F. BIRCHBAUER.

PLUMB BOB.

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1,090,015. Patented Mar. 10, 1914.

Fig. 1.

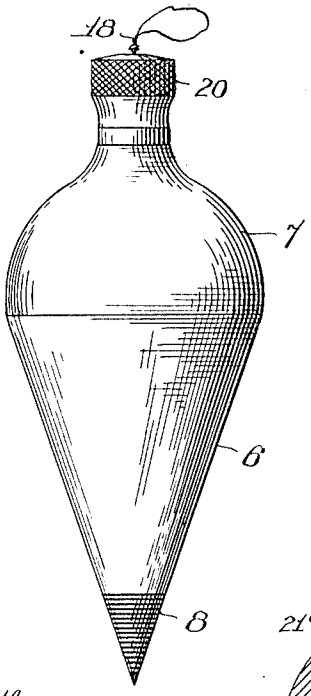


Fig. 2.

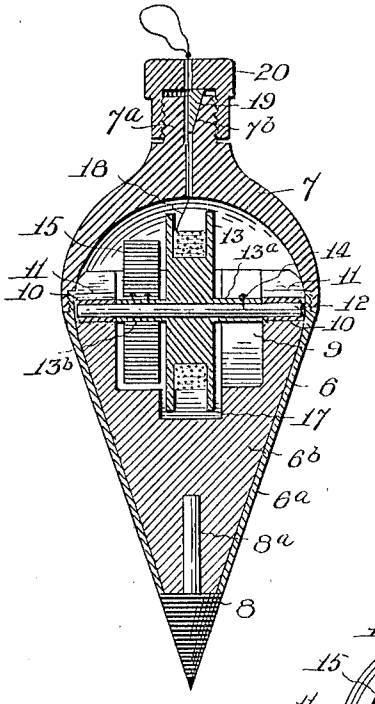


Fig. 4.

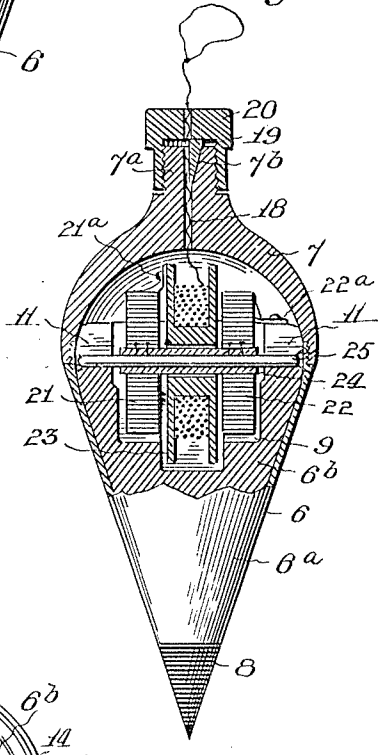
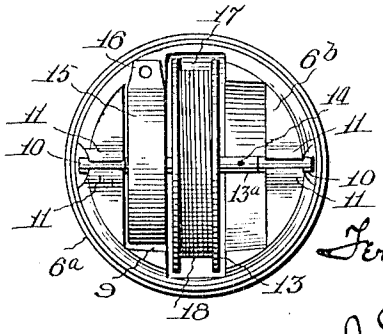


Fig. 3.



WITNESSES

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PLUMB-BOB.

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To all whom it may concern:

Be it known that I, FERDINAND BIRCHBAUER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented a Plumb-Bob, of which the following is a full and complete specification.

My invention relates more especially to improvements in that particular class of plumb-bobs in which the suspending cord or line is wound upon a spring-actuated reel inclosed within the bob; whereby in using the device the cord or line is paid out by unwinding the same from the rotatable reel against the action of the spring, so that after use the said cord or line may be housed within the bob by permitting the spring-actuated reel to automatically rewind the same thereon.

The primary object of my invention is to provide a device of this character in which the spring-actuated winding mechanism for the cord or line is simple in construction and compact so as to occupy comparatively little space within the bob and permit the same to be suitably weighted without increasing its size to any material extent as compared with the ordinary solid bob.

A further object of my invention is to provide a bob with clamping means easily and conveniently operated to grip the cord or line so that the length of the same beyond the bob may be varied at will.

Other objects and advantages of my invention will hereinafter appear, and what I claim as new, and desire to secure by Letters-Patent is more specifically set forth in the appended claims.

In the accompanying drawings, which form a part of this specification: Figure 1 is an elevation, showing a plumb-bob constructed in accordance with my invention. Fig. 2 is a vertical sectional view through the bob and mechanism embodied therein. Fig. 3 is a plan view, with the upper part of the bob removed. Fig. 4 is a longitudinal vertical sectional view, illustrating a slight modification of the invention.

Like numerals of reference indicate like parts in all the figures of the drawings.

The bob is of the usual shape, that is to say larger at its upper end and tapering gradually to the pointed lower end, and in carrying out my invention this bob is made in two parts, a body portion 6 and cap 7, intimately connected together preferably by threading one upon the other, as shown in the drawings. The body portion 6 is composed of an outer shell 6^a of hard metal, as brass, a filling 6^b of heavier metal, as lead, and the usual steel point 8, the latter being securely held in place by providing the same with a shank 8^a which is embedded in the lead filling 6^b, it being understood of course that the lead is poured into the shell after the point with its shank is set in place.

The upper part of the lead filling is hollowed out to provide a cavity 9, receiving the lower part of the winding mechanism, hereinafter described, the upper part thereof being inclosed by the removable cap, and at opposite sides of this cavity there are bearing-sleeves 10, 10, suitably secured to the lead filling, in the present instance by forming extensions 11 of said filling and upsetting them upon the sleeves, though of course other fastening means may be provided. These sleeves form the end bearings for a shaft 12, upon which is fixed a reel 13, having opposite collars 13^a and 13^b, one of which, as 13^a, receiving the pin or key, 14, by which the said reel is fastened to the shaft. Upon and attached to the other collar, 13^b, is a coiled spring 15, the outer end of which is fastened to the lead filling of the bob by means of a pin 16; whereby when the reel is turned or rotated in one direction the spring is wound upon itself, so as to automatically turn or rotate the said reel in the other direction. It will be noted that the reel is disposed vertically in the bob, and at the center thereof, and, also, that the bottom of the cavity is grooved or channeled, as at 17, so as to lap the edge of the spring, to confine the same and prevent it from overlapping the reel.

Attached to the reel and wound thereon is the cord or line 18, which passes out of the bob through the upper end of the cap 7, and for the purpose of gripping the cord, to prevent it from rewinding on the reel, I provide a clamping device consisting of a wedge-plate 19 and milled nut 20, the latter being threaded on a projection 7^a on the cap, both said cap and projection being apertured to permit the cord or line to pass therethrough. The projection is also provided with a wedge-shaped recess 7^b, into which the wedge-plate 19 fits, the latter projecting a slight distance beyond the projection so as to be engaged by the closed end of the nut and thereby forced into the recess

to clamp the cord between said plate and one of the side walls of the recess. It will be noted that the clamping surfaces of the plate and recess are such as to give a wide bearing on the cord to prevent wear on the same.

In the operation of the device the cord is wound upon the reel by the action of the spring, and when it is desired to use the bob the nut 20 is loosened to release the wedge-plate, and after pulling out the cord to the required length the said nut is turned to clamp or grip the cord and prevent it from being wound upon the reel. After the bob is used the cord may be readily wound within the same by simply loosening the binding-nut 20, when the action of the spring will turn the reel to rewind the cord thereon. It will be understood that the binding-nut need be turned only a slight distance to release the wedge-plate and permit the cord to run freely into or out of the bob, and that when said nut is turned down against the shoulder at the inner end of the projection the wedge-plate will frictionally engage the cord only sufficiently to hold it, such frictional engagement however being such as to prevent the cord from passing out of the bob when the weight of the latter is suspended by said cord.

In the modification shown in Fig. 4 of the drawings I have shown an arrangement by which a longer length of cord may be used. In this instance two coiled springs, 21 and 22 are used and operate consecutively, the outer end of the spring 21 being connected directly to the reel 23, as at 21^a, mounted loosely on a sleeve 24, and the inner end thereof attached to said sleeve; while the other spring, 22, is also connected at its inner end to the sleeve, and at its outer end to the bob as at 22^a; said springs being disposed at opposite sides of the reel, as shown. As will be noted, this permits of a very long cord to be used, inasmuch as the spring 21 attached to the reel after being tightly wound turns the sleeve 24 which acts to wind the other spring, 22. In this instance both the reel and sleeve are loose on the shaft, 25, so that the reel may turn independently until spring 21 is wound, and then the sleeve turned to wind spring 22, as above explained.

Having described my invention, I claim:

1. A plumb-bob having a cavity therein and an integral projection at its upper end with a wedge-shaped recess opening out at the upper end of said projection, a spring-actuated reel located in the cavity, a cord wound on the reel and passing out of the bob through the aforesaid recess, a wedge-shaped plate movable in the recess, and a nut threaded on the projection of the bob to impinge against the outer end of the plate, substantially as shown and for the purpose set forth.

2. In combination with a plumb-bob having a cavity therein, of a shaft extending across said cavity, a sleeve loosely mounted on the shaft, a reel loosely mounted on the sleeve, and a cord wound upon the reel and passing therefrom out of the bob; together with a spring attached to the reel and sleeve, respectively, and a second spring attached to the sleeve and to a fixed part of the bob, substantially as shown and for the purpose set forth.

3. In combination with a plumb-bob having a cavity therein, of a shaft journaled in the bob and extending across the cavity, a sleeve loosely mounted on the shaft, a reel loosely mounted on the sleeve, a cord wound upon the reel and passing out of the bob, a spring attached to the reel and sleeve, respectively, and a second spring attached to the sleeve and to a fixed part of the bob; together with a projection on the bob having a wedge-shaped recess through which the cord passes, a wedge-plate fitting in said recess, and a nut threaded on the projection to bear against the wedge-plate, substantially as shown and for the purpose set forth.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."