No. 877,710. PATENTED JAN. 28, 1908.

F. R. GOODALE.

ELLIPSOGRAPH.

APPLICATION FILED APR. 13, 1907.

Fig. 1.

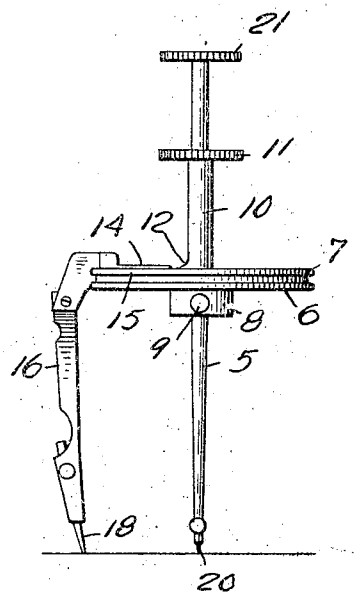


Fig. 3.

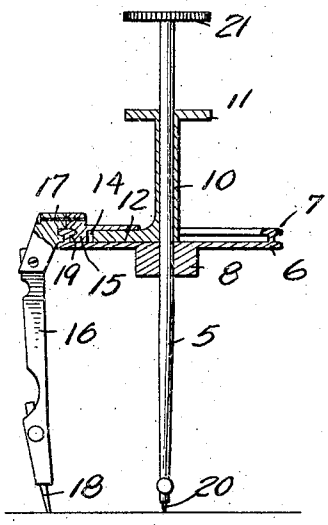
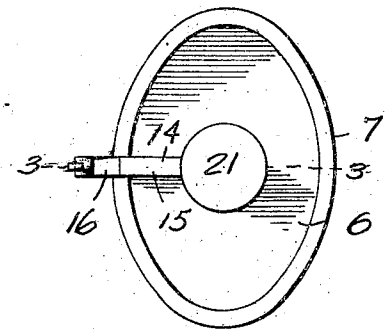


Fig. 2.



Witnesses

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ELLIPSOGRAPH.

No. 877,710. Specification of Letters Patent. Patented Jan. 28, 1908.

Application filed April 13, 1907. Serial No. 368,016.

To all whom it may concern:

Be it known that I, FRANK R. GOODALE, a citizen of the United States, residing at Exeter, in the county of Rockingham, State of New Hampshire, have invented certain new and useful Improvements in Ellipsographs; 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.

The present invention relates to improvements in ellipsographs, and it aims to provide an extremely simple and efficient instrument of that type, by means of which ellipses of different curvatures may be readily and quickly described.

To this end, the invention resides in the provision of an elliptical dial having a T-shaped, vertical shoulder formed thereon adjacent its periphery, which shoulder is engaged in a similarly shaped groove formed in an arm loosely mounted upon a tongue projecting laterally from a hollow sleeve, which embraces the dial-carrying shaft. Rotation of the sleeve will therefore cause the above mentioned arm to move forward and backward upon the tongue, according as the distance from the center of the dial to the T-shaped shoulder increases or diminishes, and since said shoulder exactly follows the periphery of the dial, the pencil carried by said arm will move in a corresponding path and describe a perfect ellipse.

The invention will be readily understood from the following detailed description, and its preferred embodiment is illustrated in the accompanying drawings, in which like parts are designated by corresponding reference numerals in the several views.

Of the said drawings—Figure 1 is a front elevation of an ellipsograph constructed in accordance with the present invention. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2, illustrating the disposition of the pencil-carrying arm upon the tongue formed upon the shaft sleeve.

In its practical embodiment the drawing instrument includes a shaft 5 provided intermediate its ends with an elliptical dial 6, which latter has formed adjacent its periphery a vertical T-shaped shoulder 7, which exactly follows the periphery of the dial and is therefore similar to the latter in curvature. The dial is retained in adjusted position upon the shaft by means of a collar 8, carrying a set-screw 9.

The upper portion of the shaft is embraced by a hollow sleeve 10, provided at its upper end with a milled nut 11, and having a laterally-projecting tongue 12 at its lower end, said tongue resting approximately upon the upper face of the dial. The free end of said tongue extends loosely into a socket 14 formed in the inner end of a pencil-carrying arm. This arm consists of an upper section 15, in which the socket, above referred to, is formed, and which is movable across the upper face of the dial, and a lower section or arm 16, which is connected to the upper section 15 by means of a transverse bolt 17, which passes through alining transverse openings formed therein and is readily removable therefrom. The lower end of the arm carries a pencil 18.

The sections 15 and 16, which comprise the pencil-carrying arm are provided at their inner ends with oppositely-disposed grooves 19, which mate when said sections are connected together and form a T-shaped groove, in which the T-shaped shoulder 7 fits.

The shaft 5 is provided at its lower end with the usual needle 20, and at its upper end with a milled nut 21, similar to the nut 11.

It will be apparent from the foregoing that when the sleeve 10 is rotated upon the shaft 5, the projection of its tongue 12 into the socketed end of the upper section of the pencil-carrying arm will cause the latter to rotate therewith across the upper face of the dial. Owing, however, to the curvature of the dial and of its shoulder, and to the reception of the latter within the T-shaped groove formed in said arm, the latter will be given an endwise movement backwards and forwards upon said tongue, according as the distance between the center of the dial and said shoulder decreases or increases. The lower section of the arm 14, which carries the pencil, will likewise move in a corresponding path, the pencil describing an ellipse as will be obvious.

It will likewise be apparent that ellipses of varying sizes may be described owing to the jointed formation of the pencil-carrying arm. It is to be understood, moreover, that while the invention is primarily intended as an ellipsograph various other curvilinear figures may be described thereby, since the dial may be readily removed from its shaft and one of a different configuration substituted.

What is claimed, is—

1. A drawing instrument of the class described comprising a shaft; a curvilinear dial carried thereby and provided with a vertical peripheral shoulder; an arm provided with a transverse groove adapted to receive said shoulder, said arm including a depending, pencil-carrying section; and means for rotating said arm around said dial, to cause the pencil carried by said arm-section to describe a curvilinear figure.

2. A drawing instrument of the class described comprising a shaft; a curvilinear dial carried thereby and provided with a vertical peripheral shoulder; a sleeve carried by said shaft and provided with a laterally-projecting tongue; an arm provided with a socket and groove adapted to receive said tongue and shoulder, respectively; a pencil carried by said arm; and means for rotating said sleeve.

3. A drawing instrument of the class described comprising a shaft; a curvilinear dial carried thereby and provided with a vertical peripheral shoulder; a sleeve carried by said shaft and provided with a laterally-projecting tongue; an arm provided with a socket and T-shaped groove adapted to receive said tongue and shoulder respectively; a pencil carried by said arm; and means for rotating said sleeve.

4. An ellipsograph comprising a shaft; an elliptical dial carried thereby and provided with a vertical T-shaped peripheral shoulder; a sleeve carried by said shaft and provided with a laterally-projecting tongue; an arm disposed upon the upper face of said dial, said arm having a T-shaped groove adapted to receive said shoulder, and a socketed inner end adapted to receive said tongue; a depending arm hinged to the outer end of said first-mentioned arm and provided with a pencil; and means for rotating said sleeve upon said shaft to effect a simultaneous rotation of said first-mentioned arm around said dial, and a movement backwards and forwards thereacross upon said tongue, to cause said pencil to describe an ellipse.

In testimony whereof, I affix my signature, in presence of two witnesses.

FRANK R. GOODALE.

Witnesses:

JOHN A. GLASSEY,

JOHN BELL.