

No. 646,329.

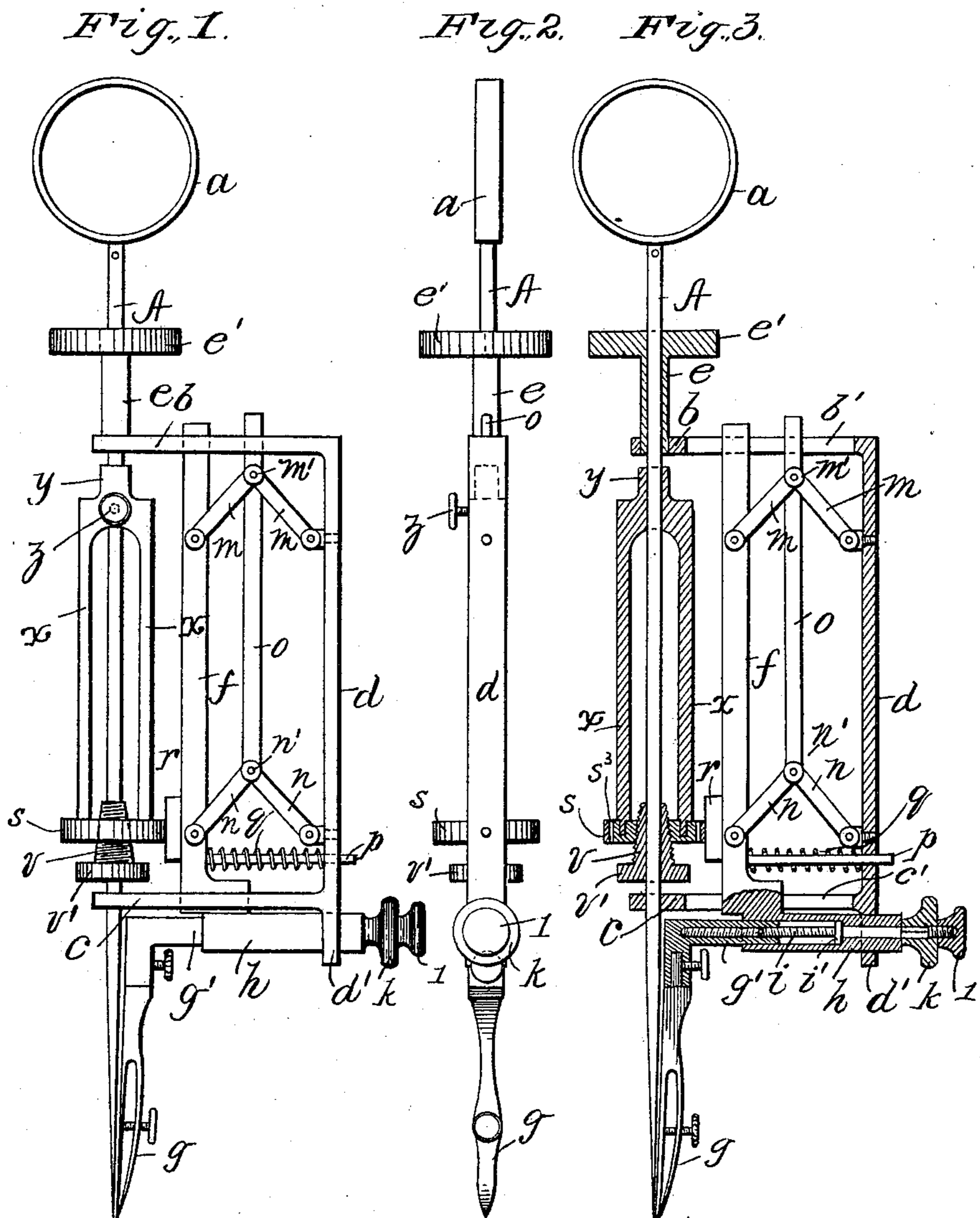
Patented Mar. 27, 1900.

E. TINTANNÉ.  
ELLIPSOGRAPH.

(Application filed June 13, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses  
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J. J. Lewis

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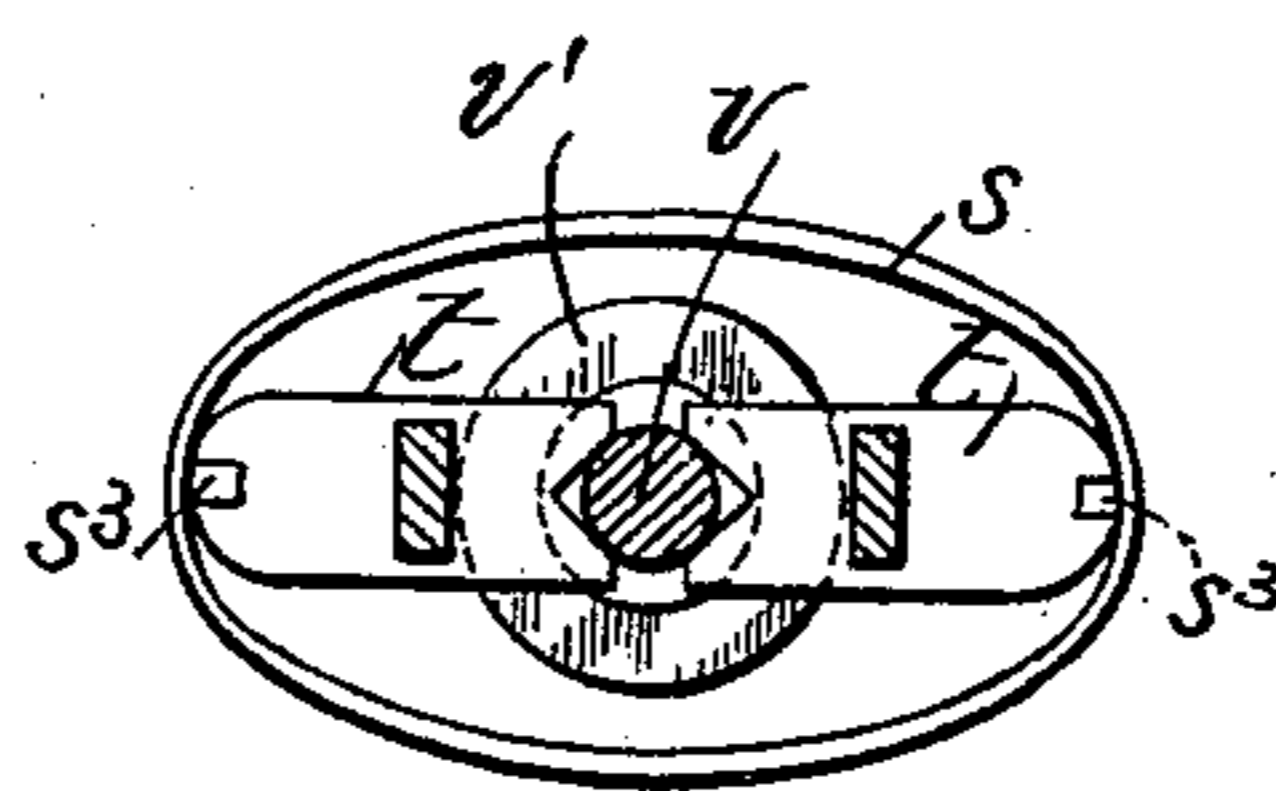
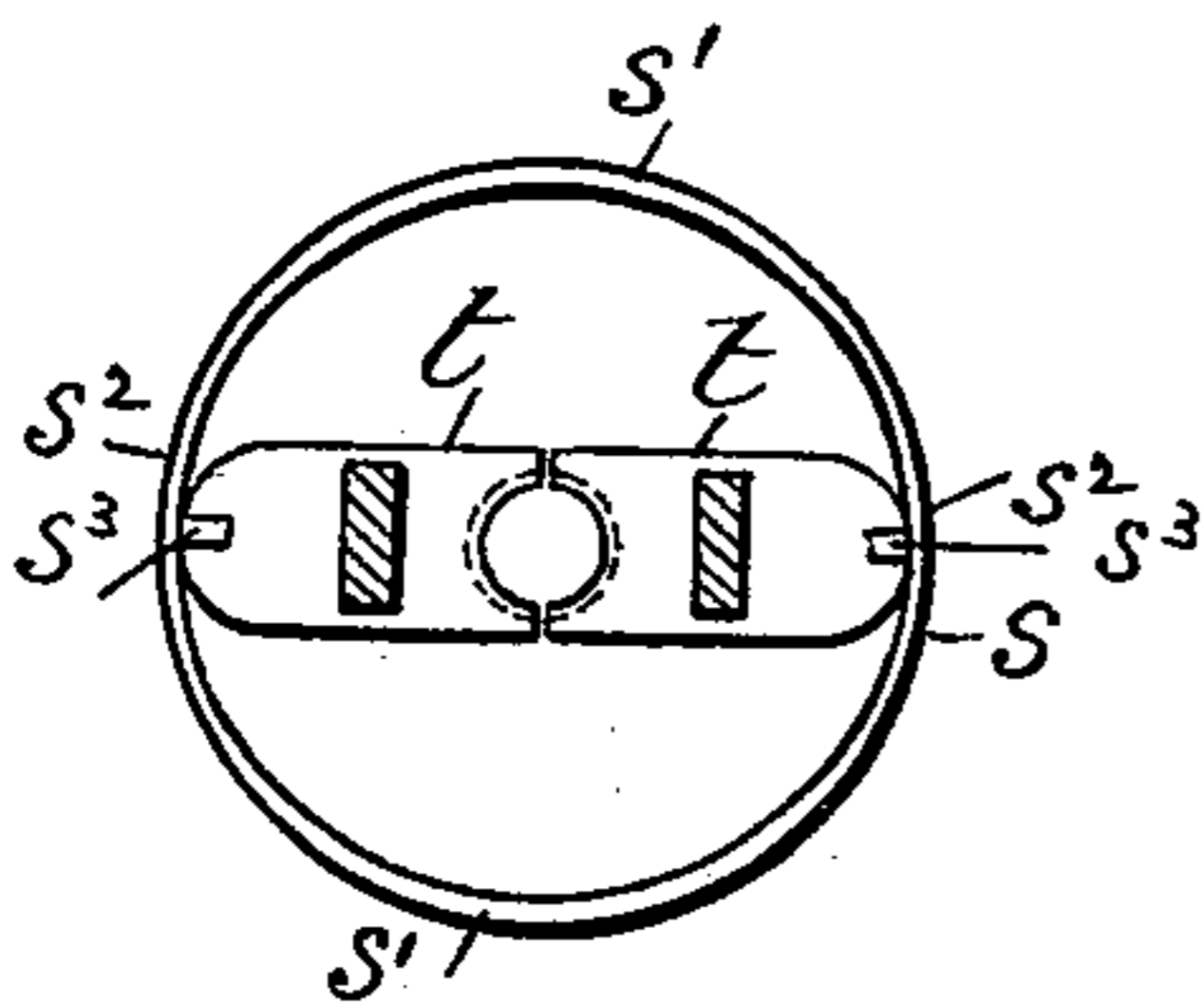
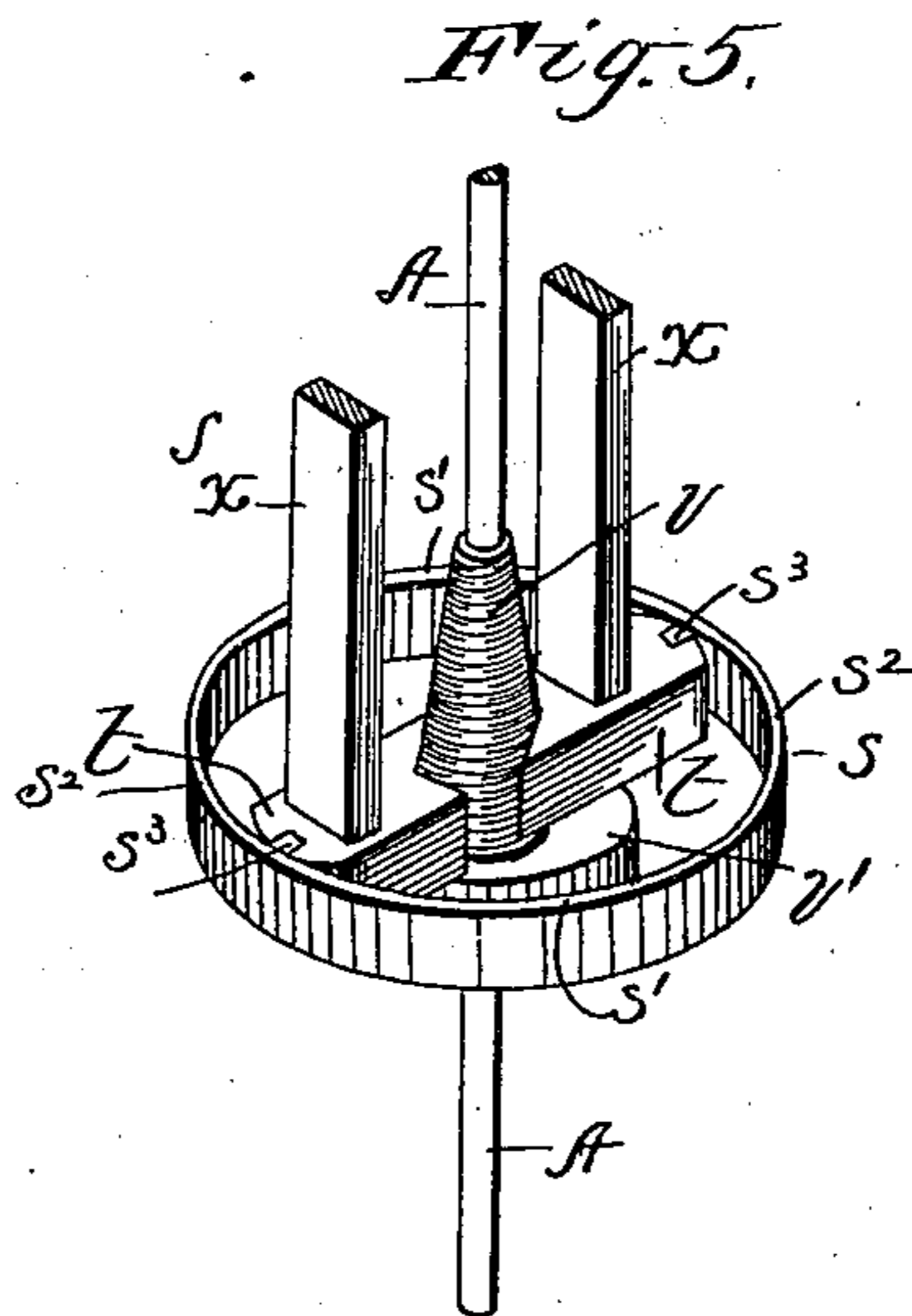
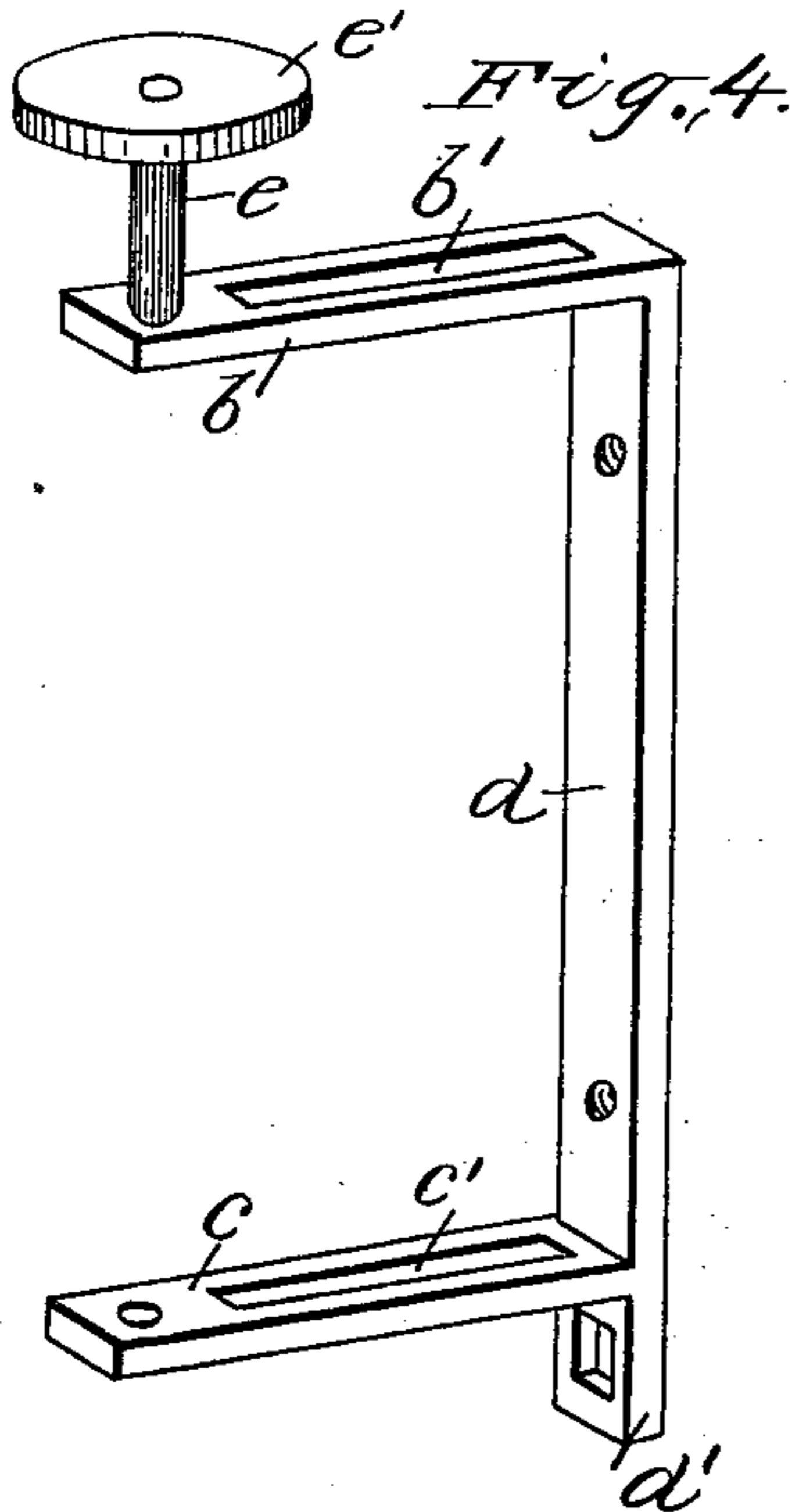


Fig. 6.

Fig. 7.

Witnesses.  
W. R. Edelin.  
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Emile Tintanné  
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his atty.

**No. 646,329.**

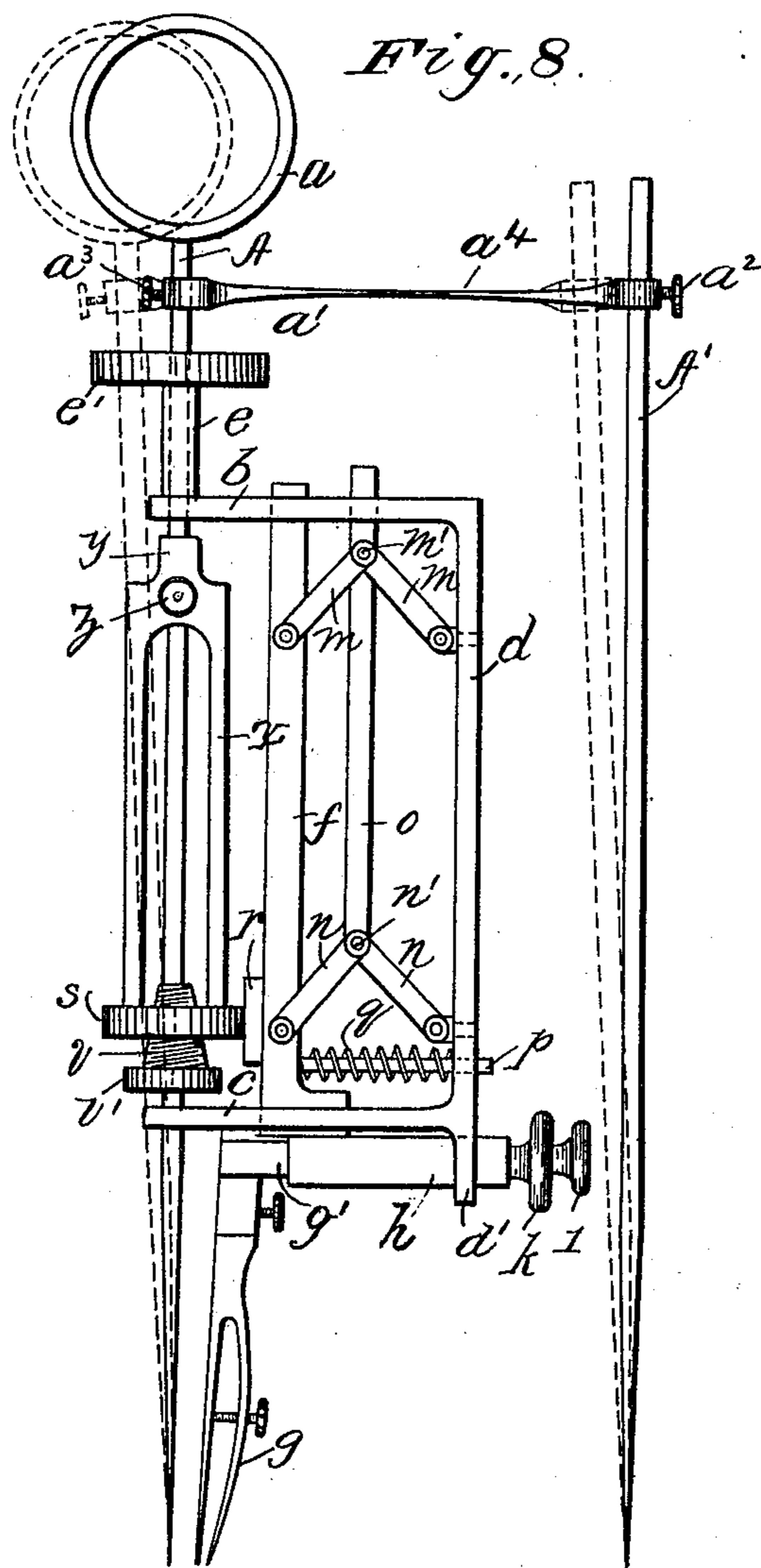
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**3 Sheets—Sheet 3.**



Witnesses.  
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# UNITED STATES PATENT OFFICE.

EMILE TINTANNÉ, OF PROVIDENCE, RHODE ISLAND.

## ELLIPSOGRAPH.

SPECIFICATION forming part of Letters Patent No. 646,329, dated March 27, 1900.

Application filed June 13, 1899. Serial No. 720,369. (No model.)

*To all whom it may concern:*

Be it known that I, EMILE TINTANNÉ, of Providence, Rhode Island, have invented a new and useful Improvement in Ellipso-  
5 graphs, which invention is fully set forth in the following specification.

The present invention relates to improvements in ellipsographs; and the principal object thereof is to provide an instrument that  
10 may be easily and accurately manipulated for drawing or tracing both small and large ellipses, (which may or may not be a true geometrical ellipse,) ovals, and analogous figures and all kinds of curved elements—such, for  
15 example, as those which enter into the formation of certain styles of alphabetical lettering or are found in all kinds of designs and ornamental and architectural work.

Furthermore, it is the aim of my invention  
20 to provide an instrument which shall not only be capable of executing its work, whether it be in ink or otherwise, with neatness and despatch, but which may be readily adjusted both for the purpose of varying the size and  
25 within certain limits the shape of the ellipse produced thereby, and this without removing or changing the position of the elliptical form or guide which is followed by the movable leg or member, but merely by adjusting the po-  
30 sition of the tracing-point toward or from the axis of rotation or by altering or varying the shape of the elliptical form by manipulating certain means for elongating or shortening the same.

In the accomplishment of these objects and the attainment of many other advantages, which will be apparent, what is regarded as the principal and is believed to be an entirely novel feature of my invention resides in  
40 an elliptical form the shape of which may be changed without altering its position on or removing it from the instrument, means being provided whereby change of shape may be quickly effected. In the preferred em-  
45 bodiment of the invention this form consists, primarily, of a flexible and resilient annulus. In conjunction with this annulus means are provided within the same for elongating it in the direction of the greater axis of the ellip-  
50 tical shape to be imparted thereto, the effect of which is to simultaneously narrow it in the direction of the shorter diameter of the ellipse.

I am aware that it has heretofore been proposed to draw ellipses of different shapes by the employment of forms of invariable  
55 shapes, either by providing several of such forms and using them one at a time on the instrument or by so mounting a single form on the instrument that its position may be changed. The advantages of my variable el-  
60 liptical form over such arrangements are so obvious as to require no explanation.

Another feature of particular importance is the mounting of the movable leg in such manner that in all of its movements with ref-  
65 erence to the fixed leg or axis it is maintained in substantial parallelism therewith, and this is true whether the movements be those which take place in rotating the movable leg about the fixed leg, following the elliptical form, or  
70 whether the movement is that which takes place when the tracing-point, (which may be either a pen or pencil,) which constitutes a part of the movable leg, is adjusted toward or from the axis to vary the size rather than  
75 the shape of the ellipse to be drawn. Among the more important advantages resulting from this feature of my invention I would mention that it enables the movable leg and the frame in which it is mounted to be ro-  
80 tated about the fixed leg or axis while the latter is held in an approximately vertical or upright position. For this reason no particular skill or care is required in handling the instrument, whereas with ellipsographs  
85 now ordinarily used, in which the movable leg is secured by a fixed pivot at its upper end and is movable toward and from the fixed leg at its lower end, necessitating constant changing of the inclination of the instrument  
90 during the travel of the tracing-point, much skill is required in the manipulation of the instrument to do good work.

My invention will be more fully understood, both as to the features referred to above and  
95 as to many other features of importance, from the detailed description in connection with the accompanying drawings, wherein I have illustrated the preferred embodiment of the invention in a practical instrument.

In said drawings, Figure 1 is an elevation.  
Fig. 2 is an elevation from the right of Fig. 1. Fig. 3 is a vertical sectional view. Fig.  
100 4 is a detail perspective view of the frame in

which the movable leg is mounted. Fig. 5 is a detail perspective view of the elliptical form and associated parts, and Figs. 6 and 7 are top views of said form and the spreading blocks therefor. Fig. 8 is an elevation of my instrument, showing an attachment applied thereto for steadying the same when in use.

Referring to the drawings, A represents the fixed leg or axis having a ring or eye *a* at its upper end, whereby it may be held, and sharpened at its lower end to engage the paper or other surface on which the work is being executed. Pivoted on and rotatable about this axis is a frame (see Fig. 4) consisting of upper and lower horizontal arms *b* and *c*, engaging about the axis A at their inner ends and connected at their outer ends by the upright bar *d*, which extends below arm *c* at *d'*. From arm *b* sleeve *e* projects upwardly about the leg A and carries a milled head *e'*, whereby the frame and other parts carried thereby, as hereinafter described, may be rotated.

What I have heretofore referred to as the "movable leg" consists, as shown in the drawings, of an upright bar or slide *f* and a pen *g*, the former being movable in slots *b'* and *c'* in arms *b* and *c* and the latter being removably secured to a squared slide *g'*, working in a squared socket or sleeve *h*, secured at the lower end of slide *f*. In operation the squared sleeve *h* engages through a similar opening in the lower extremity *d'* of bar *d*. An adjusting-screw *i* engages a screw-threaded socket in slide *g'* of the pen, said screw being held in place by an enlargement *i'* thereon and by the thumb-nut *k*, engaging a squared part thereof and held in place by a screw-nut *l*. Slide *f* is connected to bar *d* by four toggle-links, two, *m m*, above, and two, *n n*, below, the pivots *m' n'* of the connected ends of each set being in turn connected together by a vertically-movable bar *o*, adapted to work at its upper extremity in slot *b'*. A pin *p*, secured to slide *f*, projects through an opening in bar *d*, and around this pin engages a spiral spring *q*, which exerts its tension to constantly hold a bearing edge *r* on slide *f* in contact with the elliptical form now about to be described.

The elliptical form, which is most clearly shown in Figs. 5, 6, and 7, consists principally of a flexible resilient annulus or ring *s*, made, preferably, of steel and thicker at points *s' s'* than at *s<sup>2</sup> s<sup>2</sup>*, the effect of this difference in thickness being to prevent the sides from straightening too much when the ring is elongated, as in Fig. 7. *t t* are two spreader-blocks having notches at their outer ends engaging lugs *s<sup>3</sup> s<sup>3</sup>* on ring *s* and at their inner ends having screw-threaded recesses bearing against a conical-shaped screw-sleeve *v*, loose on leg A and having a milled head *v'*, whereby the same may be turned to spread the blocks *t t* farther apart or permit them to approach each other. Blocks *t t* are supported, respectively, at the

lower ends of spring-arms *x x*, formed integral with a sleeve *y*, which engages about leg A and is secured in proper position thereon by set-screws *z*.

From the foregoing description it will be clearly understood that in the operation of the instrument the fixed leg A is held in a substantially-vertical position by grasping the ring *a* with one hand and turning the milled head *e'* with the other. In the rotation of the frame and other parts the bearing edge *r* is constantly held in contact with the elliptical form, and the ellipse drawn will in its relative dimensions exactly correspond to the form, although its size will depend on the adjustment of the pen-point by means of screw *i*. To alter the shape of the form, it is only necessary to turn screw *v*. Of course, where desirable, different sizes of rings *s* and of blocks *t t* may be employed, and many other changes or modifications may be made without departing from the invention. The instrument is also capable of use as an ordinary compass.

In the use of the ellipsograph above described it is often desirable to employ some means for enabling the fixed leg or axis A to be steadied or held firmly either in a vertical upright position or at a slight varying inclination while the leg is being maneuvered. To that end I provide an additional leg or brace A', (see Fig. 8,) having a sharpened point adapted to engage the surface upon which the work is to be executed and connected at its upper end to the leg A by rod *a'*, in the end of which the legs A and A' slidably engage and are held by set-screws *a<sup>2</sup> a<sup>3</sup>*. Rod *a'* is made thin in the middle, as at *a<sup>4</sup>*, so as to render it flexible and capable of being bent when it is desired to incline the legs A and A', as shown, for example, by dotted lines in Fig. 8, the points of contact of the legs with the paper remaining fixed. Such inclination, which may be varied at will, greatly enhances the efficiency of operation of the apparatus in enabling the tracing-point to follow unevenness in the surface on which the work is being executed. As will be noted, the brace A' and bar *a'* in no way interfere with the operation of the other parts.

What I claim is—

1. In an ellipsograph or similar instrument, a fixed leg, a movable leg or member adapted to move about the fixed leg as an axis, a form of variable shape the guiding edge of which is bounded by an endless line, said form being adapted to guide the movable leg in its transit, and means for varying the shape of said form.

2. In an ellipsograph or similar instrument, a fixed leg, a movable leg or member adapted to move about the fixed leg as an axis, and a flexible form of variable shape the guiding edge of which is bounded by an endless line, said form being supported from a fixed leg adapted to guide the movable leg in its tran-

sit, and means for varying the shape of said form.

3. In an ellipsograph or similar instrument, a fixed leg, a movable leg or member adapted to move about the fixed leg as an axis, a flexible resilient form of variable shape, the guiding edge of which is bounded by an endless line, said form being supported from a fixed leg and adapted to guide the movable leg in its transit, and means for varying the shape of said form.

4. In an ellipsograph or similar instrument, a fixed leg, a movable leg or member adapted to move about the fixed leg as an axis, a form consisting of a resilient annulus or ring adapted to guide said movable leg in its transit, and means for elongating said annulus or ring.

5. In an ellipsograph or similar instrument a form consisting of a resilient annulus or ring, two blocks located within and bearing against opposite sides of said ring, a tapering screw engaging between the inner ends of the blocks for spreading the same and elongating the ring and a movable member or leg adapted to be guided in its transit by said form.

6. In an ellipsograph or the like the combination with a fixed leg or axis, and a movable leg, of a variable form consisting of a resilient ring, blocks located within and bearing against the ring, a sleeve on the fixed leg having an exterior tapered screw-thread engaging between the block for spreading the same to elongate the ring, and spring-arms secured to the fixed leg and supporting the blocks respectively.

7. In an ellipsograph or similar instrument, the combination with a fixed leg or axis, of a form of variable shape carried by the fixed leg, means for altering the shape of said form, a movable leg, means for rotating the same about the fixed leg and in contact with the form, and connections for maintaining the movable leg always in substantial parallelism with the fixed leg during such movement of rotation and whatever the shape of the form.

8. In an ellipsograph or similar instrument, the combination with a fixed leg or axis, of a form of variable shape carried by the fixed leg, means for altering the shape of said form, a movable leg consisting of an upright slide and a tracing-point adjustably secured thereto, means for rotating the movable leg about the fixed leg and in contact with the form, and connections for maintaining the movable leg always in substantial parallelism with the fixed leg during such movement of rotation irrespective of the shape of the form and adjustment of the tracing-point.

9. In an ellipsograph the combination with a fixed leg or axis, of a variable form carried thereby, means for changing the shape of said form, a frame pivoted on and adapted to turn about the fixed leg, said frame consisting of two arms embracing the fixed leg at their inner ends and connected by a bar at their

outer ends, a movable leg consisting of an upright slide carrying a tracing-point and working in slots in the arms, two sets of toggle-links connecting the slide to the bar of the frame whereby the movable leg is always maintained in substantial parallelism with the fixed leg, and means for holding the movable leg in contact with the form by yielding pressure.

10. In an ellipsograph the combination with a fixed leg or axis, of a variable form carried thereby, means for changing the shape of said form, a frame pivoted on and adapted to turn about the fixed leg, said frame consisting of two arms embracing the fixed leg at their inner ends and connected by a bar at their outer ends, a movable leg consisting of an upright slide having a sleeve at its lower end and working in slots in the arms, a tracing-point having an arm slidably engaging in said sleeve, a screw engaging said arm for adjusting the position of the tracing-point, connections between the slide and the bar of the frame whereby the movable leg is always maintained in substantial parallelism with relation to the fixed leg, and means for holding the movable leg in contact with the form by yielding pressure.

11. In an ellipsograph, the combination with a fixed leg, a variable form carried by said leg, said form consisting of a resilient ring, two spreader-blocks within and bearing against said ring at their outer ends, spring-arms secured to the fixed axis and supporting the blocks, a sleeve on the fixed axis having an exterior tapering screw-threaded surface engaging between the inner ends of the blocks, a frame consisting of two horizontal arms pivoted on the fixed axis at their inner ends and connected by a vertical bar at their outer ends, a movable leg sliding in ways in the horizontal arms, toggle connections between said movable leg and vertical bar, means for rotating the frame, and means—such as a spring—for yieldingly holding the fixed leg in contact with the form.

12. In an ellipsograph or similar instrument, a movable leg or member, and a form consisting of a resilient annulus or ring of varying dimensions in cross-section adapted to act as a guide for the movable leg in its transit.

13. In an ellipsograph or similar instrument, a movable leg or member, and a form consisting of a resilient annulus or ring of varying thickness in a radial direction and adapted to act as a guide for the movable leg in its transit.

14. In an ellipsograph or similar instrument, a movable leg or member, and a form consisting of a resilient annulus or ring of greater thickness at the parts which constitute the sides of the ellipse than at the parts which constitute the ends thereof, and adapted to act as a guide for the movable leg in its transit.

15. In an ellipsograph or similar instrument, a fixed leg, a movable leg or member adapted to be moved about said fixed leg as an axis, means for steadying the instrument  
5 while in use, consisting of a third upright leg or brace connected at its upper end to the fixed leg by a flexible bar.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EMILE TINTANNÉ.

Witnesses:

WM. G. BRENNEN,  
LOUIS D. RICHARDSON.