No. 862,672. PATENTED AUG. 6, 1907.

L. S. STARRETT.

CALIPER SQUARE.

APPLICATION FILED FEB. 7, 1906.

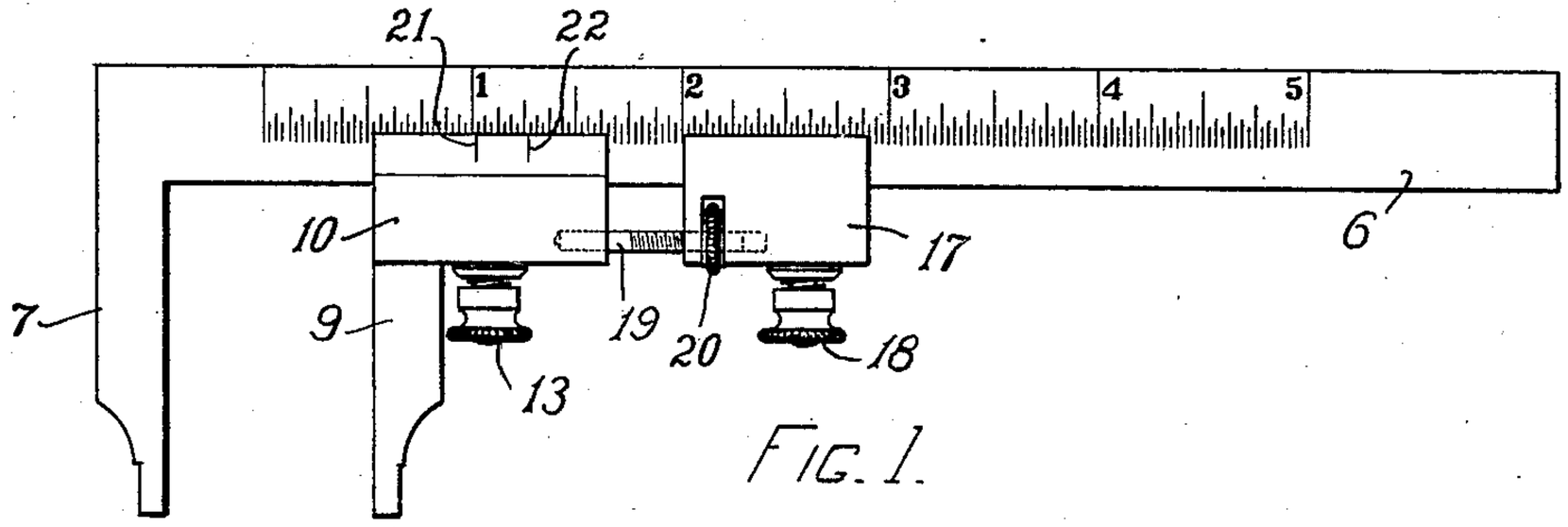
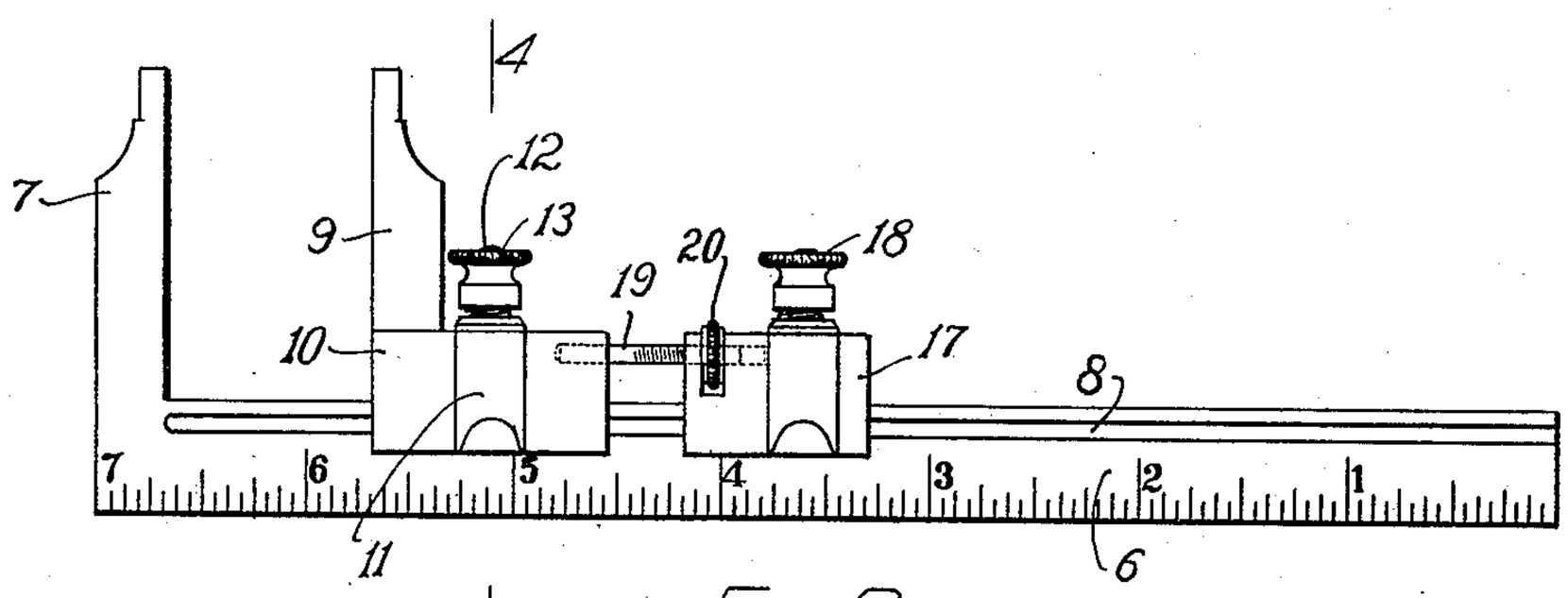


FIG. 1.



4 FIG. 2.

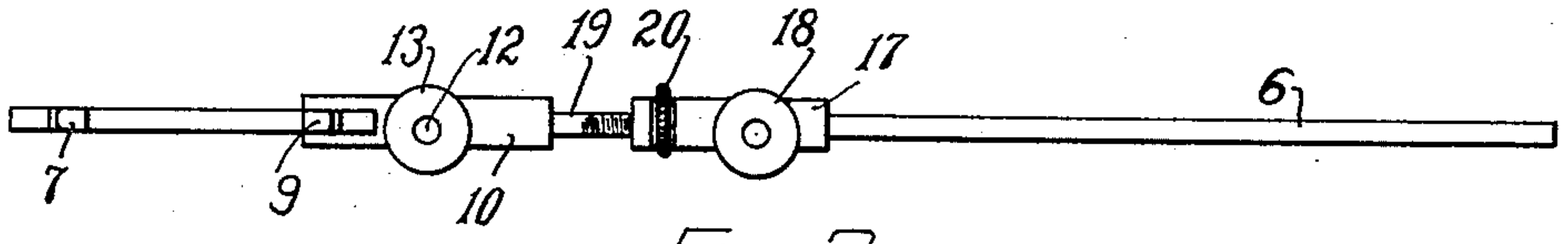


FIG. 3.

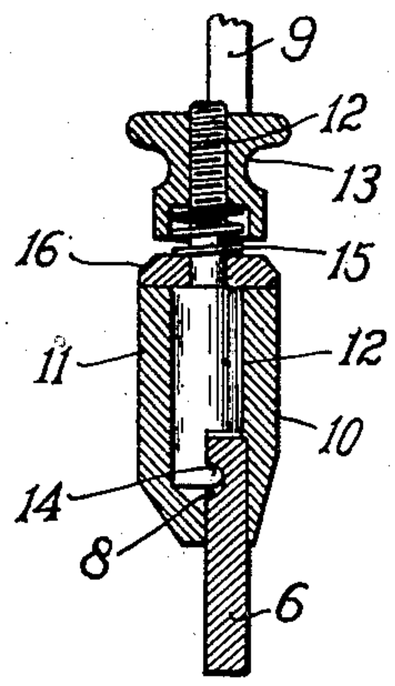


FIG. 4.

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CALIPER-SQUARE.

No. 862,672. Specification of Letters Patent. Patented Aug. 6, 1907.

Application filed February 7, 1906. Serial No. 300,060.

To all whom it may concern:

Be it known that I, LAROY S. STARRETT, of Athol, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Caliper-Squares, of which the following is a specification.

My invention improves upon the ordinary caliper square shown in my U. S. Patent No. 399,167, dated March 5, 1889, by a construction which reduces its weight and the space it occupies in the tool chest, and leaves one of its longitudinal edges and both of the graduated scales unobstructed from end to end.

My improvement omits the loop-like clasps heretofore surrounding the beam, simplifies and cheapens the instrument, and locates the adjusting and set screws at one edge of the beam, as herein shown and described.

In the drawing:—Figures 1 and 2 are elevations showing opposite sides of my improved instrument. Fig. 3 is a top plan of the same. Fig. 4 is an enlarged transverse section on line 4—4 of Fig. 2, the hook bolt being in elevation.

The body or stationary part of the instrument comprises the beam 6, here shown in horizontal position, and the terminal jaw 7, rigidly secured perpendicular to the beam at one end, and of equal thickness with it. In the face shown in Fig. 2, beam 6 has a deep groove 8 parallel with and near its upper edge, and extending from the foot of jaw 7 to the outer end of the beam. Beam 6 has, on the lower edge of this face, a measuring scale, graduated in practice preferably in thirty-seconds of an inch, while its opposite face, as seen in Fig. 1, has, midway between its edges, a scale in finer graduations, say sixty-fourths of an inch.

The movable jaw 9 is mounted, with its attachments, adjacent to jaw 7, on the grooved edge of the beam 6, in a novel manner. Said jaw 9 is formed integral with a thicker base portion 10, deeply grooved or recessed in its lower edge to fit over and slide along the grooved edge of beam 6, toward and from the rigid jaw 7. The base or slide 10 has, on one of its faces, a vertical semi-cylindrical protuberance 11, (Fig. 2) and is recessed axially of said protuberance, to admit from above the clamping bolt 12, Figs. 3 and 4. This bolt is threaded at top to receive nut 13, and is semi-cylindrical near its foot to fit one side of the beam 6 and be held from rotation. Said bolt is formed with a terminal hook 14 to enter the groove 8 from its open end and move therein so as to clamp jaw 9 and hold it firmly to the beam at any point desired. Groove 8 being close to the beam edge, and the bolt axis coinciding with the grooved face of the beam, gives the bolt a short and stiff tip-portion, see Fig. 4, not likely to spring laterally; hence a thin blade with a shallow groove and a corresponding hook 14 may be employed.

The body of nut 13 is hollowed out to inclose a coiled spring 15 which surrounds the threaded part of bolt 12, a flat annular cap 16, surrounding said bolt, being interposed between said spring and the top of the protuberance 11, see Fig. 4. By this construction, the sliding jaw 9 and base 10 are held by the hooked bolt to grooved beam 6 with a yielding pressure sufficient to hold them frictionally, for ready adjustment.

Adjacent to base 10 and similarly formed recessed and mounted on beam 6, is a supplementary slide 17 held to the grooved beam by a similar hooked bolt and a nut 18. A fine screw 19, parallel with the edge of the beam, extends rigidly from base 10 into an unthreaded perforation in slide 17. This slide has a transverse vertical recess in its outer edge to receive a milled adjusting nut 20, engaging the threads of screw 19 and exactly fitting, flatwise, between the walls of said recess. By this construction, when nuts 13 and 18 are loosened, base 11 and slide 17 are freely movable together along beam 6 for approximate adjustment of jaw 9 with relation to jaw 7. Nut 18 may then be tightened, and the nice adjustment of the movable jaw 9 effected by turning nut 20 in its recess, thus advancing or retracting screw 19 and base 11 to which it is secured.

Both inside and outside measurements are accurately made by this instrument. The inner edge of base 10 is beveled and reaches to the fine graduated scale of Fig. 1. This beveled edge has a transverse base line 21 which registers with zero on said scale when jaws 7 and 9 are tightly closed. Such base line, therefore indicates on said scale the exact outside caliper measurements made by the instrument. Another base line 22 is formed on such beveled edge at a distance from the first equal to the combined breadth of the tip portions of both jaws, say one-quarter inch. This line 22 therefore denotes, by its position with relation to the fine scale of Fig. 1, the exact inside caliper measurements made,—the breadth of the jaw tips being necessarily added to inside measurements made, since the tips occupy part of the inside spaces measured.

I claim as my invention:—

1. In caliper squares, the beam having a rigid perpendicular terminal jaw, an unobstructed straight edge, and unobstructed lengthwise scales, one being located adjacent to said edge and the other midway between the edges of the opposite side, in combination with a movable jaw having an elongated grooved base seated on the beam edge and adapted to meet the graduations of one of such scales, and with means for holding such base and movable jaw, frictionally and rigidly, in any desired adjusted position, without obstructing the straight edge or scales of the beam, for the purpose set forth.

2. In caliper squares, the beam having a rigid terminal jaw, a lengthwise groove in one face extending from the foot of said jaw to the opposite end of the beam, near and parallel to its upper edge, and a graduated measuring scale along each face thereof, in combination with an adjustable jaw having an elongated grooved base seated on

the grooved edge of the beam formed with a semi-cylindrical protuberance, recessed vertically to receive the fastening device, the axis of said recess being in the plane of one face of the beam, and with a threaded bolt in such recess flattened at tip to semi-cylindrical shape, formed with a terminal hook engaging the groove in the beam, and provided with a fastening nut, whereby the opposite edge of the beam and the scales on its sides are wholly unobstructed, for the purpose set forth.

3. In caliper squares, the beam having a rigid perpendicular jaw at one end, a lengthwise groove in one face extending from the foot of said jaw to the opposite end of the beam, near and parallel to its upper edge, and a graduated measuring scale along either face thereof, in combination with an adjustable jaw having an elongated grooved base seated on the grooved edge of the beam, vertically recessed and provided therein with a fastening bolt having, terminally, a hook engaging the groove in the beam and a tightening nut and spring therefor, one face of said base being beveled and terminating in a thin edge along the graduated scale and such face being provided with two transverse base lines reaching to said edge at a distance from each other equal to the combined breadth of the jaw-tips, and respectively located to indicate on said scale the outside and inside caliper measurements made by the instrument, substantially as set forth.

In testimony whereof I have affixed my signature, in presence of two witnesses.

LAROY S. STARRETT.

Witnesses:
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