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(54) **CHALK LINE WITH VIEWING WINDOW**

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B44D 3/38 (2006.01)

(52) **U.S. Cl.** **33/414**

(58) **Field of Classification Search** 33/414
See application file for complete search history.

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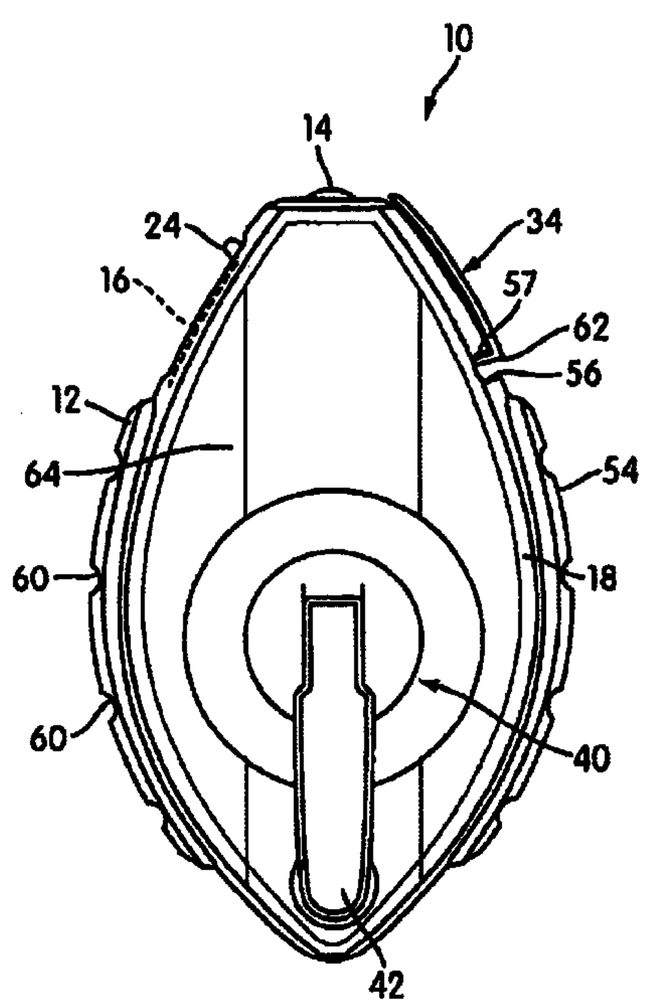
(57) **ABSTRACT**

A chalk line device includes a housing and a chalk line stored in the housing. The chalk line terminates in a hook at one end and the hook is disposed outside of the housing. The housing may include a side wall with a depression formed therein that is shaped to receive the hook for storage. The depression has an edge that allows the hook to securely engage. The housing may also include a translucent window for allowing the user to check the level of chalk in the chalk line device. The translucent window forms at least a portion of a wall of the housing. The translucent window can be made, for example, of a plastic and can be integrally formed with the housing.

53 Claims, 5 Drawing Sheets



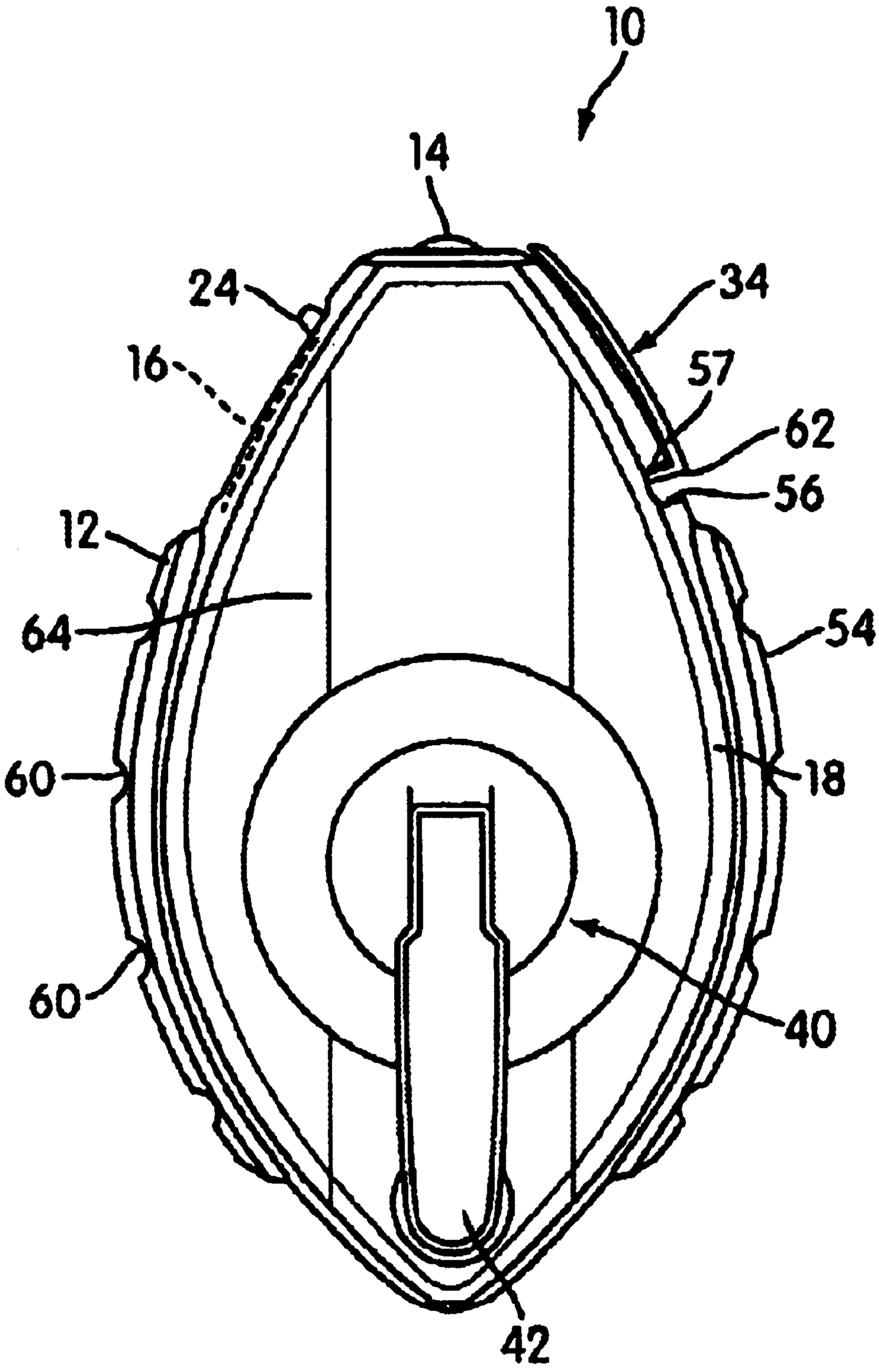


FIG. 1

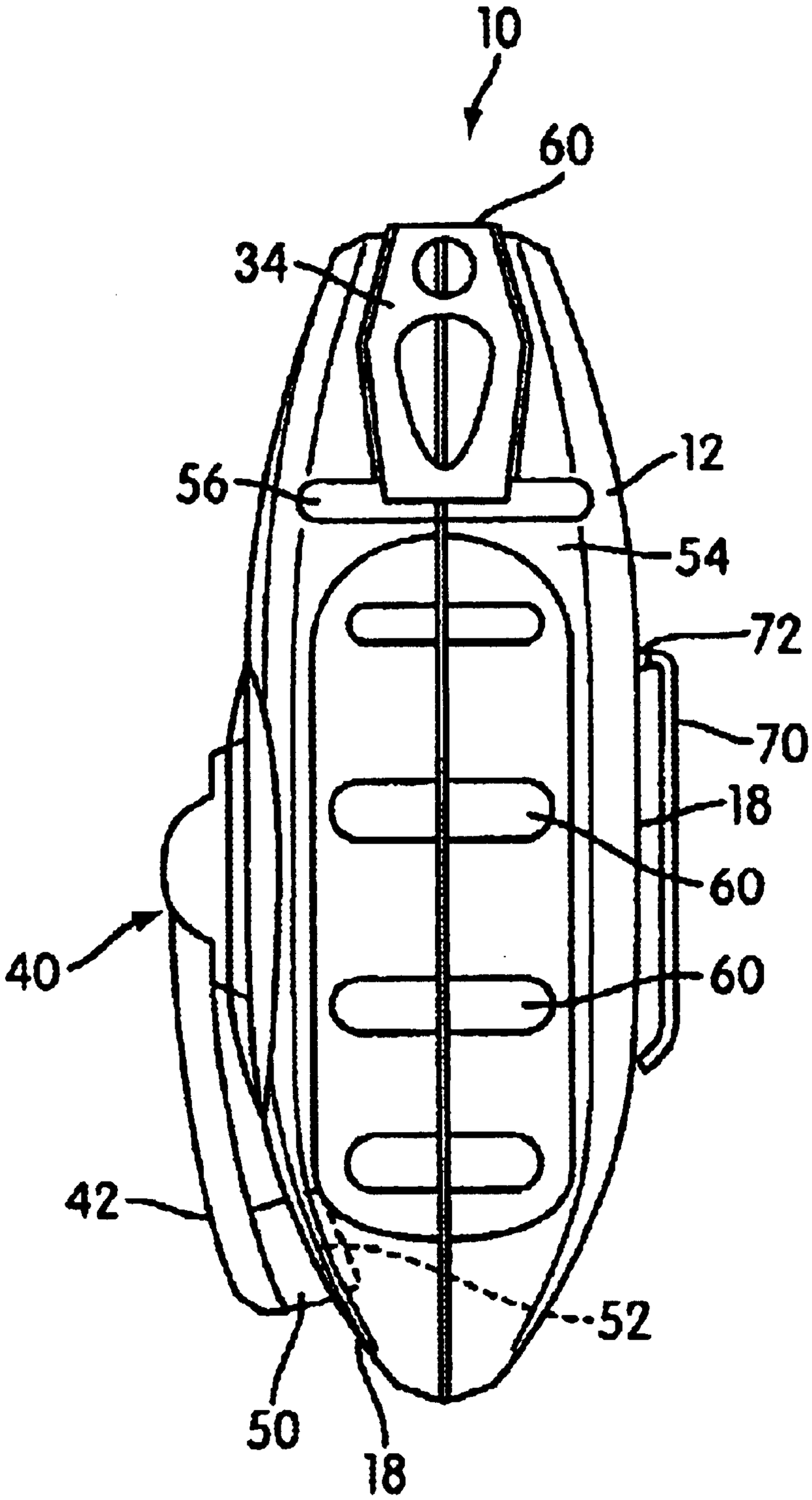


FIG. 2

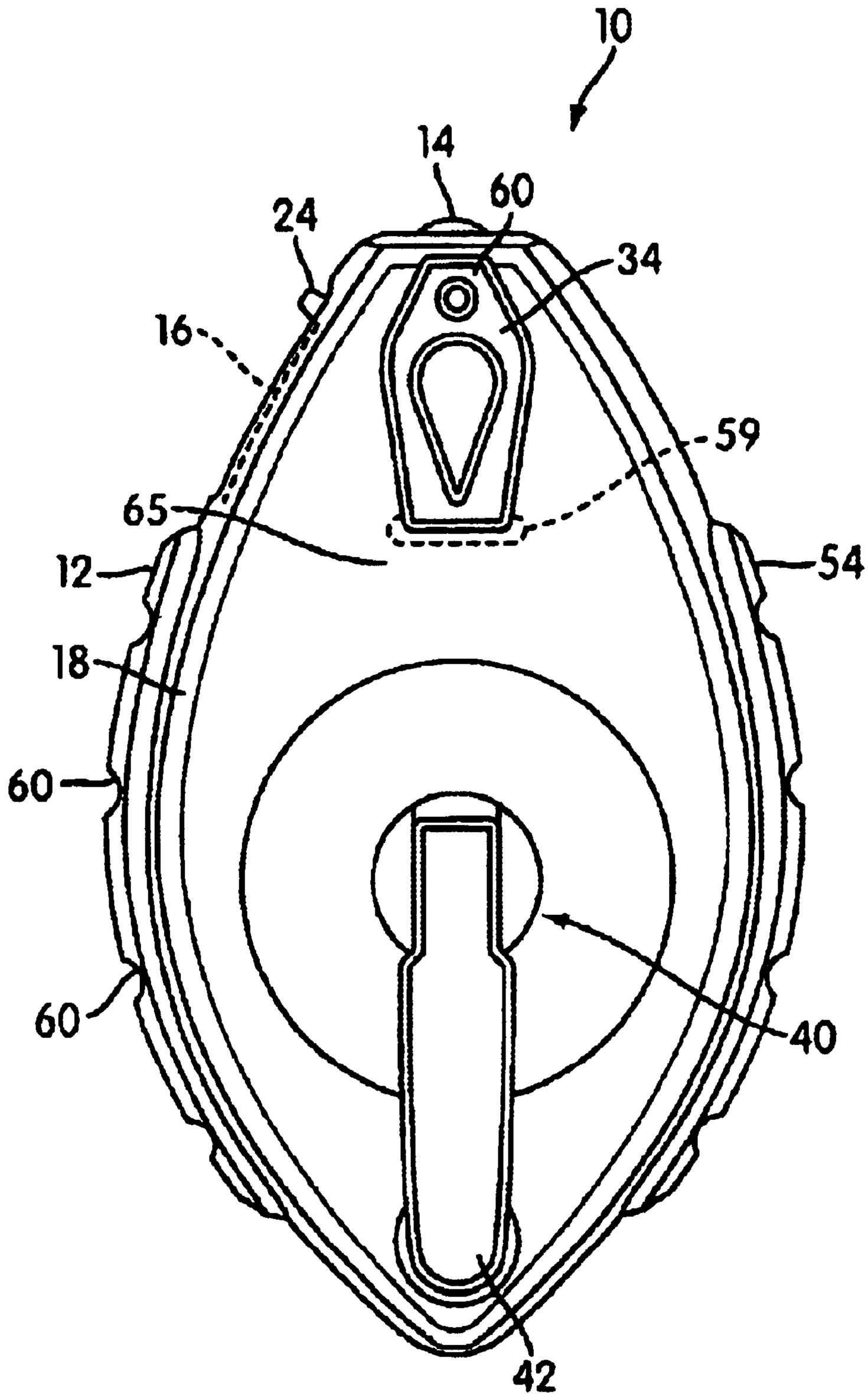


FIG. 3

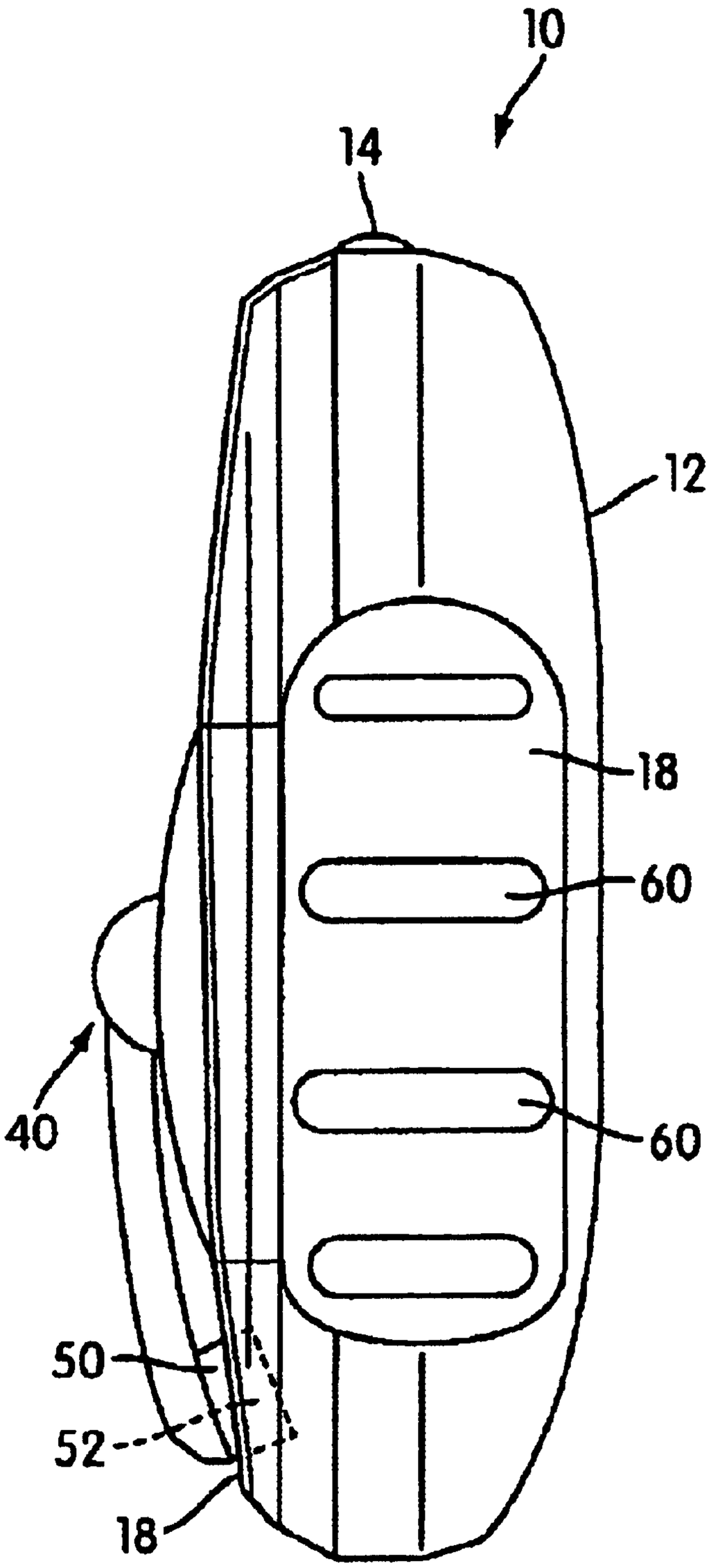


FIG. 4

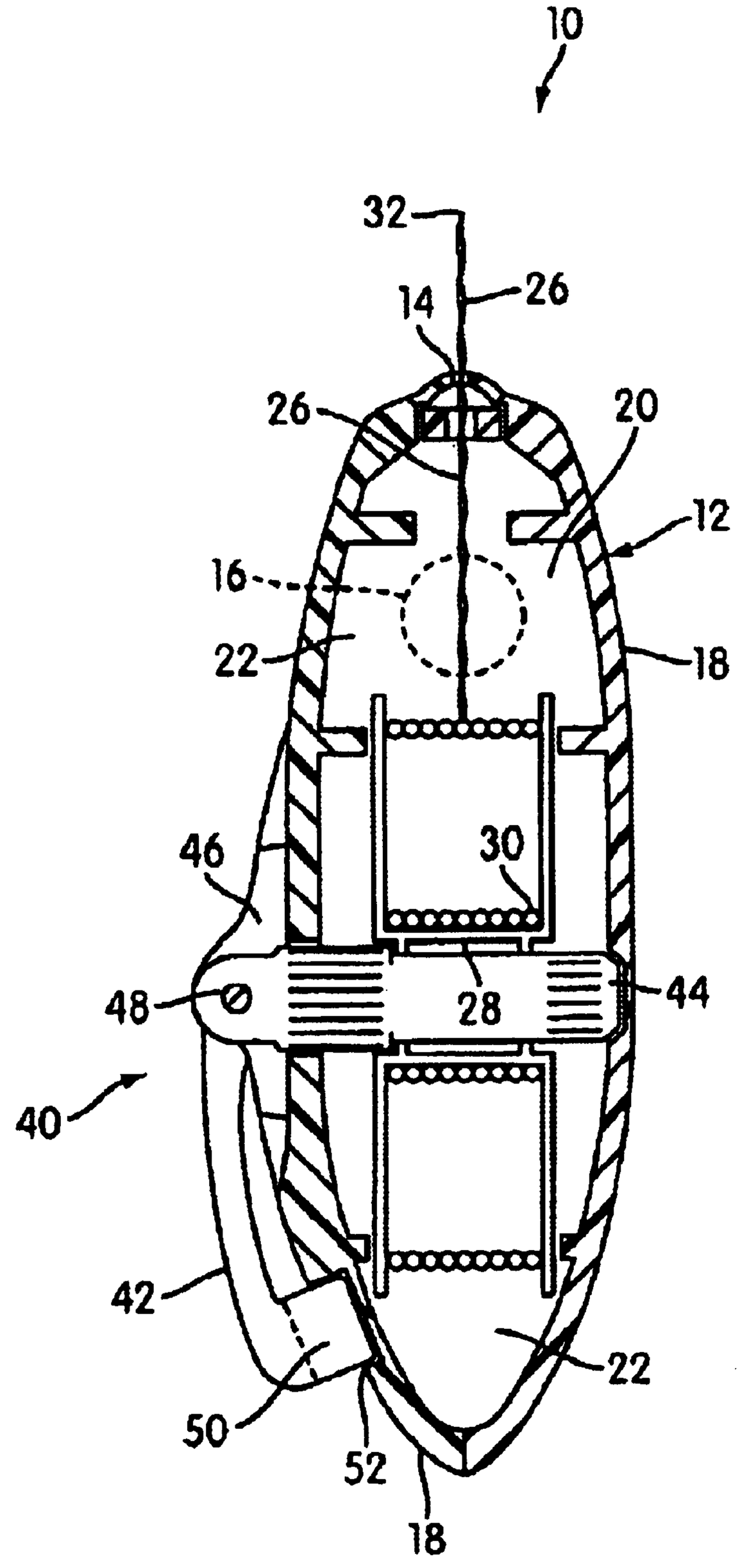


FIG. 5

CHALK LINE WITH VIEWING WINDOW

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

This application is a reissue application of U.S. Pat. No. 6,915,587, which issued on Jul. 12, 2005.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention pertains to chalk line devices, and more particularly, to chalk line devices with a housing having a viewing window and/or a housing having a structure for attaching an end of the chalk line.

2. Discussion of Related Art

Chalk line devices are widely employed to mark straight lines along a workpiece or work place. Generally, the chalk line device includes a housing or casing which defines a reservoir for storing chalk and stores an extendable line about a spool that is driven by a crank outside of the housing. Chalk line devices use a finely powdered chalk which is applied to the chalk line within the housing. The powdered chalk is usually colored brightly so as to allow the user to distinguish a mark line from a surface color of the workpiece. Generally, the housing is provided with a port for filling the reservoir initially with chalk or refilling the reservoir with chalk when the quantity of chalk in the reservoir is low. However, in conventional chalk line devices, it is difficult to determine the level of quantity of chalk remaining in the reservoir.

Furthermore, the chalk line typically terminates in a clip or a hook. The clip or hook facilitates pulling and securing the chalk line as well as acts as a stop against a wall of the housing to prevent the end of the chalk line from entering inside the housing during rewinding of the chalk line. However, in conventional chalk line devices, the clip is often left hanging and this may create the situation where the clip can get caught by some object or can be entangled with the line itself.

BRIEF SUMMARY OF THE INVENTION

An aspect of embodiments of the invention provides a chalk line device with storage for the hook end of the chalk line.

Another aspect of embodiments of the invention provides a chalk line device with a mechanism for determining the level of chalk in the device.

In accordance with an embodiment of the invention a chalk line device includes a housing having a chalk line port and a chalk port. The housing defines an exterior surface and an interior space including a chalk reservoir in communication with the chalk port. The chalk line device further includes a movable door secured to the housing over the chalk port to selectively open and close the chalk port and a chalk line support mounted in the interior space in the housing. A chalk line having one end secured to the chalk line support within the housing and another end with a hook disposed outside of the housing is provided. The chalk line extends through the chalk line port. A retracting mechanism is mounted to the housing and connected to the chalk line to selectively retract the chalk line into the housing and to allow the chalk line to be extended from the housing through the chalk line port. The exterior surface of the housing includes a side wall with a depression formed therein that is shaped to receive the hook for storage.

In accordance with an embodiment of the invention a chalk line device includes a housing having a chalk line port and a chalk port and defining an interior space including a chalk reservoir in communication with the chalk port. The housing includes a translucent window forming at least a portion of a wall of the chalk reservoir. The chalk line device further includes a chalk line support mounted in the interior space in the housing and a chalk line is secured to the chalk line support and extends through the chalk line port. A retracting mechanism is mounted to the housing and connected to the chalk line. The retracting mechanism selectively retracts the chalk line into the housing and allows the chalk line to be extended from the housing through the chalk line port.

These and other aspects of the invention will become apparent when taken with the detailed description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. **1** is a front elevational view of a chalk line device according to an embodiment of the present invention;

FIG. **2** is a side view of a chalk line device of FIG. **1** according to an embodiment of the present invention;

FIG. **3** is a front elevational view of a chalk line device according to another embodiment of the present invention;

FIG. **4** is a side view of a chalk line device of FIG. **3** according to an embodiment of the present invention; and

FIG. **5** is a cross-sectional view of a chalk line device according to an embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to FIGS. **1**–**5** in detail, a chalk line device **10** is shown that includes a housing **12** having a chalk line port **14** and a chalk port **16**. The housing **12** defines an exterior surface **18** and an interior space **20**. The interior space **20** includes a chalk reservoir **22** in communication with the chalk port **16**.

A movable door **24** (shown in FIGS. **1** and **3**) is secured to the housing **12** over the chalk port **16** to selectively open and close the chalk port **16**. Any suitable closure mechanism may be used including a hinged door, a sliding door or even a self-sealing access port. As seen in FIG. **5**, a chalk line **26** is spooled around a chalk line support **28**. The chalk line support **28** is rotatably mounted in the interior space **20** in the housing **12**.

The chalk line **26** has one end **30** secured to the chalk line support **28** within the housing **12** and another end **32** provided with a hook **34** disposed outside of the housing **12**. The chalk line **26** extends through the chalk line port **14**.

The chalk line device **10** further includes a retracting mechanism **40** which is mounted to the housing **12**. The retracting mechanism comprises a handle **42**, a crank shaft **44** and an integral hub **46**.

The retracting mechanism **40** is connected to the chalk line support **28** via the crank shaft **44** and allows the chalk line **26** to be freely extended from the housing **12** through the chalk line port **14** when the user pulls the hook **34** attached to end **32** of chalk line **26**. The retracting mechanism **40** also allows selective retraction of the chalk line **26** into the housing when the user rewinds the chalk line by rotating the handle **42**. Of course any known retracting and spooling mechanisms could be used.

The handle **42** is connected to hub **46** via pivot pin **48**. The handle **42** can easily be moved from a storing position through an are of about 180° to assume a cranking position as is known. The handle **42** has a knob **50** rotatably mounted on handle **42** to allow the user to rotate the handle **42** while being able to maintain grip on the knob **50**. This feature facilitates rewinding of the chalk line. In addition, the knob **50** also serves as a rotating-stop for halting the rotation of the hub **46** and crank shaft **44** when the handle **42** is moved to a stored position. In the stored position, the knob **50** is inserted into a groove **52** provided in the exterior surface **18** of housing **12**. In this way, the groove **52** serves as a rotating-stop and also renders the arm **42** more compact with the housing **12** for storage and/or handling.

The exterior surface **18** of housing **12** also includes a side wall **54** with a depression **56** formed therein that is shaped to receive the hook **34** for storage, as seen in FIGS. **1**–**2**. The depression **56** is formed as an elongated slot to allow easy insertion of the hook **34** as described below. The depression **56** is positioned adjacent to the chalk line port **14** so that when the line **26** is fully retracted in the housing **12**, only the hook **34** remains on the exterior to prevent chalk from the line **26** from inadvertently soiling surfaces it may contact. So the depression **56** is preferably spaced from the port **14** about the length of the hook **34**.

The depression **56** has an edge **57** (shown in FIG. **1**) that allows the hook **62** to securely engage to prevent accidental removal. The edge **57** extends that an angle of about 90° or less from the surface **54** of housing **12** to form an acute ledge for the hook **34** to engage. The depression **56** has a mouth that is flush with the side wall **54**.

The hook **34** has a body with a line attachment device **60** on one end and a finger **62** extending outwardly from the other end. The finger **62** engages the depression **56** during storage, as shown in FIGS. **1**–**3**. The shape of the hook **34** can be designed such that the hook **34** can mate with a surface of side wall **54**. For example, the shape of the hook can be curved to follow the curvature of side wall **54**, as illustrated in FIG. **1**. Of course, any known end piece for a chalk line can be used, including various shapes and configurations.

The movable chalk door **24** can be mounted on any surface of the housing **12**. Similarly, the depression **56** can be formed on any surface of housing. For example, in the embodiment shown in FIGS. **1** and **2**, the movable chalk door **24** is mounted to one side wall of the housing **12** and the depression is located on a different side of the housing **12**. As seen in FIG. **2**, the chalk door **24** is mounted on one side wall of the housing **12** and the depression **56** is located on a side wall situated on an opposite side of the housing **12**. Whereas, in the embodiment shown in FIGS. **3** and **4**, the chalk door **24** is mounted, for example, on one side wall of the housing and the depression **59** is located on a side wall that extends at an angle to the side wall with the chalk door **24**. Alternatively, the chalk door **24** can be mounted on one side wall of the housing **12** and the depression **56** can be located on the same side wall, below the door **24** to cover the door **24** or at an end spaced apart from the door **24**.

The side wall(s) **54** of housing **12** can be provided with a plurality of grip formations **60**. As seen in FIGS. **2** and **4**, the formations **60** are formed on the side wall to provide the user with a less slippery surface to grip and handle the chalk line device **10**. Alternatively, the side wall(s) **54** of housing **12** can be provided with a plurality of ridges. In this case also, the ridges provide the user with a less slippery surface for better grip. However, any textured surface would be suitable for providing enhanced grip.

The housing **12** also includes a mechanism for determining the level of the chalk in the reservoir **22**. As seen in FIGS. **1** and **3**, the chalk line device **10** has a translucent window **64** (shown in FIG. **1**) or window **65** (shown in FIG. **3**). The window **64**, **65** forms at least a portion of a wall of the chalk reservoir **22**. The window **64**, shown in FIG. **1**, is a strip of translucent material covering one or more walls of the housing **12** over an entire length of the housing. The translucent window **65** shown in FIG. **3** forms a substantial portion of one side of the housing **12** and extends the length of the housing **12**. However, one can appreciate that the translucent window **64**, **65** can be formed on any selected surface portion of the housing **12** and have any size or shape. In addition, the translucent window can be formed on one or more sides of the housing **12**.

The translucent window **64**, **65** allows the user to check the level of chalk remaining in the reservoir **22**. In one embodiment, the window **64**, **65** is provided with a scale to indicate the level of chalk quantity in the reservoir. In another embodiment, the window **64**, **65** can include a scale with three lines with the words (low, medium and high) written, respectively, beside each line to indicate to the user the approximate level of quantity of chalk in the reservoir. In yet another embodiment, the window **64**, **65** can include a scale with four lines with the markings ¼, ½, ¾ and full inscribed, respectively, beside each line to indicate to the user the approximate level of quantity of chalk in the reservoir. However, one can appreciate that more than four lines may be inscribed on the window and used as a scale to indicate to the user the level of chalk in the reservoir.

The housing **12** is preferably formed of plastic but may also be formed of metal or any other suitable material or combination of materials. The translucent window **64**, **65** is preferably formed of a light diffusing plastic, but may also be formed of glass or other translucent material. The window **64**, **65** can be transparent, clear or colored, as long as a user can view the interior of reservoir **22**. Thus, it should be understood that the term "translucent" as used herein should be construed as a generic term for materials that are clear (transparent) or light diffusing, so long as a viewer can determine the chalk level therethrough. The window **64**, **65** can be integrally formed with the housing **12**. The housing **12** may be formed as one piece or multiple pieces. In this case, the housing **12** can be over-molded with opaque material while leaving an area for the window **64**, **65**. For example, the housing **12** can be over-molded with a relatively soft material such as a soft plastic or rubber to protect the housing **12** from breaking in case the device **10** is dropped on a hard surface.

As stated above, the depression which receives the hook **34** for storage can be formed on any surface of housing **12**. For example, as shown in FIG. **3**, the depression **59** is formed on window **64**. Similarly to the embodiment shown in FIGS. **1** and **2**, the depression **59** is formed as an elongated slot to allow easy insertion of the hook **34**. The hook **34** remains on the exterior to prevent chalk from the line **26** from inadvertently soiling surfaces it may contact. So the depression **59** is preferably spaced from the port **14** about the length of the hook **34**.

The depression **59** has an edge that allows the hook **62** to securely engage to prevent accidental removal. Similarly to the embodiment shown in FIGS. **1** and **2**, the edge extends at an angle of about 90° or less from the surface **54** of housing **12** to form an acute ledge for the hook **34** to engage. The depression **59** has a mouth that is flush with the surface of window **65**.

As seen in FIG. **4**, the depression may be enlarged to extend from the edge so as to receive the entire book **34**

rather than just the finger **62**. In this way, the hook **34** lies flush in the exterior surface **18** of the housing **12**, as seen in FIG. **4**. Of course, a depression similar to that shown in FIG. **1** could also be formed in the window **65** as well.

The chalk line device further optionally includes a clip **70** that is pivotally attached to a wall of housing **12** at point **72**. The clip **70** can be spring biased at the point **72** to allow biasing the clip **70** toward a wall of the housing **12**. The clip **70** can be used, for example, to hold the chalk line device **10** on a support. For instance, the clip **70** can be slid in a belt or on a pocket rim of a user to allow easy retrieval and storage.

Although the hook **34** is shown in the Figures having a certain shape or form, it is also within the scope of the present invention to have various shapes or form and make the hook from any material, such as but not limited to metal and plastic. The many features and advantages of the present invention are apparent from the detailed specification and thus, it is intended by the appended claims to cover all such features and advantages of the described apparatus which follow the true spirit and scope of the invention.

Furthermore, since numerous modifications and changes will readily occur to those of skill in the art, it is not desired to limit the invention to the exact construction and operation described herein. Accordingly, all suitable modifications and equivalents should be considered as falling within the spirit and scope of the invention.

What is claimed:

1. A chalk line device, comprising:

a housing having a chalk line port and a chalk port, wherein the housing defines an exterior surface and an interior space including a chalk reservoir in communication with the chalk port;

a movable door secured to the housing over the chalk port to selectively open and close the chalk port;

a chalk line support mounted in the interior space in the housing;

a chalk line having one end secured to the chalk line support within the housing and another end with a hook disposed outside of the housing, wherein the chalk line extends through the chalk line port; and

a retracting mechanism mounted to the housing and connected to the chalk line that selectively retracts the chalk line into the housing and allows the chalk line to be extended from the housing through the chalk line port;

wherein the exterior surface of the housing includes a side wall with a depression formed therein that is shaped to receive the hook for storage, the depression having a mouth that is flush with the side wall,

wherein the hook has a body with a line attachment device on one end and a finger extending outwardly from the other end, the finger engaging the depression during storage so that the body can lie against the exterior surface.

2. The chalk line device of claim **1**, wherein the door to the chalk port is mounted to one side of the housing and the depression is located on a different side of the housing.

3. The chalk line device of claim **1**, wherein the housing has walls and the door is mounted on one wall of the housing and the depression is located on another wall that extends at an angle to the side wall with the door.

4. The chalk line device of claim **1**, wherein the housing has walls and the door is mounted on one wall of the housing and the depression is located on a another wall that is located on an opposite side of the housing.

5. The chalk line device of claim **1**, wherein the retracting mechanism includes a handle with a knob and the housing further includes another depression arranged to receive at least a portion of the knob when the handle is stored.

6. The chalk line device of claim **1**, wherein the side wall has a plurality of grip depressions.

7. The chalk line device of claim **1**, wherein the housing includes a translucent window.

8. The chalk line device of claim **7**, wherein the housing has walls and the translucent window is located on a wall of the housing and the depression is located on another wall of the housing.

9. The chalk line device of claim **7**, wherein the depression is formed on the translucent window.

10. The chalk line device of claim **1**, wherein the depression has an edge.

11. The chalk line device of claim **10**, wherein the edge forms an acute ledge.

12. The chalk line device of claim **1**, wherein the depression is spaced from the chalk line port about a length of the hook.

13. A chalk line device, comprising:

a housing having a chalk line port and **[**a chalk port and**]** defining a sealed interior space including a chalk reservoir **[**in communication with the**]** *into which* chalk **[**port, wherein**]** *can be placed,* the housing **[**includes a translucent**]** *including a* window forming at least a portion of a wall of the chalk reservoir**[**; an amount of powdered chalk retained within the chalk reservoir**]**, wherein **[**the**]** *an* amount of powdered chalk **[**retained**]** *that may be provided* within **[**the chalk**]** *said* reservoir can be viewed through the **[**translucent**]** window;

a chalk line support mounted in the interior space in the housing;

a chalk line **[**secured to**]** *carried by* the chalk line support and extending through the chalk line port; and

a retracting mechanism mounted to the housing and connected to the chalk line **[**that**]**, *the retracting mechanism operable to* selectively **[**retracts**]** *retract* the chalk line into the housing and **[**allows**]** *allow* the chalk line to be extended from the housing through the chalk line port.

14. The chalk line device of claim **13**, wherein the **[**translucent**]** window forms substantially at least one side of the housing.

15. The chalk line device of claim **13**, wherein an inside surface of the **[**translucent**]** window is polished to prevent chalk from sticking to the inside surface of the **[**translucent**]** window.

16. The chalk line device of claim **13**, wherein the **[**translucent**]** window includes a scale to indicate a level of the chalk in the chalk reservoir.

17. The chalk line device of claim **16**, wherein the scale includes three lines with words low, medium and high inscribed beside each respective line.

18. The chalk line device of claim **16**, wherein the scale includes four lines with the markings ¼, ½, ¾ and full inscribed beside each respective line.

19. The chalk line device of claim **13**, wherein the housing is formed of plastic and the window is formed of plastic.

20. The chalk line device of claim **13**, wherein the housing is formed of metal and the window is formed of plastic.

21. The chalk line device of claim **20**, wherein the housing and the window are integrally formed.

22. The chalk line device of claim **21**, wherein the housing is over-molded with opaque material.

23. The chalk line device of claim **22**, wherein the over-molded opaque material is one of a plastic and rubber.

24. The chalk line device of claim **23**, wherein the plastic is a soft plastic.

25. The chalk line device of claim **13**, wherein the **[**translucent**]** window is textured with varying textures to highlight a viewing zone for viewing a level of the chalk in the chalk reservoir.

26. The chalk line device of claim **13**, wherein the window is transparent.

27. The chalk line device of claim **13**, wherein the **[**translucent**]** window comprises a transparent zone and a light diffusing zone.

28. The chalk line device of claim **13**, wherein the window is arranged to cover substantially a whole length of a face of the housing.

29. The chalk line device of claim **13**, wherein the housing has a depression that retains an end of the chalk line.

30. The chalk line device of claim **29**, wherein the chalk line has a hook and the depression is shaped to engage the hook.

31. The chalk line device of claim **29**, wherein the housing has walls and the depression is located on one wall of the housing and the window is located on another wall of the housing.

32. The chalk line device of claim **29**, wherein the depression is formed on the window.

33. A chalk line device, comprising:

a housing having a chalk line port and a chalk port, wherein the housing defines an exterior surface and an interior space including a chalk reservoir in communication with the chalk port;

a movable door secured to the housing over the chalk port to selectively open and close the chalk port;

a chalk line support mounted in the interior space in the housing;

a chalk line having one end secured to the chalk line support within the housing and another end with a hook disposed outside of the housing, wherein the chalk line extends through the chalk line port; and

a retracting mechanism mounted to the housing and connected to the chalk line that selectively retracts the chalk line into the housing and allows the chalk line to be extended from the housing through the chalk line port;

wherein the exterior surface of the housing includes a side wall with a depression formed therein that is shaped to receive the hook for storage, **[**and the housing includes a translucent window forming at least a portion of a wall of the chalk reservoir,**]** the depression having a mouth that is flush with the side wall.

34. The chalk line device of claim **33**, wherein the housing has walls and the depression and **[**the window**]** *a window* are formed on a same wall of the housing.

35. The chalk line device of claim **34**, wherein the depression is formed in the window.

36. The chalk line device of claim **33**, wherein the housing has walls and the depression and **[**the window**]** *a window* are formed on different walls.

37. The chalk line device of claim **33**, wherein the depression is spaced from the chalk line port about a length of the hook.

38. The chalk line device of claim **33**, wherein the depression has an edge and the hook has a finger that engages the edge.

39. The chalk line device of claim **38**, wherein the edge forms an acute ledge.

40. The chalk line device of claim **33**, wherein **[**the window**]** *a window* forms substantially one side of the housing.

41. The chalk line device of claim **33**, wherein **[**the window**]** *a window* is arranged to cover substantially an entire length of one side of the housing.

42. The chalk line device of claim **33**, wherein an inside surface of **[**the translucent window**]** *a window* is polished to prevent chalk from sticking to the inside surface of the **[**translucent**]** window.

43. The chalk line device of claim **33**, wherein **[**the translucent window**]** *a window* includes a scale to indicate a level of chalk quantity in the chalk reservoir.

44. The chalk line device of claim **43**, wherein the scale includes three lines with words low, medium and high inscribed beside each respective line.

45. The chalk line device of claim **43**, wherein the scale includes four lines with the markings ¼, ½, ¾ and full inscribed beside each respective line.

46. The device of claim **33**, wherein **[**the translucent window**]** *a window* is textured with varying textures to highlight a viewing zone for viewing a level of chalk in the chalk reservoir.

47. The chalk line device of claim 13, wherein the window is translucent.

48. The chalk line device of claim 13, further comprising a movable door to provide access through a port into the space, wherein chalk can be placed into the sealed interior space by opening the movable door.

49. A chalk line device, comprising:

a housing having a chalk line port and defining a sealed interior space including a chalk reservoir into which chalk can be placed, the housing including a window through which an amount of powdered chalk that may be placed within said reservoir can be viewed;

a chalk line support mounted in the housing;

a chalk line carried by the chalk line support and extendable through the chalk line port; and

a retractor mechanism carried by the housing and operatively coupled with the chalk line to enable the retractor mechanism to retract the chalk line into the housing and to allow the chalk line to be extended from the housing through the chalk line port.

50. The device of claim 49, wherein the window forms at least a portion of a side wall of the housing.

51. The device of claim 49, wherein the retracting mechanism comprises a handle.

52. The device of claim 49, wherein the chalk line support comprises a spool.

53. The device of claim 49, wherein the window is formed from a transparent material.

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