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(54) **POOL HANDLE ATTACHMENT MECHANISM AND METHODS THEREOF**

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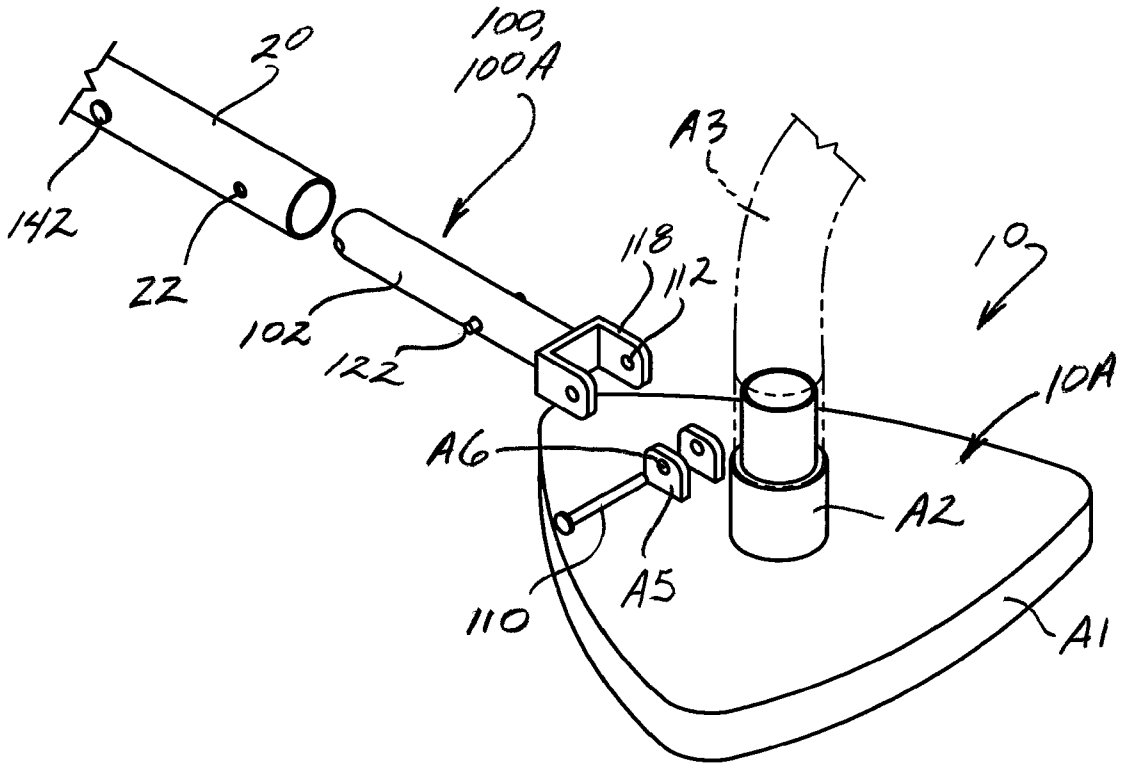
(57) **ABSTRACT**

A pole attachment mechanism for removably attaching swimming pool maintenance accessories to an end of a pole. The pole attachment mechanism includes a thumb-press which, when pressed, the pegs projecting from the shaft of the pole attachment are retracted thereby permitting the pole to be received over the retracted pegs or to be released from pegs.



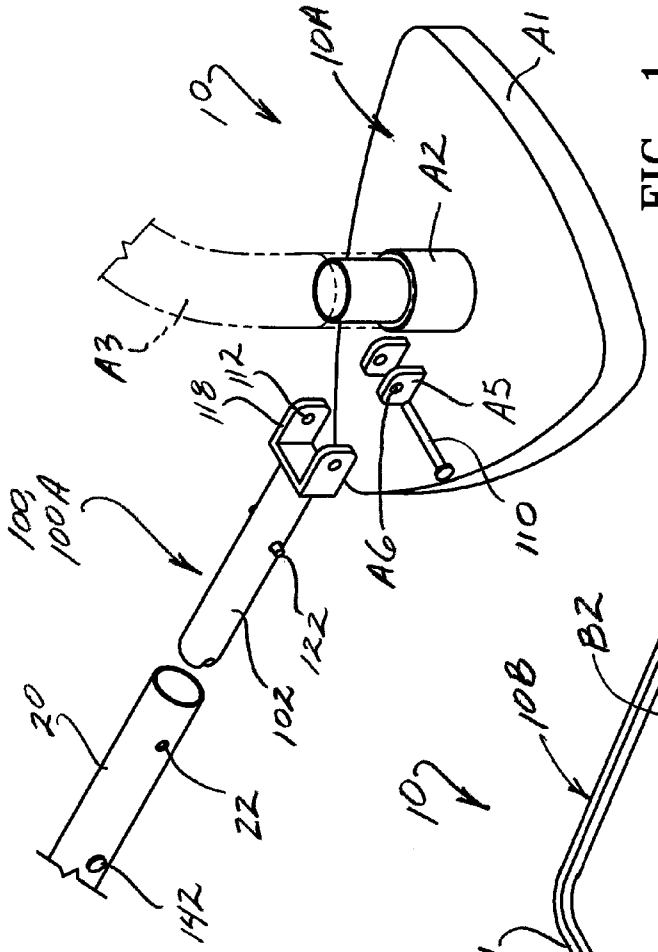

10
10A
A1
A2
A3
A5
A6
110
112
118
100, 100A
102
122
20
22
142

FIG. 1

10
10B
B1
B2
100, 100B
102
122
20
22
142

FIG. 2

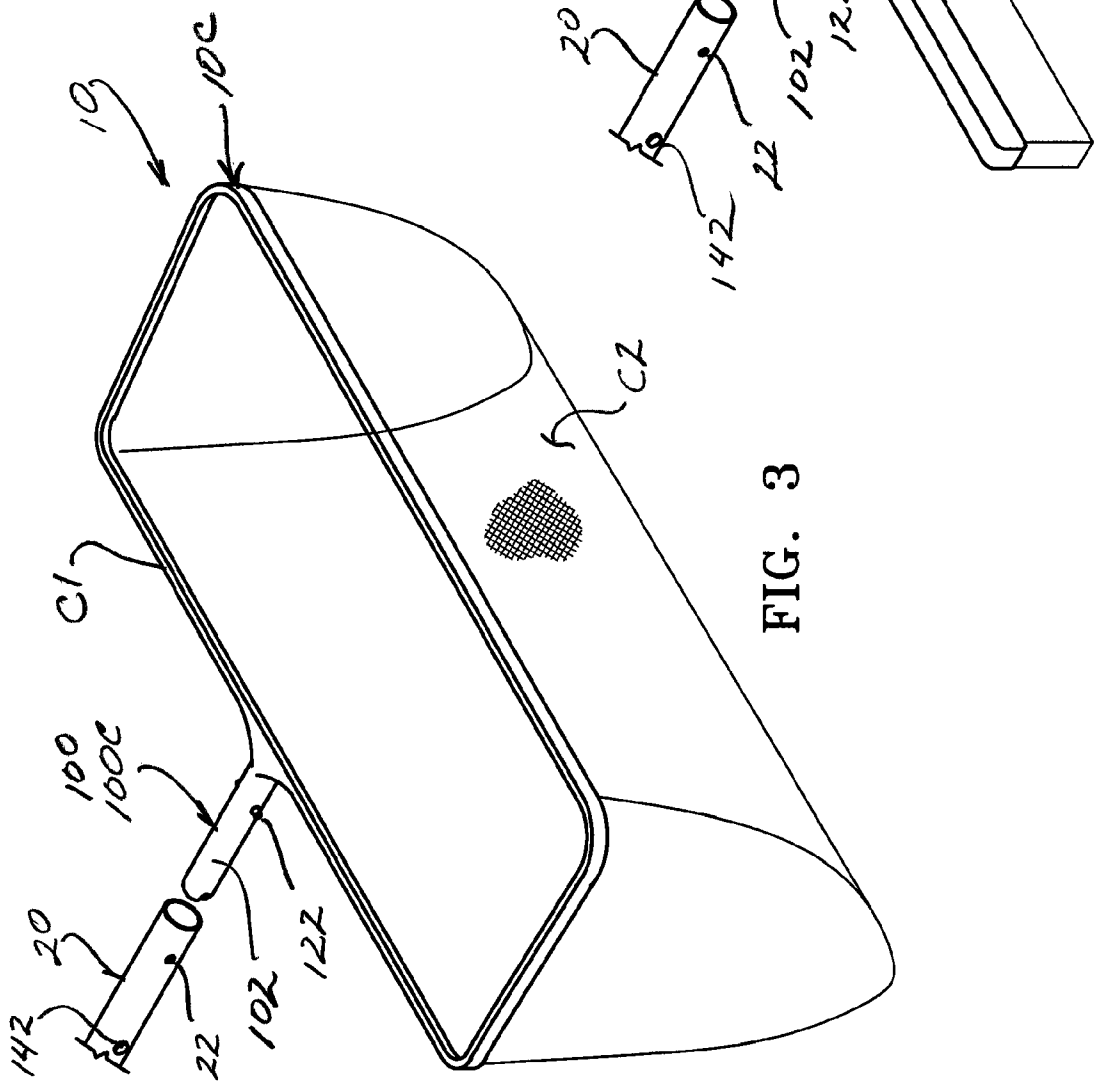

10
10C
C1
C2
100
100C
20
22
102
122
142

FIG. 3

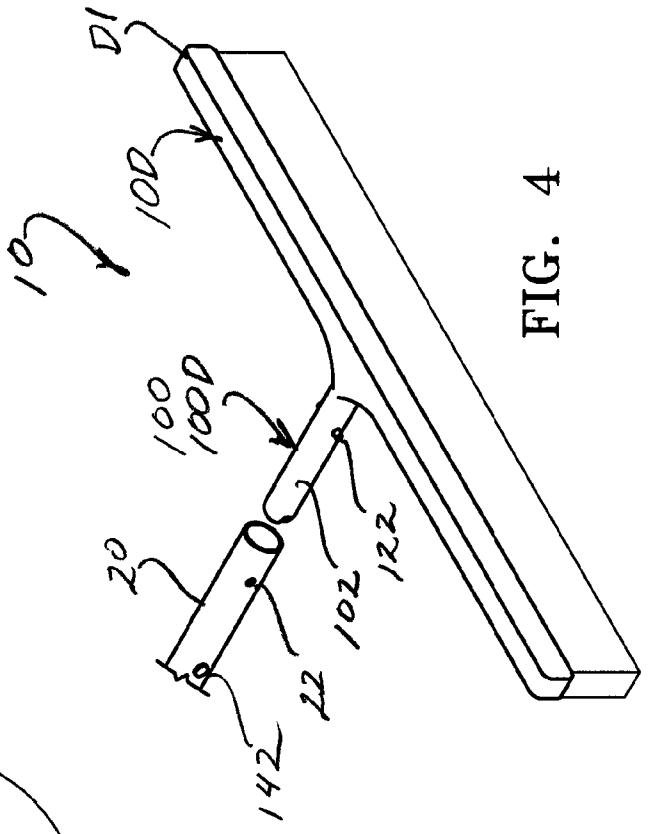

D1
10D
10
100
100D
20
22
102
122
142

FIG. 4

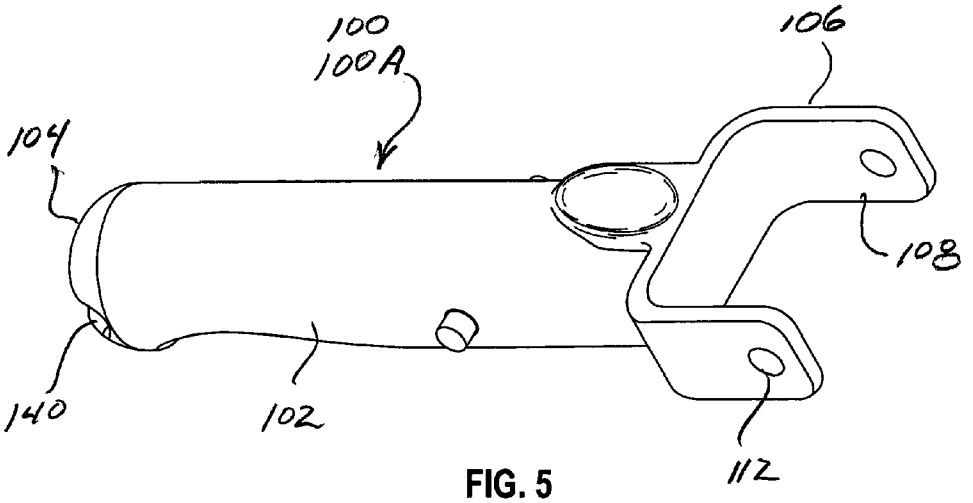


FIG. 5

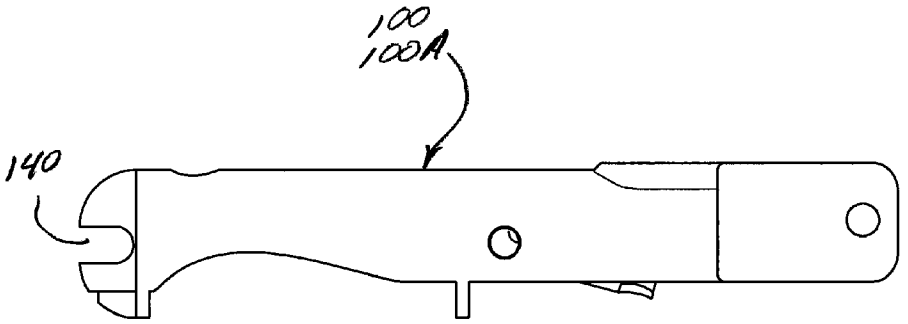


FIG. 6

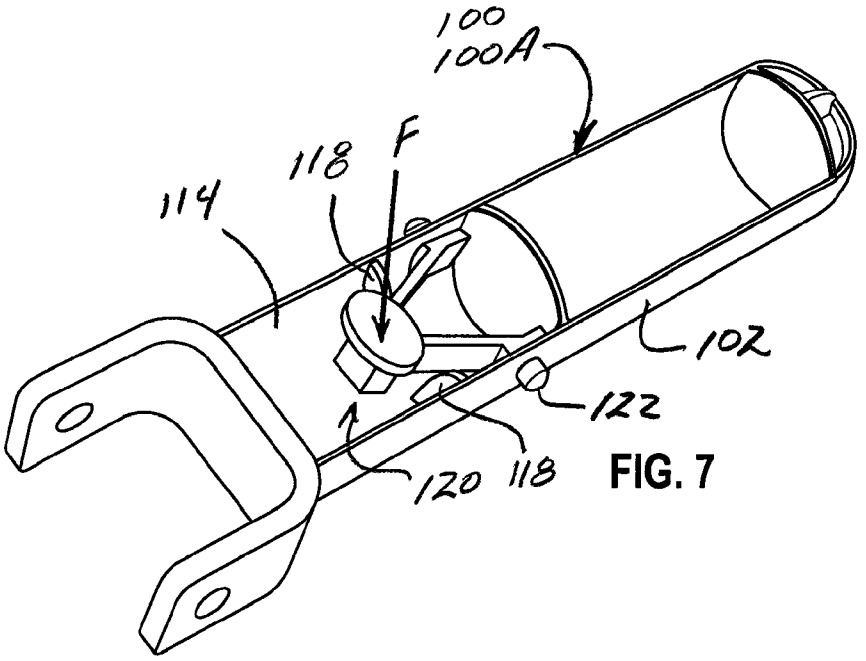

100
100A
118
F
114
102
122
120
118

FIG. 7

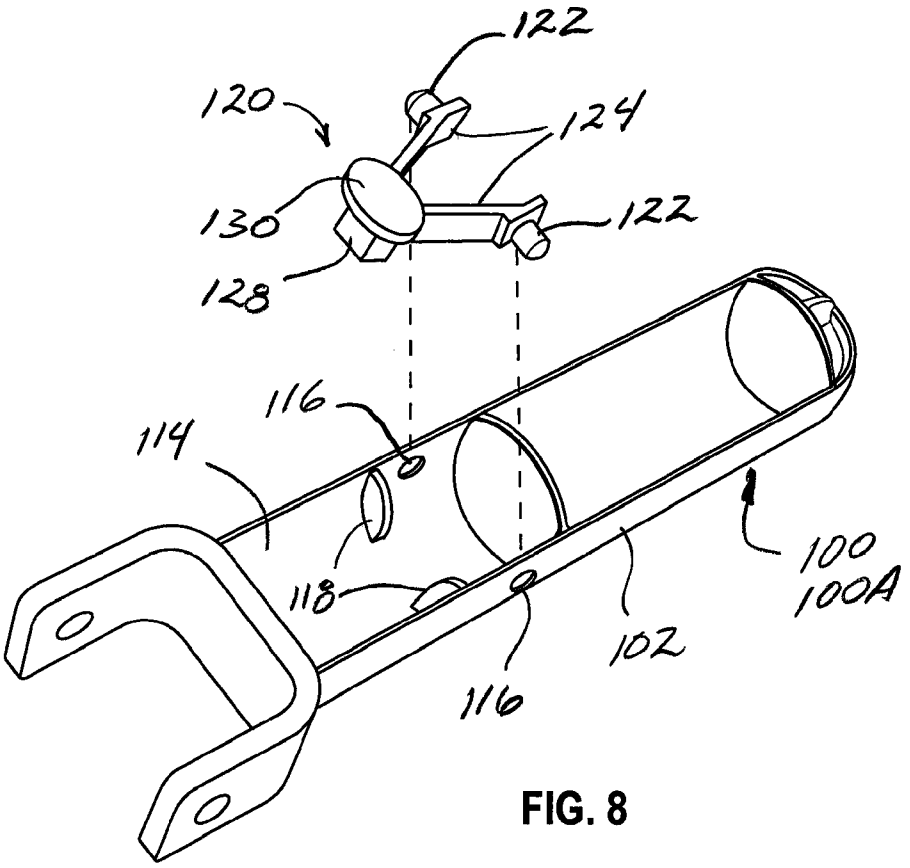

122
120
124
130
122
128
116
114
118
100
100A
102
116

FIG. 8

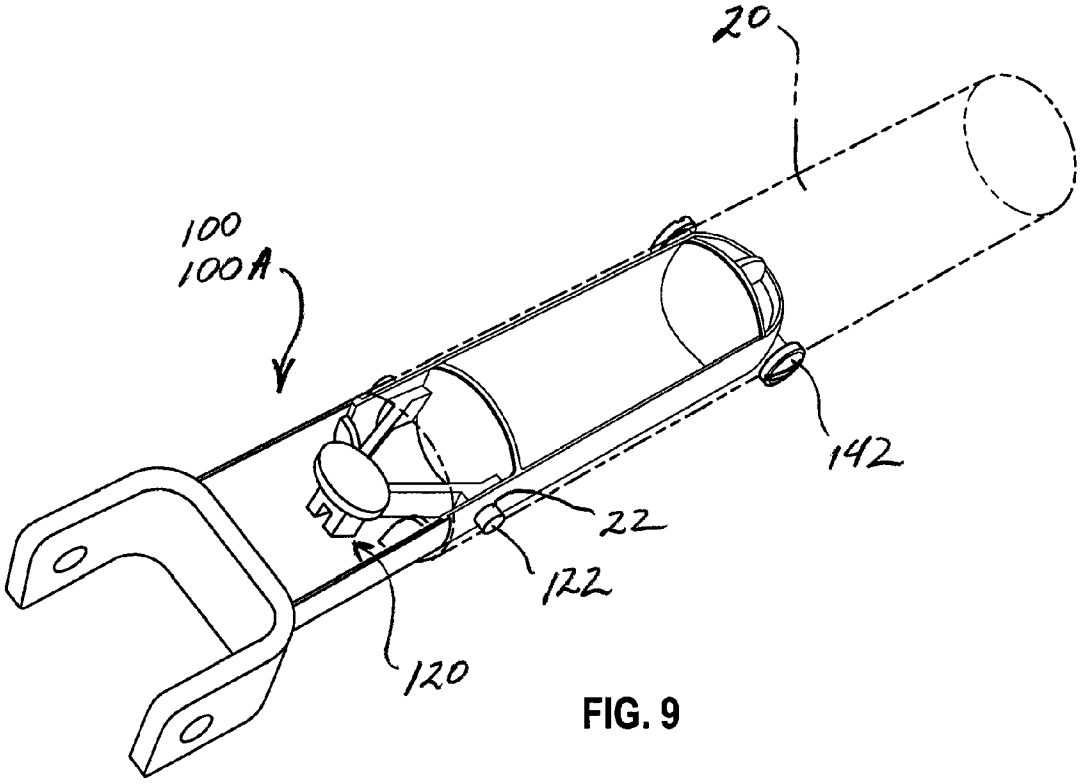


FIG. 9

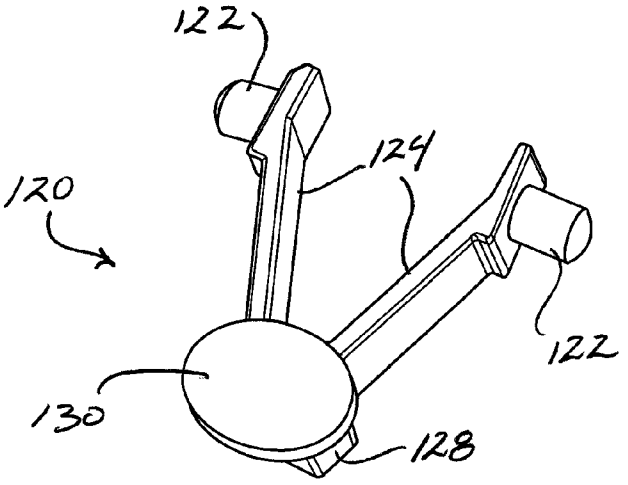


FIG. 10

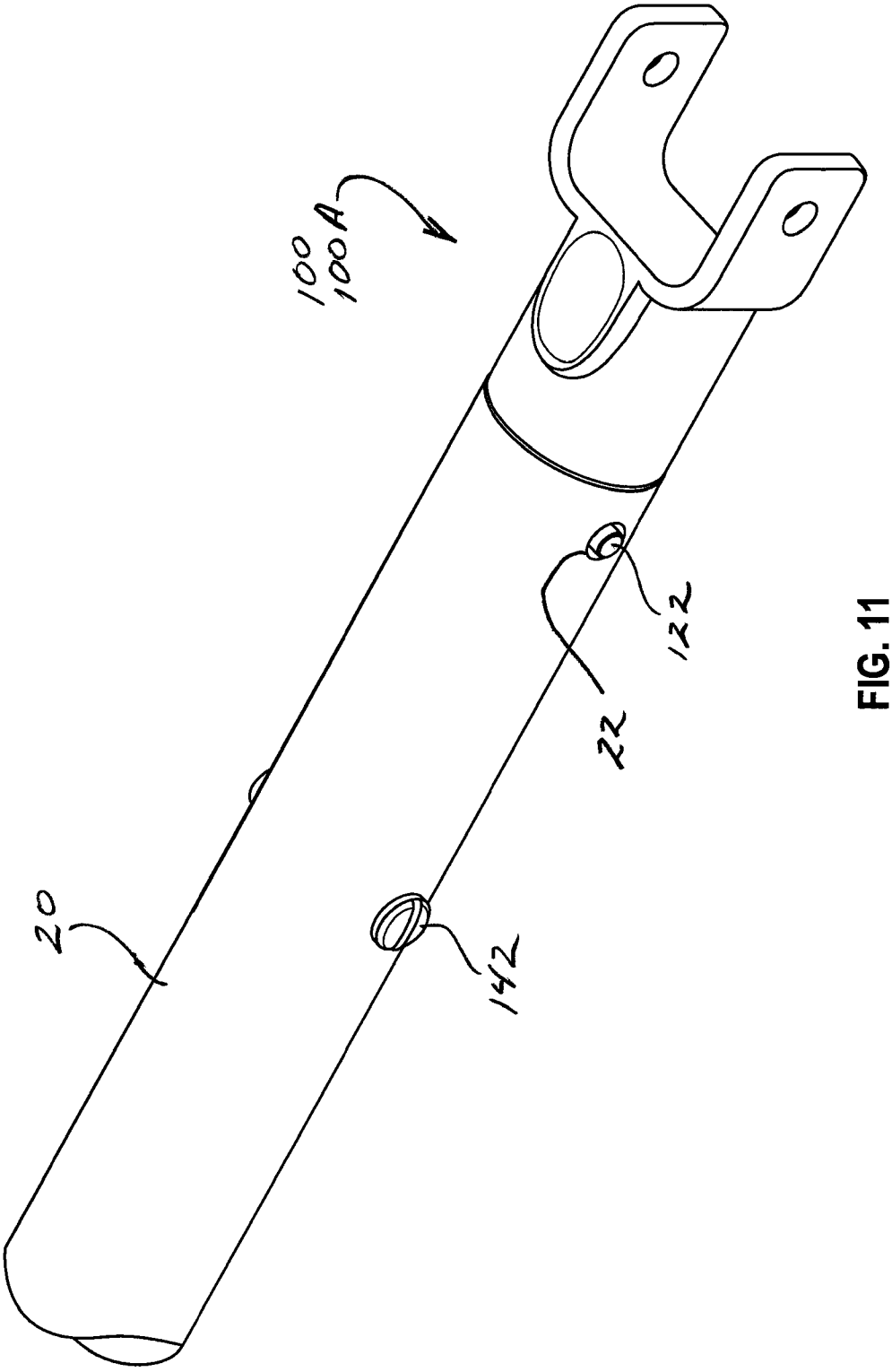


FIG. 11

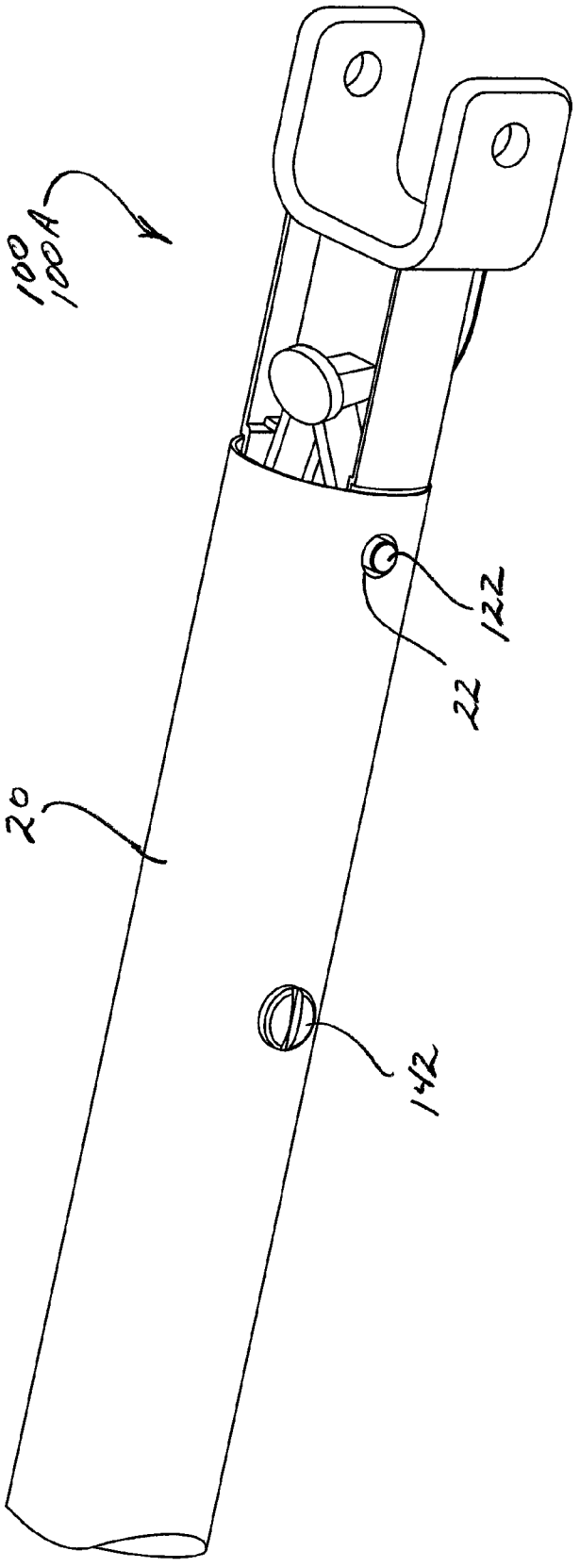


FIG. 12

POOL HANDLE ATTACHMENT MECHANISM AND METHODS THEREOF

BACKGROUND

[0001] Swimming pools require considerable maintenance to keep the water clean and inviting. Typical equipment used for cleaning and maintaining pools include hand skimmers, leaf rakes, wall brushes, vacuum heads and the like. Each of these pool maintenance or cleaning accessories attaches to an end of a long pole which allows the user to stand or walk around the pool deck while reaching down into the pool to vacuum or rake debris from the bottom of the pool or to reach out over the pool to skim floating debris from the water surface.

[0002] The conventional method of attaching the pole to the accessory requires a shaft on the accessory to be inserted into one end of the pole. To lock the accessory to the pole, the shaft of the accessory includes a resilient clip (typically made of plastic) having pegs which project outwardly from the shaft. To slide the pole over the shaft, the projecting pegs must be pressed with one hand (typically using the thumb and index finger), while at the same time sliding the end of the pole over the pressed-in pegs. Once the pole is received over the shaft, mating holes near the end of the pole must be aligned with the pegs, permitting the pegs to snap out through the holes, thereby locking the accessory to the end of the pole. To remove the accessory from the pole, the user must again press in the pegs projecting through the pole while pulling or pushing the accessory away from the pole.

[0003] While the resilient clip serves its intended purpose, some users find it difficult to press in the pegs projecting from the accessory shaft when attempting to attach the accessory or to remove the accessory from the end of the pole. Additionally, it is cumbersome to try to place the end of the pole over the pegs while at the same time pressing in on the pegs. Often the skin of the thumb and fingers will get pinched between the edge of the pole and the pegs when attempting to push the end of the pole over the pressed in pegs.

[0004] Accordingly, there is a need for an improved pole attachment mechanism for swimming pool maintenance accessories which overcomes the foregoing difficulties, but which still locks to standard poles in substantially the same manner utilizing pegs which snap into the peg holes near the end of the pole.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. **1** is a perspective view of one embodiment of a pole attachment mechanism for a swimming pool maintenance accessory comprising a vacuum head.

[0006] FIG. **2** is a perspective view of another embodiment of the pole attachment mechanism for a swimming pool maintenance accessory comprising a hand skimmer.

[0007] FIG. **3** is a perspective view of another embodiment of the pole attachment mechanism for a swimming pool maintenance accessory comprising a leaf rake.

[0008] FIG. **4** is a perspective view of another embodiment of the pole attachment mechanism for a swimming pool maintenance accessory comprising a wall brush.

[0009] FIG. **5** is a top perspective view of the pole attachment mechanism of FIG. **1**.

[0010] FIG. **6** is a side elevation view of the pole attachment mechanism of FIG. **5**.

[0011] FIG. **7** is a bottom perspective view of the pole attachment mechanism of FIG. **5**.

[0012] FIG. **8** is an exploded perspective view of the pole attachment mechanism of FIG. **7**.

[0013] FIG. **9** is the same bottom perspective view of the pole attachment mechanism as in FIG. **5**, except showing the pole received over the shaft of the pole attachment mechanism.

[0014] FIG. **10** is an enlarged perspective view of an embodiment of a clip.

[0015] FIG. **11** is a top perspective view of the pole attachment mechanism of FIG. **5** locked with respect to the end of a pole.

[0016] FIG. **12** is a bottom perspective view of the pole attachment mechanism and pole of FIG. **11**.

DESCRIPTION

[0017] Referring now to the drawings wherein like reference numerals designate the same or corresponding parts throughout the several views, FIG. **1** is a perspective view of a swimming pool maintenance accessory **10** comprising a vacuum head **10**A. FIG. **2** is a perspective view of a swimming pool maintenance accessory **10** comprising a hand skimmer **10**B. FIG. **3** is a perspective view of a swimming pool maintenance accessory **10** comprising a leaf rake **10**C. FIG. **4** is a perspective view of a swimming pool maintenance accessory **10** comprising a wall brush **10**D. The examples of the accessories **10** shown in FIGS. **1** to **4** are for illustration purposes only, and it should be understood that the accessories **10** may be any other type of swimming pool maintenance accessory to which a pole may be attached.

[0018] With respect to FIG. **1**, the vacuum head accessory **10**A includes a base A**1** having a vacuum port A**2** projecting upwardly from the base. In use, a vacuum hose A**3** attaches to the vacuum port A**4**. The base A**1** includes upwardly projecting ears A**5** having aligned apertures A**6**. A pole attachment mechanism **100**A is provided to removably attach the vacuum head accessory **10**A to a pole **20**. In this embodiment, the pole attachment mechanism **100**A includes a clevis end for pivotally attaching to the vacuum head accessory **10**A (discussed later).

[0019] With respect to FIG. **2**, the hand skimmer **10**B includes a base B**1** in the form of a peripheral frame to which a mesh or net material B**2** is attached. A pole attachment mechanism **100**B is provided to removably attach the hand skimmer accessory **10**B to a pole **20**. In this embodiment, the pole attachment mechanism **100**B is substantially the same as pole attachment mechanism **100**A except that the pole attachment mechanism **100**B is fixed to or formed integral with the base B**1** instead of utilizing a clevis end.

[0020] With respect to FIG. **3**, the leaf rake **10**C includes a base C**1** in the form of a peripheral frame to which a mesh or net material C**2** is attached. A pole attachment mechanism **100**C is provided to removably attach the leaf rake **10**C to a pole **20**. In this embodiment, the pole attachment mechanism **100**C is substantially the same as pole attachment mechanism **100**B and is fixed to or formed integral with the base C**1**.

[0021] With respect to FIG. **4**, the wall brush **10**D includes a base D**1** in the form of a brush head. A pole attachment mechanism **100**D is provided to removably attach the wall brush **10**D to a pole **20**. In this embodiment, the pole attachment mechanism **100**D is substantially the same as pole attachment mechanism **100**B and is fixed to or formed integral with the base D**1**.

[0022] FIG. **5** is a top perspective view of one embodiment of the pole attachment mechanism **100**A for attaching the pole to a vacuum head accessory **10**A. FIG. **7** is a bottom perspective view of the pole attachment mechanism **100**A of FIG. **5**. FIG. **6** is a side elevation view of the pole attachment mechanism **100**A. The pole attachment mechanism **100**A comprises a tubular shaft **102** having a distal end **104** sized to be received into the end of the pole **20**. The proximal end **106** of the tubular shaft **102** includes a clevis **108** sized to receive the upwardly projecting ears AS on the base A**1** of the vacuum head accessory **10**A. A pin **110** extends through aligned apertures **112** in the clevis **108** and through the aligned apertures A**6** in the upwardly projecting ears A**5**, thereby securing the tubular shaft **102** to the accessory **10**A.

[0023] Referring to FIGS. **7-10**, the tubular shaft **102** of the attachment mechanism **100** includes a clip **120** received within an open segment **114** of the tubular shaft **102**. The clip **120** includes a pair of outwardly projecting pegs **122** which extend from a pair of resilient legs **124** which diverge apart from a vertex **128** forming a V-shape. The vertex **128** includes an enlarged head **130** providing a thumb-press (discussed later). As best illustrated in FIG. **8**, the tubular shaft **102** includes a pair of apertures **116** through which the pegs **122** extend (see FIG. **7**). Within the open segment **114** is a pair of inwardly projecting rounded ears **118**. When an inward force F (e.g., a downward force as shown in FIG. **7**) is applied to the enlarged head **130** or vertex **128**, the diverging legs **124** are forced between the inwardly projecting rounded ears **118**. The legs are forced inwardly by the ears **118** thereby causing the pegs **122** at the ends of the legs **124** to retract or be pulled inwardly permitting the end of the pole **20** to pass over the retracted pegs **122**. When the force F is removed or released, the biasing force of the outwardly diverging resilient legs **124** will spring back from between the rounded ears **118** to their original position thereby causing the pegs **122** to be forced outwardly. When the peg apertures **22** in the pole **20** become longitudinally and rotationally aligned with the pegs **122**, the pegs snap out through the peg apertures, locking the tubular shaft **102** to the pole **20**, which, in turn, locks the accessory **100** to the pole **20**.

[0024] To assist in aligning the pegs **122** with the peg apertures **22** in the pole **20**, the distal end of the tubular shaft **102** includes a transverse slot **140**. The transverse slot **140** is configured to receive a pin **142** extending transversely through the pole **20** at the proper distance from the end of the pole so that the transverse pin **142** and transverse slot **140** cooperate to both longitudinally and rotationally align the pegs **122** in the shaft **102** with the peg apertures **22** in the pole **20** so the pegs **122** will snap out through the peg apertures **22** locking the pole to the tubular shaft **102**.

[0025] Thus, as with the conventional means of attaching the shaft **102** to the pole **20**, the distal end **104** of the tubular shaft **102** is inserted into the end of the pole until the end of the pole abuts the pegs **122** projecting from the shaft **102**. However, unlike the convention method, rather than pressing the projecting pegs inwardly by hand to enable the shaft to extend deeper into the pole, one can simply press the enlarged head with one's thumb to retract the pegs **122**. This thumb-press action is much easier than attempting to push the pegs in between one's thumb and forefinger and avoids pinching of the skin on the fingers common with the conventional method.

[0026] FIG. **11** is a top perspective view showing the pole attachment mechanism **100**A received and locked within the end of the pole **20**. FIG. **12** is a bottom perspective view showing the pole attachment mechanism **100**A received and locked within the end of the pole **20**. In reference to FIG. **12**, it should be appreciated the enlarged head **130** extends a distance beyond the end of the pole **20**, providing a convenient thumb-press for depressing the head **130** to retract the pegs **122** permitting the shaft to be easily inserted into the end of the pole or easily removed from the end of the pole.

[0027] Various embodiments of the invention have been described above for purposes of illustrating the details thereof and to enable one of ordinary skill in the art to make and use the invention. The details and features of the disclosed embodiments are not intended to be limiting, as many variations and modifications will be readily apparent to those of skill in the art. Accordingly, the scope of the present disclosure is intended to be interpreted broadly and to include all variations and modifications coming within the scope and spirit of the appended claims and their legal equivalents.

1. A pole attachment mechanism for swimming pool maintenance accessories, the pole attachment mechanism comprising:

(A) a tubular shaft having a distal end and a proximal end, the tubular shaft having longitudinal central axis and a lateral central axis, the tubular shaft including:

(i) a pair of apertures substantially aligned along the longitudinal central axis and proximate the central lateral axes;

(ii) an outer surface with an open wall segment exposing an interior cavity of the tubular shaft, the interior cavity including:

(a) a pair of opposing inwardly projecting ears substantially aligned along the longitudinal central axis, the opposing inwardly projecting ears defining a lateral space therebetween, the inwardly projecting ears spaced a distance longitudinally from the apertures in a direction toward the proximal end of the tubular shaft;

(B) a clip including:

(i) a pair of resilient legs extending longitudinally from and diverging laterally outwardly from a vertex;

(ii) a peg extending laterally outwardly from a distal end of each of the legs, each of the pegs having outer ends;

wherein the legs of the clip extend into the interior cavity of the tubular shaft with the outer ends of the pegs projecting through the apertures and extending outwardly from the outer surface of the tubular shaft, the laterally outwardly diverging legs biasing the peg ends outwardly;

wherein a distance from the pegs at the distal ends of the legs to the vertex is greater than the longitudinal distance between the apertures and the inwardly projecting ears;

wherein the vertex of the legs of the clip is oriented toward the proximal end of the tubular shaft;

wherein a width between the laterally diverging legs of the clip at a location where the legs extend past the inwardly projecting ears is greater than the lateral space between the ears;

wherein the lateral space between the ears is such that when an inward force is applied to the vertex of the legs to force the legs between the inwardly projecting ears, the distal end of the legs are drawn inwardly a sufficient distance such that the outer ends of the pegs are substantially flush with the outer surface of the tubular shaft.

2. The pole attachment mechanism of claim **1** wherein the proximal end of the shaft includes a clevis end adapted to pivotally attach to the swimming pool maintenance accessory.

3. The pole attachment mechanism of claim **1** wherein the swimming pool maintenance accessory is a vacuum head.

4. The pole attachment mechanism of claim **1** where in the proximal end of the shaft is fixed to a base of the swimming pool maintenance accessory.

5. The pole attachment mechanism of claim **4** wherein the swimming pool maintenance accessory is a hand skimmer.

6. The pole attachment mechanism of claim **4** wherein the swimming pool maintenance accessory is a wall brush.

7. The pole attachment mechanism of claim **4** wherein the swimming pool maintenance accessory is a leaf rake.

8. The pole attachment mechanism of claim **1** in combination with a pole, wherein the pole is sized to slidably receive the distal end of the tubular shaft.

9. The pole attachment mechanism of claim **8** wherein the pole includes peg apertures which mateably align with the peg ends projecting outwardly from the tubular shaft, whereby when the peg apertures align with the peg ends, the outwardly biased peg ends snap into the peg apertures, removably locking the pole to the pole attachment mechanism.

10. The pole attachment mechanism of claim **9** wherein the vertex of the legs extends a distance beyond the end of the pole when the peg ends are received within the peg apertures of the pole.

11. The pole attachment mechanism of claim **10** wherein a distal end of the tubular shaft includes a transverse slot and the pole includes a transverse pin, whereby the transverse pin and transverse slot cooperate to longitudinally and rotationally align the peg apertures with the peg ends when the transverse pin is received within the transverse slot.

12. The pole attachment mechanism of claim **11** wherein the proximal end of the tubular shaft includes a clevis end adapted to pivotally attach to the swimming pool maintenance accessory.

13. The pole attachment mechanism of claim **12** wherein the swimming pool maintenance accessory is a vacuum head.

14. The pole attachment mechanism of claim **11** where in the proximal end of the shaft is fixed to a base of the swimming pool maintenance accessory.

15. The pole attachment mechanism of claim **14** wherein the swimming pool maintenance accessory is a hand skimmer.

16. The pole attachment mechanism of claim **14** wherein the swimming pool maintenance accessory is a wall brush.

17. The pole attachment mechanism of claim **14** wherein the swimming pool maintenance accessory is a leaf rake.

* * * * *