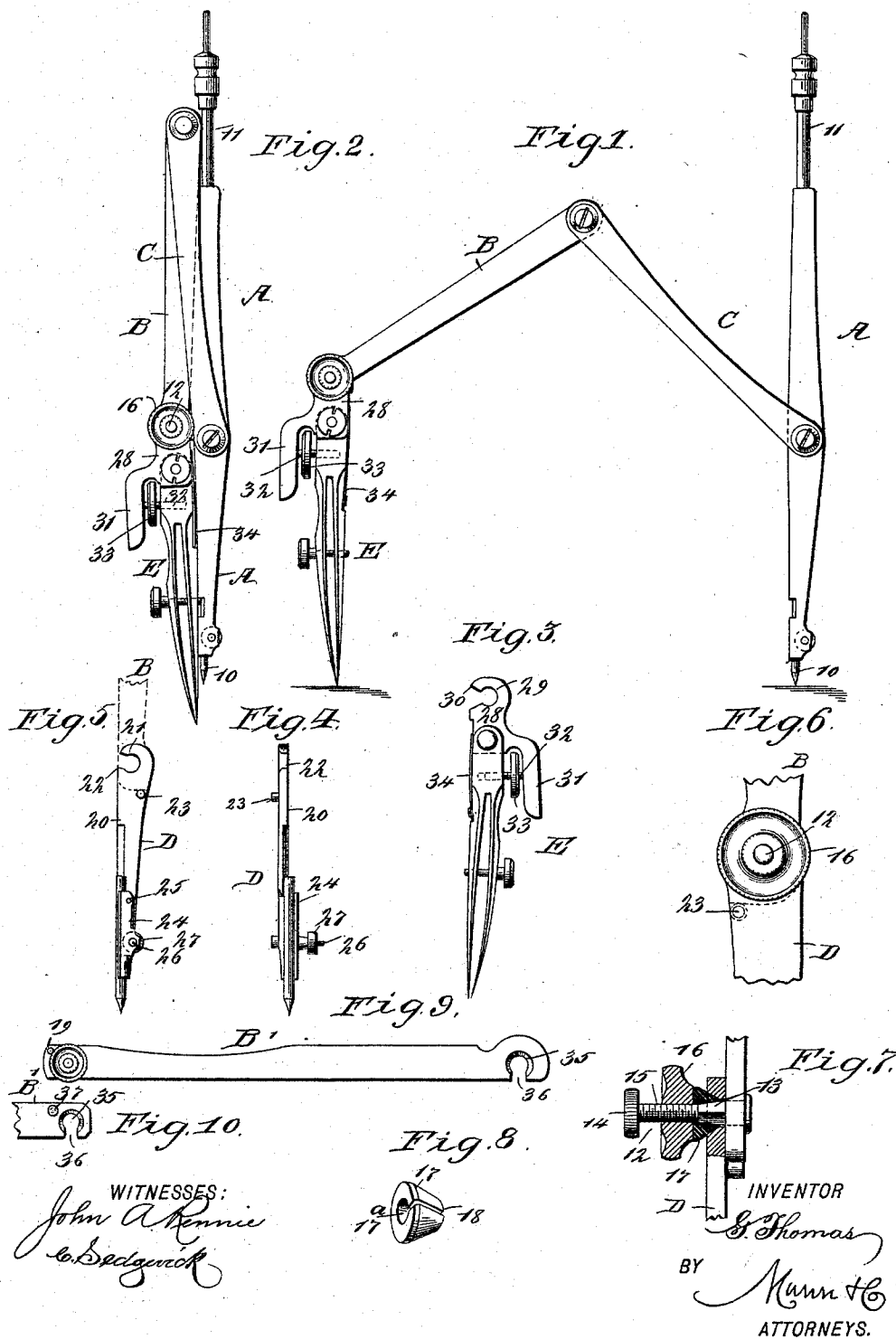


(No Model.)

G. THOMAS.
DRAWING INSTRUMENT.

No. 527,300.

Patented Oct. 9, 1894.



UNITED STATES PATENT OFFICE.

GEORGE THOMAS, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO EMILY THOMAS, OF SAME PLACE.

DRAWING-INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 527,300, dated October 9, 1894.

Application filed July 26, 1893. Serial No. 481,493. (No model.)

To all whom it may concern:

Be it known that I, GEORGE THOMAS, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Drawing-Instruments, of which the following is a full, clear, and exact description.

The invention is an improvement in the class of drawing instruments, especially compasses, which are provided with a jointed, laterally-extended arm carrying a tracing device, or socket for holding a tracing point.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the compass, showing its arm extended to draw a circle of medium diameter. Fig. 2 is a side elevation of the compass folded, one member close to the other. Fig. 3 is a side elevation of the ruling pen removed from the body arm of the compass. Fig. 4 is a front elevation of a pencil point adapted to be used in connection with the body arm of the compass; and Fig. 5 is a side elevation of the said pencil point. Fig. 6 is an enlarged side elevation of the clamp employed for connecting a pencil point, pen or tracer to the body arm. Fig. 7 is a section taken practically through the joint. Fig. 8 is a detail perspective view of the clamping sleeve of the joint; and Figs. 9 and 10 are respectively a side elevation of an extension of the main arm and a partial side elevation of a further extension of the arm.

In carrying out the invention the body of the instrument consists of a pivoted bar A, which at its lower end is fitted with an adjustable point 10, of any approved construction, and the upper end of the pivoted bar is provided with a handle extension 11, capable of being readily and conveniently grasped by the finger and thumb. The pivoted bar is usually made straight on opposite sides, and is generally rectangular or polygonal in cross

section. It is preferably made tapering from a point near its center in direction of its ends.

In addition to the pivoted bar the body of the instrument comprises a tracing arm B, which is connected with the pivoted bar by parallel links C. The links are pivotally attached to the inner end of the tracing arm, one at each side, and are connected in like manner with the pivoted bar, preferably at its wider portion; and the tracing arm bar B, is of such thickness that it is capable of folding partially or entirely between the links C.

The tracing arm at its outer end is provided with a clamping device, and the said device consists, as shown in Figs. 6 and 7, in securing to the arm at right angles to one of its outer faces a stud 12, and said stud adjacent to the surface of the arm is made somewhat rectangular in cross section and tapered longitudinally, the said tapering and somewhat squared section of the post or stud being designated as 13 in the drawings. The free end of the post is preferably provided with a head 14, and the exterior surface 15, between the head and the tapering surface 13, is circular and threaded to receive a lock nut 16.

Between the lock nut and the tracing arm a clamping sleeve 17, is located, adapted to be carried upon the tapering squared portion 13 of the stud and be expanded thereby. The clamping sleeve as shown in Fig. 8, is shaped substantially as the frustum of a cone, and is provided with a tapering bore 17^a, extending through it from one end to the other, while in one side a slot 18, is produced, which will enable the clamping sleeve to expand when it is forced by the locking nut upon the tapering squared surface of the post. The post is made substantially square in cross section at its tapering portion in order to prevent the sleeve from turning when it is locked between the nut 16 and the tracing arm.

The tracing arm at its outer end is made somewhat round at its inner edge, as shown in dotted lines in Figs. 5 and 6, and at its outer forward edge an aperture 19 is made, similar to that shown in the extension arm in Fig. 9.

The pencil point D employed in connection with the tracing arm comprises a body section 20, which is enlarged at its upper end and provided with an aperture 21, countersunk at one end as shown in Fig. 4, and the head of the body is further provided with a slot 22 in one side edge, which leads directly into the aperture 21. The countersink is preferably made in the outer face of the pencil point, while upon its inner face, at a predetermined point below the aperture 21 a pin 23, is located. At the lower end of the body of the point, which is somewhat reduced in width, a longitudinal socket 24, is located, capable of guided movement upon a pin 25, and a screw 26, the screw being located near the center of the socket while the pin is placed near one end. A lock nut 27, is located upon the screw, and the socket is adapted to receive a pencil, as shown in Figs. 4 and 5; and after the pencil is placed in the socket the socket is carried in direction of the body of the point by manipulating the nut 27 until the pencil is firmly held between the body of the point and the socket. The pencil is readily placed in such a socket since it is longitudinally open from end to end.

When it is desired to use the point D in connection with the body of the instrument, the aperture in its head is made to receive the tapering portion of the post 12, as shown in Fig. 7, and the nut 16, is then screwed up until the clamping sleeve has entered the countersink in the aperture 21, and by engaging with the wall of said aperture has brought the point in proper frictional engagement with the tracing arm. The pin 23 on the point, by engaging with the outer end of the tracing arm will prevent the point being carried too great a distance outward, while its range inward is practically unlimited.

The ruling pen E, is provided with a body of the ordinary construction, and the upper end of the body is pivotally connected with a head plate 28, provided with an aperture 29 and a slot 30 leading into the aperture, corresponding to the aperture and slot 21 and 22 in the point, the aperture having a countersink in one of its walls; and the head plate is further provided with a tail 31, projecting downward from its outer edge, and in the head of the pen proper an adjusting screw 32, is secured, one end of which screw has bearing against the inner edge of the tail 31, as shown in Figs. 1 and 3, the screw being turned through the medium of an attached disk 33. A spring 34, having bearing against the head plate and secured to the pen normally maintains the adjusting screw with a bearing against the tail of the head plate. By turning the screw 32 in one or the other direction the nibs of the pen may be carried to or from a given line, and fine adjustment may be made thereby.

The range of the instrument may be in-

creased by adding to the tracing arm B one or more extension arms B', one of which is shown in Fig. 9, and a portion of the second in Fig. 10. One end of each arm is provided with a countersunk aperture 35 at one end and a slot 36 leading into the same, while at the opposite end a clamping device is located similar to that heretofore described, and at the slotted and apertured end of the extension arms a pin 37, is placed in some instances, adapted to enter the aperture 19 in either the extension tracing arm or the main tracing arm B; and when this connection is made the two arms are rigidly held in contact.

When adjustment of the extension arms is required, the pins 37, are not entered into the apertures 19. The range of such an instrument may be increased or decreased as desired, and in an expeditious and simple manner, and since the handle or pivoted bar is always perpendicular to the center of the circle being drawn the instrument may be swung without the slightest trouble, since the pen, pencil or pointer used will tend to gravitate in a circular direction, and therefore will assist the operator in the use of the instrument.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The improved drawing instrument including the tracing arm provided with a lateral screw-threaded post at its outer end, and a detachable point or arm for carrying a tracing device, the same having its head provided with a lateral slot adapted to receive said post, a nut adapted to screw on the post, and a sleeve interposed between said arm and nut, substantially as described.

2. In a drawing instrument, the combination with the tracing arm, having a pivoted head provided with a downward extension, of a pen or other tracing device which is pivoted to said head, a screw fixed in the pen and having an attached turning disk and its free end abutting the said extension, and a spring applied on the opposite side of said pen and bearing on the pivoted head, as shown and described.

3. In a drawing instrument, the combination, with two sections to be united, one of the sections being provided with a head having a countersunk aperture produced therein and a slot leading into the aperture, of a clamping device adapted to be secured to the other section, comprising a threaded stud permanently secured to the section and provided with a tapering square section, a conical expanding sleeve held to slide upon the tapering section of the stud, and a lock nut adapted for engagement with the sleeve, as and for the purpose specified.

GEORGE THOMAS.

Witnesses:

CHAS. KENNEDY,

CHARLES E. RIDGWAY.