

F. E. RIAL & F. E. MOORE.

LEVEL.

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1,112,935.

Patented Oct. 6, 1914.

Fig. 1.

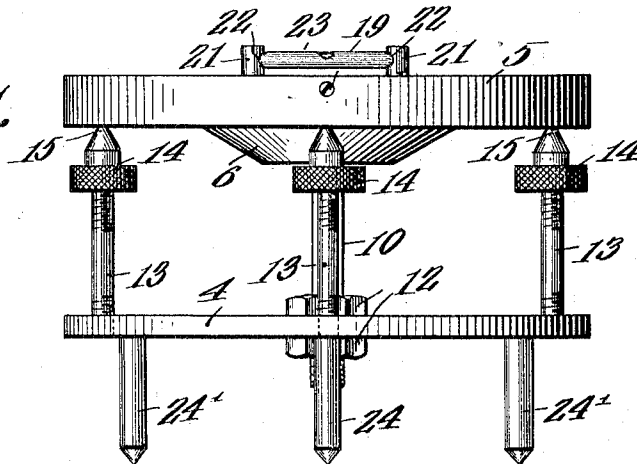


Fig. 2.

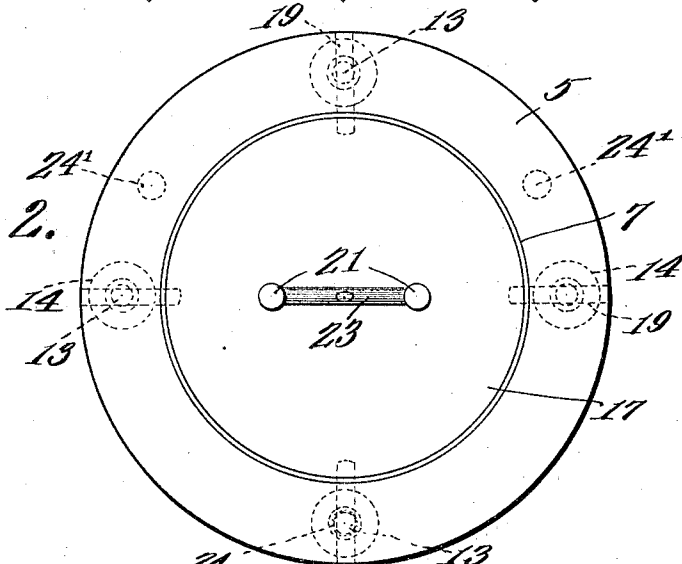
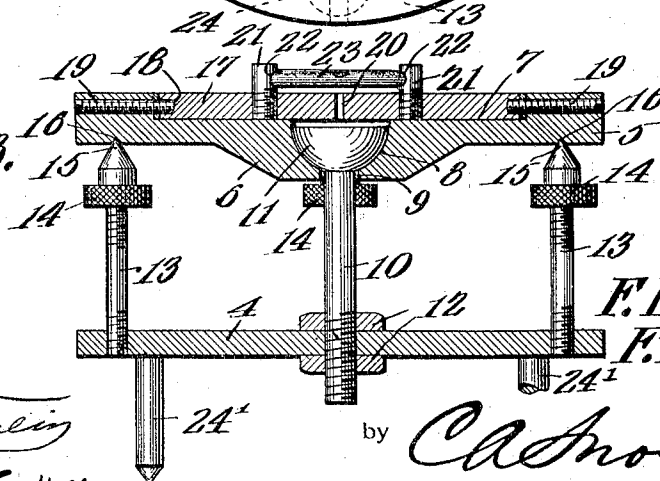


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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LEVEL.

1,112,935.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, FRED E. RIAL and FRANCIS EDWARD MOORE, citizens of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented a new and useful Level, of which the following is a specification.

The present invention appertains to spirit levels and particularly to a novel and improved support for such levels.

It is the object of the present invention to provide a base plate adapted to be supported by a tripod or upon a suitable surface, a plate spaced above the base plate and connected thereto for swinging movements, means for adjusting the upper plate relative to the base plate, and a rotatable spirit level holder carried by the upper plate, in order that the level holder may be adjusted to the proper horizontal position and may be set to various angular positions.

This invention also aims to provide such a device which shall be simple, inexpensive, durable, substantial and compact in construction, as well as serviceable, convenient and efficient in use.

To the above and other ends, the present invention resides in the novel construction, combination and arrangement of parts hereinafter set forth and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The preferred embodiment of the invention has been illustrated in the accompanying drawings, wherein like reference characters have been employed to denote corresponding parts and wherein:—

Figure 1 is a side elevation of the support. Fig. 2 is a plan view thereof. Fig. 3 is a central vertical section of the device.

Referring specifically to the drawing, a base plate has been designated by the numeral 4, the same being circular in contour, and the upper plate or platen has been designated by the numeral 5, the same being of a contour and size corresponding with the base plate. The base plate 4, however, is comparatively thin, whereas the upper plate

5 is made thicker due to its particular construction as described presently.

The upper plate 5 is provided with a central depending lug or boss 6, and has an upper shallow circular recess 7 of a diameter slightly less than the diameter of the said plate 5. The plate 5 is also provided with a concaved socket 8 in the bottom of the recess 7 and an opening 9 extending from the socket 8 to the bottom of the plate, the said opening and socket being concentric with the recess 7 and the plate 5.

The pedestal 10 is screw threaded centrally through the base plate 4 and projects below the said base plate in order to engage the threaded socket of a tripod, when necessary or desirable, the upper end of the pedestal passing loosely through the opening 9 in the upper plate and having a hemispherical head 11 fitting into the concaved socket 8 so as to provide a ball and socket joint in order to permit the upper plate to be swung relative to the base plate. A pair of jam nuts 12 are engaged on the pedestal 10 to contact with the respective faces of the base plate in order to maintain the pedestal in position, as will be apparent. The flat face of the head 11 is parallel with the base plate. An annular series of posts 13, in this case four, is screw threaded into the base plate 4 adjacent its margin, a knurled nut 14 being engaged or screw threaded onto the upper end of each post 13 and having a conical tip 15. The upper plate 5 is provided with an annular series of indentations 16 in the bottom thereof and adjacent its margin in which the respective tips 15 of the adjustable members or nuts 14 engage. Thus, the pedestal 10 forms a draft member connecting the two plates centrally for swinging movements relative to each other, whereas the respective bolts and adjusting nuts 14 provide adjustable jam members between the marginal portions of the two plates for setting the plates at any angular position or a parallel position relative to each other.

A circular level holding plate or turret 17 is arranged within the recess 7 within the plate 5, and is preferably flush with the face of the said plate 5, the plate 17 being provided with a circumferential groove 18, and

a series of set screws 19 being passed into the periphery of the plate 5 so as to engage in the groove 18 for retaining the plate 17 against outward displacement, but permitting the said plate to rotate freely. It will be noted that the plate 17 closes the socket 8, the head 11, however, being spaced from the plate 17 in order to permit the plate 5 to swing relatively to the pedestal, the plate 17 being provided with a central duct or aperture 20 through which oil or other lubricant may be passed so as to lubricate the parts which are in sliding engagement with each other.

The flat face of the head 11 is disposed slightly below the bottom of the recess, which will serve to limit the swinging movements of the plates 5 and 17 with respect to the pedestal, and which will permit the turret or plate 17 to seat upon the flat face of the head, for the purpose hereinafter set forth. It will be noted that the periphery or circumference of the turret or plate 17 is spaced from the walls of the recess 7, the turret or plate 17 being of smaller diameter than the said recess, so that the set screws 19 may be readily adjusted to center the turret or plate 17.

A pair of studs 21 are screw threaded into the plate 17 and are provided with opposed sockets 22 for the reception of the ends of the spirit level 23 in order to support the spirit level diametrically over the center of the plate 17. The ends of the spirit level 23 may be engaged to the studs 21 in any well known manner. Thus, the sockets 22 may be of sufficient depth, to permit one end of the spirit level to be inserted in one of the sockets, prior to the engagement of the other stud to the plate 17, in order that when the said stud is engaged to the plate, the spirit level may be slid outwardly slightly to engage in the other socket. The spirit level may then be cemented or otherwise secured in the sockets, it being understood, however, that other means may be employed for mounting the spirit level upon the plate 17.

One of the posts 13 projects below the base plate 4 to provide the leg 24 and a pair of additional legs 24' are secured to the base plate, so as to provide a three point contact with any object upon which the base plate is to be supported. The lower ends of the legs lie in a plane parallel with the base plate, in order that the flat face of the head 11 is parallel with the said plate.

This implement may be employed for divers purposes, it being noted that the same may be employed as a telescope base of surveying instruments, the pedestal 10, or base 4, being adapted to be carried by the usual tripod, and the platen being readily adjusted by means of the adjustable members 14, in order that the telescope (not shown) car-

ried by the turret may be brought to a horizontal position through the assistance of the spirit level. The present device may also be employed as an ordinary plumber's level, in which event, it is necessary or essential that the turret be disposed parallel with the plane of the lower ends of the legs of the base. During the use of the device as a telescope base, it will be observed that the platen and turret are usually tilted at various angles with respect to the base plate 4, so that the device may not readily be employed as a level without first bringing the platen parallel with the base plate. This, however, is readily accomplished by releasing the adjusting members 14 from the platen, which will permit the platen and turret carried thereby to seat upon the head of the pedestal. When the platen is thus released, the turret or plate 17 is adapted to seat on the flat face of the pedestal head, and inasmuch as the said face of the head is parallel with the base plate 4 and the plane of the lower ends of the legs, the turret will thus be positioned properly in order that the device may be conveniently employed as a level, it being observed that the platen, together with the turret form a turret structure adapted to be rotated upon the pedestal head to variously position the spirit level. It will also be observed that the turret and platen being flush permit any suitable implement to be placed thereon, especially when the platen and turret are rotated together upon the pedestal head. In this manner, the device may be conveniently employed as a plumber's level, the legs of the base plate being adapted to readily set upon the surface or object to be leveled or set in a true horizontal position. By threading the nuts or adjusting members 14 upwardly, they will again contact with the platen so as to raise the same, in which event, the device may again be employed as a telescope base, or the like.

From the foregoing, taken in connection with the drawing, the advantages and capabilities of the present device will be apparent and it will be manifest that the objects aimed at have been carried out in a satisfactory manner, the present device providing a desirable one for the purposes for which it is designed.

Having thus described the invention, what is claimed as new is:—

In a device of the character described, a base having legs, a pedestal supported by the base and having a hemi-spherical head, the flat face of which is parallel with the plane of the lower ends of the legs, a platen having a shallow recess and a concaved socket at the bottom of the recess, the said head fitting within the said socket with its flat face disposed slightly below the bottom

of the recess, a turret plate disposed in the
said recess, means carried by the platen for
holding the turret plate within the recess,
a spirit level carried by the turret plate, and
5 a series of adjusting members adjustably
carried by the base to contact with the platen
and to release the platen so that the turret
plate will seat upon the said head.

In testimony that we claim the foregoing
as our own, we have hereto affixed our signa- 10
tures in the presence of two witnesses.

FRED E. RIAL.
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Witnesses:

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