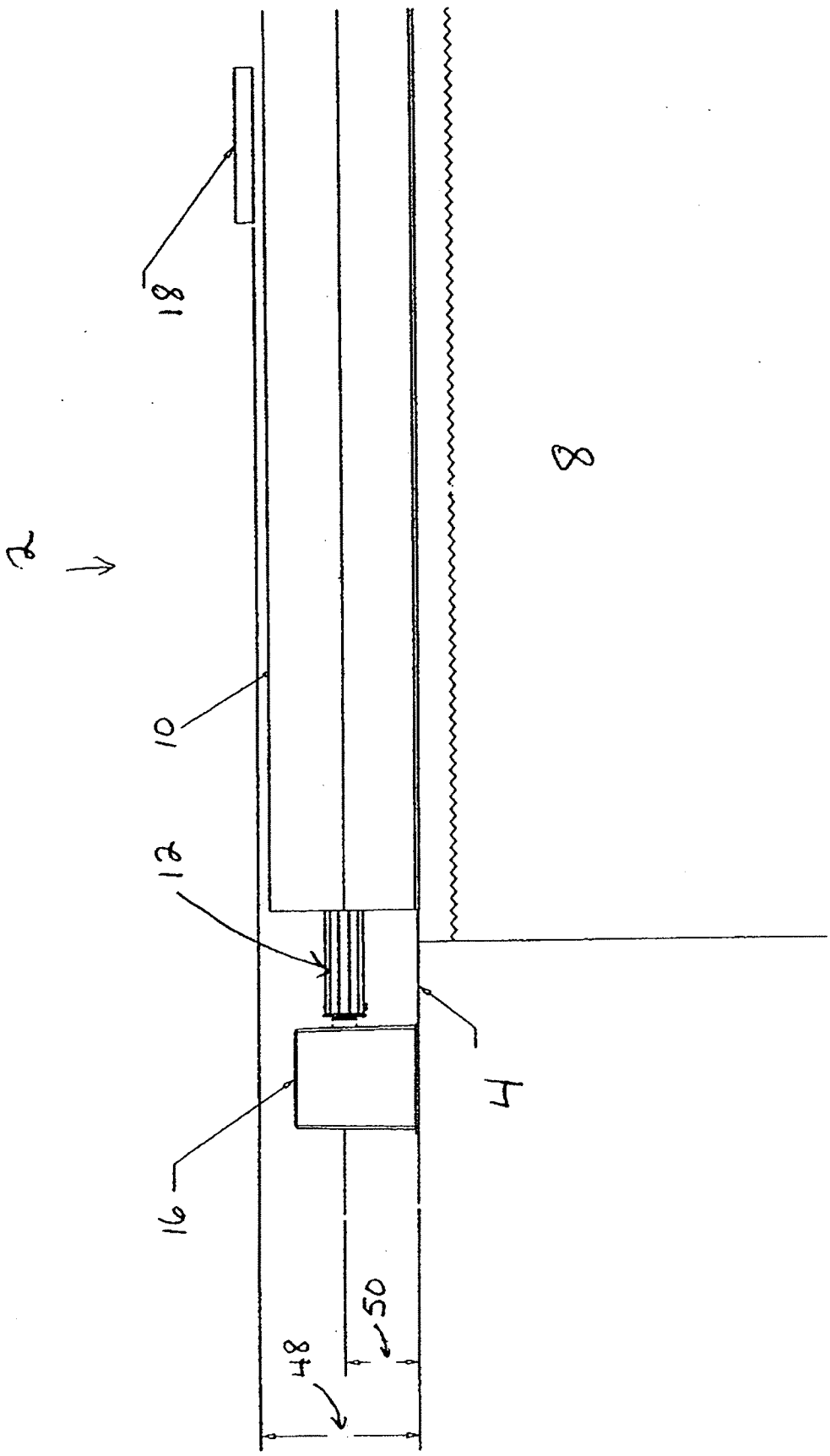

FIG. 5

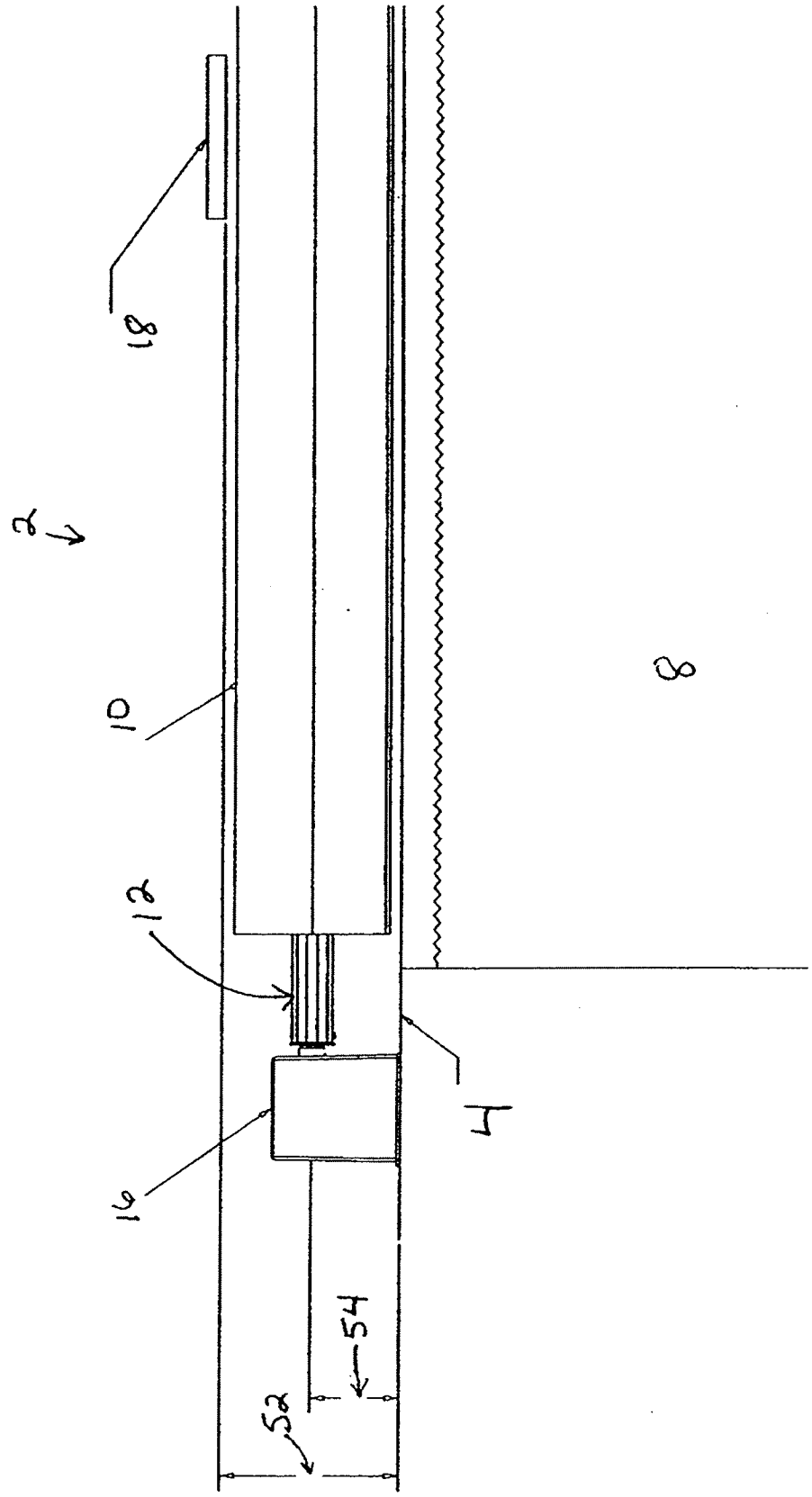

FIG. 6

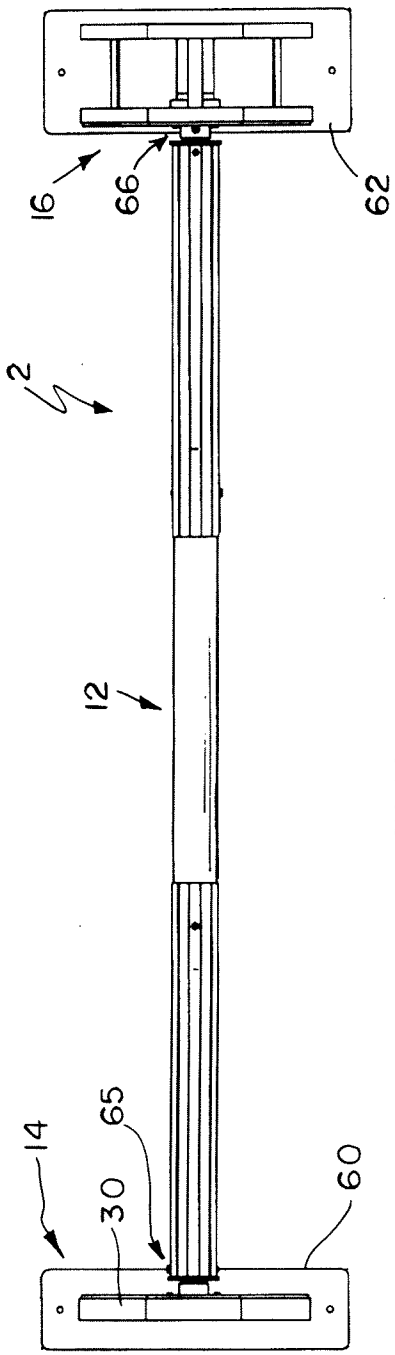

FIG. 1a

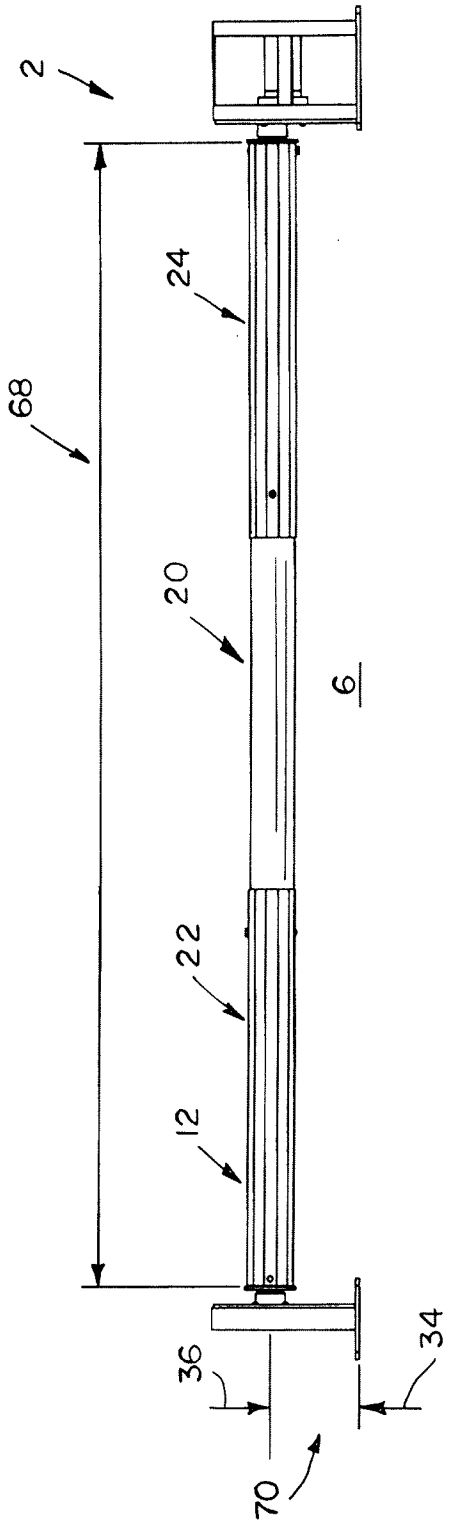

FIG. 1b

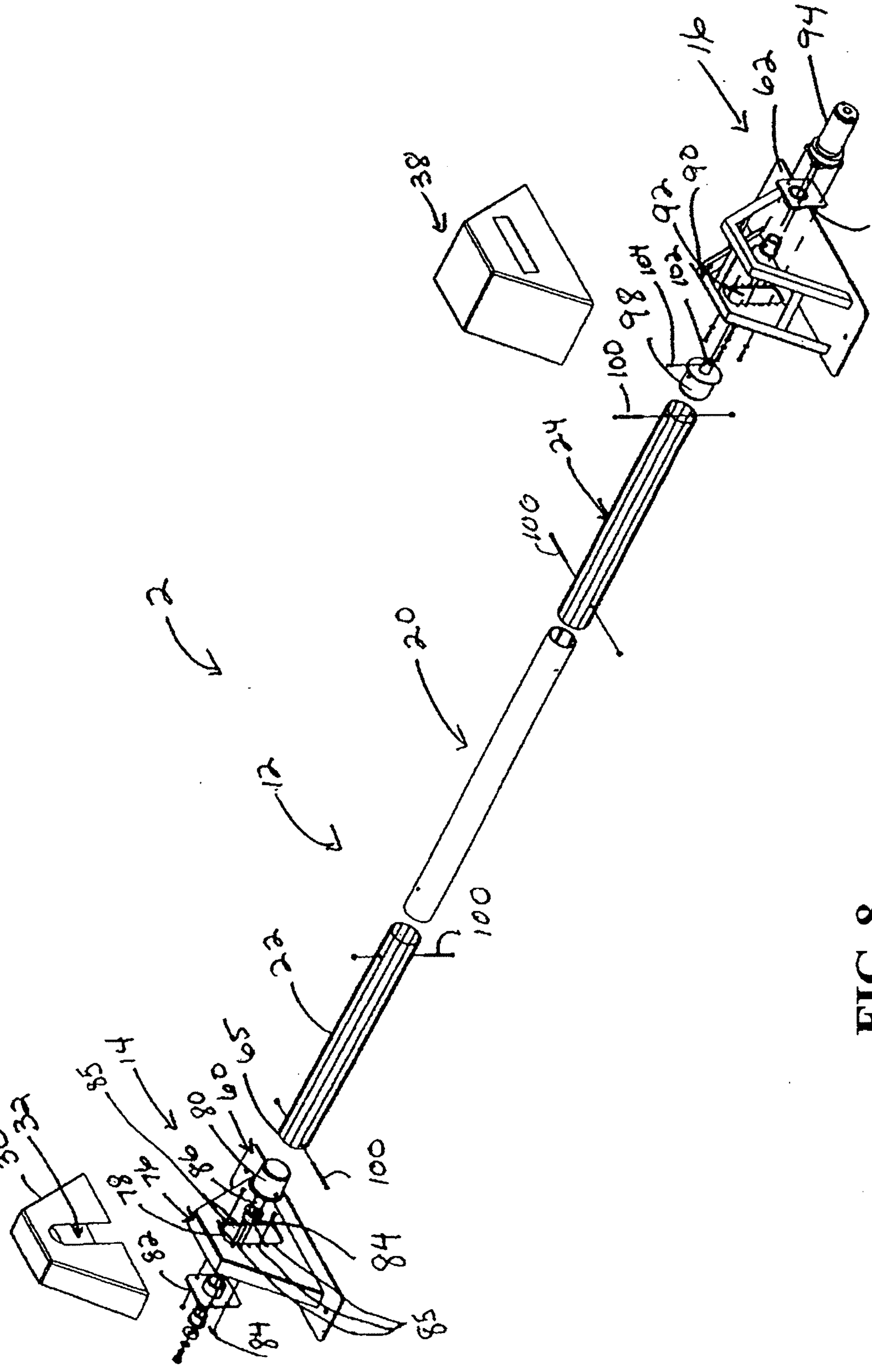
2
12
14
16
20
22
24
30
32
38
60
62
65
74
76
78
80
82
84
85
86
90
92
94
96
98
100
101
102

FIG. 8

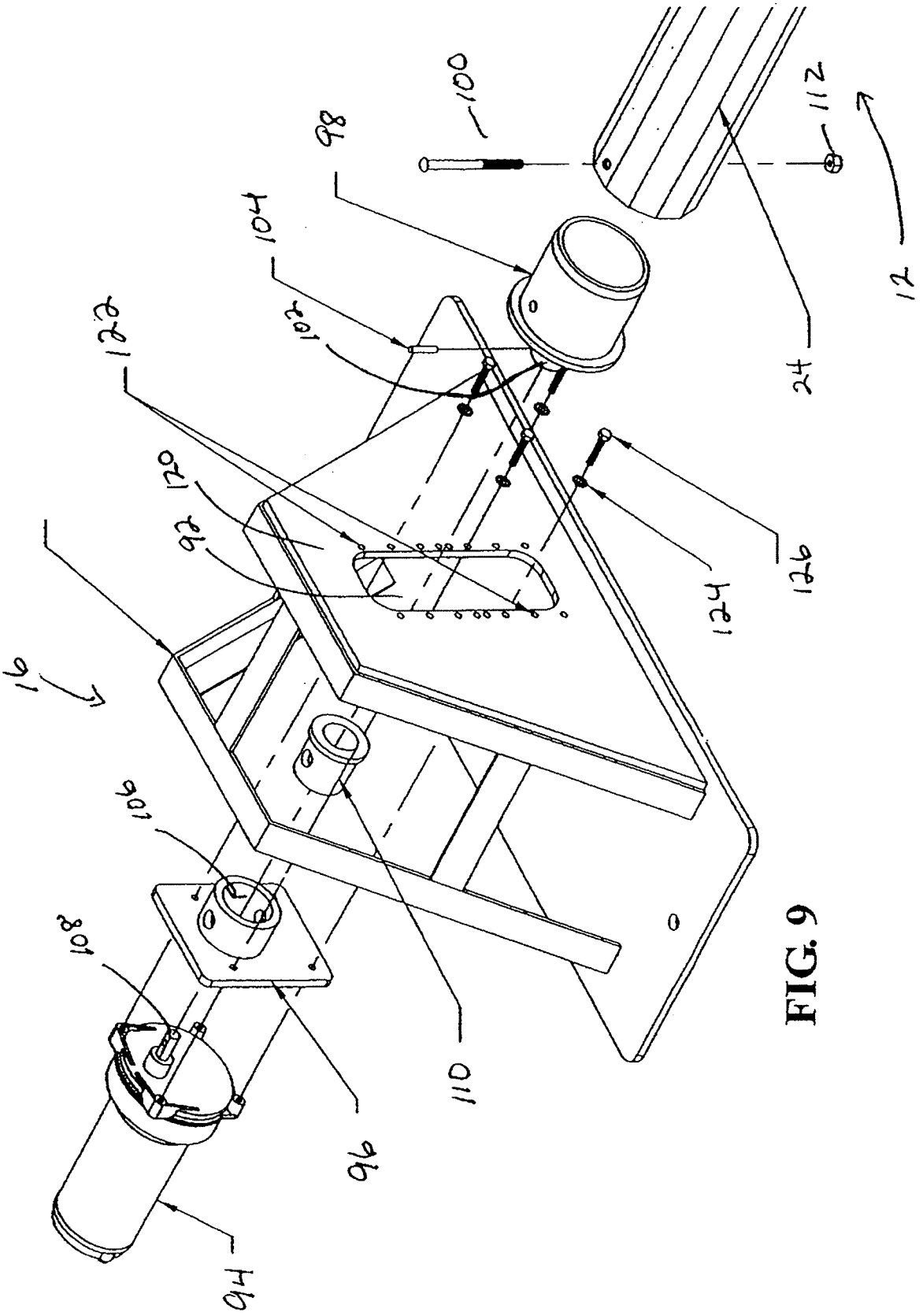

FIG. 9

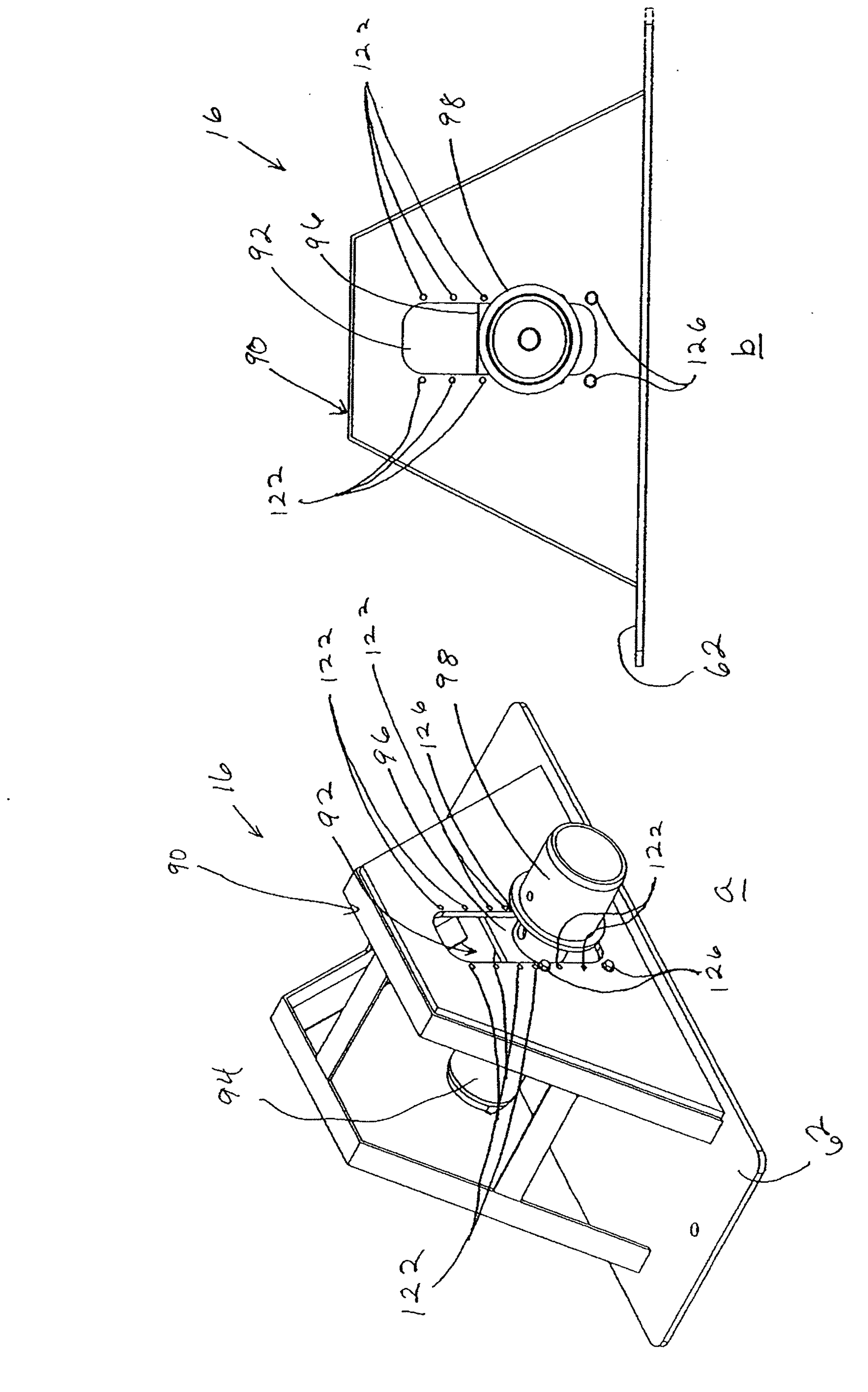

FIG. 10

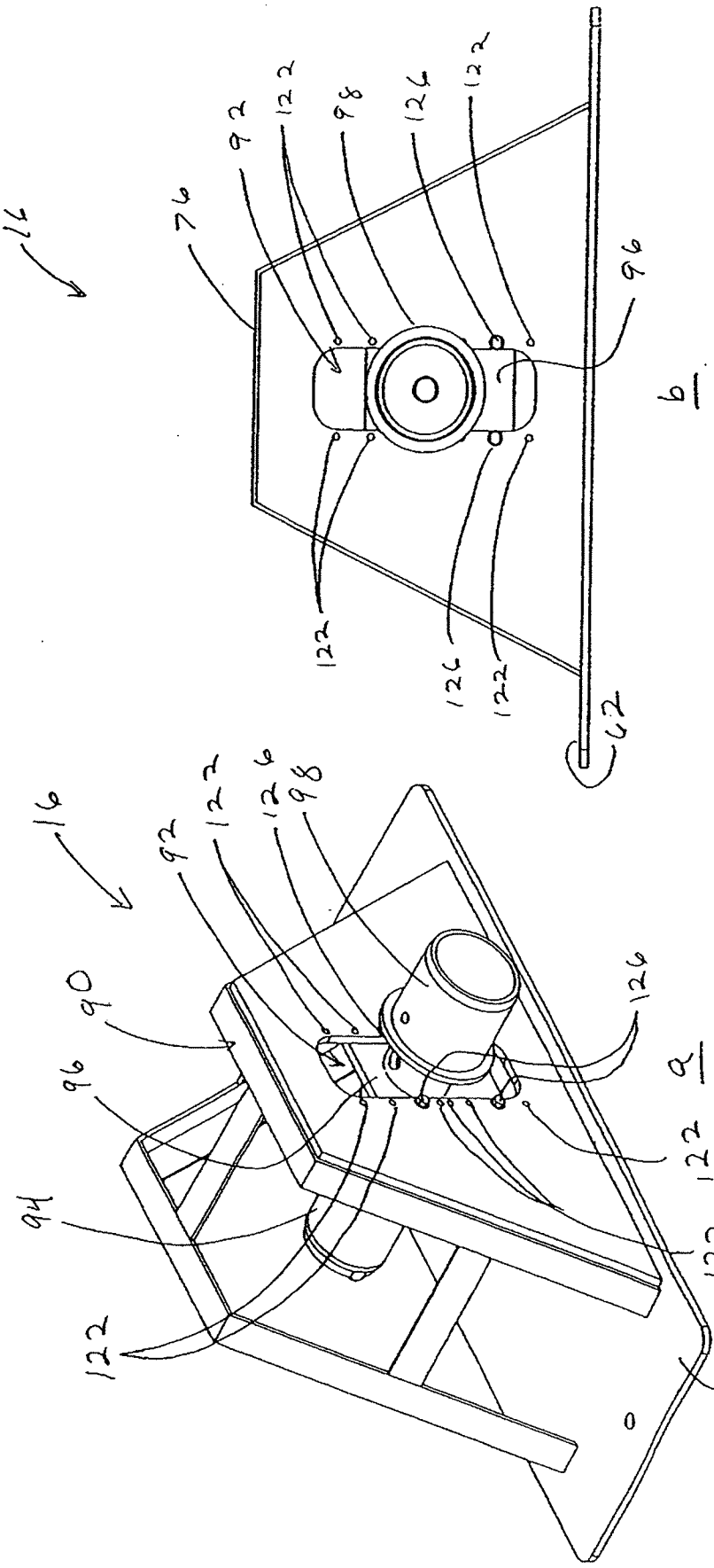
16
92
122
98
126
122
76
96
b
122
126
122
62
16
92
122
126
98
90
96
94
122
126
a
122
122
62

FIG. 11

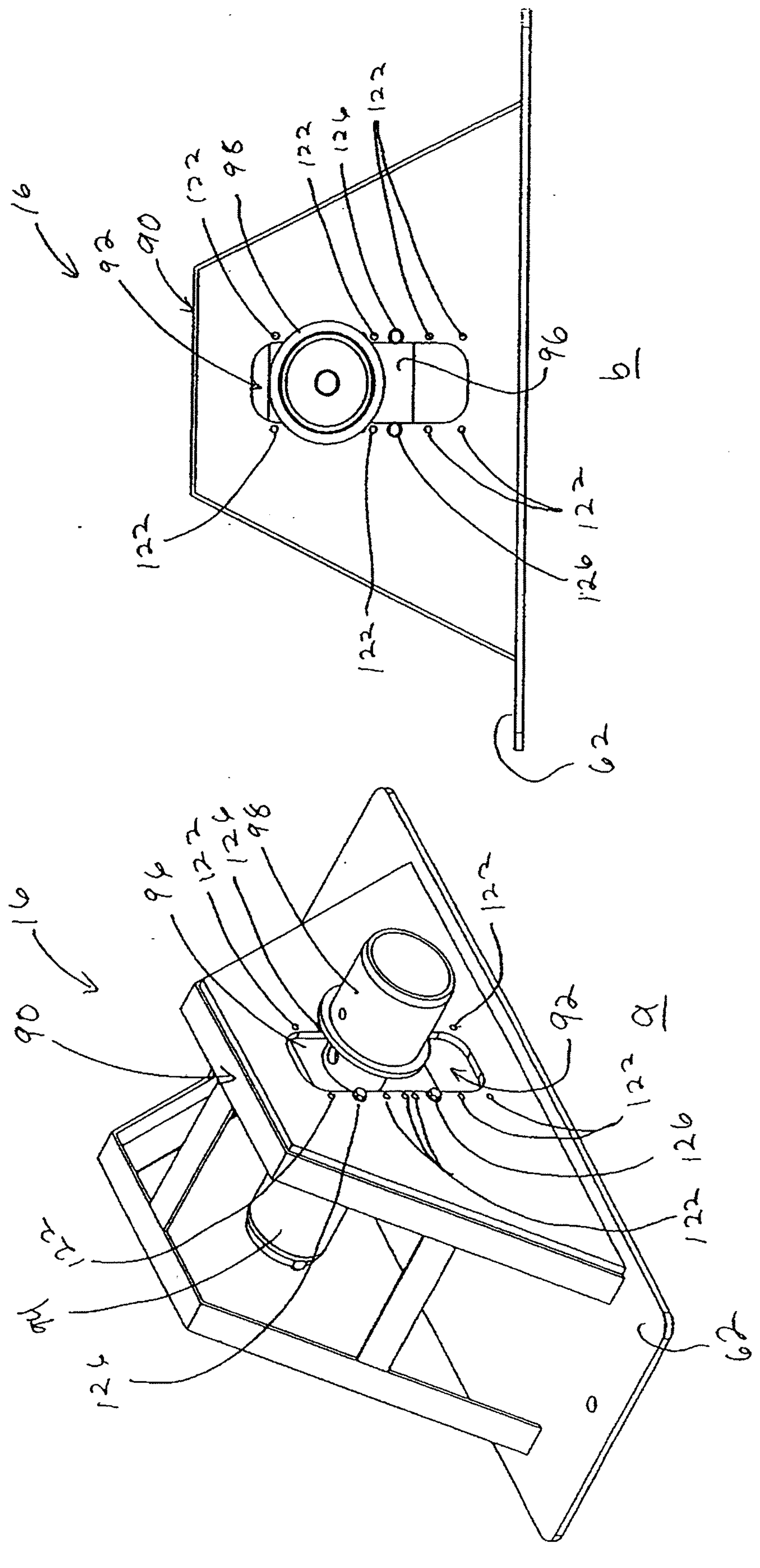

FIG. 12

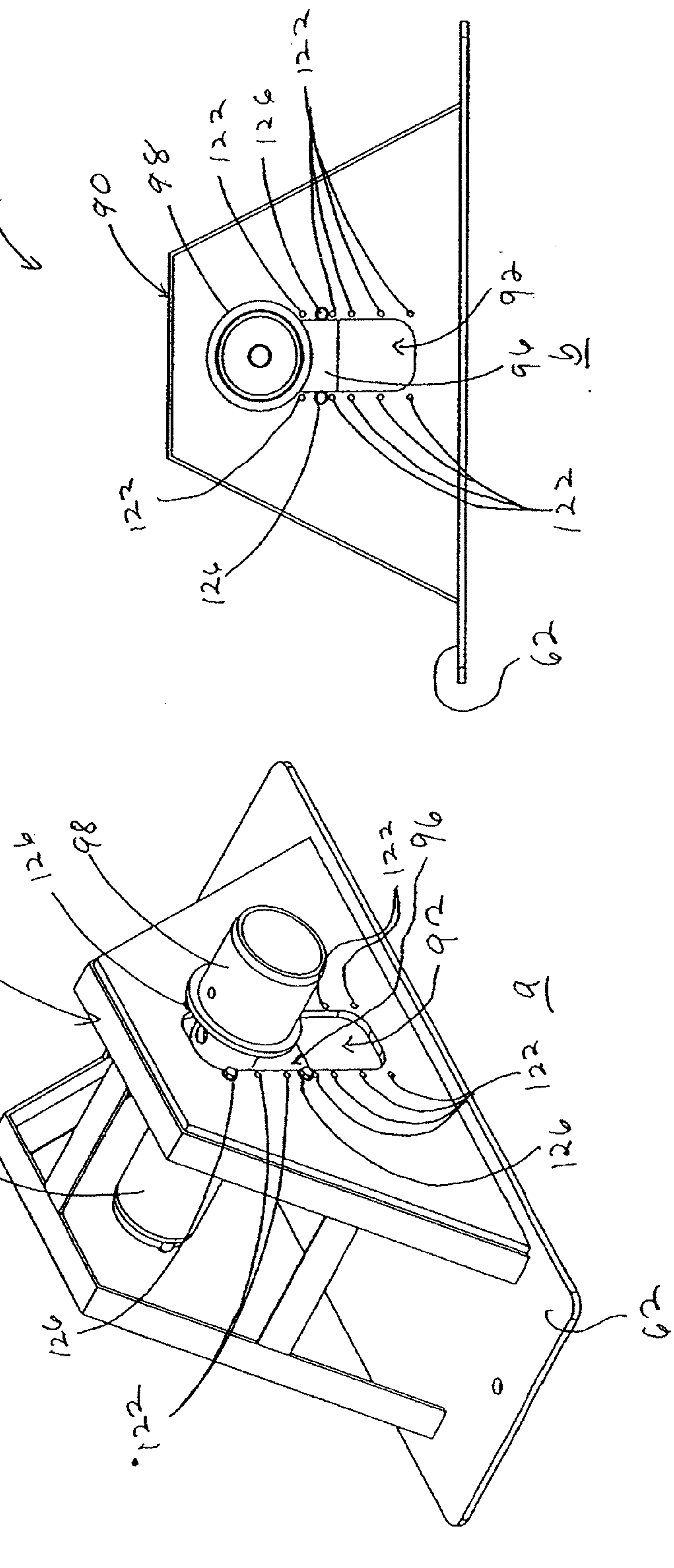

FIG. 13

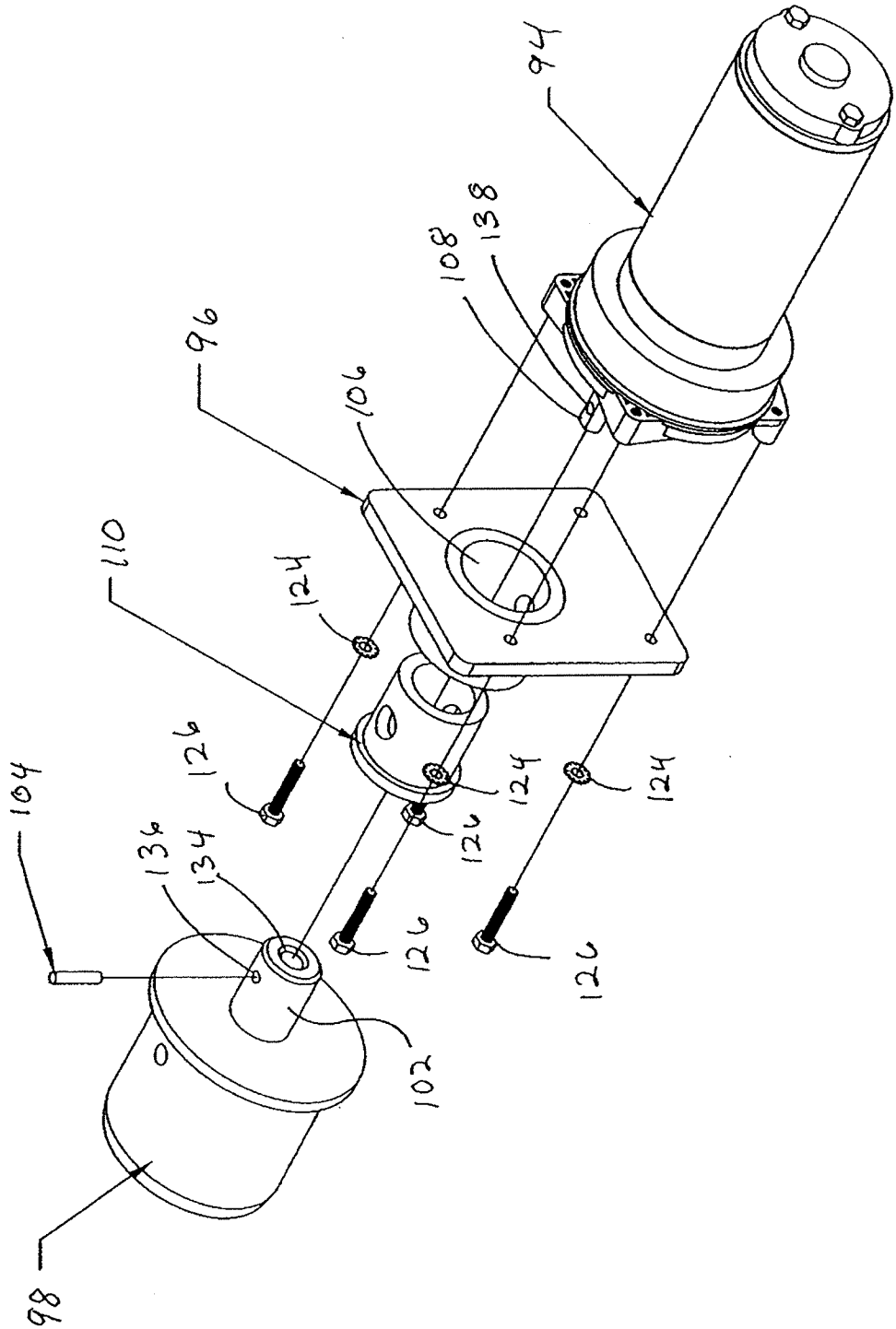

FIG. 14

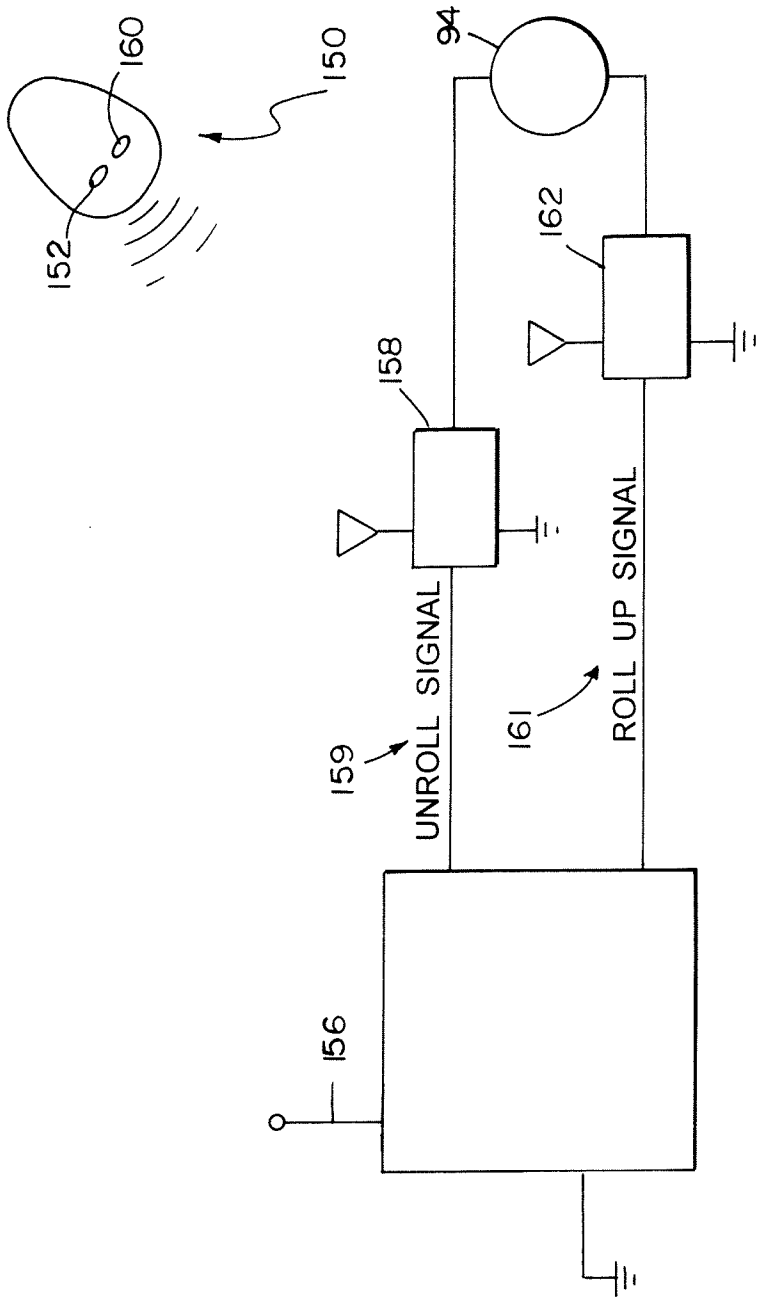
160
150
152
94
162
158
ROLL UP SIGNAL
UNROLL SIGNAL
159
161
156

FIG 15

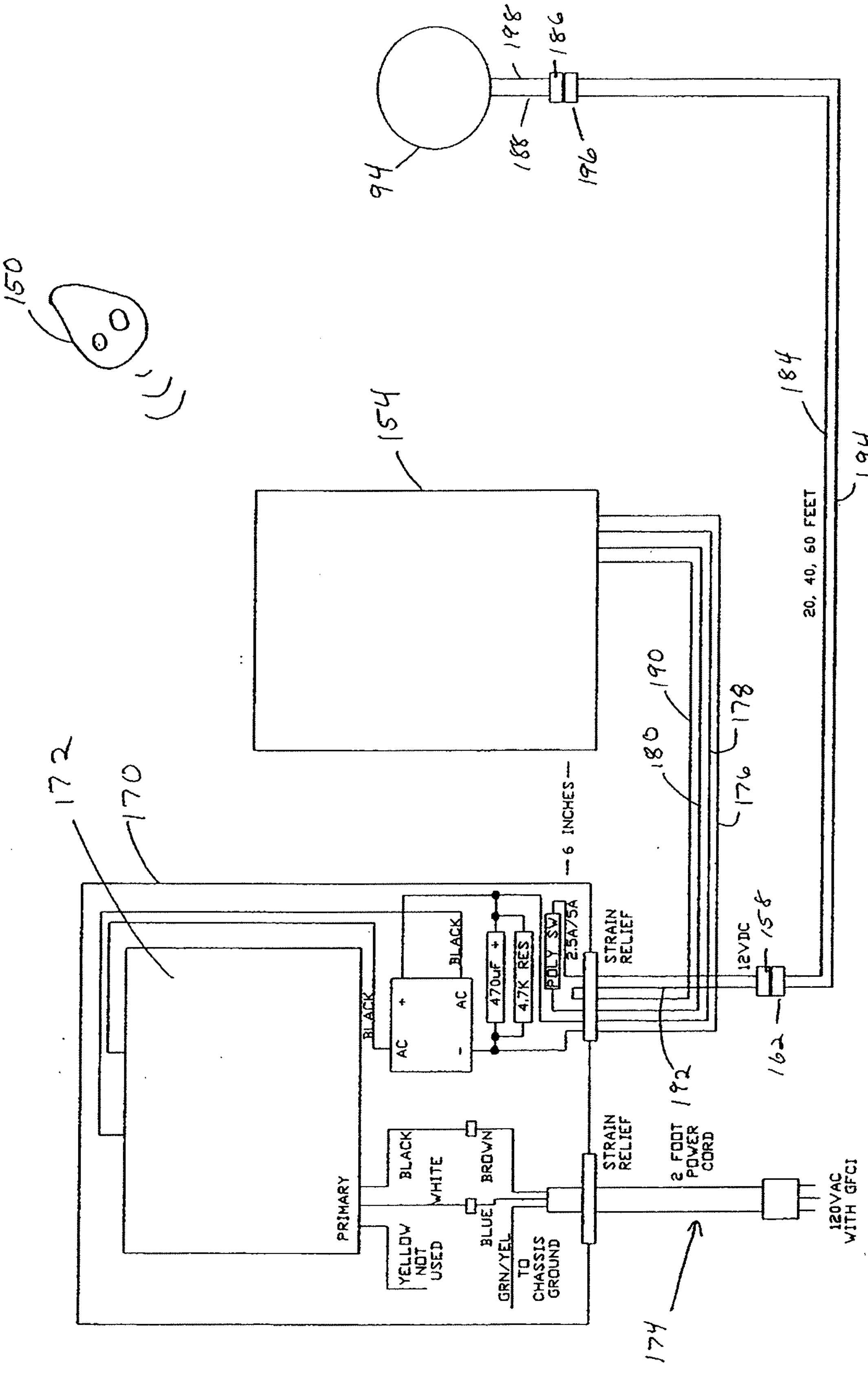
150
154
94
198
186
188
196
184
194
20, 40, 60 FEET
190
178
180
176
6 INCHES
172
170
BLACK
AC
+
-
AC
470uF +
4,7K RES
POLY SW
2.5A/5A
STRAIN RELIEF
12VDC
158
162
192
PRIMARY
BLACK
WHITE
BROWN
BLUE
GRN/YEL
TO CHASSIS GROUND
YELLOW NOT USED
STRAIN RELIEF
2 FOOT POWER CORD
120VAC WITH GFCI
174

FIG. 16

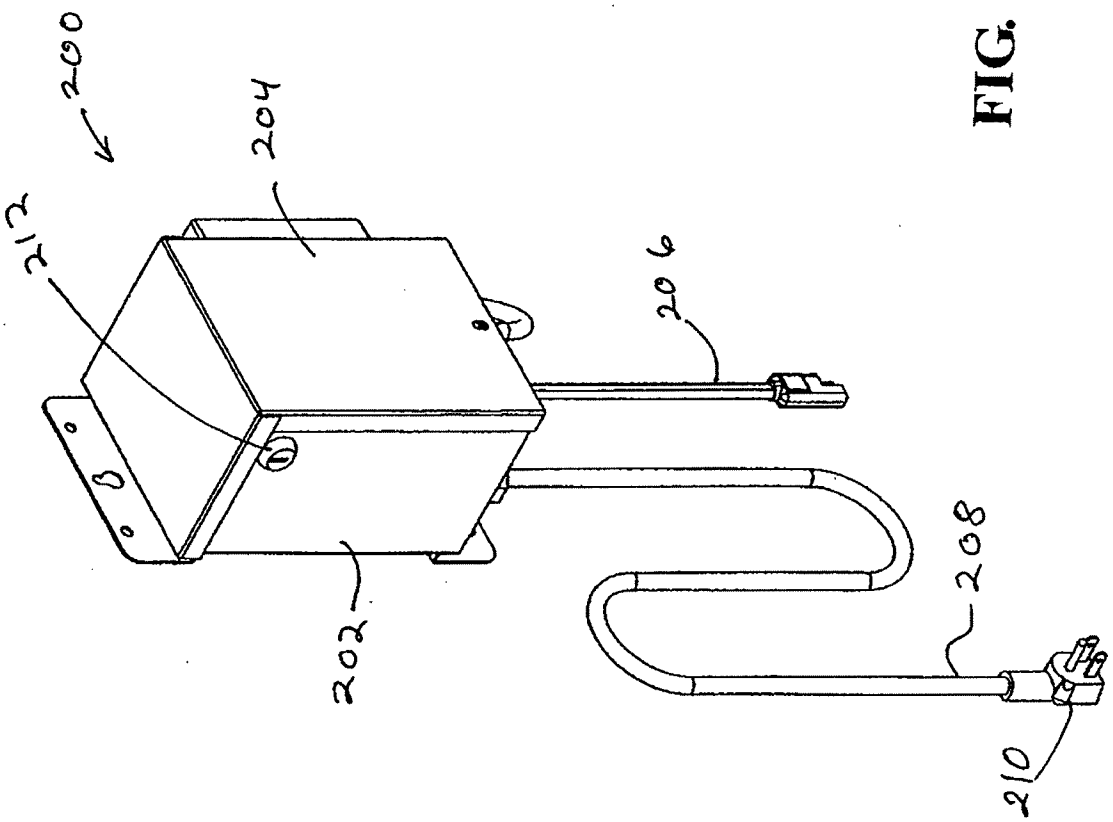

FIG. 17

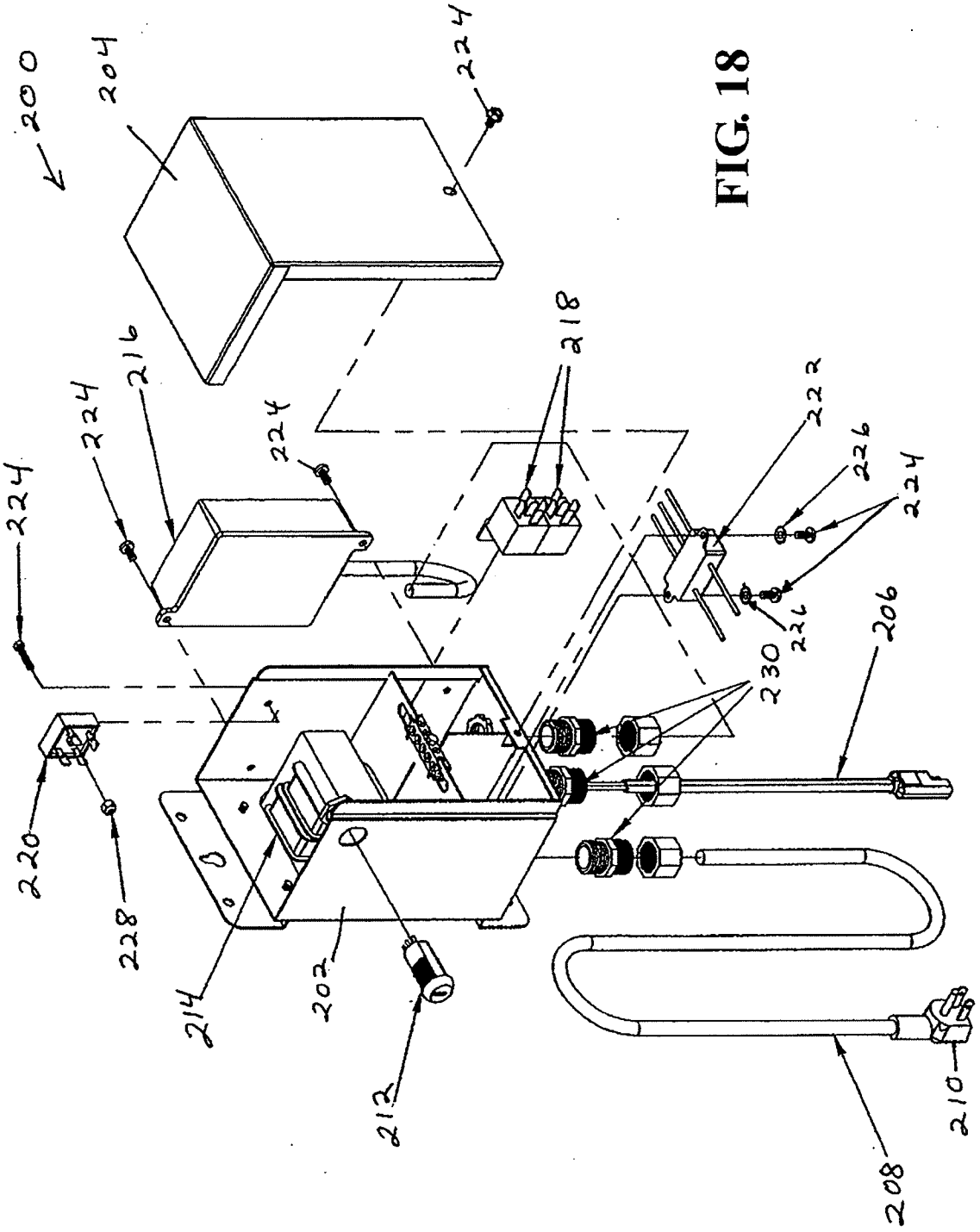

FIG. 18

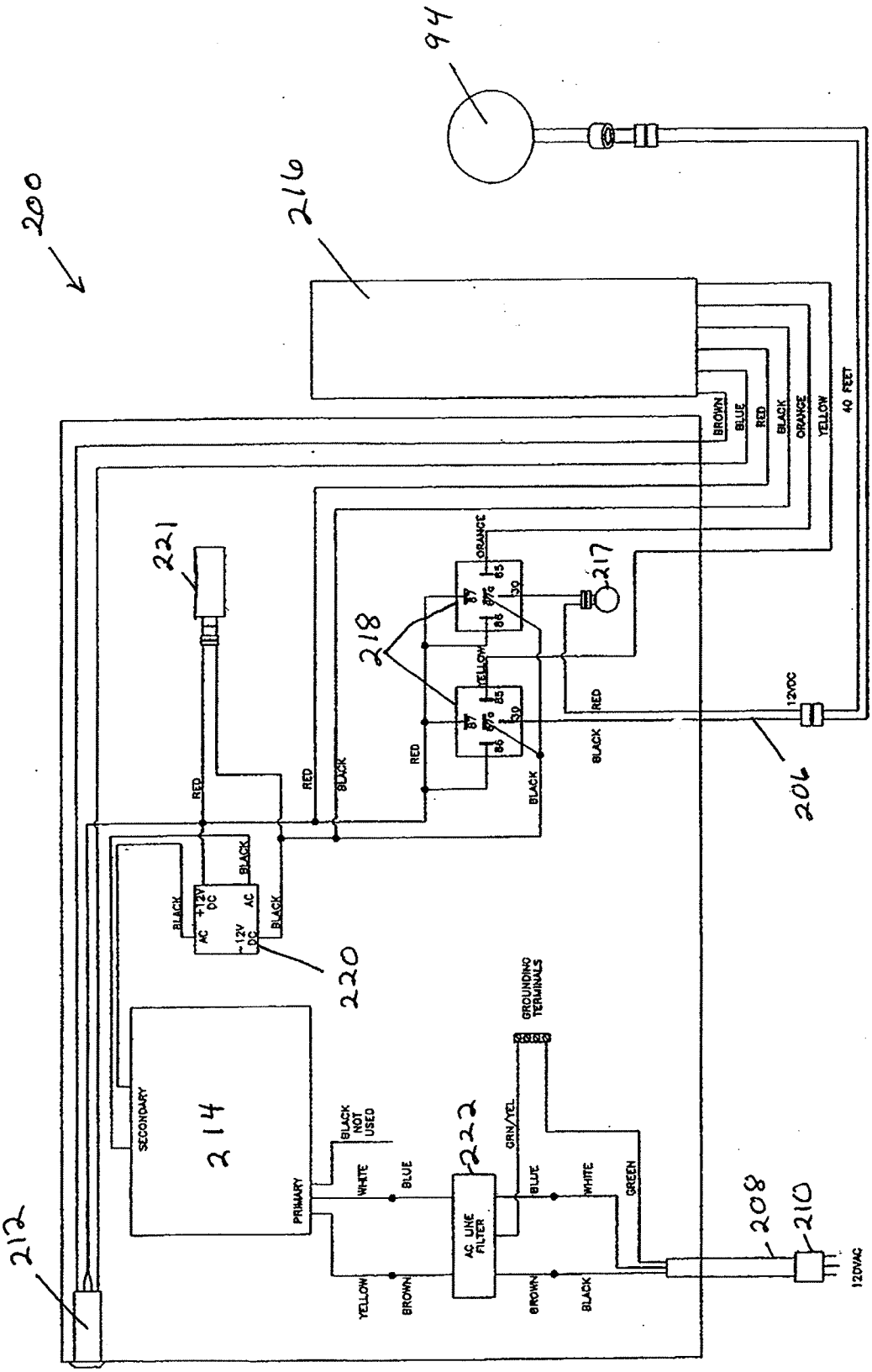
200
94
216
BROWN
BLUE
RED
BLACK
ORANGE
YELLOW
40 FEET
221
ORANGE
87
87a
85
30
86
217
218
YELLOW
RED
BLACK
12VDC
206
RED
BLACK
RED
BLACK
BLACK
AC +12V DC
AC
~12V DC
BLACK
220
GROUNDING TERMINALS
214
SECONDARY
PRIMARY
BLACK NOT USED
WHITE
BLUE
222
AC LINE FILTER
GRN/YEL
BLUE
WHITE
GREEN
208
210
12VAC
212
YELLOW
BROWN
BROWN
BLACK

FIG. 19

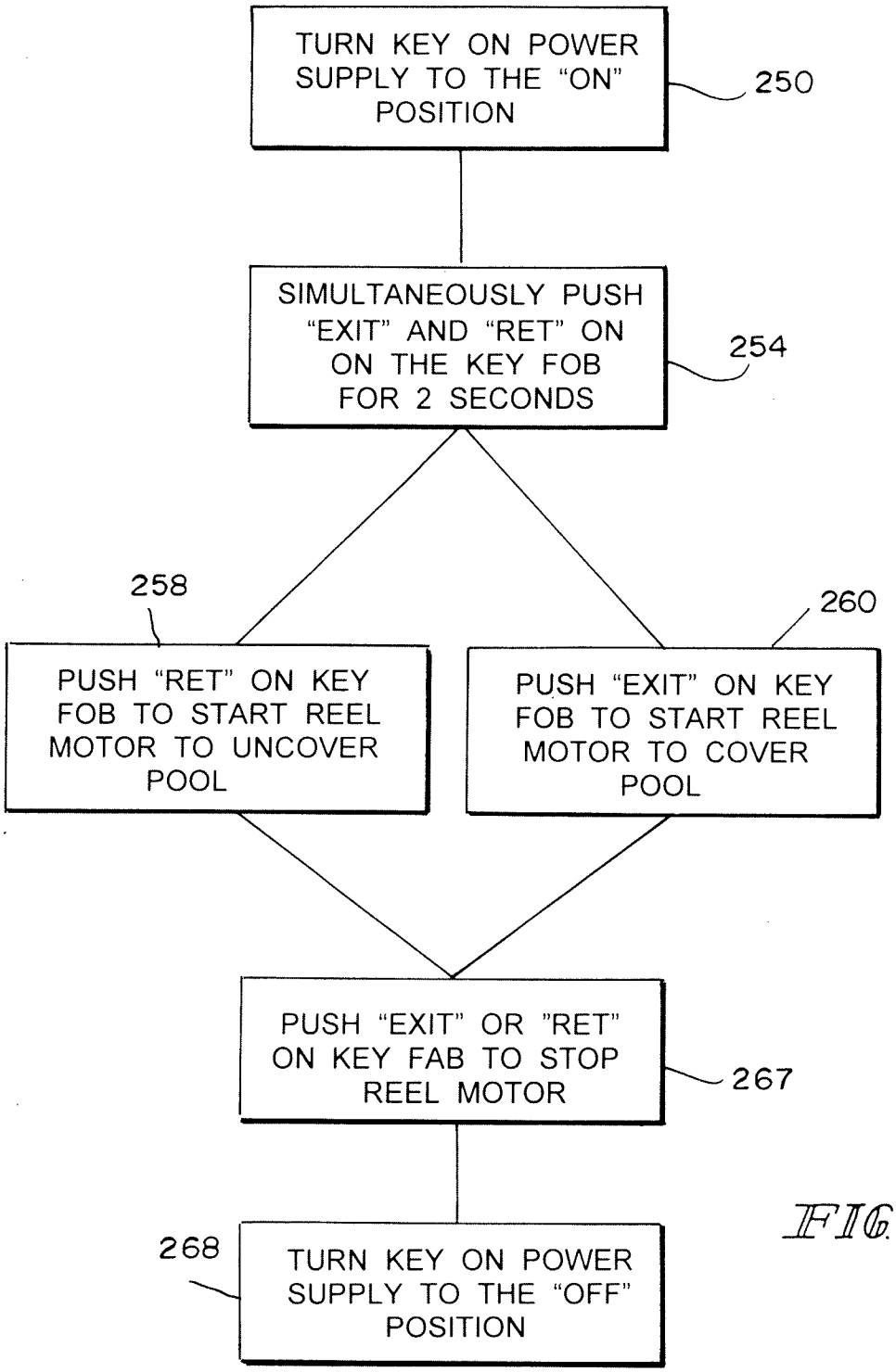
TURN KEY ON POWER SUPPLY TO THE "ON" POSITION
250
SIMULTANEOUSLY PUSH "EXIT" AND "RET" ON ON THE KEY FOB FOR 2 SECONDS
254
258
PUSH "RET" ON KEY FOB TO START REEL MOTOR TO UNCOVER POOL
260
PUSH "EXIT" ON KEY FOB TO START REEL MOTOR TO COVER POOL
PUSH "EXIT" OR "RET" ON KEY FAB TO STOP REEL MOTOR
267
268
TURN KEY ON POWER SUPPLY TO THE "OFF" POSITION

FIG 20

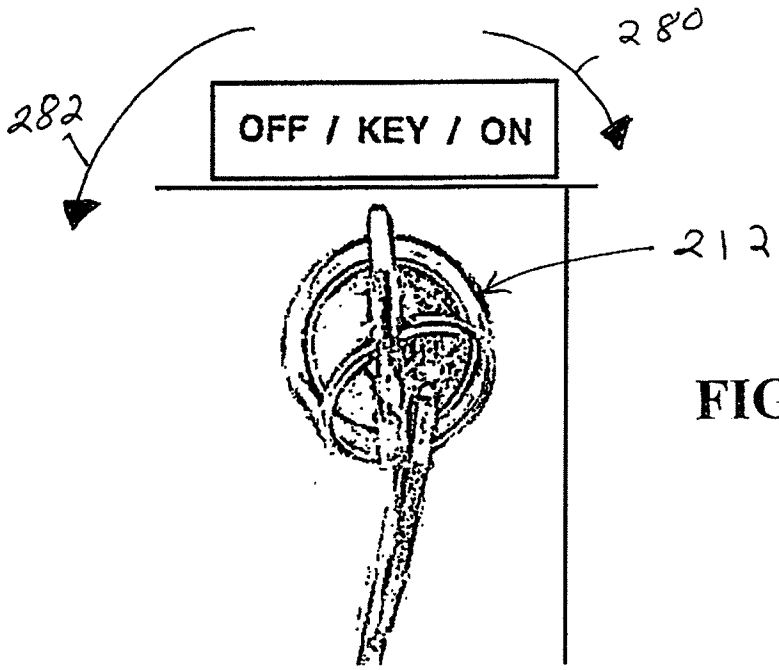

FIG. 21

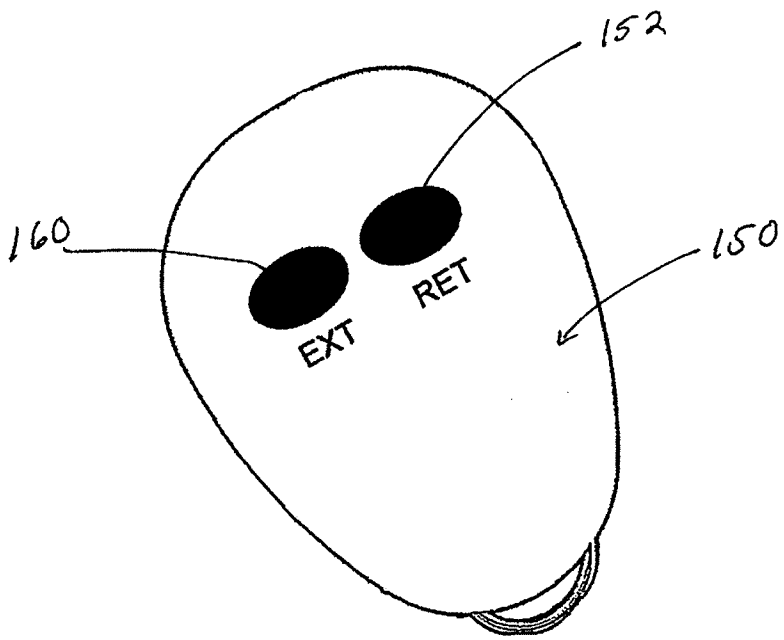

FIG. 22

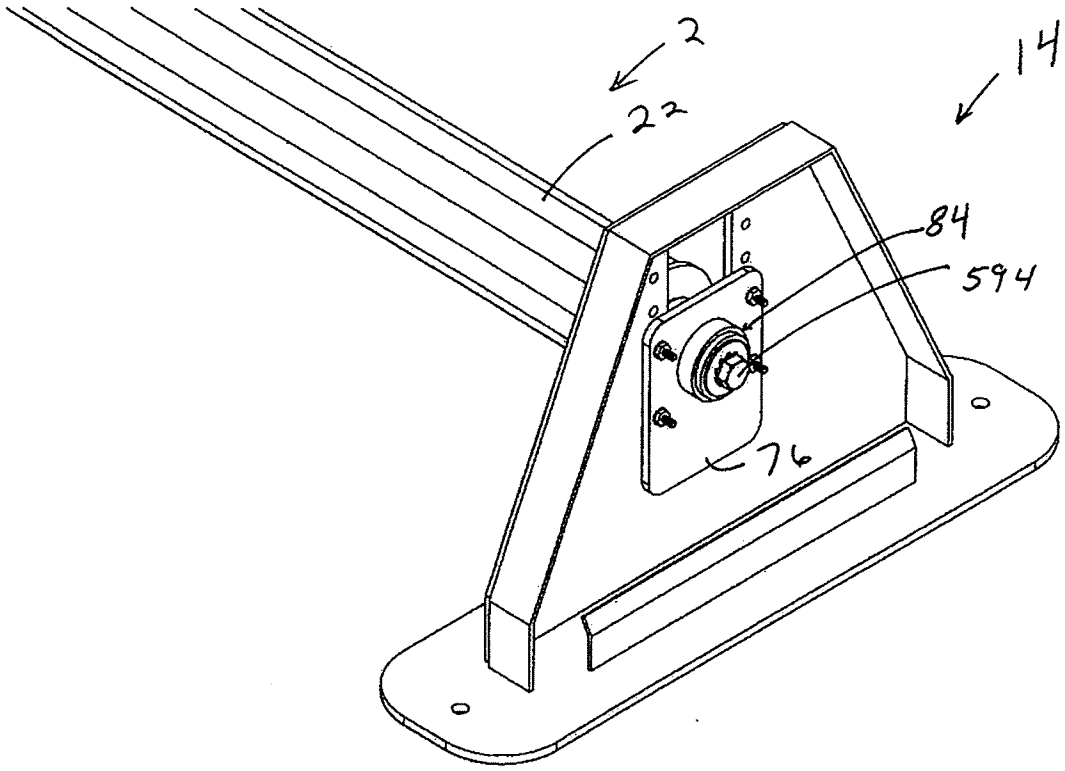

FIG. 23

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 10/20250

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - B65H 75/00 (2010.01)
USPC - 242/370
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC - 242/370

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 242/370,406,570-571; 417/214 (keyword limited - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Electronic Databases Searched: Google Scholar, PubWEST(USPT, PGPB, EPAB, JPAB)
Search Terms Used: pool, cover, blanket, automatic, retract, mechanical, motorized, electric, electronic, motor, engine, idler, pulley, roller, unravel, wind, bar, bracket, member, support, arm, spool, shaft, mount, connect, attach, secure, affix, screw, link, couple,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,811,433 A (MacDonald et al.) 14 March 1989 (14.03.1989), see entire document; especially col 3, ln 10-14, col 3, ln 59-62, col 6, ln 45-51, col 6, ln 45-51, col 7, ln 23-29, Fig. 1-2, 3, 8	1-2
Y	US 2003/0070216 A1 (Bertoni) 17 April 2003 (17.04.2003), see entire document; especially para [0074], [0083], [0085], [0088], Fig. 4-6, 10	1-2
Y	US 5,920,922 A (Ragsdale et al.) 13 July 1999 (13.07.1999), see entire document; especially col 10, ln 8-15, 39-47, col 13, ln 48-59, Fig. 1, 10-11	1-2
Y	US 4,955,092 A (Hagan) 11 September 1990 (11.09.1990), see entire document; especially col 2, ln 46-48, 57-65, 66-68, col 3, ln 1-4,Fig. 3	1-2
Y	US 2007/0252675 A1 (Lamar) 01 November 2007 (01.11.2007), see entire document; especially para [0013]-[0014], [0036], [0040], [0042]-[0043] Fig. 1-2	1-2
A	US 2005/0102744 A1 (Wood) 19 May 2005 (19.05.2005), see entire document	1-2
A	US 2001/0023506 A1 (Mathis et al.) 27 September 2001 (27.09.2001), see entire document	1-2

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 February 2010 (12.02.2010)	05 MAR 2010
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)