

No. 682,294.

Patented Sept. 10, 1901.

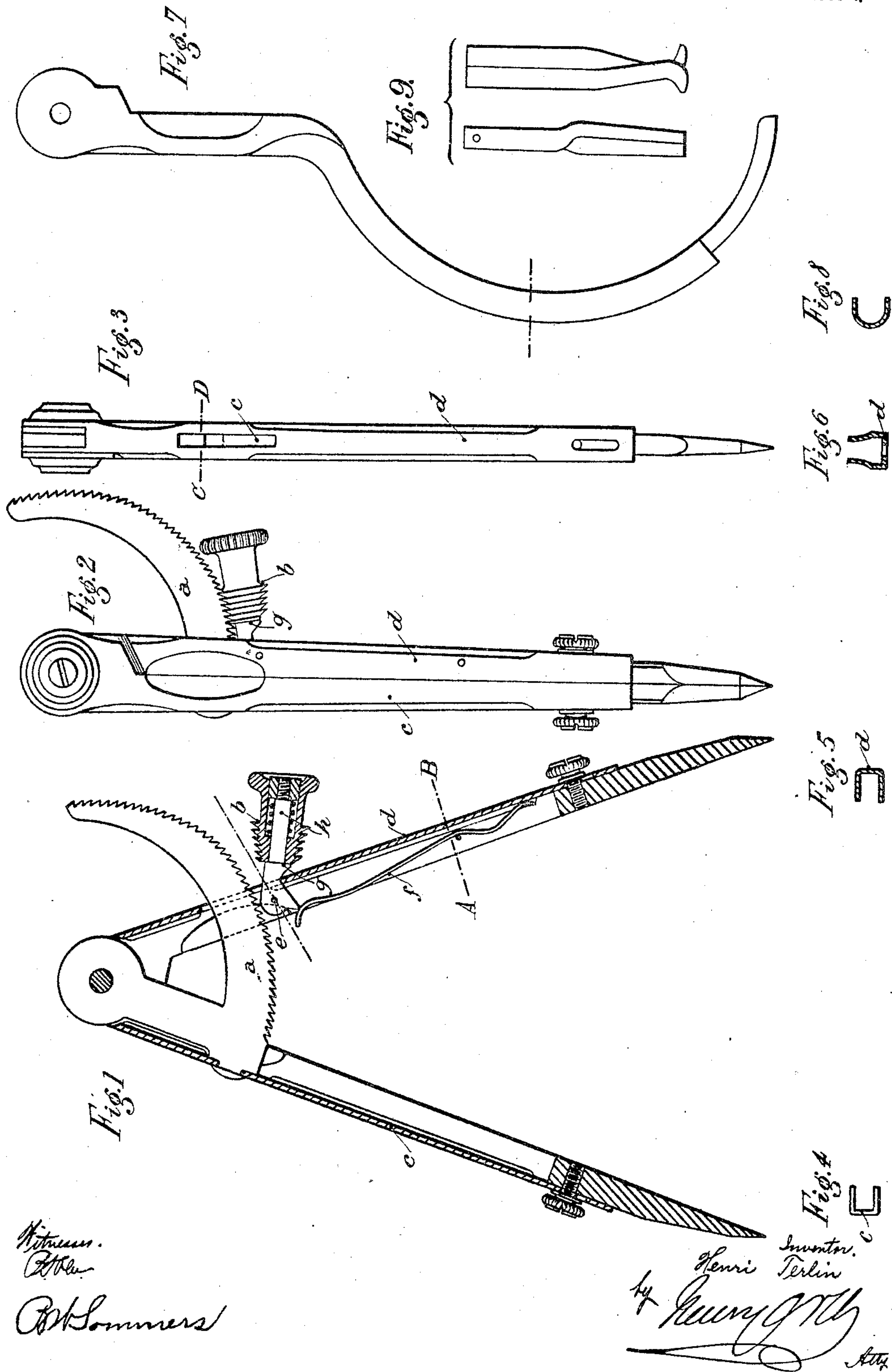
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DRAWING COMPASSES, CALIPERS, &c.

(Application filed Mar. 17, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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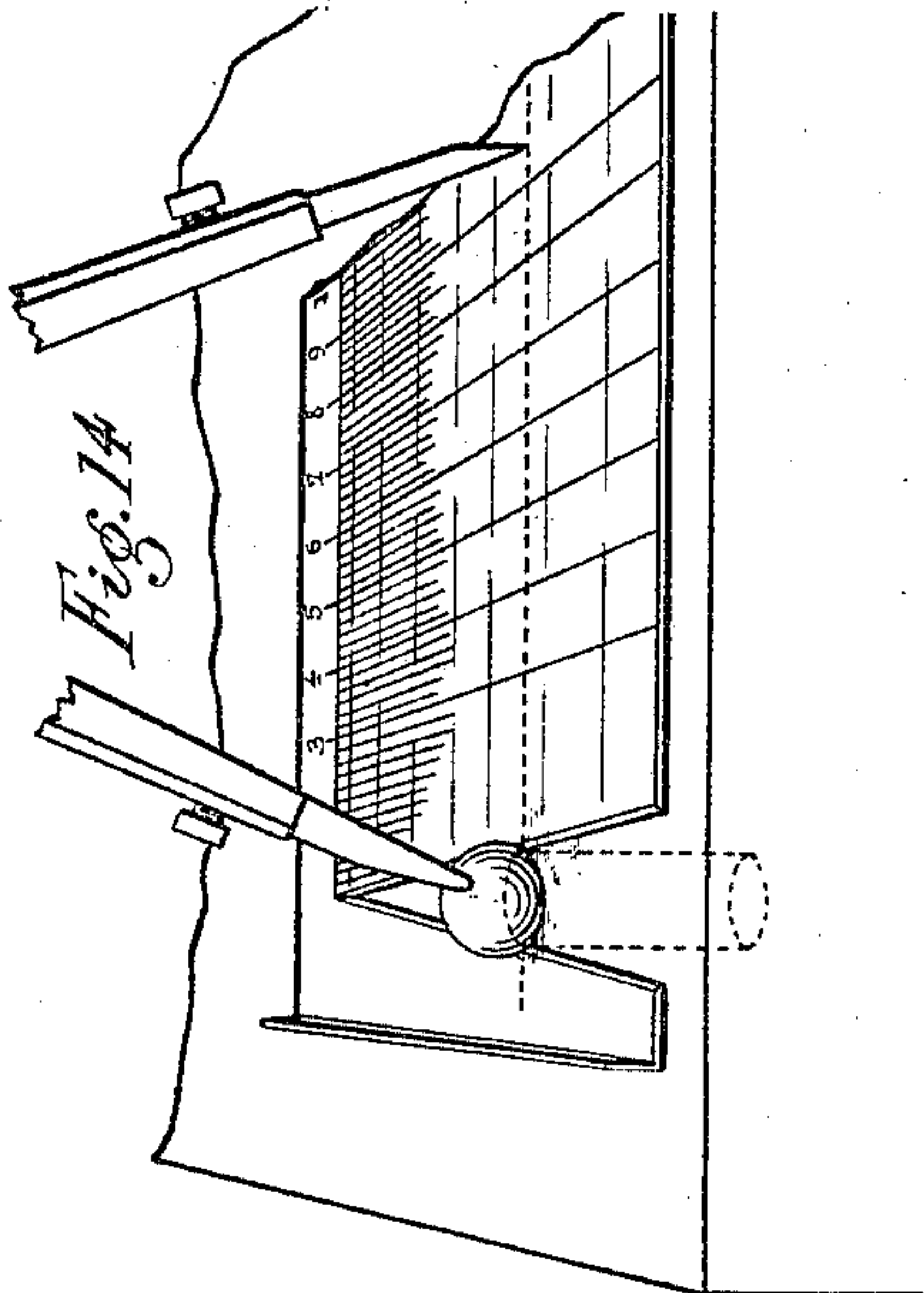
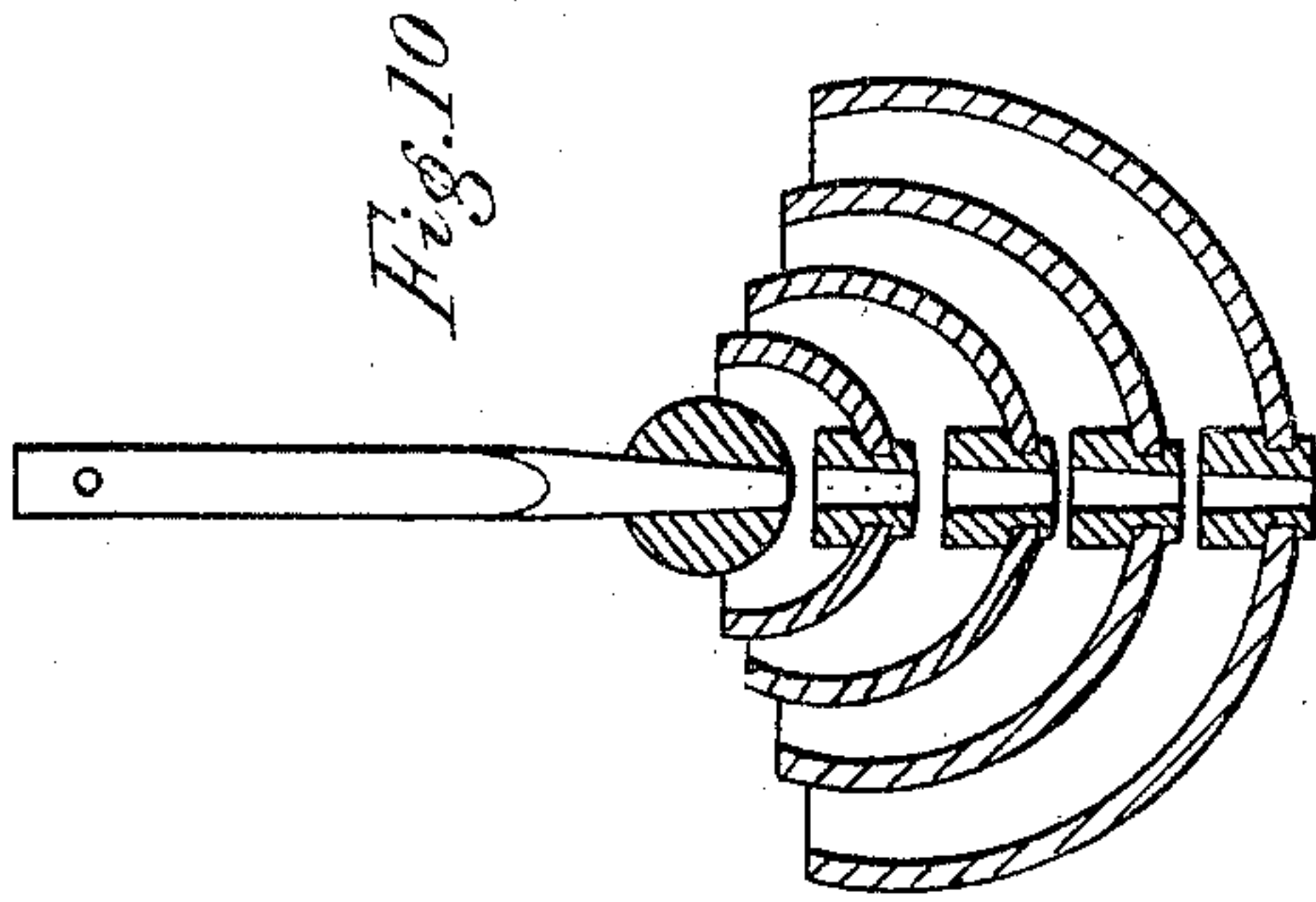
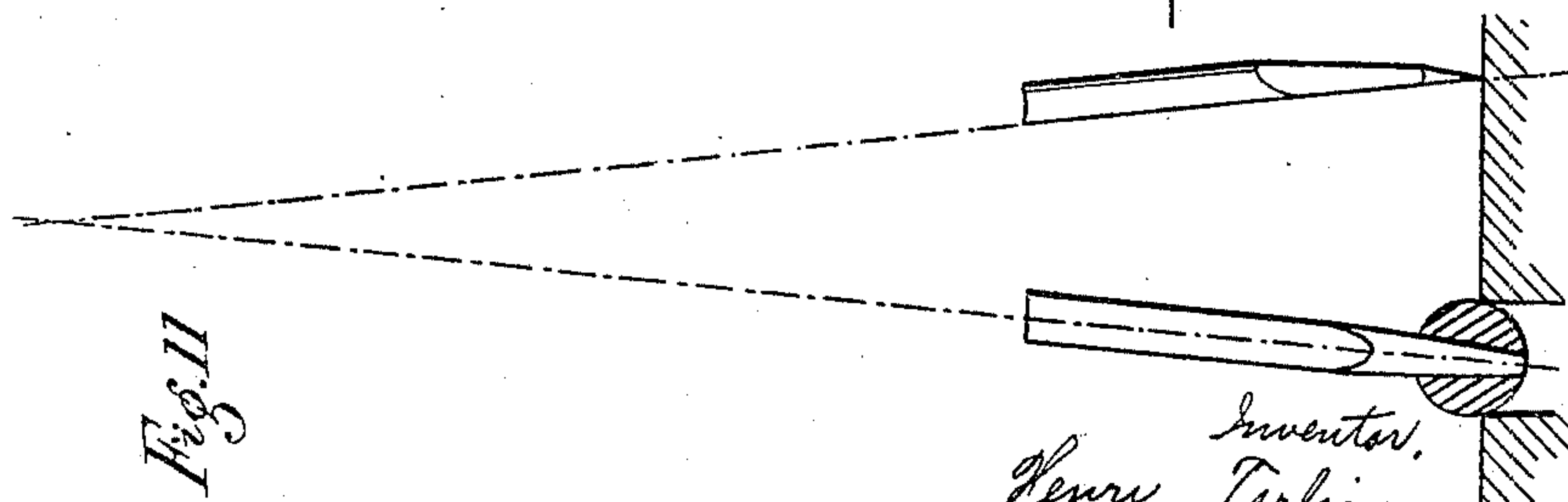
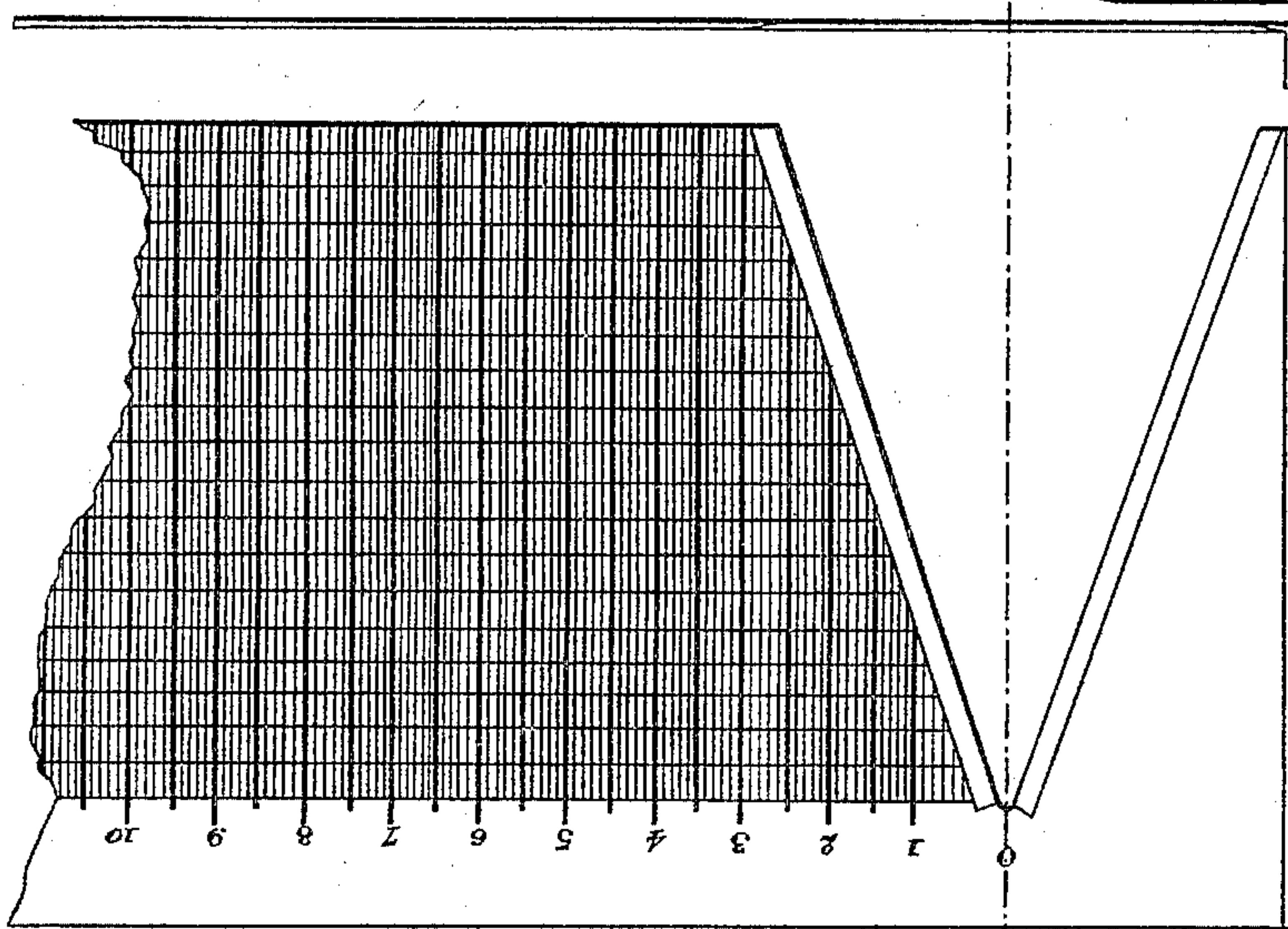


Fig. 13

Fig. 12



Witnesses:

Attn

C. W. Sommers

Inventor,
Henry Terlin
by *[Signature]*

UNITED STATES PATENT OFFICE.

HENRI TERLIN, OF LUNEVILLE, FRANCE.

DRAWING COMPASSES, CALIPERS, &c.

SPECIFICATION forming part of Letters Patent No. 682,294, dated September 10, 1901.

Application filed March 17, 1900. Serial No. 9,085. (No model.)

To all whom it may concern:

Be it known that I, HENRI TERLIN, manufacturer, a citizen of the Republic of France, and a resident of 54 Rue d'Alsace, Luneville, (Meurthe-et-Moselle,) in the Republic of France, have invented certain new and useful Improvements in Drawing Compasses, Calipers, and the Like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to drawing compasses, calipers, and the like which are so constructed as to permit of a rapid and precise adjustment of the distance between the points or centers of the instrument. For this purpose one of the legs of the compasses or the like is furnished with a toothed segment or arc and the other leg with an endless screw or worm which when in engagement with the teeth of the segment or sector and then revolved acts upon the teeth as if engaged in a helicoidal wheel, and thus effects either the closing or the opening out of the compasses and in this manner permits the precise adjustment of the said compasses.

The instrument constructed in accordance with my invention is preferably provided with interchangeable points, which permit of the said instrument being used for various purposes.

In connection with my improved instrument I provide means, hereinafter described, which will enable circles exactly to the radius desired to be drawn concentrically around a hole.

I will now describe my invention in detail with reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a pair of ordinary straight compasses constructed according to my invention. Fig. 2 is a front elevation of the same closed. Fig. 3 is a side elevation, but with certain parts omitted. Fig. 4 is an end view from below of the left leg. Figs. 5 and 6 are cross-sections of the right leg, taken on the lines A B of Fig. 1 and C D of Fig. 3, respectively. Figs. 7 and 8

show the invention applied to calipers. Fig. 9 is a modified form of the points. Figs. 10 and 11 show the invention applied to the marking of circles concentric with a hole, and Figs. 12, 13, and 14 show a scale for use with the improved instrument.

As I have already stated, the chief feature of my improved compasses consists in the adoption to one of its legs *c* of a toothed sector *a* and to the other leg *d* of an endless screw or worm *b*, which can be revolved upon its axis. This latter is pivoted upon a pin *e* in such a manner as to enable the said worm to be depressed into the position shown in Fig. 1, so as to disengage the worm *b* from the teeth of the sector or to raise it again into the position shown at Fig. 2, so as to engage the worm with the teeth of the said sector. When the worm is in the former position, it is easy to open or close the compass-legs *c* and *d* by hand, and thus roughly set the compasses to the required distance. This done, the worm is raised into the second position and may then be revolved in one or the other direction, so as to effect the final adjustment of the compasses through the intervention of the arc *a*.

Having thus broadly disclosed the essential points of the invention, I will now describe the constructional arrangement which I have adopted and which forms the best means for carrying my invention into effect.

The instrument shown in Figs. 1 to 6 is formed with two legs having a channel or U-shaped cross-section disposed with the open side toward the interior and serving for the reception of the operating mechanism. The head portions are connected to form the hinge in the manner shown in the drawings, Fig. 3 particularly showing how the head portion of each of the legs is formed of two lateral cheeks, one of which is disposed at the exterior after having been mounted together, while the other cheek is located toward the interior in such a manner as to be within the corresponding head of the other leg.

From Fig. 1 it will be seen that the arc or sector *a* is fixed, on the one hand, in the head of the compasses, and on the other hand by riveting in the rear web of the leg. It will also be seen from the same figure that the screw or worm *b* is subjected to the action of

a spring *f*, which latter tends to maintain the said worm in engagement with the teeth of the arc or sector *a*. The adjusting-worm *b* is hollow and incloses a helical spring held in tension by a screw-nut. This spring maintains the worm constantly pressed against the shoulder *g*, provided on the pivoted pin *h*, so as to avoid any play which would interfere with the proper working of the parts.

10 The worm *b* is of such a form in the longitudinal direction as to conform to the circular shape of the sector in order that all its threads may be in contact with the latter.

The teeth of the sector and those of the worm are of ratchet-tooth shape to enable the worm to jump like a pawl over the teeth of the sector when closing the compass-legs, thus permitting the compasses to be closed up at once without having to depress the worm into the position shown in Fig. 1. Moreover, it serves as a reliable stop for preventing the legs from unintentionally spreading while the compasses are in use.

The sector is made of steel and the worm is of bronze, so as to insure the constant rectification of the worm.

The compass-points are secured in the legs by means of screws with milled and slotted heads, the screws passing through elongated slots in the legs, permitting the height of the points to be adjusted with relation to each other, so as to enable a circle to be described upon a plane of either a higher or a lower level than the center. This arrangement permits of the substitution for one of the points either of a cutting-blade for cutting disks, such as an edging-knife, a kind of a carving-gouge for cutting circles in leather, or of a special point, Fig. 10, for the purpose hereinafter explained. The arrangement further permits of replacing the ordinary points, as shown in Fig. 1, by those shown in Fig. 9, which shows side views of the ends of two of inside calipers suitable for taking internal measurements.

From Figs. 7 and 8 it will be seen that my invention is equally applicable to outside or bow calipers.

The truncated tapering conical end, Fig. 10, is designed to receive a sphere or one of the spherical pieces, (shown in the same figure,) which when applied to my improved compasses or to any other compasses permits the drawing of circles concentrically to a hole without having to center the latter, which operation takes up considerable time and is often troublesome. The diagram Fig. 11 shows at a glance the manner of using the compasses provided with a ball point. It will, however, be noticed that when making use of the spherical point there is a difficulty in ascertaining the measurement of the opening or distance between the points, so as to obtain a circle of a predetermined radius.

65 In order to meet this difficulty, I provide a ruler marked with a scale, as shown in plan and in side elevation in Figs. 12 and 13, re-

spectively. This ruler, which may, for example, be marked with divisions of semimillimeters, is formed with a V-slot having chamfered edges and the axis of which coincides with the zero of the scale. The ruler is applied in the following manner: Having selected a sphere of a slightly-larger diameter than the hole, the operator fixes the sphere to the special point, Fig. 10, which is then secured to the compasses. The sphere is then applied to the hole in the work where the line is to be drawn, and the ruler is then slid upon the work, so that its V-slitt takes around the sphere with its chamfered edges, as shown at Fig. 14. In this position evidently the axis of the hole cuts the axis of the V-slitt—that is to say, it passes through the zero-point of the scale. It is now only required to set the other point of the compasses to the division on the scale corresponding to the required dimensions.

What I claim is—

1. In a compass, a pair of channel-shaped legs, a toothed sector secured to one and passing through the web of the other of them, a worm pivoted in said other leg and organized to be spring-held out of engagement with said rack when desired, substantially as and for the purpose stated.

2. In a compass a pair of channel-shaped legs, a toothed sector secured to one and passing through the other of them, a pin pivoted to said other leg and arranged to be spring-held away from said rack when desired and a worm journaled on said pin arranged to engage the rack and have limited longitudinal motion, substantially as and for the purpose stated.

3. In a compass a pair of channel-shaped legs, a toothed sector secured to one and passing through the other of them, a pin pivoted to said other leg and provided with a nose at one end thereof, a spring engaging said nose, a hollow worm on the other end of said pin, a coil-spring inside of said worm and a nut holding said spring and worm on the pin, substantially as and for the purpose stated.

4. In compasses of the class described, channel-shaped legs, points longitudinally adjustable therein and a ball-bearing adapted to be secured to one of said legs whereby said leg can be centered in a hole to draw a circle around it, substantially as and for the purpose stated.

5. In a compass the combination of two legs of U-section each provided with a head comprising two parallel cheeks one of which forms the exterior while the other is lodged at the interior in the space between the cheeks of the other leg on being mounted together, a toothed arc or sector fixed to one of the legs and an endless screw or worm secured to the other leg and so arranged as to enable it to engage with or to be withdrawn from the teeth of the said arc, longitudinally-adjustable points at the ends of the U-sections of the legs, spherical pieces adapted to be secured to the extremity of one of the said

points, and a graduated ruler formed with a V-slit the axis of which coincides with the zero-line of the divisions on the ruler, substantially as and for the purpose stated.

- 5 6. The combination with a compass, spherical pieces adapted to be secured to one of the compass-legs of a graduated ruler, a V-slit formed therein, the axis of which coincides with the zero-line of the divisions on said

ruler, substantially as and for the purpose so stated.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HENRI TERLIN.

Witnesses:

J. H. ROUSSELOT,
E. NULLER.