

S. DEAN.
SPIRIT LEVEL.
APPLICATION FILED JULY 9, 1910.

1,038,536.

Patented Sept. 17, 1912.

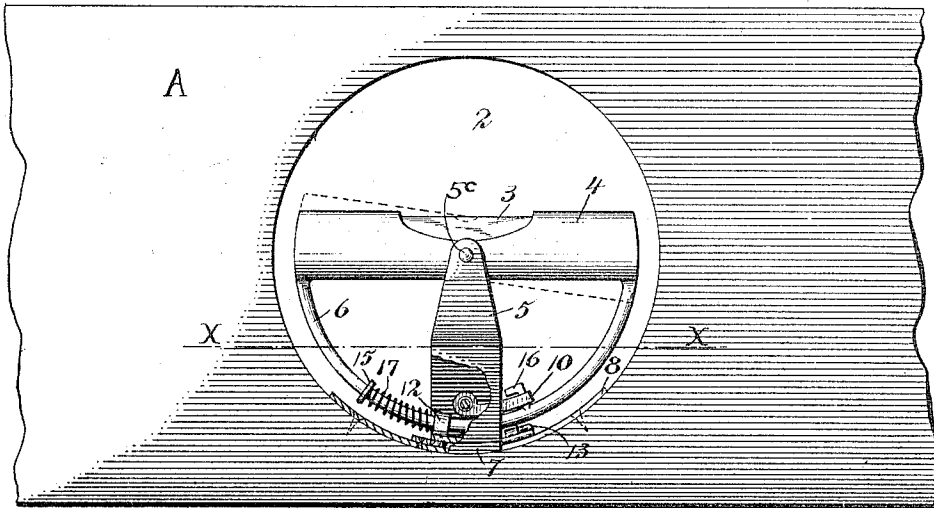


Fig. 1.

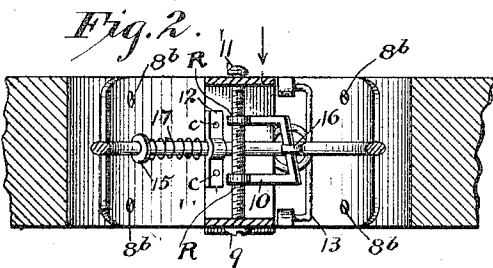


Fig. 2.

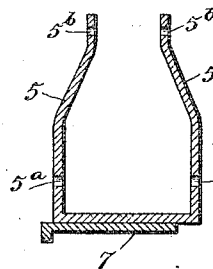


Fig. 3.



Fig. 4.



Fig. 5.

Fig. 6.

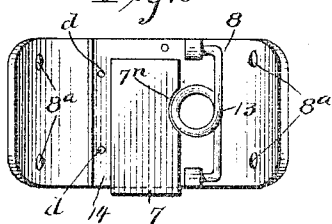
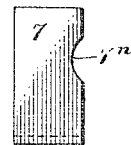


Fig. 7.



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SPIRIT-LEVEL.

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To all whom it may concern:

Be it known that I, SAMUEL DEAN, a citizen of the United States, residing at Wellington, in the county of Crawford and State of Michigan, have invented a new and useful Spirit-Level, of which the following is a specification.

My invention relates to improvements in spirit levels, such as are used by mechanics in the building trades generally.

The object of my invention is to provide a leveling device that can be easily and cheaply manufactured, and that can be attached to, and detached from a level stock or plumb rule, in a moment's time without the necessity of using a screwdriver or any other tool for the purpose, also a level that can be adjusted to the minutest degree by simply turning or reversing a screw. I attain these objects by the mechanism illustrated in the accompanying drawing in which—

Figure 1 is a side elevation of a portion of a level stock or "straight edge" having a circular recess therein and a leveling device inserted in same. Fig. 2 is a section on the dotted line *x—x* Fig. 1 (minus the base plate or clutch). Fig. 3 is a plan view of a blank used in forming the standards or framework. Fig. 4 is a sectional view of standards formed to shape with the bearing plate attached. Fig. 5 shows a blank used to form a skeleton wedge shaped piece. Fig. 6 is a plan view of the base plate or clutch, and Fig. 7 a plan view of a detachable bearing plate.

Similar letters and figures refer to similar parts throughout the several views.

A represents a portion of the level stock, the ends being broken away.

2 is an opening therein, within which is located the leveling device.

3 is the "bubble glass" of the level, in which the spirit is contained.

4 is a casing for carrying the bubble glass. This casing is preferably cut from a piece of tubing, with a sight opening cut in the upper side thereof, and the "bubble glass" inserted in same.

The standards 5, 5 are preferably cut from a piece of sheet metal and formed to the shape shown in Fig. 4, said standards being perforated near the top to provide the pivotal bearings 5^b 5^b, and also perforated near the bottom to receive the adjusting screw 9. The sleeve or casing 4 is perforated

on opposite sides and mounted on said pivots, the pivots 5^c being riveted slightly on both ends to hold them in place.

6 is a round rod formed to a half circle and rigidly fastened to opposite ends of casing 4 (preferably with solder). Said rod 6 passes through and is guided by a loop or clip 12, said clip 12 being secured to the lower or horizontal portion of the standards by the rivets *c, c*.

7 is a beveled bearing plate rigidly secured to the under side at the horizontal portion of the standard 5, 5, (preferably with solder) and adapted to engage the beveled stop 14 on the clutch 8, said stop being secured to the base plate or clutch by the rivets *d, d*. The wire spring 13 is rigidly secured to the base plate or clutch at each end, (preferably with solder), and is adapted to press against and hold down the bearing plate 7 by engaging in the notch 7^a.

The base plate or clutch 8 is perforated and countersunk at 8^a near the four corners, and is intended to be screwed to the level stock or "straight edge" A by the screws 8^b. In practice any number of these clutches 8 may be used to advantage for as many "straight edges" or plumb rules as are needed, only one level with framework being required for all, as they are all interchangeable with the clutches, the beveled bearing plate 7 being secured to the framework of the level, all that it is necessary to do to remove the level from the clutch, is to push laterally in the direction indicated by the arrow Fig. 2 on the framework and the spring 13 on the clutch 8 will disengage the notch 7^a on the bearing plate 7. To insert in another clutch reverse the operation.

To effect the adjustment of the level the mechanism is arranged as follows: An adjusting screw 9 passes laterally through the perforations 5^a 5^a in the standards 5, 5, the point of the screw passing through a washer 11 and being riveted over same to hold the screw in position. A piece of metal is bent to the form of a skeleton wedge, on one side 10, the ends being bent at right angles to the imaginary center line of the wedge and bored and threaded at R R in a line parallel to the imaginary center line of wedge 10 to engage the screw 9 and adapted to reciprocate laterally on same.

16 is a lug fastened securely on the rod 6 (preferably passing through it and being riveted underneath) to engage the wedge 10

and bent over to hold the wedge in a horizontal position, a helical spring 17 encircling the rod 6 on the opposite side of the framework and being fastened securely thereto by the collar 15 (this collar is preferably of solder), the other end of the spring being adapted to press against the clip 12 on the framework, the tension of the spring 17 being arranged to hold the lug 16 against the skeleton wedge 10 at all points of adjustment. Turning the screw 9 forward, will release the wedge and cause the level to tilt as shown by dotted lines Fig. 1, and reversing the screw will cause the level to tilt the opposite way.

The assembling of the leveling device is done as follows: The base plate or clutch is assembled as a unit (minus the bearing plate 7 Fig. 6.) A hole is then bored in the level stock A of sufficient size to admit the leveling device, the clutch is then screwed in place in the stock by the screws 8^b. All the other parts including the base plate 7 are then assembled as a unit and pressed into place between the stop 14 and the spring 13 on the clutch 8. The spring will then engage the notch 7^a on the bearing plate 7 and hold the framework securely in position for use. The adjustment of the level is then made by turning or reversing the screw 9, one important feature of the device being that by using additional clutches the level can be instantly transferred from the ordinary level stock to a "straight edge" or plumb rule and vice versa, thus doing away with the necessity of the mechanic carrying a special "straight edge" or plumb rule level.

I claim:

1. The combination, in a spirit level of a bubble glass, a sleeve or casing therefor having a sight opening in the upper side thereof, and mounted on opposite sides in a pair of vertical standards formed from one piece of metal and perforated near the top to form pivotal bearings, the said sleeve or casing having pivots secured thereto on opposite sides, to engage the pivotal bearings in the standards; and a beveled bearing plate having one end bent downward securely fastened to the lower or horizontal portion of said legs or standards; all substantially as set forth.

2. In a spirit level, a bubble glass, a sleeve or casing therefor having a sight opening in the upper side thereof, a pair of legs or standards connected to said sleeve or casing on opposite sides by pivots, said sleeve or casing being adapted to rotate slightly upon said pivots, a round rod formed to a half circle connected securely at opposite ends of said sleeve or casing, a clip secured to the

lower and horizontal portion of the standards, said clip being adapted to guide the said semi-circular rod, a helical compression spring encircling said rod, one end of the spring being fastened securely to said rod, (preferably with solder), the other end of the spring being adapted to press against the loop or clip on the lower and horizontal portion of standards, a screw passing laterally through perforations in the standards and adapted to rotate therein, the point of the screw being riveted over a washer on the outside at one standard to hold same in position, a skeleton wedge shaped piece with both ends bent and threaded to fit said screw and adapted to reciprocate on same in a lateral direction, and a lug secured rigidly to the semi-circular rod and bent over the skeleton wedge shaped piece sufficiently to hold same in a horizontal position and adapted to engage said wedge for the purpose specified.

3. In a spirit level, a bubble glass, a sleeve or casing therefor, a pair of legs or standards connected to said sleeve or casing, a round rod of a partially circular form rigidly secured to opposite ends of said sleeve or casing and passing through a clip on the lower portion of the standards, an adjusting screw passing laterally through perforations in the standards, a skeleton wedge shaped piece with both ends bent to right angles to the imaginary center line of the wedge and bored and threaded to receive the said screw, to effect the adjustment of the level glass, a lug secured to the semi-circular rod on one side of the standards and a compression spring on the other, the tension of the spring being arranged to hold the lug hard against the wedge shaped piece at all points of adjustment, a beveled bearing plate having a partially circular notch formed in one side secured rigidly to the under side of the lower portion of the standards, a detachable base clutch of partially circular form having a beveled stop secured thereto, said stop having one end formed at right angles to the beveled part and adapted to hold the bearing plate in position, and a wire spring of circular form with ends elongated and bent to right angles secured rigidly to the base plate or clutch hard against the bearing plate when in position for use, the circular portion of the spring being adapted to fit in a correspondingly shaped notch in the bearing plate all substantially as set forth.

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