March 18, 1952 R. K. LANDON ET AL 2,589,500

COMBINED CHALK LINE BOX AND PLUMB BOB

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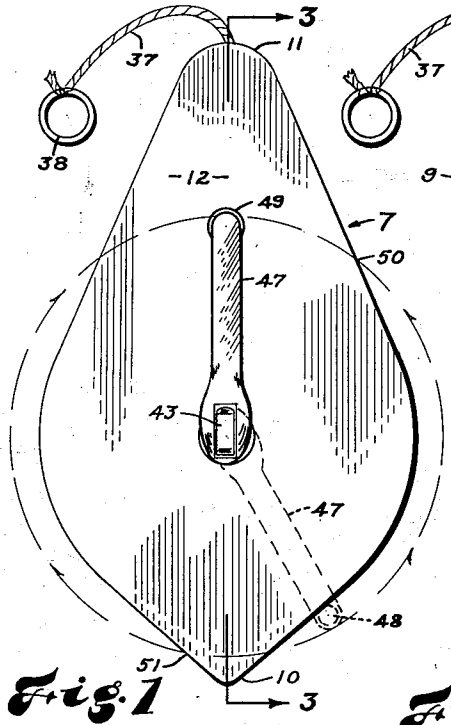


Fig. 1

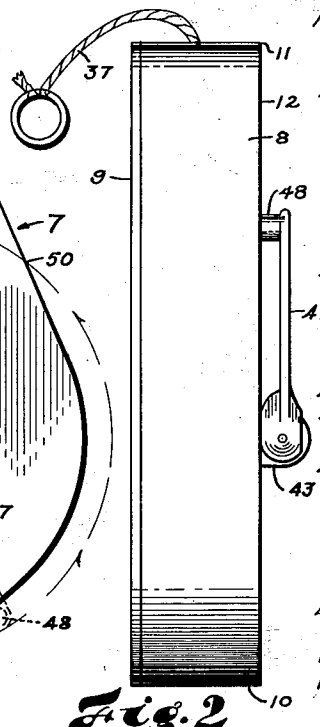


Fig. 2

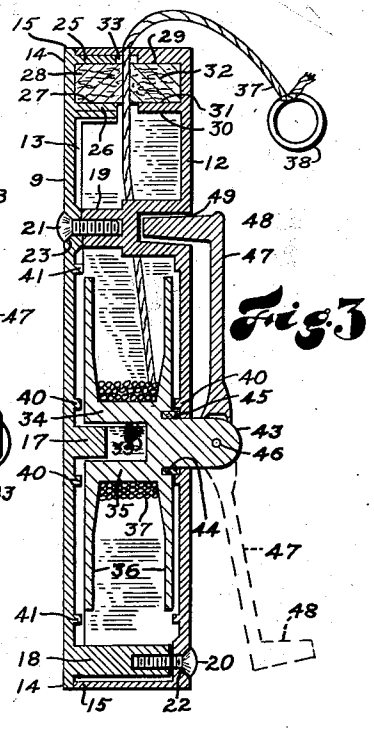


Fig. 3

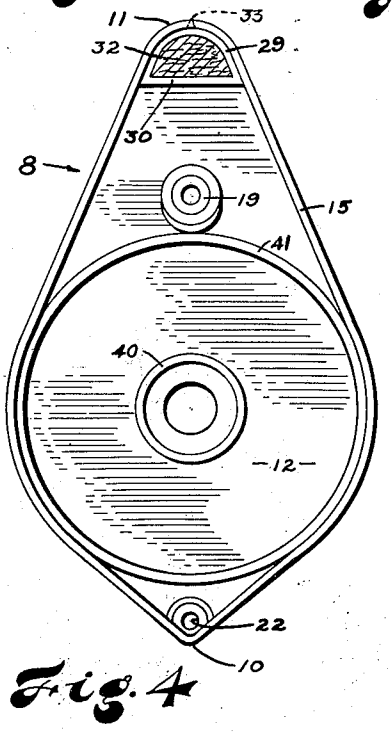


Fig. 4

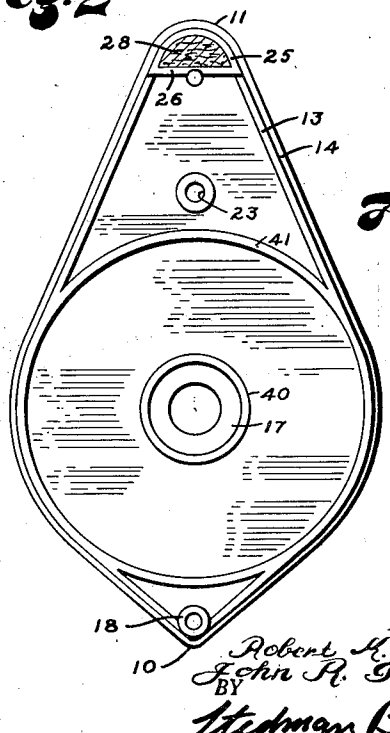


Fig. 5

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COMBINED CHALK-LINE BOX AND PLUMB BOB

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1 Claim. (Cl. 33—217)

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This invention relates to a combined chalk-line box and plumb-bob and has as an object the provision of a dual-purpose hand-tool for carpenters, masons and other artisans, of improved design and efficiency.

It is a further object of the invention to provide a dual-purpose tool of the character stated in which the constructional elements such as the box or case necessary for service in one purpose are so made to serve the other purpose that the tool appears to be specifically designed for the particular duty to which it may momentarily be applied.

Our invention possesses other advantages and more detailed objects which will be pointed out as the following description of a preferred embodiment of the invention proceeds, or will be apparent from consideration of the accompanying drawing, in which:

Figure 1 is a plan view of a chalk-line box and plumb-bob embodying the principles of our invention;

Figure 2 is a side view taken from the left of Figure 1;

Figure 3 is a longitudinal sectional view taken on the plane of section indicated by the line 3—3 of Figure 1;

Figure 4 is an interior view of the box or deeper portion of the case of the tool; and

Figure 5 is an interior view of the lid or shallower portion of the case.

Having reference now to the details of the drawing, we have provided a case 7 comprising a box or deeper portion 8 and a lid or shallower portion 9, both of which are adapted to be die-cast from metal, plastic or other suitable material. The case 7 is characterized by its pyriform shape in its wider aspect, as seen in Figure 1, though differing from a true pear in that the wider end of the case is not rounded or concave but is formed with a point 10. The narrower end 11 of the case 7 is elongated but blunt. As best illustrated in Figures 4 and 5, both the box 8 and lid 9 are so shaped that a circle may be inscribed in them centered at the intersection of their major and minor diameters, that is, the long diameter from the point 10 to the blunt end 11 and the transverse diameter of greatest length, and from this circle the perimeters of the case extend tangentially to the point 10 at an angle approximating 90 degrees and to the blunt end 11 at a more acute angle.

In the transverse aspect, as viewed in Figures 2 and 3, the case 7 is relatively thin, the lid 9 and the opposed side 12 of the box 8 being substantially flat exteriorly. The lid 9 has a shallow flange 13 which fits within the box 8 to locate the lid thereon, and a peripheral shoulder 14 which engages the rim 15 of the box and makes a smooth joint therewith.

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The lid 9 is provided with a boss 17 on its interior side substantially at the intersection of its major and minor diameters and with a boss 18 at the pointed end 10. The box 8 is likewise provided with an interior boss 19, disposed on its major diameter at a little more than half the length of the minor diameter from the intersection of the major and minor diameters and towards the blunt end 11. Both the bosses 18 and 19 are bored and tapped, to be engageable by screws 20 and 21 which extend respectively through holes 22 and 23 in the box and in the lid. When the screws 20 and 21 are drawn tight an effective seal is established between the shoulder 14 and the rim 15.

At the blunt end 11 of the case, the flange 13 of the lid 9 is heightened to provide an end wall 25, which follows the curvature of the end 11, and a transverse wall 26 joins the ends of the wall 25 to form therewith a walled enclosure 27 which contains a felt pad 28. Similarly, the box 8 has curved wall 29 within its blunt end and a transverse wall 30 forming therewith an enclosure 31 for a felt pad 32. The walls of the enclosures 27 and 31 do not meet when the lid 9 is tightened upon the box 8, but the pads 28 and 32 extend beyond their surrounding walls so as to be compressed against each other by the closure of the case. A small orifice 33 in the blunt end of the box 8 is aligned with the major diameter of the box and communicates with the interior of the box at the interfacial level of the pads 28 and 32.

A spool 34, having its hub 35 bored to receive the boss 17 is mounted within the case 7 to rotate upon the boss 17 as an axis. The spool is provided with end disks 36, which are of slightly less diameter than the minor diameter of the case so as to be capable of fitting within the circular portion of the case. A cord 37 is wound upon the spool 34 and has its free end led between the pads 28 and 32 and outwardly through the orifice 33, the free end being provided with a suitable grip such as a ring 38. The fastened end 39 of the cord 37 may be led through a suitable hole (not shown) to the interior of the hub 35 and there to be knotted.

To prevent undue friction between the disks 36 and the adjacent lid and box surfaces and to strengthen the lid and box to prevent distortion

or denting, rings 40 are provided on the inner surfaces of the lid and box concentric with the boss 17. The rings 40 hold the spool 34 spaced from the case and serve as end bearings for the spool. Additional larger rings 41 may be provided in virtual circular extension of the curved walls of the box and lid, thereby further strengthening the case against distortion. The rings 41, being at or just beyond the periphery of the disks 36 also serve to prevent the cord 37 from jumping the disks and being caught between the disks and the case walls.

The hub 35 has an end extension 43 adapted to extend outwardly through an opening 44 in the box bottom 12. A packing ring 45 may be provided to seal the opening 44 around the extension 43. The outer end of the extension 43 pivotally supports, as at 46, a crank 47 by which the spool 34 may be rotated to wind the cord 37. The crank 47 is pivoted to be swingable in planes perpendicular to the box bottom 12 and is provided with a handle 48 which at one end of the pivotal arcs is turned outwardly from the box bottom and at the other end of the arcs is turned inwardly theretowards. The boss 19 is provided with a well or recess 49 closed at its inner end and opening outwardly through the box bottom 12, and the crank 47 is of suitable length to permit the handle 48 to enter the well 49 when turned theretowards.

It will be understood that the interior of the case 7 normally contains chalk or a like substance, which is sealed therein by the pads 28 and 32, the packing ring 45, and the heads of the screws 20 and 21 which close all the openings leading to the interior of the case. Whether the tool is to be used as a chalk-line box or as a plumb-bob, the spool 34 may be freed for rotation by swinging the crank 47 so that the handle 48 is outwardly beyond the plane of the box bottom 12. A desired length of the cord 37 may then be pulled from the orifice 33. No brake is required to prevent an excess of cord being pulled out, other than the friction of the pads 28 and 32 upon the cord. However, a positive lock upon rotation of the spool 34 is provided by engagement of the handle 48 in the well 49. Two additional locking positions are also provided by engagement of the handle 48 with the side walls of the case. For example, if unwinding the cord 37 produces a counter-clockwise motion of the crank 47, as seen in Figure 1, the rotation of the crank will be stopped at the points 50 and 51, where the orbit of the handle 48 crosses the side walls of the case, if the crank is swung pivotally to its locking inclination. Thus the length of the cord pulled from the case can be regulated to less than one-half of a turn of the cord upon the spool 34. Such exact regulation is often desirable when the tool is suspended as a plumb-bob from a fixed support and it is desired to bring the point 10 to approximate contact with a point to be marked.

The pyriform shape of the tool has physical advantages in addition to its attractive appearance. When the tool is used as a plumb-bob, the

mass at the lower end will cause the tool to hang in true verticality from the cord emerging from the axially located orifice 33. The balance of the plumb-bob may be made very exact by placing the handle 48 in the well 49 so that the crank 47 is aligned with the vertical axis. When cord is being drawn from the spool or wound thereon, it is natural to place the wide portion of the tool in the palm of one hand with the fingers gripping the elongated end, the ring 38 or handle 48 being then manipulated with the other hand. Under these conditions the tool wedges itself into the gripping hand and is more easily and firmly grasped than a cylindrical or rectilinear tool.

Obviously, our invention is subject to modifications which fall within its spirit and scope, we therefore do not wish to be limited to the exact embodiment herein described and illustrated, but to the scope and spirit of the invention as set forth in the appended claim.

We claim:

A chalk-line box having two opposed sides of generally pyriform outline, and connecting sides curved to follow said outline and perpendicular to said pyriform sides so as to form a box having a wide generally circular portion tapering gradually to an elongated but blunt end and tapering sharply to an opposite end, the blunt end of said box having an orifice; a spool mounted within said box, the axis of said spool being substantially at the center of said circular portion; a cord wound on said spool and emerging from said orifice; a well in one of said pyriform sides; and a crank for rotating said spool hingedly connected to said spool for arcuate movement in planes perpendicular to said pyriform sides and having a handle extending outwardly from said box when said crank is at one end of said arcuate movement, and inwardly toward said box at the other end of said movement, said crank having a length sufficient to permit said handle to rotate in a circle which encompasses said circular portion of said box and is intersected by said connecting sides towards both ends of said box, said well being disposed on said circle and adapted to receive said handle.

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