

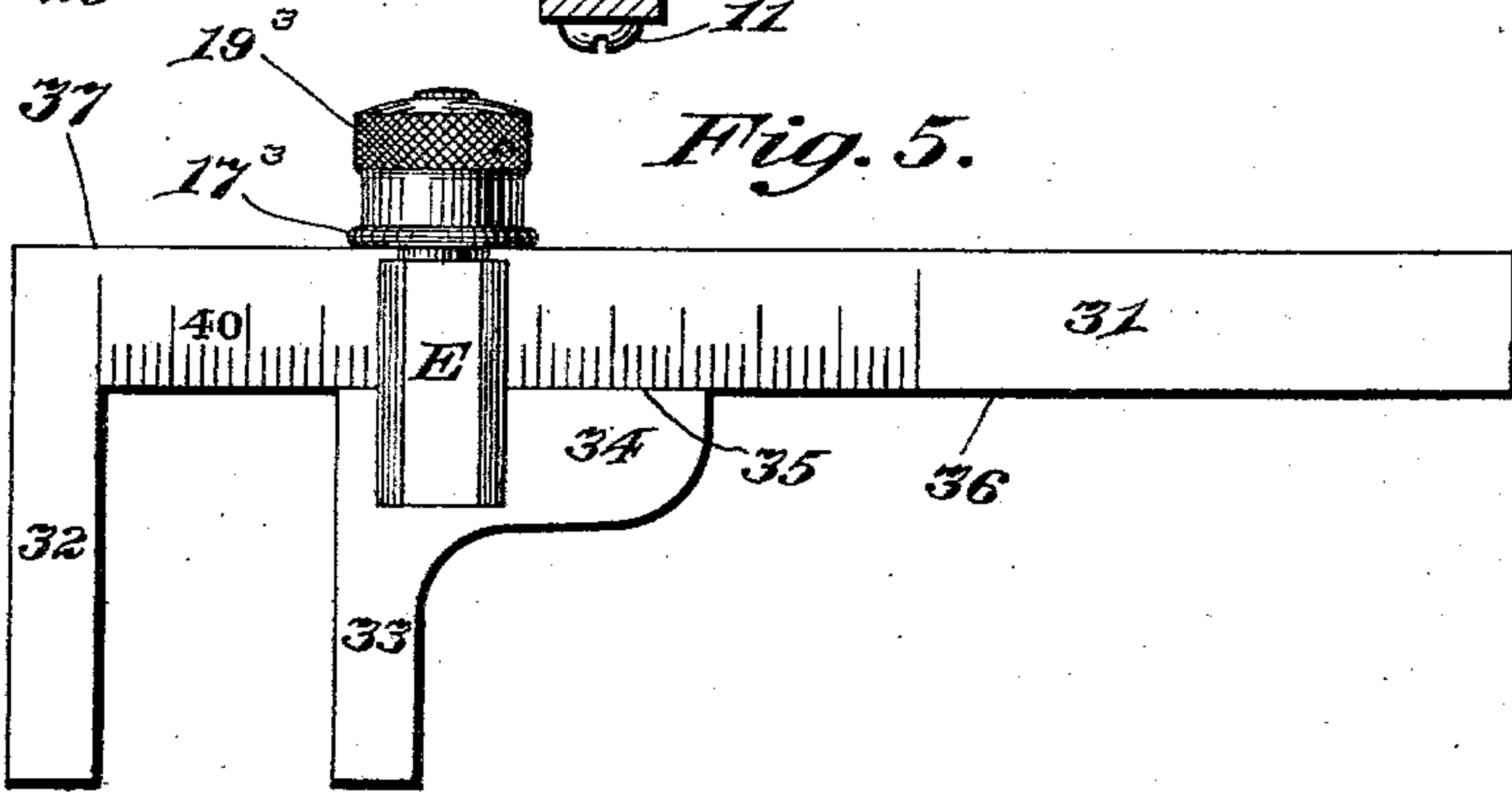
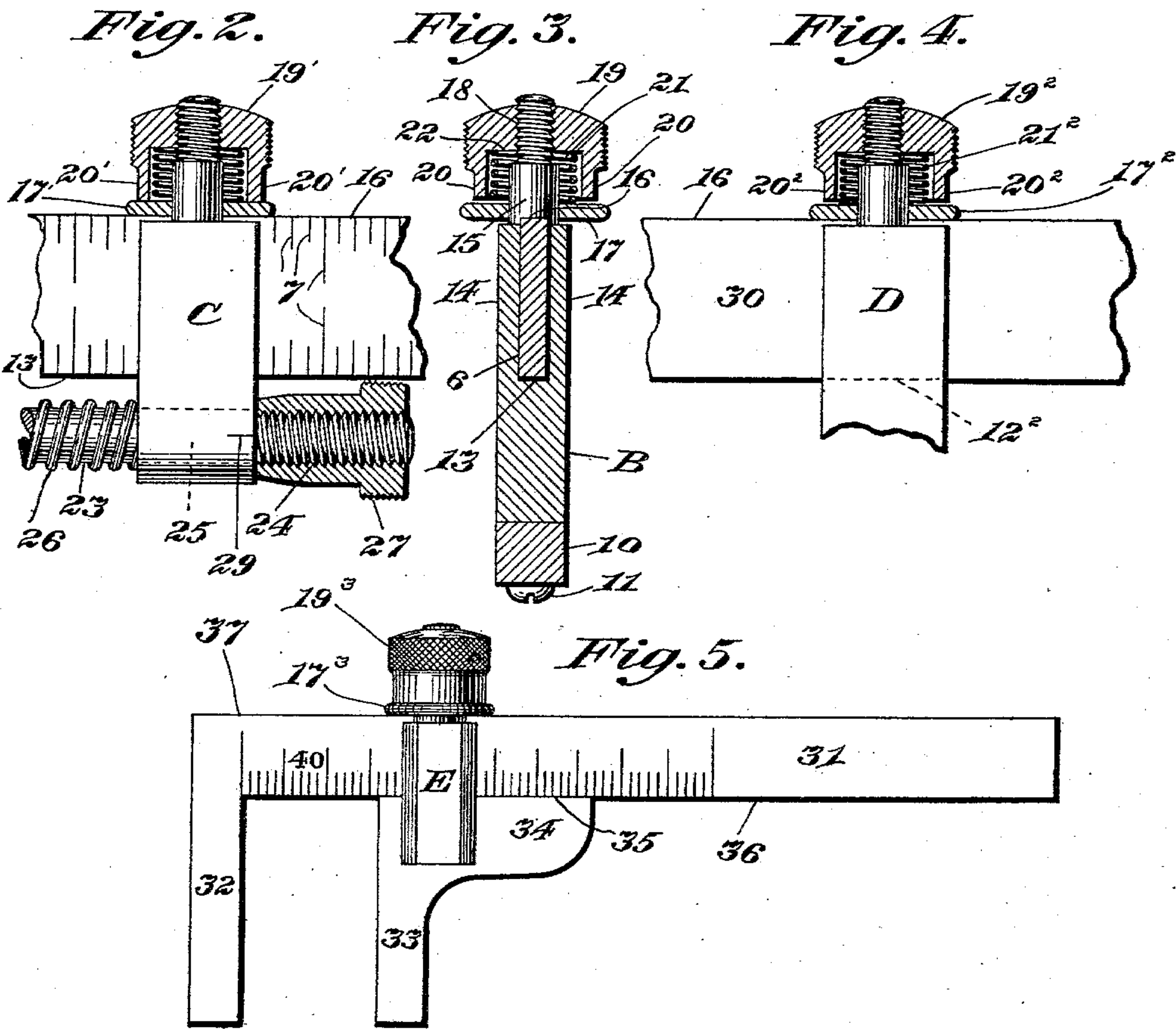
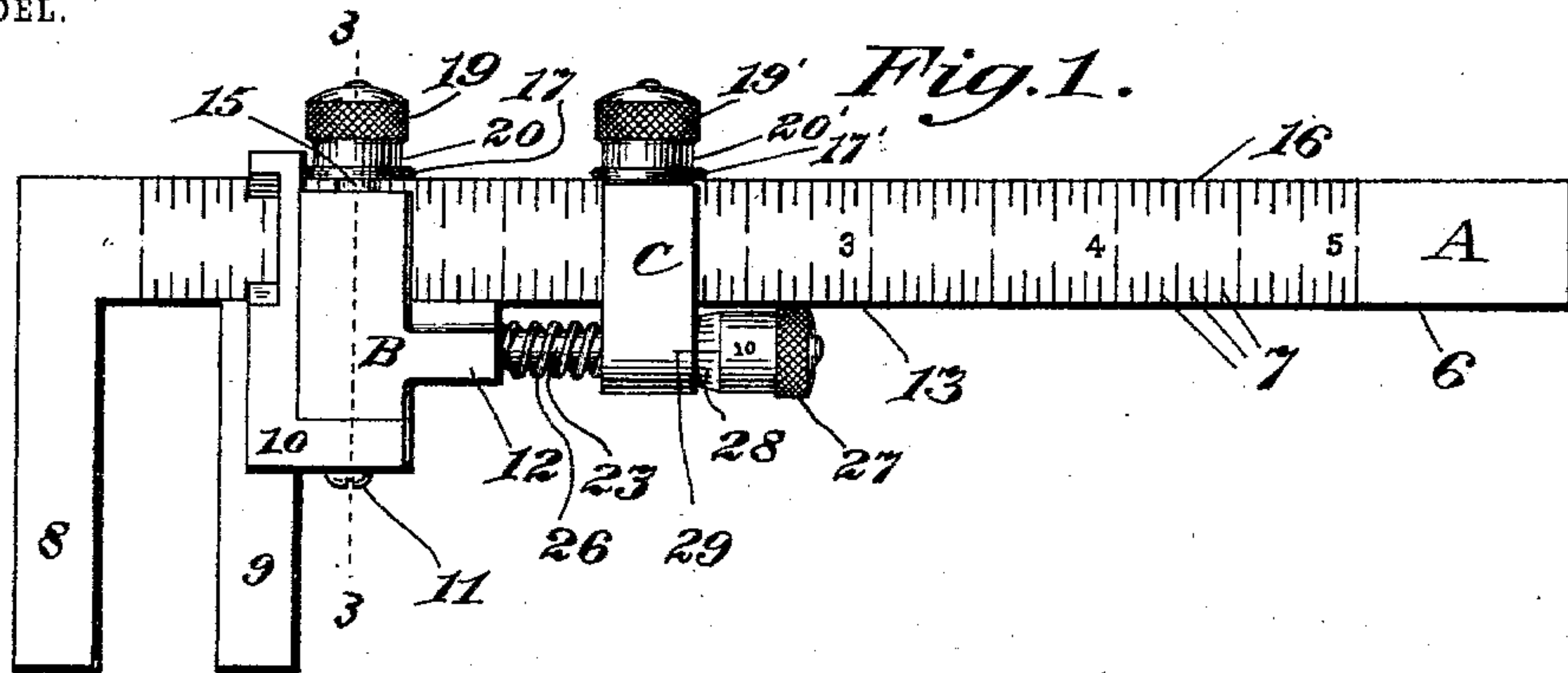
No. 744,028.

PATENTED NOV. 17, 1903.

C. E. BILLINGS.
BEAM CALIPERS.

APPLICATION FILED MAR. 21, 1902.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES E. BILLINGS, OF HARTFORD, CONNECTICUT.

BEAM-CALIPERS.

SPECIFICATION forming part of Letters Patent No. 744,028, dated November 17, 1903.

Application filed March 21, 1902. Serial No. 99,314. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BILLINGS, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Beam-Calipers, of which the following is a specification.

This invention relates to calipers, and has for its object to provide an improved beam-caliper.

A further object of the invention is to provide a caliper having a pair of jaws one of which is adjustable relatively to the other and improved means for securing the movable jaw.

In the drawings accompanying and forming part of this specification, Figure 1 is a side view of my improved beam-caliper. Fig. 2 is an enlarged detail thereof, showing some portions in central longitudinal section. Fig. 3 is a sectional view on line 3 3 of Fig. 1 at right angles thereto. Fig. 4 is a side view, part shown in section, of a yoke clamped to a bar and embodying my invention; and Fig. 5 is a side view of a simpler form of beam-caliper embodying my invention.

My caliper, here illustrated as a beam-caliper square, is designated in a general way by A and embodies a beam 6, which may be provided with a suitable scale of measurement 7. In the present instance the beam is shown as provided with a transverse arm or jaw 8 and an adjustable arm or jaw 9, mating therewith, which arm is carried in the present instance by a frame 10, mounted to slide and move longitudinally of the beam, secured to which frame is a frame or yoke, (designated in a general way by B,) shown in the drawings as secured thereto by means of a screw 11. The frame or yoke embodies an end portion 12, effective to engage the lower edge 13 of the beam. The yoke also embodies side members 14 14, occupying positions upon either side of the beam and forming guide-surfaces therefor. Projecting from the side members of the yoke is a post 15, the base of which is bifurcated and forms at such portion a part of each of the side members. A portion of the post is located above the edge 16 of the beam. Loosely mounted upon the post is a wear-plate or shoe 17, which is shown as capable of reciprocation and rotation upon the

post and is in position to engage the top edge 16 of the beam to clamp the frame or yoke in an adjusted position thereon. Suitable means may be employed for clamping the shoe or plate upon the beam and in the present instance comprises a screw-threaded portion 18 of the post and a nut 19, mounted thereon, the nut in the present instance being in the form of a cap having a flange-like portion 20, capable of engaging when screwed down the wear-plate or shoe. A suitable spring may be interposed between the nut and wear-plate to the end that by exerting pressure upon the spring the frame or yoke may be yieldingly clamped to the beam. In the present instance a helical spring 21 is interposed between the wear-plate and a flat portion 22 of the nut and surrounds the post. The pressure of the spring upon the plate or shoe may be adjusted by adjusting the position of the nut upon the post, and for the purpose of positively clamping the nut in place the nut may be adjusted to a position where it will engage the plate and force the same positively against the edge of the beam. When in such position, the beam will be clamped in the frame or yoke by being engaged at its edges only. The side members are each shown as terminating at a sufficient distance from the edge of the beam that the wear-plate or shoe may not be interfered with in its engagement of the edge of the beam. The sides of the post at its bifurcated portion are shown as forming parts of the guide-surfaces. The relative amount contributed to the guide-surfaces by the post and side members is a matter largely dependent upon the exigencies of manufacture.

For the purpose of micrometrical adjustment the yoke B may be provided with an arm 23, having at its free end a screw-threaded portion 24, and mounted upon the beam another yoke C, shown as similar in details to the former yoke and having in the lower portion thereof an opening 25 through which the arm 23 may pass, there being shown a spiral spring 26, interposed between the two yokes, and an adjusting screw-head 27, mounted upon the screw portion 24. The screw-head is shown as provided with a scale 28 and the yoke as having an index-point 29. When it is desired to use the caliper for micrometrical

adjustment, the set-screw on the yoke B of the main frame will be released, so that the shoe or plate engages the edge of the beam sufficiently to maintain the frame in what-
 5 ever position it is placed in and exerts slight friction thereon, and the set-nut 19', with its flange 20' of the yoke C, will be adjustable to securely clamp the wear-plate 17' upon the
 10 beam, the end portion 12' and wear-plate engaging the beam by its edges, whereupon the turning of the screw-head 27 will move the movable or adjustable jaw toward and from the other jaw, the scale and index-
 15 point being useful to determine the amount of movement.

This invention may be applied to any device where a yoke or member is to be clamped positively or yieldingly to a bar or other structure by engagement with the edges of
 20 the latter, and in Fig. 4 a yoke and adjusting device (designated in a general way by D) is shown as applied to a plane rod or beam 30, the organization being such that the yoke may be yieldingly or positively clamped at
 25 will upon the bar or flat structure 30 by means of end portion 12², nut 19², spring 21², flange 20², and shoe or wear-plate 17² by exerting a clamping contact upon the edges thereof.

This improvement may be applied to many
 30 forms of calipers and in Fig. 5 is shown as applied to a beam-caliper square, simple in construction than that shown in Fig. 1 and having a fixed and a movable jaw. The yoke (designated in a general way by E) may be
 35 the same in general construction as that employed in Fig. 1. In the present instance, however, the beam 31 is shown as provided with a transverse arm or jaw 32 and a movable jaw 33, having a transverse body portion 34,
 40 the edge 35 of which is shown in engagement with the lower edge 36 of the beam, the yoke in the present instance being shown similar in construction to that heretofore described, and the wear-plate or shoe 17³ is shown as en-
 45 gaging the upper edge 37 of the beam responsive to the nut 19³, the device, as in the other structures, working to clamp the beam either yieldingly or positively by engagement with its edges.

50 Having described my invention, what I claim is—

1. In a beam-caliper the combination with a beam, having comparatively wide flat side faces and comparatively thin or narrow edge
 55 faces, of a yoke adjustable thereon and having side members, a transverse member, the inner face whereof is in engagement with one of said edge faces of the beam, and the inner faces of the side members are in engagement
 60 with the side faces of the beam and terminate

short of the other edge face thereof, and a post having a solid screw-threaded portion, an unscrew-threaded base rigid with the side members, and divided at the immediate re-
 65 gion of connection with the side members and having on the inner sides of such divided section faces in engagement with the side faces of the beam adjacent to said other edge face and constituting continuations of the side
 70 faces of said side members of the yoke; a wear-plate or shoe mounted on the unscrew-threaded portion of the post and occupying a position partially upon the solid section and partially upon the divided section thereof and
 75 longitudinally and rotarily movable thereon; a spring surrounding the post and resting on the shoe; and a nut on the screw-threaded portion of the post constituting a bearing for the spring and a portion for engaging the
 80 plate or shoe upon the compression of the spring.

2. The combination with a beam, of a jaw rigid thereon; an adjustable jaw slidably mounted upon the beam by means of a frame embodying a yoke consisting of an end por-
 85 tion, for engaging one edge of the beam; side members constituting guide-surfaces for the sides of the beam; a post, circular in cross-section, having a screw-threaded portion and a bifurcated base rigid with the side mem-
 90 bers and forming continuations of the guide-surfaces thereof; a wear-plate or shoe rotarily and reciprocally mounted upon the post and capable of engaging the other edge of the beam; a spring surrounding the post and
 95 bearing upon the plate or shoe upon the side thereof opposite to the edge-engaging side; an arm projecting from the yoke; a screw-threaded portion on the arm; a second yoke or frame slidably mounted upon the beam
 100 and embodying an end portion, for engaging one edge of the beam; side members constituting guide-surfaces for the sides of the beam; a post, circular in cross-section, having a screw-threaded portion and a bifurcated
 105 base rigid with the side members and forming continuations of the guide-surfaces thereof; a wear-plate or shoe rotarily and reciprocally mounted upon the post and capable of engaging the other edge of the beam; and a
 110 springsurrounding the post and bearing upon the plate or shoe upon the side thereof opposite to the edge-engaging side; an opening in the second yoke for the passage of the arm of the first yoke; and a screw-nut mounted upon
 115 the arm.

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Witnesses:

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