

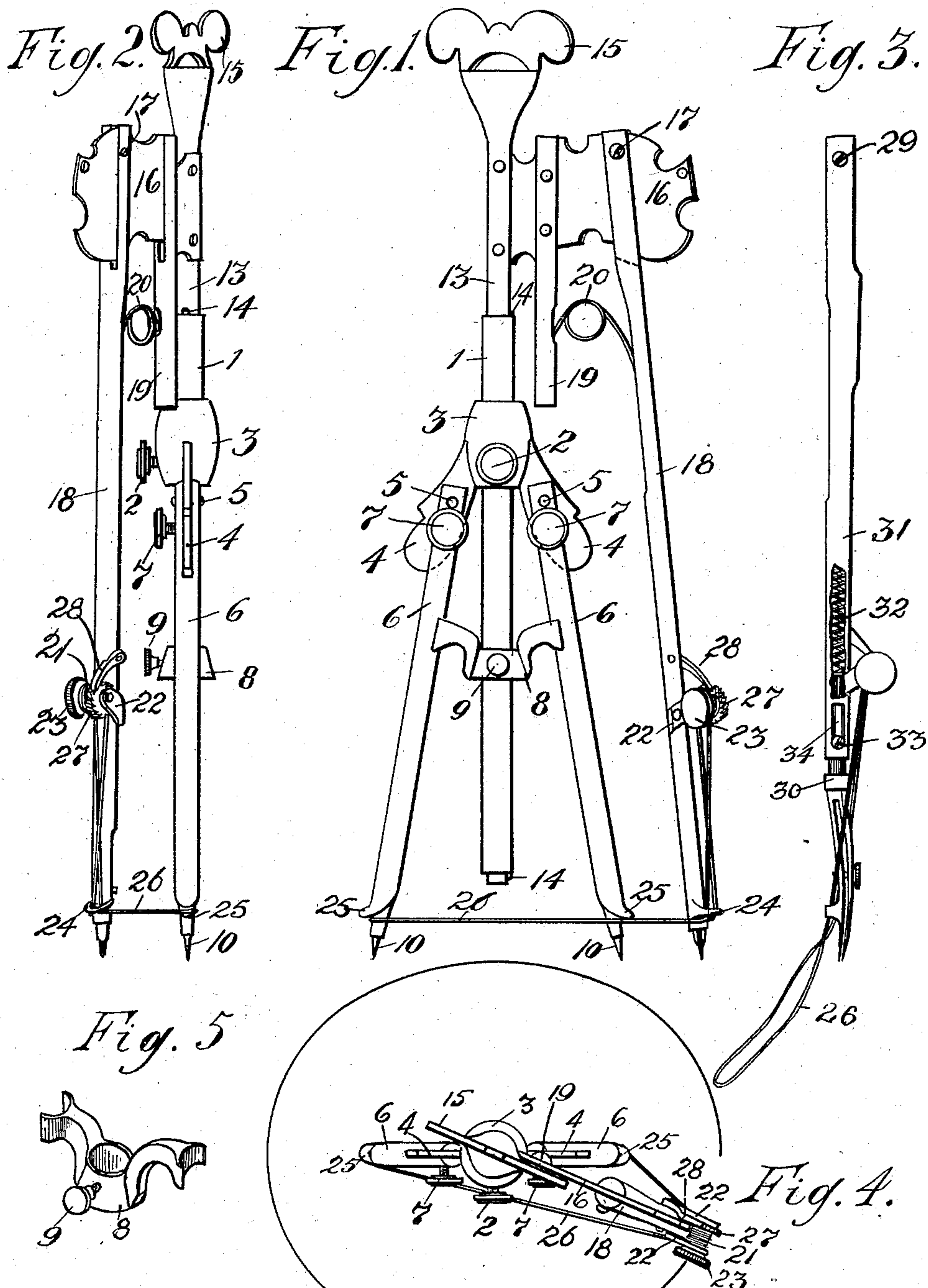
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J. W. GRIFFITH.
ELLIPSE OR CIRCLE COMPASSES.

APPLICATION FILED MAY 29, 1903.

NO MODEL.



WITNESSES:
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JOHN W. GRIFFITH, OF SAN FRANCISCO, CALIFORNIA.

ELLIPSE OR CIRCLE COMPASSES.

SPECIFICATION forming part of Letters Patent No. 743,490, dated November 10, 1903.

Application filed May 29, 1903. Serial No. 159,308. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. GRIFFITH, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Ellipse or Circle Compasses, of which the following is a specification.

My invention relates to improvements in ellipse and circle compasses, the object of my invention being to provide compasses for drawing ellipses, either with pencil or with pen, which shall be cheap and simple in construction and convenient of operation, compasses, moreover, which can be adapted, when desired, for drawing circles.

In the accompanying drawings, Figure 1 is a front elevation of my improved compasses. Fig. 2 is a side view thereof. Fig. 3 is a side view of the inking-pen detached, the wall thereof being broken to show a spring in the interior. Fig. 4 is a plan view of the compasses. Fig. 5 is a perspective view of the spreader detached.

Referring to the drawings, 1 represents a central tubular stem upon which is clamped, by means of a set-screw 2, a collar 3, having depending tugs 4, upon which are pivoted, as shown at 5, the legs 6, said legs being also clamped at any desired angle to said tugs by means of set-screws 7.

8 represents a spreader, which is set by means of a set-screw 9 at any desired point on the tubular stem below the collar and serves to spread the legs apart to an equal distance on each side of the stem. In the ends of said legs are carried pin-points 10, which determine the foci of the ellipse to be described. By properly adjusting said collar and spreader the focal distance can be made of any desired length.

Revoluble within the tubular stem is a rod 13, having pins 14 at the ends of the stem preventing its longitudinal movement in the stem. Said rod is provided at the top with a suitable handle 15, and to said rod is clamped a plate 16, having pivotally secured thereto, as shown at 17, a pencil-carrier 18. To said plate is also secured a depending bar 19, which forms a support for a spring 20, the other end of which presses against the inner surface of the pencil-carrier, which is hol-

lowed out for this purpose, said spring thus pressing said pencil-carrier outward.

26 represents a cord of inextensible material, as catgut or wire, preferably the former, which is doubled and wound around a small winding-pin 21, carried in bearings 22 upon the pencil-carrier and wound by means of the head 23. The loop of said cord is passed through an eye 24, carried at the lower end of the pencil-carrier, and is then passed around the ends of the legs 6 immediately above the pin-points 10, said ends being provided with shoulders 25 at substantially the same level as the eye 24, which prevent the cord slipping upward on the legs. The winding-pin also carries the ratchet-wheel 27, engaged by a pawl 28 upon the pencil-carrier, preventing the loop of catgut being drawn out beyond a predetermined length. This length will be the sum of the focal distances of any point on the ellipse, and since the length of the loop remains constant and the focal distance of the ellipse, determined by the distance between the pin-points, is also constant the remainder of the loop will be a constant quantity, and, therefore, by the well-known property of the ellipse the pencil will, as it rotates about the foci, describe an ellipse.

The spring 20 keeps the loop or cord always taut, as it constantly presses outward the pencil-carrier.

In Fig. 3 is illustrated the drawing-pen, which is used for inking the ellipse. Like the pencil-carrier, it is provided with a pivot-hole 29, by which it is pivoted to the plate, and the end 30 of the inking-pen is movable relatively to the main body or stem 31 thereof, the latter carrying a spring 32, which normally presses down the point of the pen, the lower section having a stud 33, sliding in a slot 34 of the main body.

If desired to use the device as a circle compass, all that is necessary is to slip the cord over the end of one of the legs, when the pencil-carrier will describe a circle about the other leg as a center.

I claim—

1. An instrument of the character described, comprising a tubular stem, legs provided with means for holding them stationary upon the surface to be drafted upon, a device upon

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which said legs are pivotally secured, said device being adjustably secured upon said stem, a rod revoluble in said stem, a marking device, a carrier therefor movably connected with said rod, a loop of flexible but inextensible material extending from the lower end of said carrier and around the lower ends of said legs, and means for varying the size of the loop, substantially as described.

2. An instrument of the character described, comprising a tubular stem, legs provided with means for holding them stationary upon the surface to be drafted upon and movably attached to said stem, a rod revoluble in said stem and extending below said attachment, a marking device, a carrier therefor movably connected with said rod, a loop of flexible but inextensible material extending from the lower end of said carrier and around the lower ends of said legs, and means for varying the size of the loop, substantially as described.

3. An instrument of the character described, comprising a stem, legs provided with means for holding them stationary upon the surface to be drafted upon and movably connected with said stem, a spreader slidable without rotation on said stem to adjust its position thereon, and engaging the legs to spread them to equal distances from the stem, a clamping-screw for clamping the spreader on the stem, a marking device, a carrier therefor movable to and from the stem and rotatable around the same, a loop of flexible but inextensible material extending from the lower end of said carrier and around the lower ends of said legs, and means for varying the size of the loop, substantially as described.

4. The combination of the stem, the supporting-legs movably connected with the stem, the plate 16 having a pivotal engagement with said stem, the depending bar 19 fixedly secured on said plate, the marking device, the carrier 18 therefor, the spring 20 between said bar and carrier and the loop or cord 26 around the legs and the carrier, substantially as described.

5. An instrument of the character described, comprising a tubular stem, legs provided with means for holding them stationary upon the surface to be drafted upon, a device upon which said legs are pivotally secured, said device being adjustably secured upon said stem, a spreader secured upon said stem below said device and engaging said legs to spread them apart to equal distances from said stem, a rod revoluble in said stem, a marking device, a carrier therefor movably connected with said rod, a spring normally forcing said car-

rier from said rod, a loop of flexible but inextensible material extending from the lower end of said carrier and around the lower ends of said legs, and means for varying the size of the loop, substantially as described.

6. An instrument of the character described, comprising a tubular stem, legs provided with means for holding them stationary upon the surface to be drafted upon, a device upon which said legs are pivotally secured, said device being adjustably secured upon said stem, a rod revoluble in said stem, means for preventing longitudinal movement of said rod and said stem, a marking device, a carrier therefor movably connected with said rod, a spring normally forcing said carrier from said rod, a loop of flexible but inextensible material extending from the lower end of said carrier and around the lower ends of said legs, and means for varying the size of the loop, substantially as described.

7. An instrument of the character described, comprising two legs provided with means for holding them stationary upon the surface to be drafted upon, means for extending or contracting the lower ends of said legs to change the focal distance, a marking device and a carrier therefor rotatable about said legs as a whole, and having formed near the lower end thereof an eye and having also secured thereon at a higher point thereof a winding-pin, and a loop of flexible but inextensible material extending around the lower ends of the legs and passing through said eye and wound around said pin, substantially as described.

8. An instrument of the character described, comprising two legs provided with means for holding them stationary upon the surface to be drafted upon, means for extending or contracting the lower ends of said legs to change the focal distance, a marking device and a carrier therefor rotatable about said legs as a whole, said legs having shoulders at their lower ends, and the carrier having an eye at substantially the same level as said shoulders, and a loop of flexible but inextensible material extending around the lower ends of the legs below said shoulders and also passing through said eye, and means for varying the length of said loop from said eye around said shoulders, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

J. W. GRIFFITH.

Witnesses:

FRANCIS M. WRIGHT,
BESSIE GORFINKEL.