

No. 855,120.

PATENTED MAY 28, 1907.

M. C. MÜHLBACH.
COMPASSES.

APPLICATION FILED JAN. 28, 1907.

Fig. 1.

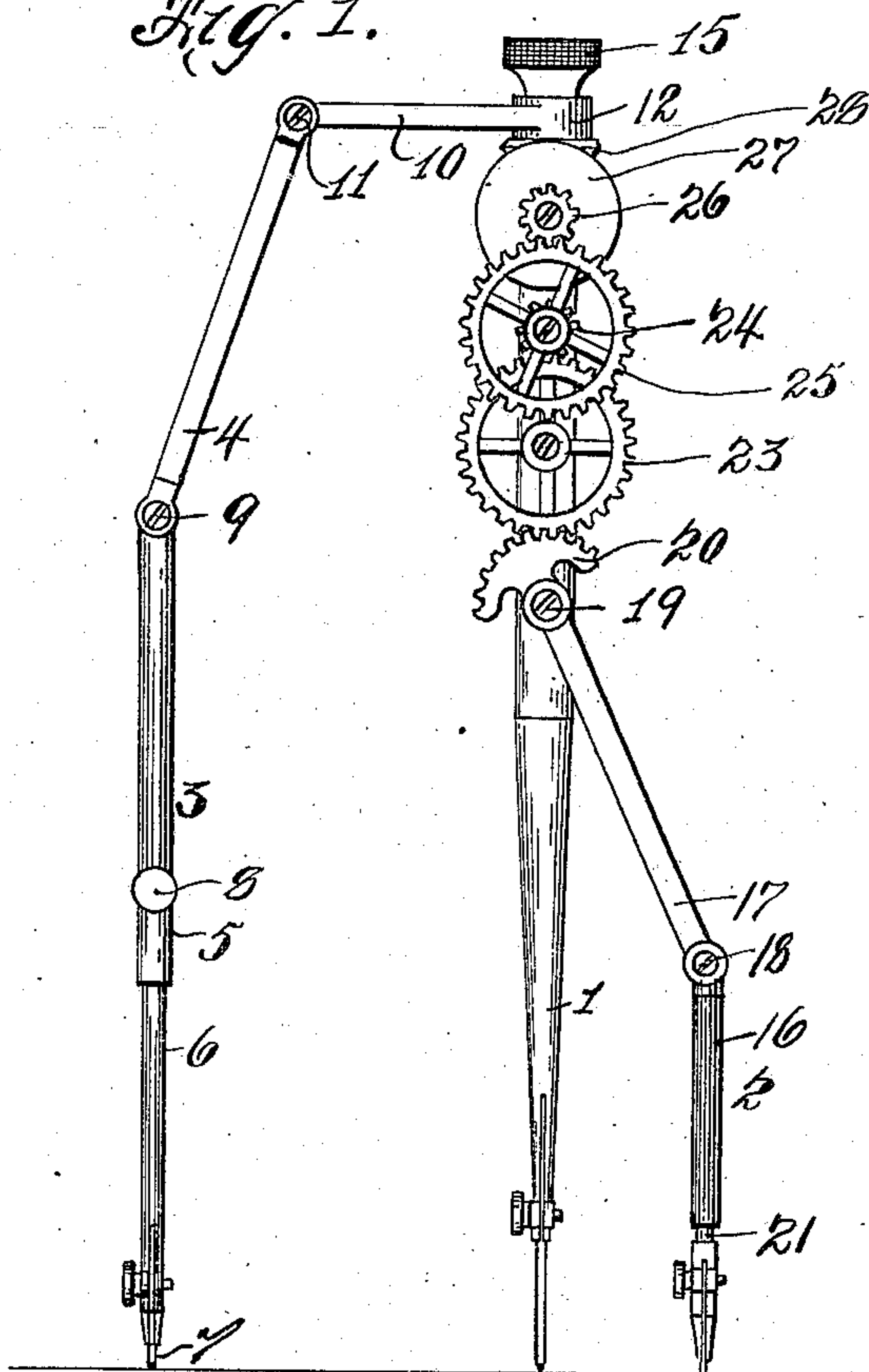


Fig. 2.

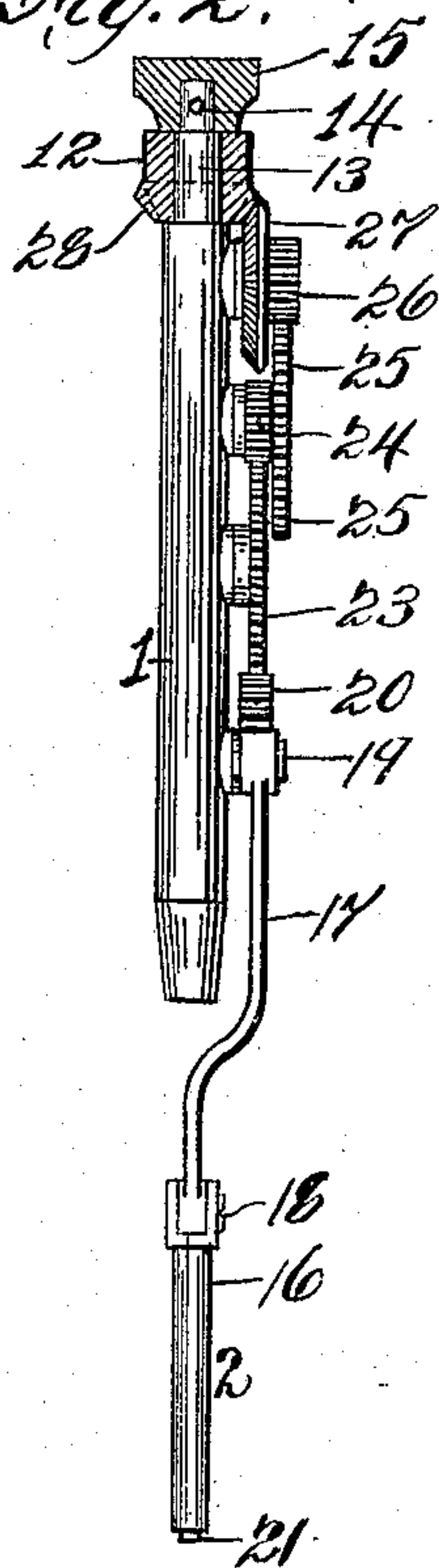


Fig. 3.

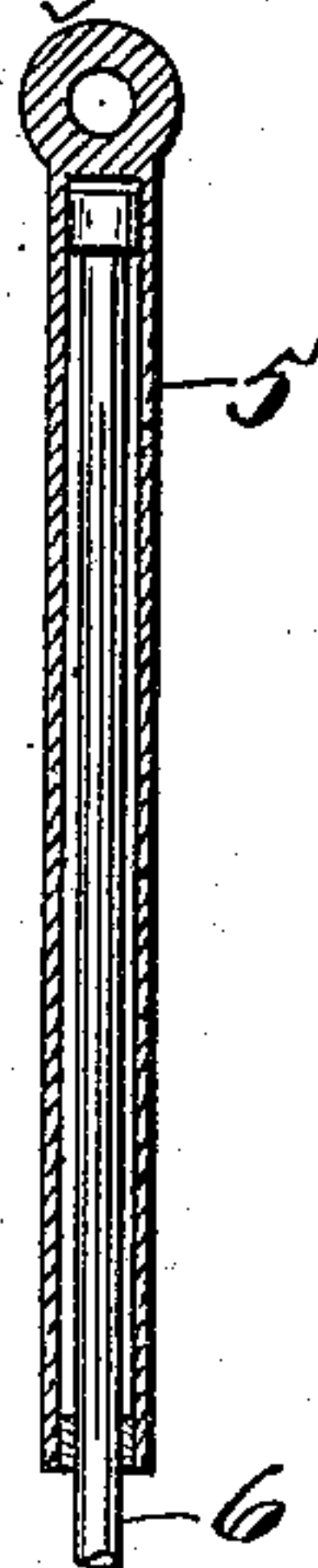


Fig. 4.

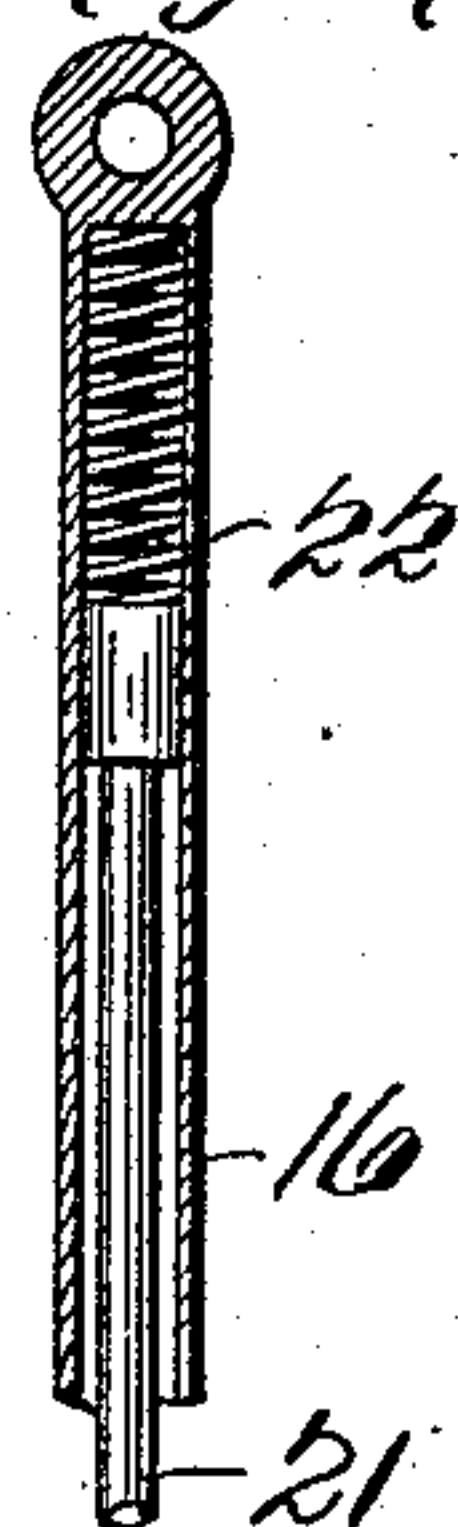
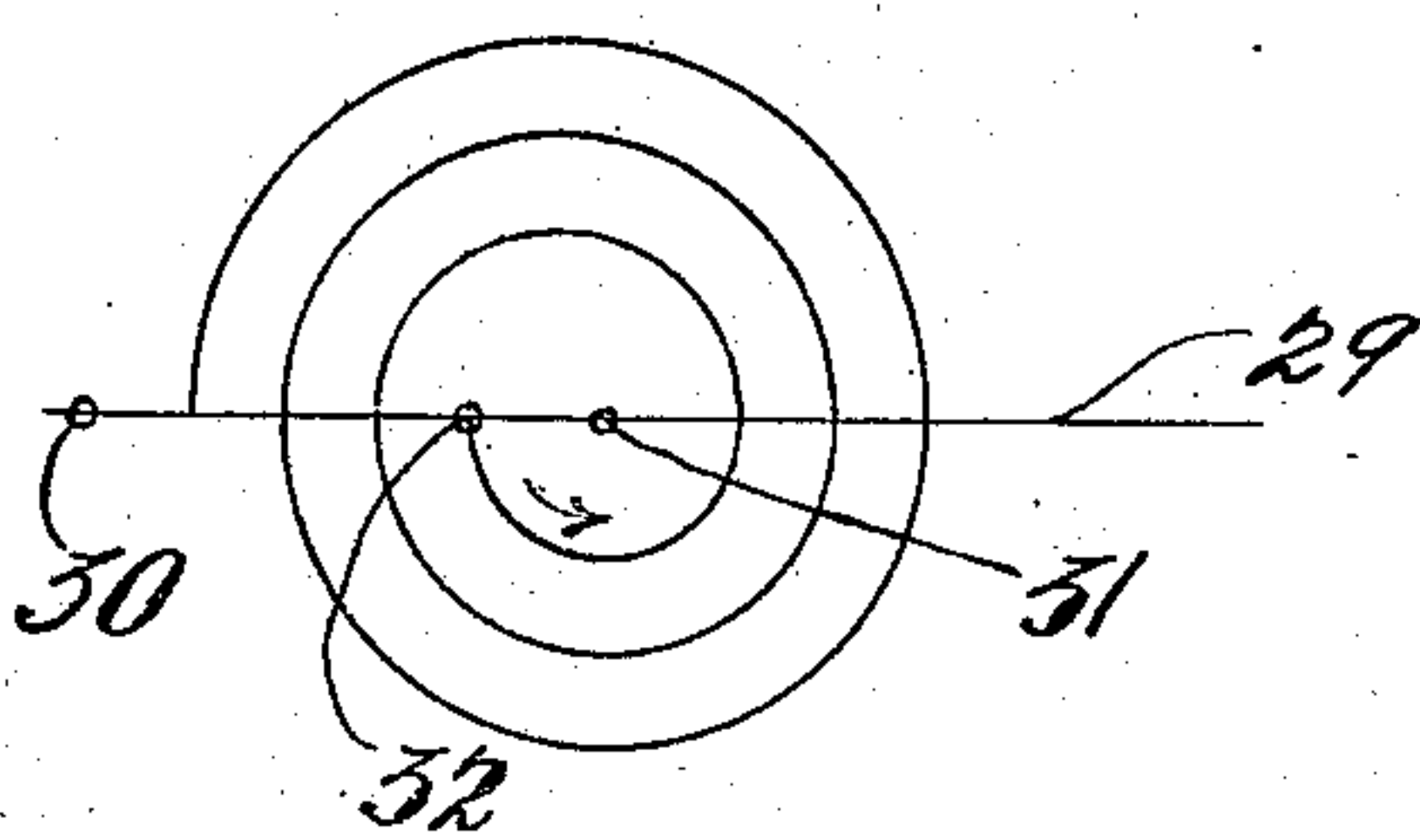


Fig. 5.



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UNITED STATES PATENT OFFICE.

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COMPASSES.

No. 855,120.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed January 28, 1907. Serial No. 354,355.

To all whom it may concern:

Be it known that I, MAX C. MÜHLBACH, a subject of the Emperor of Germany, residing at Newport News, Warwick county, State of Virginia, have invented certain new and useful Improvements in Compasses, of which the following is a clear, full, and exact description.

This invention relates to compasses, and has for an object to produce an instrument of this character that can be utilized for the purpose of forming spirals, and the like, a further object being to produce an inexpensive device as well as an efficient one.

To these and other ends which will hereinafter appear, my invention comprises the novel features of improvement and combination and arrangement of parts which I will now proceed to describe and finally claim, reference being had to the accompanying drawing, forming part hereof, wherein

Figure 1 illustrates my improved compass in side-elevation; Fig. 2 is an end view thereof broken away and partly in section; Fig. 3 is an enlarged central vertical sectional detail view of the tubular members of my improved compass and shows the adjustable leg therein; Fig. 4 is an enlarged central vertical sectional detail view of the marking arm, wherein a spring is used to force the adjustable leg outwardly; and Fig. 5 is a diagrammatic view of a spiral, which will be used to aid in the explanation of the use of my improved compass;

Similar numerals indicate corresponding parts in all the views.

Referring to Fig. 1 in the drawing the numerals 1, 2, 3 indicate respectively, the pivotal leg, the radially movable marking arm, and the radially adjustable positioning arm. The arm 3 is composed of the hinged members 4 and 5 and radius-bar 10, the member 5 being tubular and slidably supporting the leg 6 which, at its lower end, is provided with a needle point 7 suitably held, as shown, in the ordinary way. To hold the leg 6 rigid an adjusting screw 8 is herein employed. The members 4 and 5 are hinged together at 9 in any suitable manner, and the member 4 is hinged to a radius-bar 10, at 11. The radius-bar 10 is provided with a hub 12, which is rotatably fitted to the reduced upper portion 13 of the stationary or pivotal leg 1. The said leg 1, has attached, as at 14, a manipulating-knob 15 by which the said pivotal leg is rotated. The marking arm 2 com-

prises the hinged members 16 and 17, which are suitably secured together, as at 18. The member 17 of the said marking arm 2 is pivotally connected, as at 19, to the said pivotal leg 1 and is also provided with a toothed rack 20. The pencil-holder 21 is slidably fitted to the tubular member 16 and is kept against the paper or any other element upon which a design is to be drawn, by the spring 22 (see Fig. 4). To actuate the arm 2, I employ a train of gears which communicate radial movement to the said arm 2 when the pivotal arm 1 is rotated by the knob 15. The rack 20 which is carried by the arm 2, has meshed therewith the gear 23, which is pivoted to the leg 1. The gear 23 in turn meshes with a pinion 24 which is carried, or actuated by the gear 25 which, like the gear 23, is pivotally attached to the leg 1. The gear 25 in turn meshes with the pinion 26, carried by a bevel gear 27 pivotally attached to the leg 1. To the radius-bar 10 I attach a bevel-pinion 28 which meshes with the bevel-gear 27 and acts as an anchor for the rest of the train, the said gear 28 always remaining stationary. The adjustable anchor-arm 3 is for the purpose of holding the said bevel-pinion 28 stationary. When the arm 2 is performing its function, it will pass between the leg 1 and the arm 3; consequently it is necessary that the said arm 3 should be radially adjustable in order that the arm 2 can describe designs of various diameters. The arm 3 also serves to locate the instrument.

In the event of describing a spiral, as in Fig. 5, for instance, the needle point 7 would be placed on the center line 29, as indicated at 30. It is obvious that the arm 2 is actuated by the gears carried by the pivotal arm 1. Referring to Fig. 5, and presuming I wish to make this design, or spiral, I place the pivotal leg 1 at 31, the arm 2 being at the point 32 between the leg 1 and the arm 3, which is positioned at some point outside of the design, as at 30, as has been mentioned. I then, by means of the knob 15, rotate the leg 1 in the direction in which I wish the spiral to go, as, for instance, in the direction of the arrow Fig. 5. As the arm 2 is carried by the leg 1, it will follow a circular path, but owing to the gears, connected as hereinbefore mentioned, the arm 2 is caused to gradually move outwardly from the center 31. The gear 28, which is carried by the bar 10, serves as an anchor; in other words when the leg 1 is rotated, the gears and arm 2 are carried with it.

As the arm 3 is fixed, likewise the gear 28, the said gears pass around the gear 28, in the manner of a sun-and-planet construction. The distance between the convolutions of the spiral depends upon the proportion of the gears to one another; consequently after having ascertained the spiral I want, I then put in gears of the proper proportion. In order to form a design, I place in gears so proportioned as to carry the arm 2 outwardly in the proper proportion when the leg 1 is rotated.

Having now described my invention, what I claim and desire to secure by Letters Patent is:

1. A compass, comprising a pivotal member, a radially adjustable positioning arm, rotatably mounted thereupon, a radially movable arm carried by said pivotal member and adapted to carry a marking element, and means adapted to cause said radially movable arm to gradually move away from the pivotal member when said pivotal member is rotated.

2. A compass, comprising a pivotal member, a radially adjustable positioning arm, rotatably mounted thereupon, a radially movable arm carried by said pivotal member and adapted to carry a marking element, and means carried by said pivotal member and actuated by said radially adjustable positioning arm adapted to cause said radially movable arm to describe a spiral when said pivotal member is rotated.

3. A compass, comprising a pivotal member, a radially adjustable positioning arm, rotatably mounted thereon, a radially movable arm carried by said pivotal member and adapted to carry a marking element, a train of intermeshing gears carried by said pivotal member and actuated by said radially adjustable positioning arm adapted to cause said radially movable arm to describe a spiral when said pivotal member is rotated.

4. A compass, comprising a pivotal member, a radially adjustable positioning arm, rotatably mounted thereon, a radially movable arm carried by said pivotal member and adapted to carry a marking element, a train

of intermeshing gears carried by said pivotal member, a gear carried by said radially adjustable positioning arm, adapted to mesh with one of said train of gears, whereby said train of gears is operated when said pivotal member is rotated, and means operated by said train of gears adapted to operate said radially movable arm.

5. A compass, comprising a pivotal member, a radially adjustable positioning arm, rotatably mounted thereon, a radially movable arm carried by said pivotal member and adapted to carry a marking element, a train of intermeshing gears carried by said pivotal member, a gear carried by said radially adjustable positioning arm, adapted to mesh with one of said train of gears, whereby said train of gears is operated when said pivotal member is rotated, and a toothed segment carried by said radially movable arm adapted to mesh with one of said train of gears.

6. A compass, comprising a pivotal member, a radially adjustable positioning arm, rotatably carried thereby, a radially movable marking arm pivotally mounted on said pivotal member, and means adapted to move said marking arm outwardly when said pivotal member is rotated, said means comprising toothed elements actuated by said positioning arm.

7. A compass, comprising a pivotal member, a radially adjustable positioning arm rotatably carried thereby, an arm pivotally mounted on said pivotal member and adapted for an outward movement in a vertical plane, a tubular member pivotally mounted on said arm, a holder adjustably mounted in said tubular member and adapted to receive a marking element, a train of gears adapted to operate said vertically movable arm, and a gear carried by said positioning arm adapted to operate said train of gears.

Signed at Newport News, Va., this 23rd day of January 1907.

MAX C. MÜHLBACH.

Witnesses:

PETER LAZARICH,
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