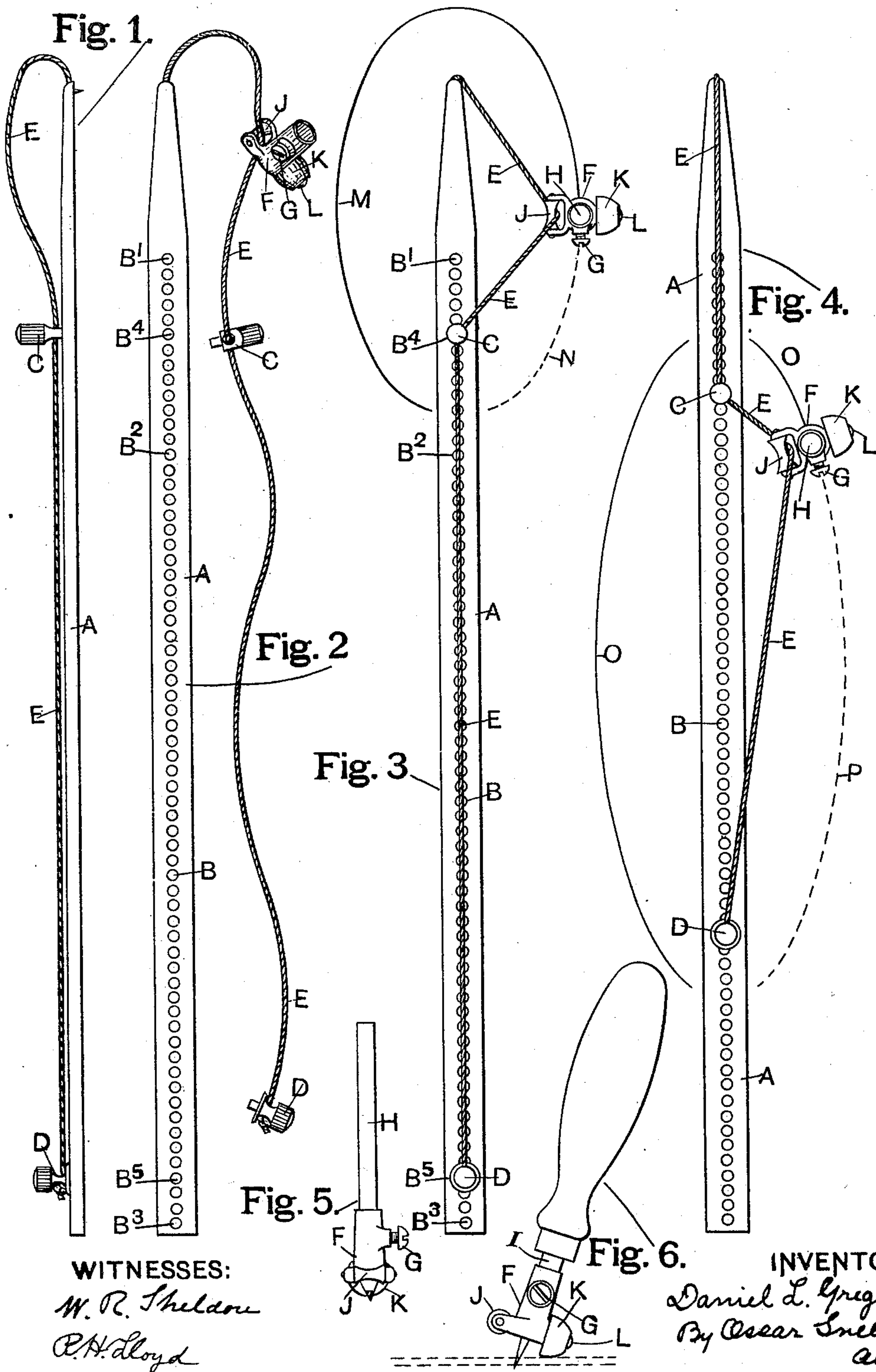


D. L. GREGORY.
ELLIPSOGRAPH.

(Application filed Nov. 13, 1901.)

(No Model.)



WITNESSES:

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DANIEL L. GREGORY, OF CHICAGO, ILLINOIS.

ELLIPSOGRAPH.

SPECIFICATION forming part of Letters Patent No. 707,580, dated August 26, 1902.

Application filed November 13, 1901. Serial No. 82,127. (No model.)

To all whom it may concern:

Be it known that I, DANIEL L. GREGORY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Ellipsographs, of which the following is a specification.

My invention relates to means for laying out elliptical forms for patterns, cutting mats for pictures, and other similar purposes; and my object is to produce a means which, although simple and inexpensive, may be easily and quickly adjusted, so as to enable a person of ordinary skill to lay out or cut a great variety of elliptical figures which differ in their relative transverse and conjugate diameters, as is fully described hereinafter and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation showing a simple form of this device which may be used for laying out elliptical patterns with a pencil held in position and guided by direct contact with a guide-cord. Fig. 2 is a plan showing several parts disengaged from the main staff and with a pencil or cutter holding device, and a tool-holder in engagement with the guide-cord. Fig. 3 is the same as Fig. 2, but with the guide-cord properly attached to the staff and a tool-holder in engagement with the guide-cord as it appears with a pencil in position when a small elliptical form is being drawn, the latter being indicated in solid and broken lines. Fig. 4 is the same as Fig. 3, but with the parts in position for laying out, as indicated by solid and broken lines, an elliptical form having a conjugate diameter longer relative to the transverse diameter than is shown in Fig. 3. Fig. 5 is a separate elevation of the tool-holder, showing a pencil attached thereto; and Fig. 6 is a side elevation of the same, showing an attached cutter having a handle which may be firmly grasped, the whole being shown in an inclined position, as when in use for cutting a beveled-edge picture-mat, the latter being indicated by the broken lines.

Similar letters indicate like parts throughout the several views.

The staff A in this instance is provided with a central row of holes B to receive pins C and D. The guide-cord E is attached to

the forward end of the staff A and the other end of the cord is secured to pin D, but is disposed loosely through a hole in pin C.

The tool-holder F consists of a tubular main portion adapted to receive the shank or handle of a tool and is provided with any good clamping device, such as a set-screw G, for retaining the tool adjustably yet firmly in operative position, such tools being indicated in Figs. 3, 4, 5, and 6 by the pencil H or cutter, whose shank is shown at I, Fig. 6. Projecting laterally from one side of the lower end of the tool-holder are two arms, between which is revolvably mounted a roller J, having a shallow wide groove, the axis of the roller being in practically the same plane as the guide-cord E, so that the latter is disposed spirally around the roller, as indicated in Figs. 3 and 4. At the opposite side of the tool-holder is another roller K, which is preferably of a conical shape and is mounted to revolve on a pin L, which projects from the tool-holder at substantially a right angle to the axis of roller J. Roller K is adapted to contact the top of the material being operated upon and guide the tool as to depth of cut or at some particular angle from the vertical when cutting beveled-edge elliptical holes.

It is obvious that each one of all the holes in staff A may be designated by a character different from all the others, if desired, for convenience in giving instructions and for accurately reproducing any one of the many different elliptical forms which may be made with this device by reference to a tabulated list; but in this instance for the purpose of showing the manner of using the device I have indicated but five of the holes by the characters B¹, B², B³, B⁴, and B⁵.

Referring to Figs. 2 and 3, to illustrate the manner of laying out an elliptical form, if pin C is inserted in the sixth hole B⁴ at the top portion of the row and pin D be inserted in the fourth hole B⁵ at the lower end portion of the staff and guide-cord E be drawn taut between pins C and D, the upper end portion of the cord would be slack and may be pulled outwardly by means of the engaged tool-holder, when the latter may be moved either way from one side of the staff to the other around the upper end thereof and

an inserted pencil or cutter be made to describe an elliptical form, as indicated by the solid line M and the uncompleted portion by the broken line N. It is obvious that the transverse and conjugate diameters of the elliptical form may be varied by changing the relative positions of pins C and D. Elliptical forms having a very short transverse diameter may be drawn by mounting the tool-holder on the guide-cord E, between pins C and D, as shown in Fig. 4 and indicated by solid lines O and broken line P, which latter indicates the portion of the ellipse not completed to the side of the staff. In practice the staff A is made very much narrower than indicated in the drawings, so that the end portion of the ellipse shown in Fig. 3 and the portions at the ends shown in Fig. 4 not complete are so short that they may be easily completed by other means.

On account of the roller J being so mounted that the guide-cord E runs on and off the roller at less than a right angle to the axis thereof the cord on the roller forms a spiral and the direction of the turn of the spiral is reversed, while the tool-holder passes around the outer end of the staff in forming the end of the ellipse shown in Fig. 3. If roller J should be disposed at a right angle to what is shown, its axis would be substantially parallel with the axis of the pencil and the guide-cord would run on and off the roller at a right angle to the axis thereof, with the result that the guide-cord would be at a half-cross posi-

tion at one side of the staff and be shortened thereby, so that one side of the ellipse would be different from the other, which is not the case with the roller-axis, disposed as shown and described, so that the guide-cord may change its angle with the roller by simply reversing its spiral contact therewith.

I claim as my invention—

1. In an ellipsograph, a supporting-staff and a series of holes in the staff, pins adapted to removably engage said holes, and a guide-cord having one end attached to one end portion of the staff, and the other end portion of the cord attached to one of the pins, the intermediate portion of the cord engaging the other of the pins, and a tool slidingly mounted on the cord, for the purpose stated.

2. In an ellipsograph, a supporting-staff and a guide-cord, the latter adjustably attached to the staff, a tool-holder and a roller pivotally mounted thereon, the guide-cord in engagement with the roller, the roller so disposed relative to the guide-cord that the latter subtends an angle to the plane of revolution of the roller and spirally contacts the latter, in the manner and for the purpose stated.

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

DANIEL L. GREGORY.

Witnesses:

OSCAR SNELL,
ABNER A. HODGES.