G. L. PARRISH AND C. A. COOLEY.

ADJUSTABLE PLUMB AND LEVEL.

APPLICATION FILED MAR. 16, 1921.

1,413,056.

Patented Apr. 18, 1922.

2 SHEETS—SHEET 1.

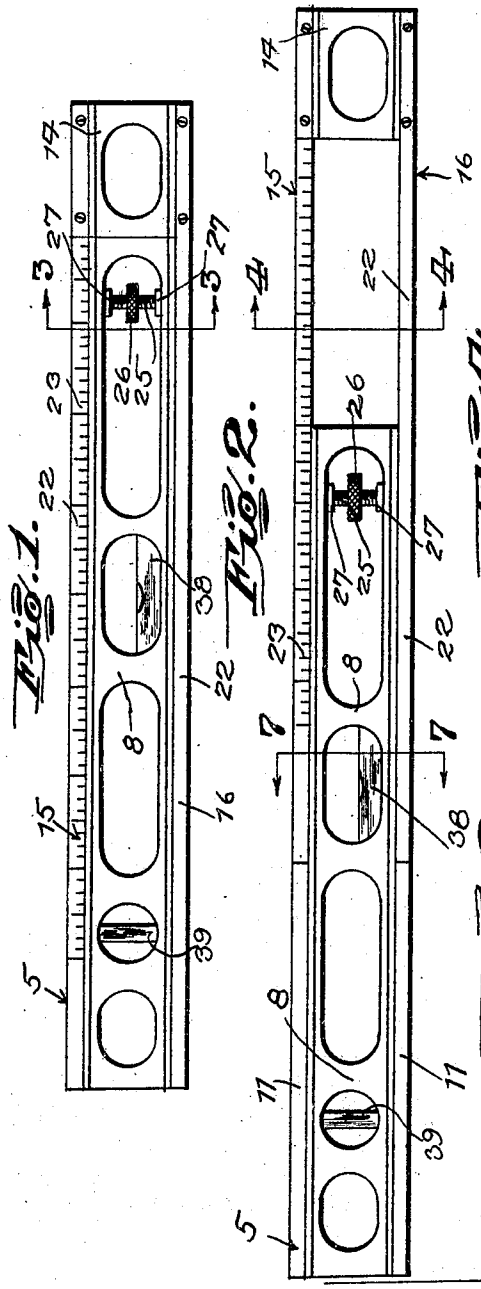


Fig. 1.

Fig. 2.

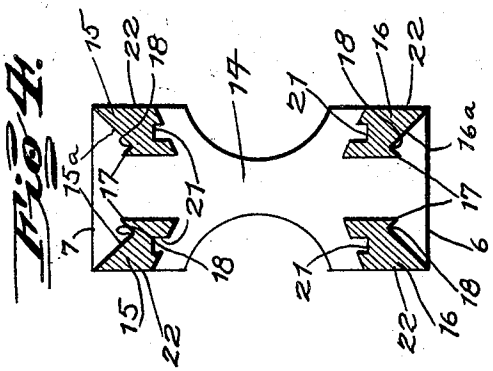


Fig. 4.

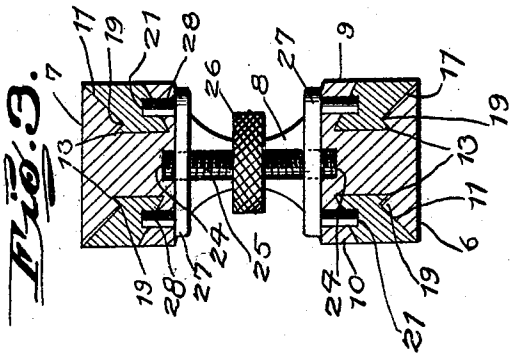


Fig. 3.

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2 SHEETS—SHEET 2.

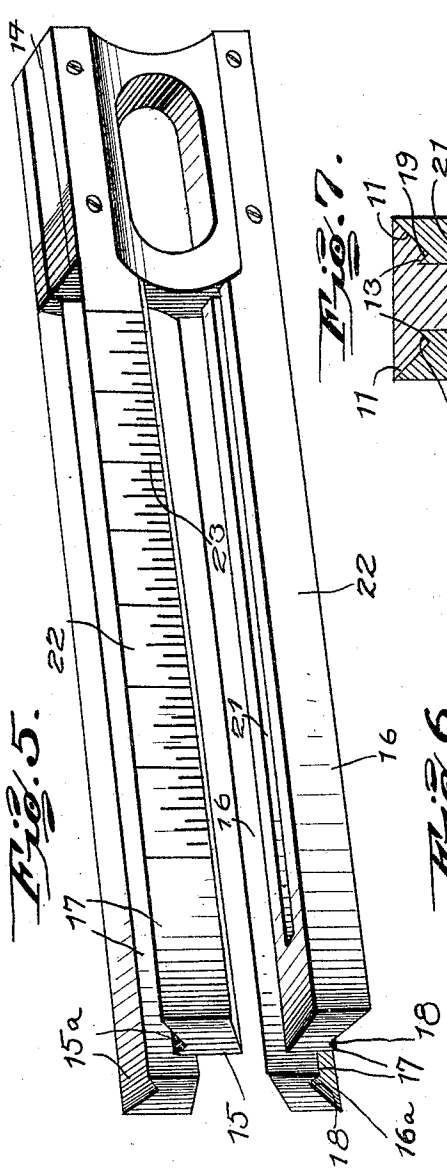


Fig. 5.

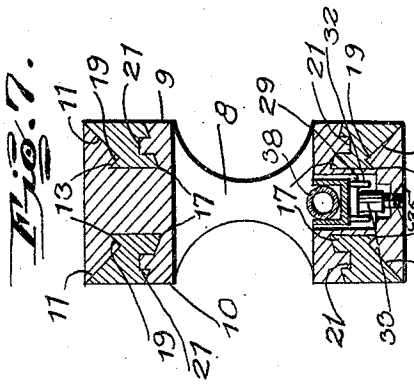


Fig. 7.

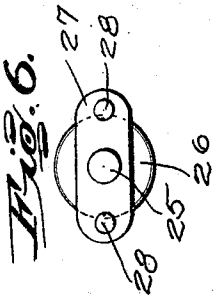


Fig. 6.

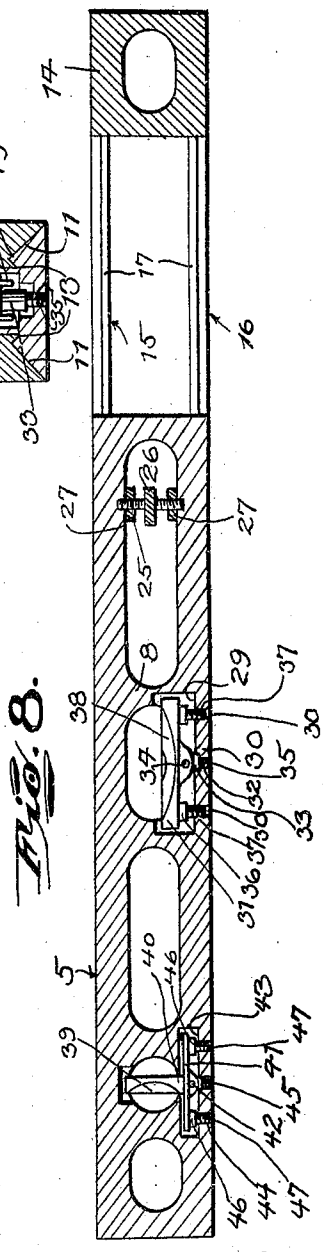


Fig. 8.

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UNITED STATES PATENT OFFICE.

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ADJUSTABLE PLUMB AND LEVEL.

1,413,056. Specification of Letters Patent. Patented Apr. 18, 1922.

Application filed March 16, 1921. Serial No. 452,879.

To all whom it may concern:

Be it known that we, GEORGE L. PARRISH and CHARLEY A. COOLEY, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Adjustable Plumbs and Levels, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to plumbs and levels, and has for its object to provide a device of this character capable of being adjusted to the length desired.

Another object is to provide a device of this character including a movable extension capable of increasing the length of the plumb and level without destroying the shape thereof.

Another object is to provide a device of this character including a movable extension slidable on the support of the plumb and level glasses without interfering with the adjustment of the glasses.

A still further object of the invention is to provide a device of this character including a body member in which plumb and level glasses are adjustably mounted and wherein one end of the body member is movable away from and toward the body member to the medium of arms slidable in channels formed in opposite faces of the body member.

A still further object of the invention is to provide a device of this character wherein the body member is provided with means adapted to secure the extension in its adjusted position.

With these and other objects in view, the invention consists in the improved construction and arrangement of parts to be hereinafter more particularly described, fully claimed and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of a plumb and level in its closed position,

Figure 2 is a side elevation of a plumb and level showing the extension in use,

Figure 3 is a section taken on the line 3—3 of Figure 1,

Figure 4 is a section taken on the line 4—4 of Figure 2,

Figure 5 is a perspective view of the extension,

Figure 6 is a plan view of the locking mechanism,

Figure 7 is a section taken on the line 7—7 of Figure 2, and

Figure 8 is a longitudinal sectional view of the structure shown in Figure 2.

Referring to the drawings, 5 designates a body member formed from a single piece of material and including opposed work engaging faces 6 and 7, said faces being connected by means of webs 8. The sides 9 and 10 of the body member adjacent the faces 5 and 6 are provided with channels 11, two channels being provided in each side. The channel extends upwardly and forwardly, and longitudinally of the body member 5. The outer wall 12 of the channel 11 is undercut to provide a channel 13, which serves to prevent lateral movement of an extension, the channel 13 being substantially V-shaped.

In order to increase the length of the body member 5, there is provided a novel extension which consists of a body member or block 14 adapted to coincide with the end face of the body member and adapted to form one end of the body member. The block 14 is provided with a plurality of arms 15 and 16, one arm extending from each longitudinal corner or edge of the block. Each of the arms 15 has its face 15ª inclined inwardly and downwardly while the lower face 16ª of the arms 16 are inclined upwardly, the inner portions of said faces terminating below the inner edge thereof to provide a flange 17 and a channel 18. The flange 17 is adapted to be disposed in the channel 13, while the channel 18 is adapted to receive the ridge 19 formed at the junction of the channel 13 and the outer wall of the channel 11. The lower faces of the arms 15 and upper faces of the arms 16 are provided with grooves 21, said grooves extending longitudinally of the arms and terminating adjacent one end thereof to provide a stop. It will be noted that the lower faces of the arms 15 and upper faces of the arms 16 extend in parallel relation to the opposite faces of said arms. By this novel arrangement, the arms 15 and 16 are permitted to slide in the channels 11 longitudinally of the body member 5, lateral movement of said arms being prevented through the cooperation of the channel 13 and the flange 17, it being of course obvious that sufficient play is allowed to prevent the binding of the arms within the channels 11.

It will be noted that the outer face 22 of each arm is disposed closely adjacent the work engaging faces 6 and 7, and in right angular relation to said faces. The grooves 21 terminate adjacent the ends of the arms to prevent disengagement of the arms. The channels 11 and the arms, in view of their interlocking engagement, will eliminate the necessity of depending upon the block 14 to maintain the arms 15 and 16 in a true position when the extension is in use, and it is desired to obtain the exact level of work on which the device is used. The outer face 22 of each of the arms 15 is provided with a scale 23 which permits the operator to set the extension at the desired distance without the use of an additional or separate rule, it being also useful for other measuring purposes.

Projecting from the inner face of each of the work-engaging faces 6 and 7 is a socket 24, said sockets being disposed in opposed registering relation and between certain of the webs of the body member. These sockets are intended to receive the ends of a shaft 25, a knurled thumb nut 26 being secured to the intermediate portion of the shaft. The portion of the shaft on one side of the nut 26 is provided with right hand threads, while the remaining portion on the opposite side of the nut is provided with left hand threads. A locking plate 27, including a central threaded opening, is mounted on each threaded end portion of the shaft, the plates including fingers 28 adapted to extend through the inner wall of the channel into the grooves 21 of the arms 15, one finger being provided for each arm. It is of course obvious that when the shaft is rotated by means of the nut 26, in view of the right and left hand threads, the plates 27 will be moved toward or away from each other so as to cause the fingers 28 to extend into the grooves 21 and engage the arms 15. When the plates are moved away from each other toward the arms, the fingers come into binding engagement with the arms and thereby lock the same in their adjusted positions, movement of said plates toward each other releasing the arms to permit adjustment of the extension.

The intermediate portion of the body member 5 is provided with a channel 29, said channel having a plurality of openings 30. Disposed within the channel is a casing 31 having a pair of opposed ears 32 depending from the intermediate portion of the bottom of the casing. A socket member 33 is disposed between the ears 32, said socket member being interiorly threaded and having trunnions 34 projecting from one end thereof, said trunnions being journaled in the ears 32 to permit pivotal movement of the casing 31. A screw 35 is passed through one of the openings 30 into the socket member 33. Depending from the bottom of the casing 31 adjacent each end thereof is a threaded socket 36, each socket being adapted to receive a screw 37, which are passed through the remaining openings 30. By means of the screws 37 the casing 31 may be adjusted to various inclinations. Mounted within the casing 31 is a bubble or spirit level glass 38.

Disposed in spaced relation to the spirit level glass 38 is a plumb glass 39. This glass is adjustable similar to the glass 38 by means consisting of a casing 40 adapted to receive the glass 39, said casing being secured to the intermediate portion of a plate 41, the plate 41 having a pair of ears 42 depending from its lower intermediate portion. The plate 41 is disposed within the channel 43 formed in the body member 5. Said channel, similar to the channel 29, is provided with a plurality of openings 44. A socket member 45 similar to the socket member 33 is disposed beneath the plate for pivotally supporting the same. The ends of the plate are provided with sockets 46 adapted to receive screws 47 by means of which the plate 41 may be disposed in various inclined positions.

By this novel device, it is possible to increase the length of the body member without causing any portion of the extension to overlap the body member. In addition to this, by the novel formation of the channel 11 and the arms 15 and 16, the shape and accuracy of the body member is not disturbed even when the block 14 is disposed at the limit of its movement away from the body member 5. Furthermore, the arms 15 and 16 are disposed flush with the sides 9 and 10, no portion of the movable arms intersecting the work-engaging face of the body member, so that the extension may be operated even when the device is supported by the work, as the arms 15 and 16 do not at any time engage the work. By a slight rotation of the shaft 25, the locking plates 17 are simultaneously moved to lock all of the arms of the extension in the desired adjusted position, the adjustable feature of the plumb and level glasses permitting the same to be maintained in various inclinations. The invention possesses every feature necessary to render a device of this character efficient and convenient for the user.

What is claimed is:

1. A plumb and level of the character described comprising a body member having channels in the side faces thereof, an extension disposed for sliding movement on the body member, said extension having arms slidable in the channels of the body member, a means carried by the body member for engagement with the arms to prevent movement of the extension.

2. A plumb and level of the character described comprising a body member, an extension having a plurality of arms extending therefrom, said arms being slidably engaged with the body member and means carried by the body member for engagement with the arms to hold said arms in binding engagement with the body member.

3. An adjustable plumb and level of the character described comprising a body member having inclined channels formed in the side faces thereof, each channel including an under cut portion, an extension disposed at one end of the body member, said extension having a plurality of arms extending therefrom and into the channels, said arms being provided with flanges adapted to engage the under cut portions of the channels to prevent lateral movement of the arms with respect to the body member, and means for holding said arms in their adjusted position on the body member.

4. An adjustable plumb and level of the character described comprising a body member having inclined channels formed in the side faces thereof, each channel including an under cut portion, an extension disposed at one end of the body member, said extension having a plurality of arms extending therefrom and into the channels, said arms being provided with flanges adapted to engage the under cut portions of the channels to prevent lateral movement of the arms with respect to the body member, a shaft rotatably mounted in the body member and between the arms of the extension, plates rotatably mounted on said shaft, fingers carried by said plates and extending through the channels of the body member for engagement with the arms upon rotation of the shaft.

In testimony whereof we hereunto affix our signatures.

GEORGE L. PARRISH,
CHARLEY A. COOLEY.