

S. L. DONNELL.

Level.

No. 60,346.

Patented Dec. 11, 1866.

Fig. 3

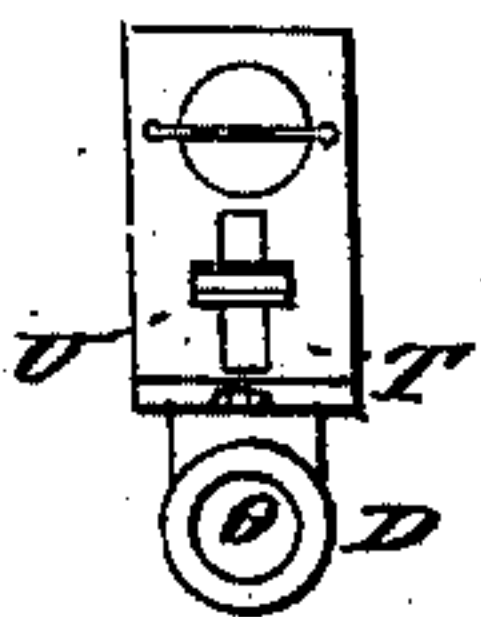


Fig. 2

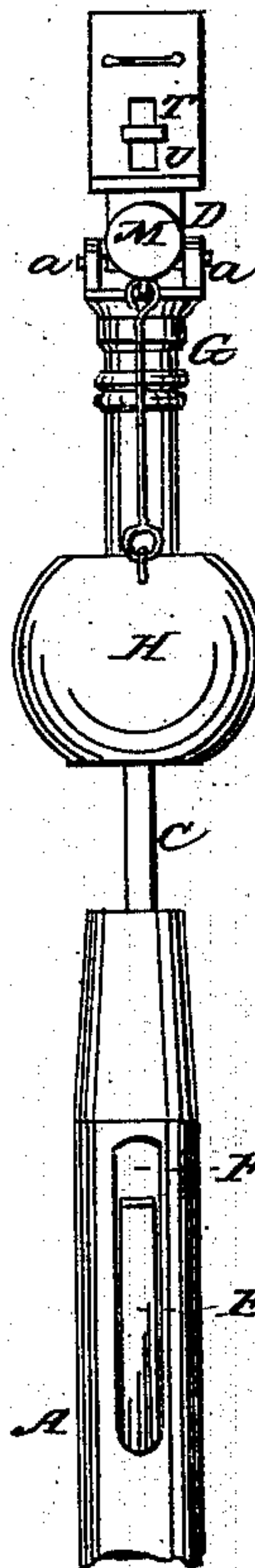


Fig. 1

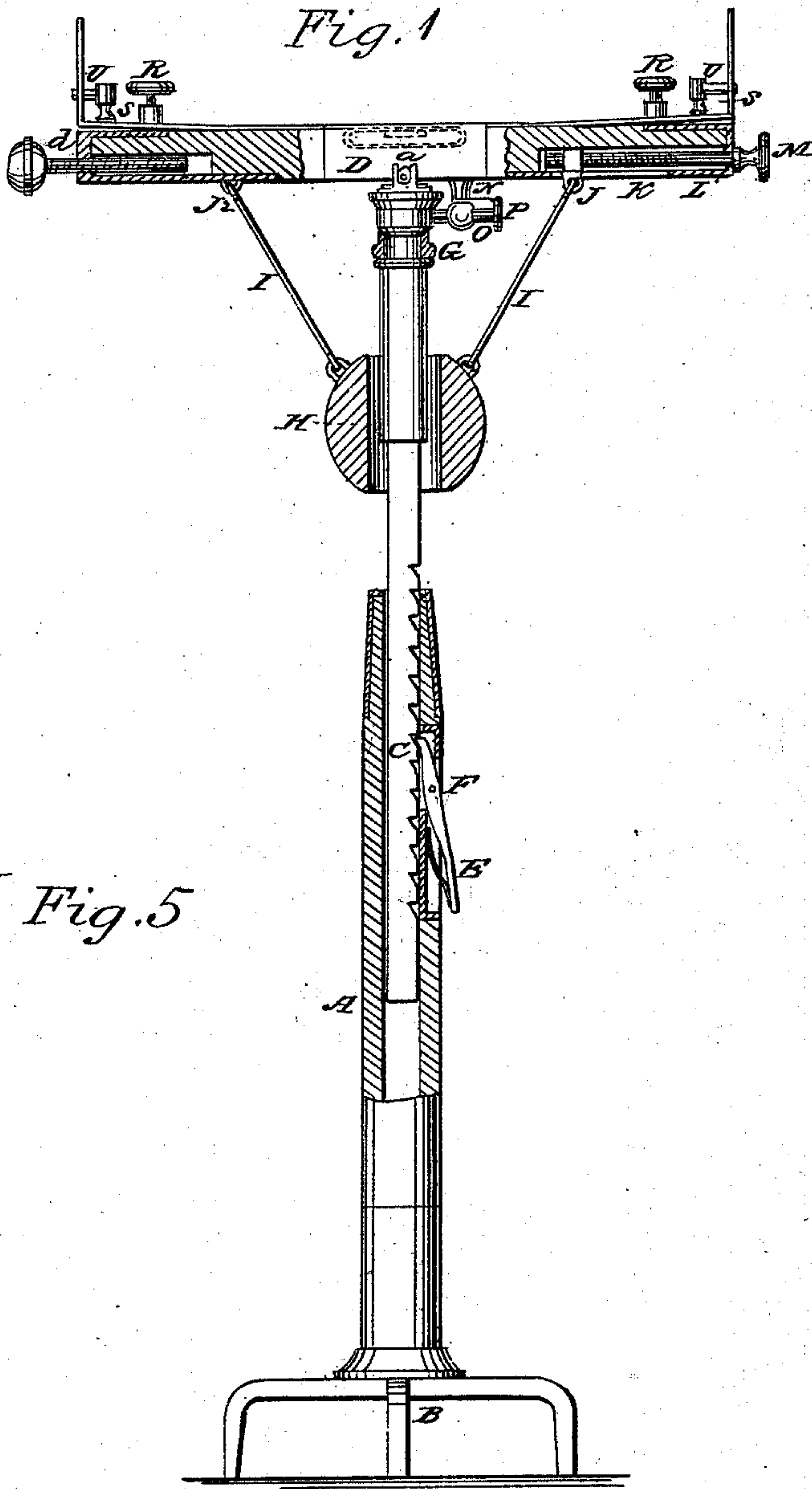


Fig. 4

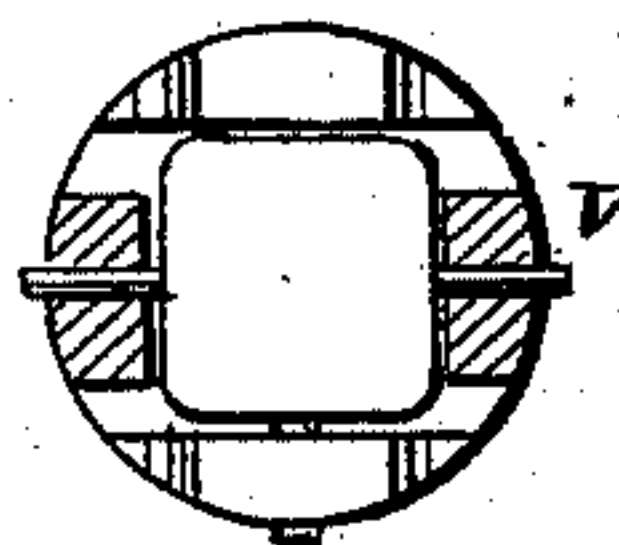
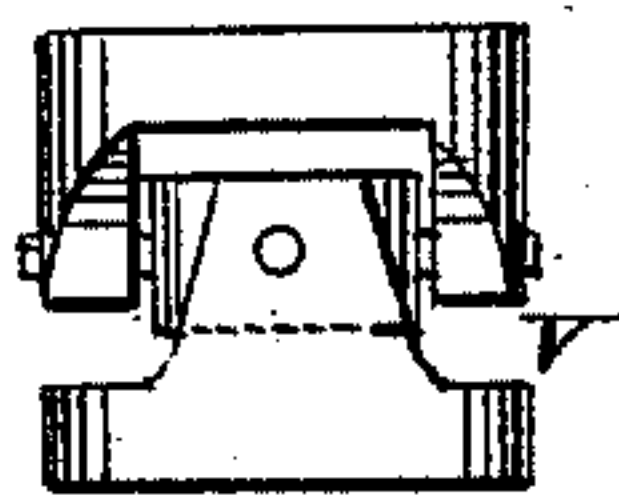


Fig. 5

Witnesses:

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IMPROVEMENT IN GRADING INSTRUMENTS.

SAMUEL L. DONNELL, OF SPRING CREEK, TENNESSEE.

Letters Patent No. 60,346, dated December 11, 1866.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, SAMUEL L. DONNELL, of Spring Creek, Madison county, State of Tennessee, have invented new and useful improvements in Levelling or Grading Instruments; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The present invention relates to certain new and useful improvements in a levelling or grading instrument, invented and secured to me by Letters Patent of the United States, bearing date the eleventh day of September, A. D. 1860, and numbered 29,955; and it consists in a novel arrangement and construction of the levelling or grading instrument, whereby simplicity and efficiency are secured, and the instrument also susceptible of a much easier and a more ready adjustment of its several parts, according as may be desired or necessary, as will be plainly apparent from the following detail description thereof, reference being had to the accompanying plate of drawings, in which—

Figure 1 is a side elevation of the instrument, with some portions in central vertical section.

Figure 2 an elevation of the front side or end of the instrument, with its stand or support broken off.

Figures 3, 4, and 5, detail views, to be hereinafter referred to.

Similar letters of reference indicate like parts.

A, in the drawings, represents the stand or support of the instrument, the foot, B, of which, may be made removable or detachable for transportation. The stand A is hollow, and the square rod, c, which supports the bubble block, D, is inserted in the hollow stand, and can be raised or lowered in height or position, and there supported by means of a spring lever catch or pawl, E, hung in the slot, F, of the stand A. Around and upon the upper end of the square rod c, a collar or ring, G, is swivelled, having hung to its upper side the bubble block D, hereinbefore referred to, by means of the trunnion pins, a, projecting from each of its sides, and at points midway between its two ends. H, a balance weight or ball, having a hole through its centre, which ball is placed over the staff of the stand A, and is suspended by means of connecting link-pieces or chains, I, one upon each side, and at points diametrically opposite to each other, to staples or lugs, J, upon the under side of the bubble block. One of these staples J, or that at the end of the bubble block, at which the eye is placed for sighting, is arranged within a slot K, extending in the direction of the length of the bubble block, and has screwed into it, upon the inside of the block, a thumb-screw, L, the milled head, M, of which is at the sight end of the block G. The other staple, J², is fixed in the under side of the bubble block, at a short distance from the opposite end to that at which the eye is placed for sighting. In the under side of the bubble block D is a fixed post or standard, N, through which passes a set or thumb screw, o, having a milled head, P, upon its outer end, and by its inner end bearing against the side of the collar G, swivelled on the stand A.

From the above description of the arrangement of the bubble block upon the stand A, it is plain to be seen that, first, by turning the thumb-screw at the sighting end of the bubble block, either to the right or left, the lug into which it is screwed and to which the balance weight or ball H is hung, will consequently be moved either toward or away from the centre staff or stand A, as the case may be, and thus, through the link-piece connecting such lug with the balancing weight, bringing said weight to the proper adjustment for the balancing and the adjustment of the bubble block, the hole through the said weight or ball H being made large, so as to allow a freedom of movement to the ball, and also to its above-described adjustment; that, secondly, the bubble block is susceptible of being swung round upon its stand, so as to be sighted in any direction, and that, thirdly, after the bubble block has been adjusted in position, as described above, it can be there held and secured, as it were, by simply bringing the thumb or set screw o against the collar G of the stand A. In order to enable the bubble block to be adjusted with more nicety, I have inserted at its opposite end to that at which the sighting is done, a thumb-screw, D, that, by being simply screwed into or out of the block, affects or changes its balance, as is obvious without any further explanation. To adjust the sights at each end of the bubble block, a set-screw or thumb-screw, R, for each sight, is provided, that, by being screwed into or out of the arms, S, by which the sights are secured to the said block D, raise or lower the sights from the block, as is evident from an inspection of fig. 1 of the drawings, each sight being slotted vertically at T, and each similarly graduated about such slots and moving over fixed pointers, U, of the block, so that they can both be brought or adjusted to uniform height.

It may be here remarked in conclusion, that a telescope and compass can be mounted upon the bubble block, if so desired, to be used in lieu of the open sights, in which case it would be desirable to employ a swivel, V, turning upon transverse centres or pivots, so as to enable the compass to be always level as the balance ball is adjusted, which form of swivel is shown in figs. 4 and 5 of the drawings.

I claim as new, and desire to secure by Letters Patent—

1. The bubble block D, mounted upon a collar G, swivelled upon the stand A or its equivalent, in combination with the balance ball or weight H, suspended from the said block and about and around the stand A, substantially as herein described and for the purpose specified.

2. In combination with the above, arranging either one or both of the lugs J J², in the bubble block D, from which the balance ball H is suspended in such a manner as to be susceptible of being adjusted therein, substantially as and for the purpose described.

3. The combination with the sights of the bubble block of the thumb or set screws R, and fixed pointer U, arranged substantially as described and for the purpose set forth.

4. The use of a transverse swivelled block V, for the purpose described.

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Witnesses:

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