May 14, 1929. A. N. KLITSCHE 1,713,085

SURVEYING TARGET

Filed April 20, 1925

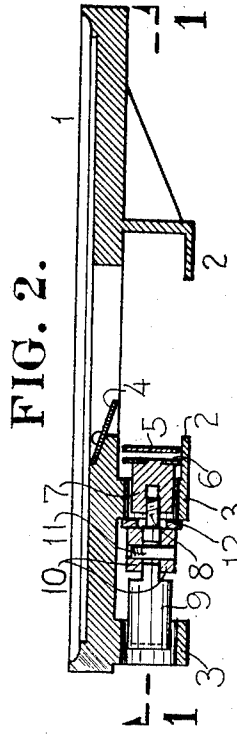


FIG. 2.

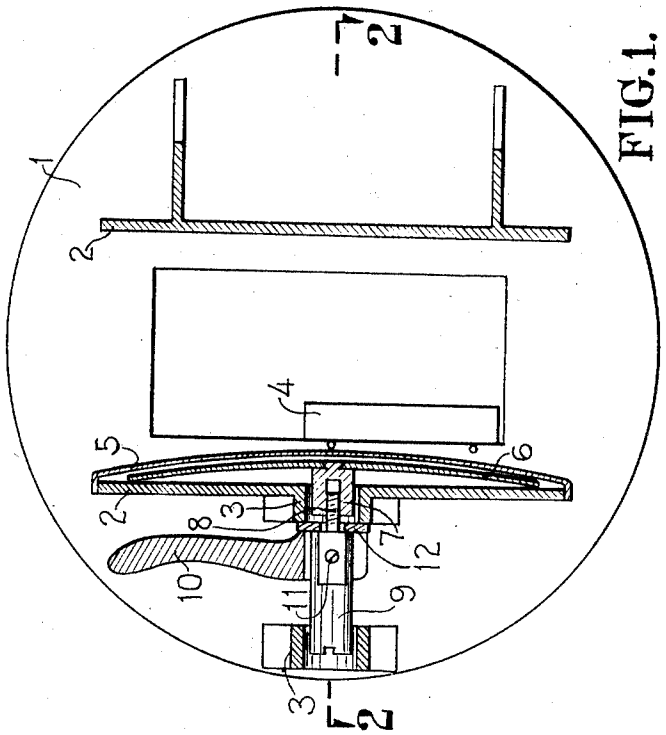


FIG. 1.

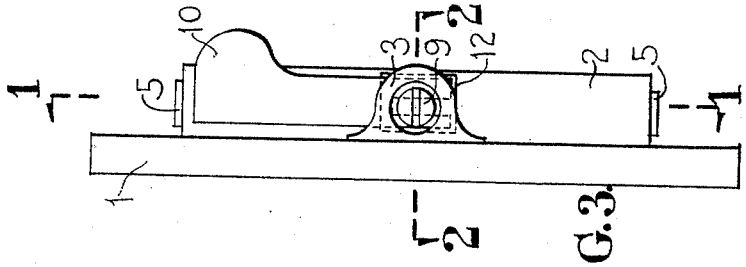


FIG. 3.

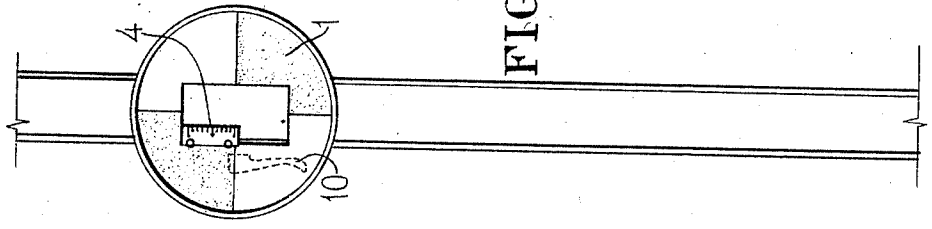


FIG. 4.

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UNITED STATES PATENT OFFICE.

AMANDUS N. KLITSCHE, OF CHICAGO, ILLINOIS.

SURVEYING TARGET.

Application filed April 20, 1925. Serial No. 24,353.

My invention relates to improvement in the targets used on surveying rods, in particular in targets used on leveling rods.

The objects of my improvement are: first to provide a target that can be moved up and down the rod with ease without binding; second, to provide a screwless clamp for the target that will hold it firmly in place without time spent in turning a screw and third, to provide a clamping device that permits the operator to manipulate the target with one hand with certainty and ease.

I attain these objects by the mechanism illustrated in the accompanying drawing in which—

Figure 1 is a section view taken just behind the back of the target on the lines 1—1 of Figures 2 and 3 and drawn to full size scale;

Figure 2 is a transverse section taken through the center of the target on line 2—2 of Figures 1 and 3 and drawn to full size scale;

Figure 3 is a side view of the target drawn to full size scale; and

Figure 4 is a face view of the target on a rod drawn to small scale and showing the clamp handle in dotted outline.

Similar numerals refer to similar parts throughout the several views.

The target body 1, the holding ribs 2 and the slide bearings 3 are rigidly connected with each other or cast in one piece.

The vernier 4 is firmly screwed to the target body 1. The loose spring 5 can be removed at will and is held in place by the rod (not numbered) which fits in between the ribs 2 and by the projecting lip of one rib.

The spring 5 is sprung in place over one of the members 2 as shown. In normal operation it cannot be removed because the rod is in position between the two members 2. When the target has been removed from the rod, this spring may be slipped off of the member 2 upon which it is normally positioned, being moved in the direction of the other member 2. It is then freed from the overhanging lip of the member 2 upon which it was originally positioned and may be removed.

The release spring 6 is rigidly connected to the sliding nut 7, which in its turn is screwed to the piston member 9 by the screw 8. The screw 8 is part of the piston member 9.

Through the piston member 9 a set screw 11 passes, thereby connecting the two prongs of the clamp handle 10 and at the same time acting as a pivot joint between the piston member 9 and the clamp handle 10.

Between the clamp handle 10 and one of the slide bearings 3 is the washer 12.

When the target is in use as shown in Figure 4 the surveying rod fits in between the ribs 2 pressing on the loose spring 5 which in turn presses on the release spring 6 so strongly that the target is held firmly in place.

To release the target the rod is held with the left hand and the target with the right hand, the right thumb exerts pressure on the clamp handle 10. The handle 10 moves inward, towards the rib 2 turning at the base of the prongs, and, therefore, pressing hard at this base upon the washer 12.

At the same time this turning motion of the handle 10 forces the piston member 9 to move outward pulling with it the sliding nut 7 and, therefore, the release spring 6 thereby removing the pressure from loose spring 5 and from the rod.

Thus by holding the handle 10 pressed inward towards the rib 2 the target can be moved easily up and down the rod, and the moment the handle 10 is released the spring 6 pulls inward towards the spring 5 placing strong pressure against the rod and holding the target firmly in the desired position.

The target can also be manipulated in the rear with the left hand or with the right hand.

When the handle 10 is held against the rib 2 the target is moved very easily and smoothly up and down the rod.

No time is spent in screwing the target in any position. All that is necessary is to let go and the target is tight in place. The target is manipulated all with one hand, with the greatest ease and without jumping or binding.

The wearing parts of the target are the washer 12 and the loose spring 5 and these can easily be replaced.

For these reasons this target is a great convenience and great improvement on the targets with screw clamps and should find an ever widening field of use in surveying.

It will be evident that while I have shown in my drawings an operative device, still many changes might be made in the size,

shape and arrangement of parts without departing materially from the spirit of my invention and I wish, therefore, that my drawings be regarded as in a sense diagrammatic. It will be understood that while I have mentioned some of the objects of my invention I have not mentioned them all and I am therefore not limited to those mentioned in the specification above.

I claim as my invention:

The combination with a surveying target having ribs for guiding it upon a staff, of a yielding member carried by one of said ribs and adapted to engage the staff; a spring member between said rib and said yielding member, adapted to normally urge said yielding member into engagement with said staff, and to thereby lock said target thereon; a releasing handle fulcrumed upon a fixed portion of said target; a piston member adjustably connected to said spring member; and pivoted connections between said piston member and said handle, whereby rocking movements of the latter upon its fulcrum may relieve the pressure of said spring member and unlock the target from the staff.

Signed at Chicago, county of Cook and State of Illinois, this sixteenth day of March, 1925.

AMANDUS N. KLITSCHE.