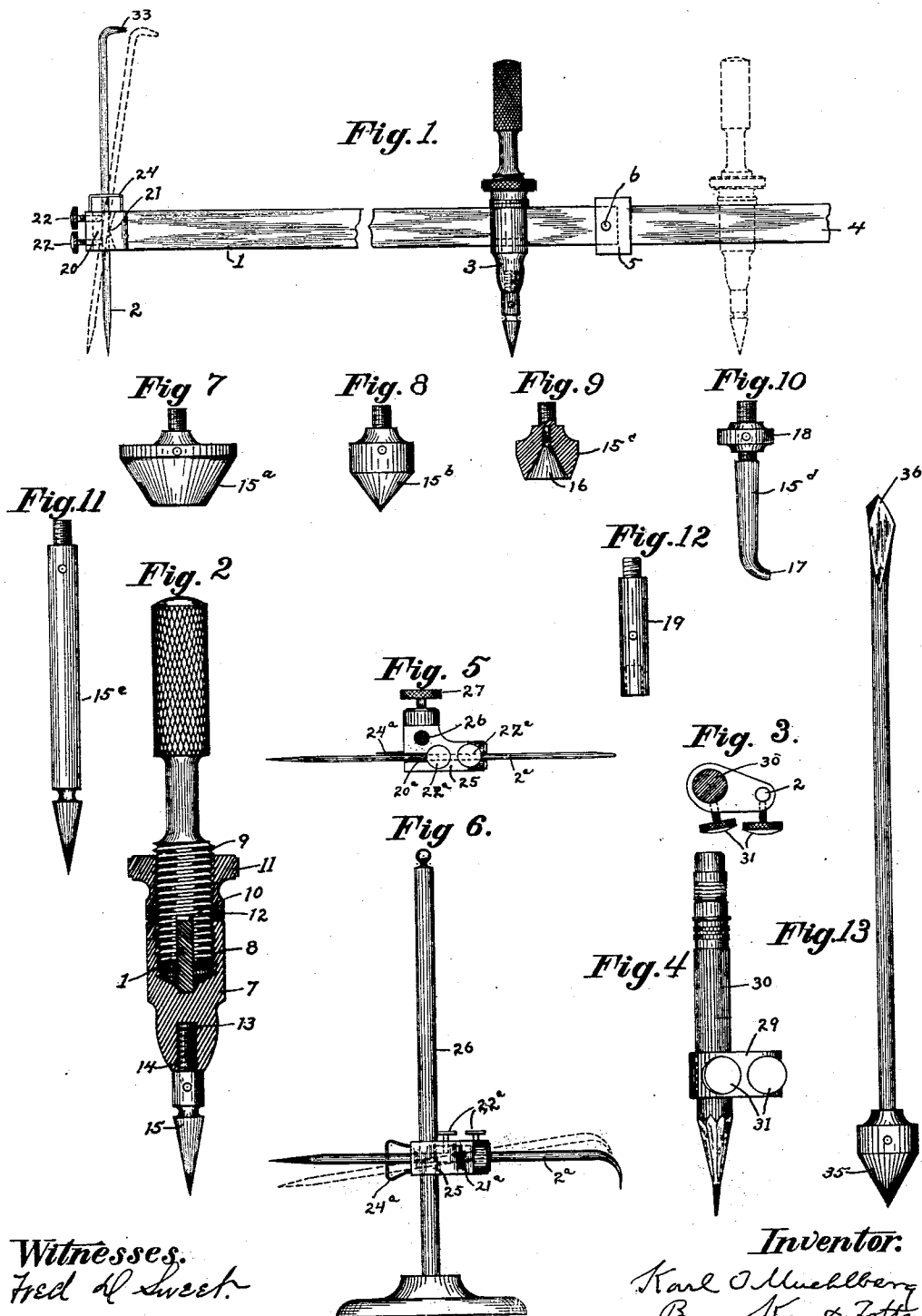


K. O. MUEHLBERG.
BEAM COMPASS.

(Application filed May 18, 1901.)

(No Model.)



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KARL OSWALD MUEHLBERG, OF BRADDOCK, PENNSYLVANIA.

BEAM-COMPASS.

SPECIFICATION forming part of Letters Patent No. 684,452, dated October 15, 1901.

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To all whom it may concern:

Be it known that I, KARL OSWALD MUEHLBERG, a resident of Braddock, in the county of Allegheny and State of Pennsylvania, have
5 invented a new and useful Improvement in Beam-Compasses; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to measuring instruments, and more especially to beam-compasses, although one feature thereof is also applicable to surface-gages and similar devices.

The object of my invention is to improve
15 measuring instruments of these descriptions to secure a greater efficiency thereof and extend the scope of their use. Among the objects of my invention are to provide an improved center-point therefor, which can be
20 manufactured much more easily and cheaply than the ordinary center-point and which is provided with improved means for locking the same; to provide such instruments and also surface-gages with improved means for
25 adjusting the describing-point whereby the adjustment can always be accurately made and the point held firmly in its adjusted position; to provide means for attaching a pencil to the describing-point, which pencil is
30 adjustable with the said point, and in general to improve the construction of this class of instruments, as will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is
35 a side view of my improved beam-compass. Fig. 2 is a sectional view of the center-point. Fig. 3 is a sectional plan view, and Fig. 4 a side view of the means for securing a pencil to the describing-point. Fig. 5 is a sectional
40 plan view, and Fig. 6 a side elevation, of one feature of my invention applied to a surface-gage. Figs. 7, 8, 9, 10, and 11 are various forms of detachable points for the center-point. Fig. 12 is an extension-piece for the
45 same, and Fig. 13 is a combined center-point and scoring-knife, which may be substituted for the describing-point in the instrument.

My beam-compass is provided with the ordinary rod or beam 1, rectangular in cross-
50 section, to the outer end of which is secured the describing-point 2, as will hereinafter more fully appear, and upon which is slid-

ably mounted the center-point 3. The end of the beam opposite the describing-point 2 is provided with a transverse hole, and in
55 order to lengthen the said beam a similar section 4 is provided on one end with a socket 5, which is adapted to receive the end of the section 1, said socket being provided with transverse holes which aline with the hole in
60 the section 1, and a pin 6 is driven into these holes to lock the two sections together. Before securing the section 4 onto the section 1 the center-point 3 will be slipped off said section onto the section 4, as indicated in
65 dotted lines in Fig. 1. To further lengthen the beam, if desired, a section similar to 4 will be attached to the end thereof in the manner just described.

The center-point 3 is provided with a trans-
70 verse rectangular opening through which the beam 1 passes, and in order to facilitate the formation of this opening I make the center-point body in two sections, as shown in Fig. 2. The lower section 7 is provided with
75 a screw-tapped socket 8, which is adapted to receive the screw-threaded upper section 9, said sections having suitable slots 10 cut in from their ends, which when the sections are screwed together aline with each other to form
80 the opening or slot through which the beam 1 passes. In order to lock the point to the beam, I provide a suitably-milled nut 11, which works on the screw-threaded section 9 and which is adapted to force a washer 12
85 down upon the upper edge of the beam 1 to lock the point on said beam. If desired, the washer 12 may be dispensed with and the nut 11 itself made to bear against the beam.

By making the point-body in two sections, 90 as shown, the slots 10 can be cut therein by an ordinary saw or milling-tool, so that these slots can be quickly made, whereas if the body were formed solid it would be necessary to drill through the same and then file the same
95 out in order to form the rectangular opening for the beam, which would be a very slow and expensive procedure. Furthermore, by my manner of constructing the same the slots 10 can be formed to fit the beam very snugly,
100 and by the tightening-nut 11 the said point can be easily and firmly locked to the beam.

The lower end of the section 7 of the center-point body is provided with a screw-tapped

socket 13, which is adapted to receive a screw-threaded shank 14 on the point 15 in order that the point may be readily detached and replaced by another, according to the work being done. I have illustrated various forms of such interchangeable points. In Fig. 7 the point 15^a is in the shape of a large truncated cone and is intended to be used when the instrument is to be centered in a large hole. In Fig. 8 the point 15^b is in the form of a blunt cone for centering in a hole. In Fig. 9 the point 15^c is provided with a conical recess 16 for centering the same on a point. In Fig. 10 the point 15^d is provided with the bent end 17 in order to adapt the instrument as a caliper, as will be hereinafter more fully explained. In this modification the screw-threaded shank 14 of the point is provided with a locking-nut 18, whereby the bent end 17 may be turned in any direction and held firmly in that position. The point 15^e (shown in Fig. 11) is intended for use when the instrument is to be centered in a comparatively deep hole or recess, the said point being long in order to extend the center-point. In such cases wherever any special point (shown in Figs. 7 to 10) is to be used I provide an extension-piece 19, (shown in Fig. 12,) which is provided at its upper end with a screw-threaded shank which takes into the socket 14 in the center-point body and in its lower end with a screw-tapped socket for receiving the special form of point to be used.

The outer end of the beam 1 is provided with a vertical socket or slot, as shown at 20, the inner wall of which slopes from both the upper and lower sides to a point, as 21, which forms a pivot-bearing for the describing-point 2 and about which it can be adjusted to any desired inclination from the vertical. Tapped through the outer end of the beam and projecting into the slot or socket 20 are a pair of set-screws 22, which bear against the center-point on the side opposite the bearing-point 21, one above and the other below said bearing-point. By merely loosening one of these screws and tightening the other the point 2 can be swung into various positions from the vertical, as shown by dotted lines in Fig. 1. These screws are a very convenient and rapid means for adjusting the position of the point and firmly hold the same in the adjusted position without liability of slipping, as is possible in the ordinary form of beam-compasses. A bow-spring 24 bears against the point 2 and prevents the same slipping through or falling out of the socket 20 when the screws 22 are loosened. This mode of adjusting the point may also be applied to a surface-gage, as shown in Figs. 5 and 6, wherein is shown a block or bracket 25, which can be adjusted vertically on the standard 26 and held at any position by the set-screw 27. This block or bracket is provided with a slot or socket 20^a, across which passes a pin 21^a, which serves as the pivot-bearing for the point 2^a. Tapped

through the block 25 opposite the pin 21^a and projecting into the slot 20^a are adjusting-screws 22^a, projecting against the point 2^a on opposite sides of the pivot-pin 21^a. A friction-spring 24^a is placed so as to bear against the point 2^a, as shown. By these means the point 2^a is adjusted at various inclinations from the horizontal, as shown in dotted lines in Fig. 6, and held firmly in such position.

In order to secure a pencil to the describing-point 2 or 2^a, I provide a suitable clip or block 29, which is provided with two parallel vertical holes, one for receiving the pencil 30 and the other for receiving the point 2, suitable set-screws 31 being provided for holding the pencil in the clip and the clip onto the point 2. When the pencil is thus secured to the point 2, it is capable of adjustment with said point in the manner just described, and such pencil may be attached either to the point in the beam-compass shown in Fig. 1 or the surface-gage shown in Fig. 6.

The point 2 is shown as provided with a bent upper end 33, and said point can be reversed in the socket 20, so that the end 33 will be below the beam. When thus reversed, the center-point 15^d (shown in Fig. 10) is screwed into the center-body and the bent end 17 thereof, together with the bent end 33 of the point 2, form a caliper. If said bent ends are turned toward each other, the instrument can be used as an outside caliper, and when said points 17 and 33 are turned to face away from each other the instrument can be used as an inside caliper. These adjustments are possible by reason of the fact that the nut 18 will hold the point 15^d with the end 17 projecting in either direction, and the set-screws 22 will hold the point 2 with the bent end 33 projecting in either direction.

The point 2 can be entirely removed from the instrument and in its place the device shown in Fig. 13 substituted, which device is provided at one end with a conical point 35, which will serve to center the instrument at its outer end, said device being provided at its opposite end with a sharpened edge 36, which will serve as a scoring instrument.

It will be observed that by the several improvements above described the utility and scope of the instrument are very greatly extended, and the adjustment of the describing-point is such that it can be easily made and firmly held in position, while the special construction of the body of the center-point is such that it can be easily and cheaply manufactured and made to fit the beam, so as to be easily and securely locked to the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a measuring instrument, a describing-point, a socket in which it is held, a pivot projection in said socket bearing against one side of the describing-point, and set-screws bearing against the opposite side of the point on opposite sides of the pivot projection.

2. In a measuring instrument, a describing-point, a socket in which the same is held, a pivot projection in said socket bearing on one side of the point, set-screws bearing against the opposite side of the point on opposite sides of the pivot projection, and means bearing frictionally against said point.

3. In a measuring instrument, a describing-point, a socket in which the same is held, a pivot projection in said socket bearing against one side of the point, set-screws bearing against the opposite side of the point on opposite sides of the pivot projection, a pencil-holder, and means for securing the same to said point.

4. In a beam-compass, the combination with an extensible beam, a center-point adjustably mounted thereon, a describing-point, said beam being provided with a socket at its outer end in which said point is mounted, said socket having a pivot projection bearing on one side of the point, and set-screws bearing against the opposite side of the point above and below the pivot projection.

5. In a beam-compass, a center-point comprising a lower section provided with a socket, an upper section fitting in said socket, said sections being provided with slots cut into their ends which when the sections are fitted together form an opening for the beam, and means for securing said sections together.

6. In a beam-compass, a center-point com-

prising a lower section having a screw-tapped socket, and an upper screw-threaded section fitting into said socket, said sections being provided with end slots which aline when the sections are fitted together and form an opening through which the beam passes.

7. In a beam-compass, a center-point comprising a lower section provided with a screw-tapped socket, an upper screw-threaded section fitting in said socket, said sections being provided with alining end slots, and a clamping-nut working on the screw-threaded upper section.

8. In a beam-compass, the combination with a beam, a center-point slidably mounted thereon, said point comprising a lower section provided with a screw-tapped socket, an upper screw-threaded section fitting in said socket, said sections being provided with alining end slots through which the beam passes.

9. In a beam-compass, the combination with a beam, a center-point slidably mounted thereon, said point comprising two sections provided with alining end slots, and a follower-nut working on one of said sections and bearing against the beam.

In testimony whereof I, the said KARL O. MUEHLBERG, have hereunto set my hand.

KARL OSWALD MUEHLBERG.

Witnesses:

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