United States Patent [19]

Phares, Sr.

[11] **3,863,358**

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[54] **LEVELING DEVICE HAVING INTEGRAL SELF-LOCK FEATURE**

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[52] **U.S. Cl.** **33/367**, 251/4

[51] **Int. Cl.** **G01c 5/04**

[58] **Field of Search** 33/367; 251/4

[56] **References Cited**

UNITED STATES PATENTS

2,566,102	8/1951	Waldo	33/367
2,581,114	1/1952	Larson	251/4 X
2,814,127	11/1957	Blatchford	33/367
3,103,335	9/1963	Martinez	251/4

FOREIGN PATENTS OR APPLICATIONS

890,018	2/1962	Great Britain	251/4

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[57] **ABSTRACT**

A device for use in conjunction with a conventional garden hose to provide an improved leveling instrument having integral locking means. The leveling device comprises a tube of material which is flexible to enable folding of the tube upon itself without breakage thereof. The end of each tube is cut in a manner which provides a secure and easy to operate locking device when the end of the tube is folded upon itself. The locking device is an integral part of the end of the tube and locks onto that portion of the tube over which it is folded.

3 Claims, 5 Drawing Figures

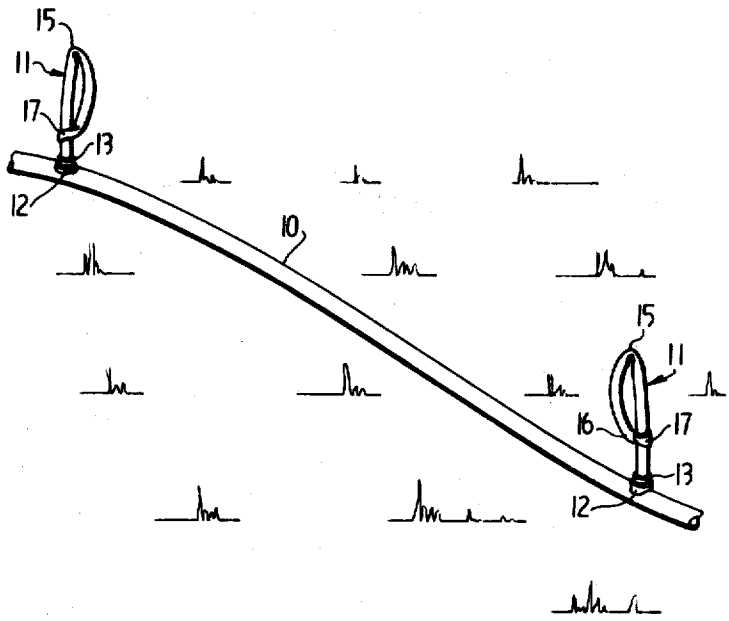


FIG. 1

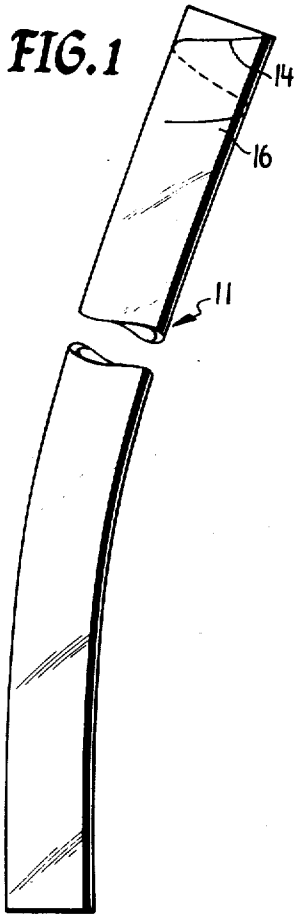
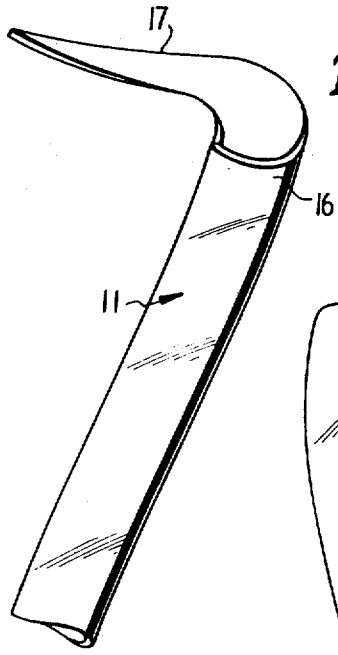


FIG. 2



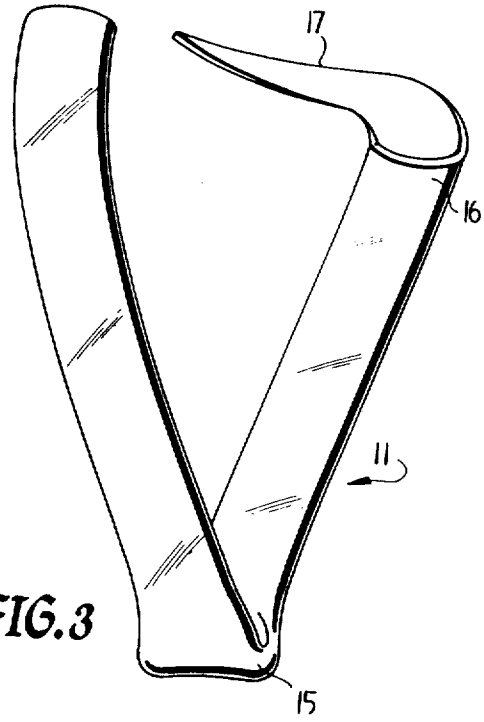


FIG. 3

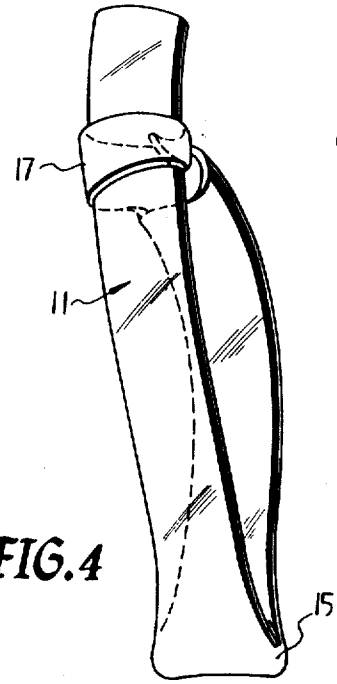


FIG. 4

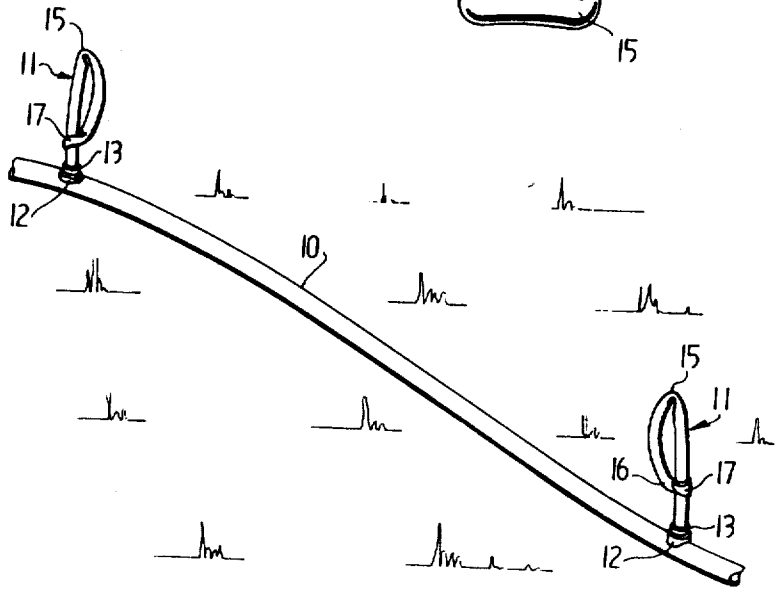


FIG. 5

LEVELING DEVICE HAVING INTEGRAL SELF-LOCK FEATURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to leveling devices and has particular utility in establishing the horizontal level between spaced points. Such instruments find particular utility in road construcion, landscaping and the like.

2 Description of the Prior Art

The use of leveling instruments is well known in the prior art. The prior art discloses leveling instruments wherein leveling devices are located at either end of a tubular construction such as a garden hose for this purpose. In this regard attention is invited to the following patents:

Boyd	2,150,048
Waldo	2,566,102
Spaeder	2,755,560
Houge	2,789,365
Blatchford	2,814,127
Chapman	3,015,167
Haissig	3,132,428

The principle of operation of devices of the above cited patents relating to leveling instruments is similar, although the particular instruments described herein differ structurally.

It is also known in the prior art that a tubular structure may be bent or folded utilizing some sort of device to keep it in bent position. In this regard attention is invited to the following U.S. patents:

Beehler	470,776
Butcher	2,040,356
Spanel	2,323,629
Kearny	2,444,449
Adams	2,540,364
Tinker	2,716,013

These patents do not relate to leveling devices. Further these patents disclose structures wherein the tubular bent structure is maintained in place by some sort of mechanical means.

SUMMARY OF THE DISCLOSURE

The instant application relates to a leveling device which provides substantial improvements over the prior art. It comprises a tubular structure such as a garden hose to which a pair of transparent plastic tubes are mounted at opposite ends thereof. The transparent plastic tubes are sufficiently flexible to be bent by folding upon itself thereby providing a bight portion. The bight portion functions as a valve to block the flow of water. One end of each tube is cut in a manner such that when the tube is folded upon itself the cut end locks in secure position around that portion of the tube upon which it is folded. This provides a lock for the bight portion and prevents water from exiting from the tube. When it is desired to unlock the tube, the cut portion can be easily disengaged to permit the exit of water.

The invention thus provides a simple leveling device which is inexpensive and easy to manufacture. Further the leveling device is easy to manipulate and does not require the use of complex mechanical locks.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of the tubular structure in unfolded position showing the cut section at one end thereof;

FIG. 2 is an isometric view of the tubular structure of FIG. 1;

FIG. 3 is an isometric view of the tubular structure of FIG. 1 folded or bent upon itself but unlocked;

FIG. 4 shows the tubular structure of FIG. 3 in locked position; and

FIG. 5 illustrates a leveling instrument utilizing the tubular structure of FIG. 1 at each end thereof.

DETAILED DESCRIPTION OF THE DISCLOSURE

FIG. 5 shows a leveling instrument operating according to the principle of the prior art cited above. A conventional tubular structure such as garden hose 10 is utilized. At each end of tubular structure 10, a transparent plastic tube 11 is connected by conventional means such as threaded male portion 12 attached to tubular structure 10 by threading with female connecting portion 13 securely attached to tube 11. The principle of operation of the water level device of FIG. 5 is well known and is described in the prior art cited above and consequently is not detailed herein.

FIG. 1 shows in greater detail a tubular structure 11 attached to each end of tube 10. Tubular structure 11 comprises a clear plastic material which is sufficiently flexible to be bent or folded upon itself, as shown in greater detail in FIGS. 3 and 4. The end 16 of tubular structure 11 opposite female member 13 is cut in the form of a helix 14. When spread out, as shown in FIG. 2, the cut section 17 assumes the illustrated curved configuration. When it is desired to form bight 15, which effectively comprises a valve to shut off water from exiting from end 16 of tubular structure 11, the tubular structure is folded upon itself as shown in FIG. 3. The cut section 17 is then wound or locked around that portion of tubular structure 11 upon which it is folded as shown in detail in FIG. 4, to provide a secure lock. This prevents water from exiting from end 16 of tubular structure 11. When the desired measurement is obtained, tubular structure 11 can be unlocked easily by simply releasing section 17 from the locked position. Since the tubular structure 11 comprises sufficiently flexible material, which for example, may be a pliable plastic material, it can easily reassume its unfolded shape as shown in FIGS. 1 and 2.

It is seen from the above description that the leveling device according to the invention utilizing tubular structures 11 at either end of tubular structure 10, is substantially simpler to operate, cheaper to manufacture, and comprises no complex mechanical or valve locking means, as compared to prior art devices cited above.

I claim:

1. In a leveling system having a pair of flexible tubes, each of said pair of tubes having a free end and an end coupled to a hose at opposite ends of said hose comprising;

each of said pair of tubes having a cut portion extending in the form of a helix from its free end to a point remote therefrom for forming a locking position when each of said pair of tubes is folded upon itself, the said locking portion may be wound around the

section of the tube upon which it is folded to hold said tube in said folded position.

2. The leveling system recited in claim 1, wherein each of said pair of tubes compreses a flexible transparent material.

3. The leveling system recited in claim 2, wherein said material is a plastic material.

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