Oct. 14, 1930. J. J. JAMES 1,778,323

TARGET

Filed May 6, 1929

Fig. 1.

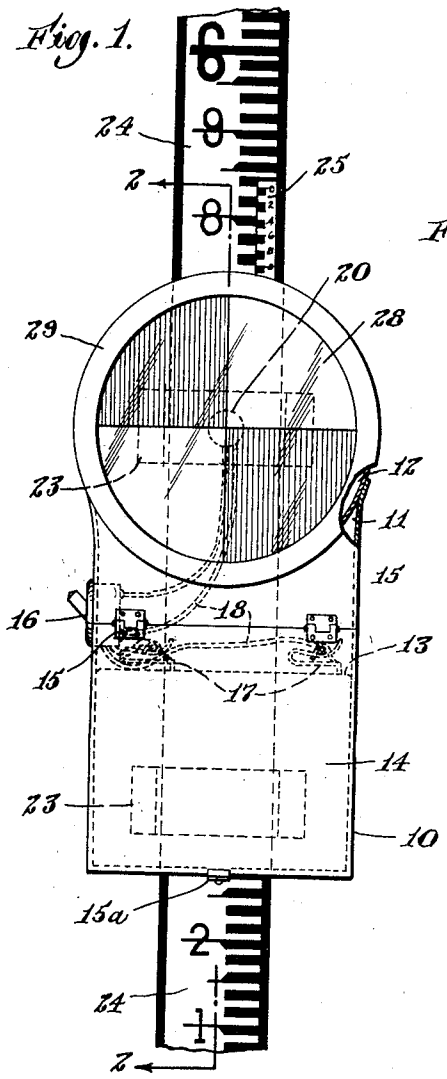


Fig. 2.

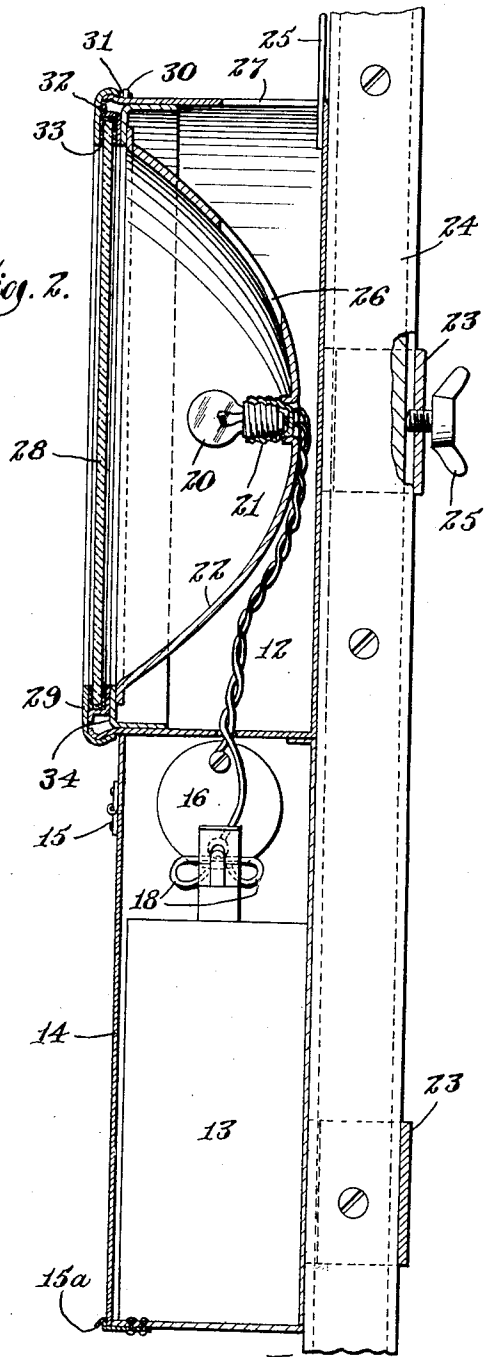
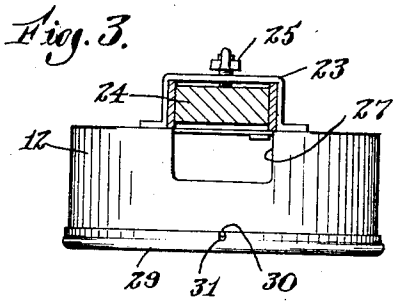


Fig. 3.



Inventor
John J. James
by Harold E. Cole
Attorney

Patented Oct. 14, 1930 1,778,323

UNITED STATES PATENT OFFICE

JOHN J. JAMES, OF BOSTON, MASSACHUSETTS

TARGET

Application filed May 6, 1929. Serial No. 360,711.

This invention relates to targets used by civil engineers in conjunction with levels to determine grades.

One of the objects of this invention is to provide a target which may be used in the dark as well as when it is light, which is simple in construction and operation, economical to manufacture and accurate.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, claimed and illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a front elevation showing my target.

Figure 2 is a cross-sectional side view on the line 2—2 of Figure 1.

Figure 3 is a top plan view of my target.

Like numerals and letters of reference indicate corresponding parts in each figure.

As illustrated, the target consists of a casing 10 which is preferably made of metal such as aluminum, consisting of a lower container 11 and an upper container 12. The lower container 11 holds a battery 13. The lower container 11 has a door 14 hinged at 15 which is normally held closed by a spring clip 15[a] riveted to the bottom of said lower container. The battery 13 is controlled by a switch 16 and has clips 17 which hold the wires 18, which wires connect with the switch 16 and bulb 20, one part of which bulb is surrounded by a socket 21. The light from said bulb 20 is diffused by a concave-shaped reflector 22.

Attached to the rear of the lower container 11 is a slotted bracket 23 and a similar bracket 23 is attached to the rear of the upper container 12. A rod 24 of the usual construction having a graduated scale or markings thereon is slidably mounted in said brackets. A wing screw 25, which screws into a threaded hole provided in the rear of the upper bracket 23, is used to hold the rod 24 in a fixed position when desired. Attached to the top of the upper container 12 and adjacent the rod so as to cooperate therewith in determining fine graduations such as a 1000th of a foot, is a scale or vernier 25. This vernier is preferably located there instead of on the target face because it is clearly visible there when my target is lighted. In determining grades the distance between the level line on the target face and the vernier must, of course, be considered in taking the reading.

In order to provide light so that the scale on the rod 24 may be read in the dark an opening 26 is provided in the upper portion of the reflector 22 corresponding in position with another opening 27 provided in the top of the upper container 12. These two openings being opposite each other permit light from the bulb to shine on the vernier and that part of the rod adjacent the vernier so that a reading may be had when it is dark. This opening 27 may be covered with glass, not shown, or any other transparent material, if desired.

At the front of the upper container 12 is a delineated target glass or face 28 divided into quadrants, the second and fourth quadrants being pointed red or some other dark color, and the first and third quadrants being painted white or not painted at all if so desired. The delineation on said target glass shown in the drawing is for purposes of illustration only, as there are many other well known delineations which will furnish a level line.

This target glass 28 is mounted in the outside rim 29, which rim is fixedly held in place by means of a pin 30 and a slot 31 as shown, to prevent it rotating once it is mounted in its pre-determined position. The target glass or face 28 is cemented as at 33 to said outside rim 29 and also to the inside or glass retaining rim 32. To the rear of said rim 32 is a reflector sleeve 34 which is welded to the upper container and to the reflector so as to hold said reflector in a permanent position.

When it is daylight this target is used as any target is now used, and the means for furnishing artificial light is disregarded. At night, or in the tunnel or shaft of a mine and in other dark places, where there is insufficient light to see and read the target face

and scales, my target is made clearly visible by turning on the switch which lights the bulb, and the target face and the scales on the vernier and rod may be easily read. This target, is of great practical value not only in underground work, but oftentimes on construction jobs when it is important to determine the level as it is growing dusk, as mistakes are often made in attempting to determine the level and read the scales under such conditions.

While a specific embodiment of the invention has been illustrated and described, the invention is not to be considered as limited to the particular combination and arrangement of parts as above described, except as limited in scope by the appended claims.

I claim as my invention:

1. A target comprising a casing provided with an opening, a delineated face, a rim to hold said face in said casing, a rod having a scale marked thereon, a vernier attached to said casing and adjacent to said rod, a battery, a bulb, a switch, a wire extending from said battery and connected to said switch and bulb, a reflector provided with an opening opposite the first-mentioned opening so as to permit light to shine on said vernier and rod.

2. A target comprising a casing, a delineated face, a rod, a vernier, means to artificially illuminate said target embodying a reflector, said casing and reflector being provided with openings opposite each other whereby said rod and vernier may be made visible in the darkness by means of said artificial illumination.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 4th day of May, 1929.

JOHN J. JAMES.