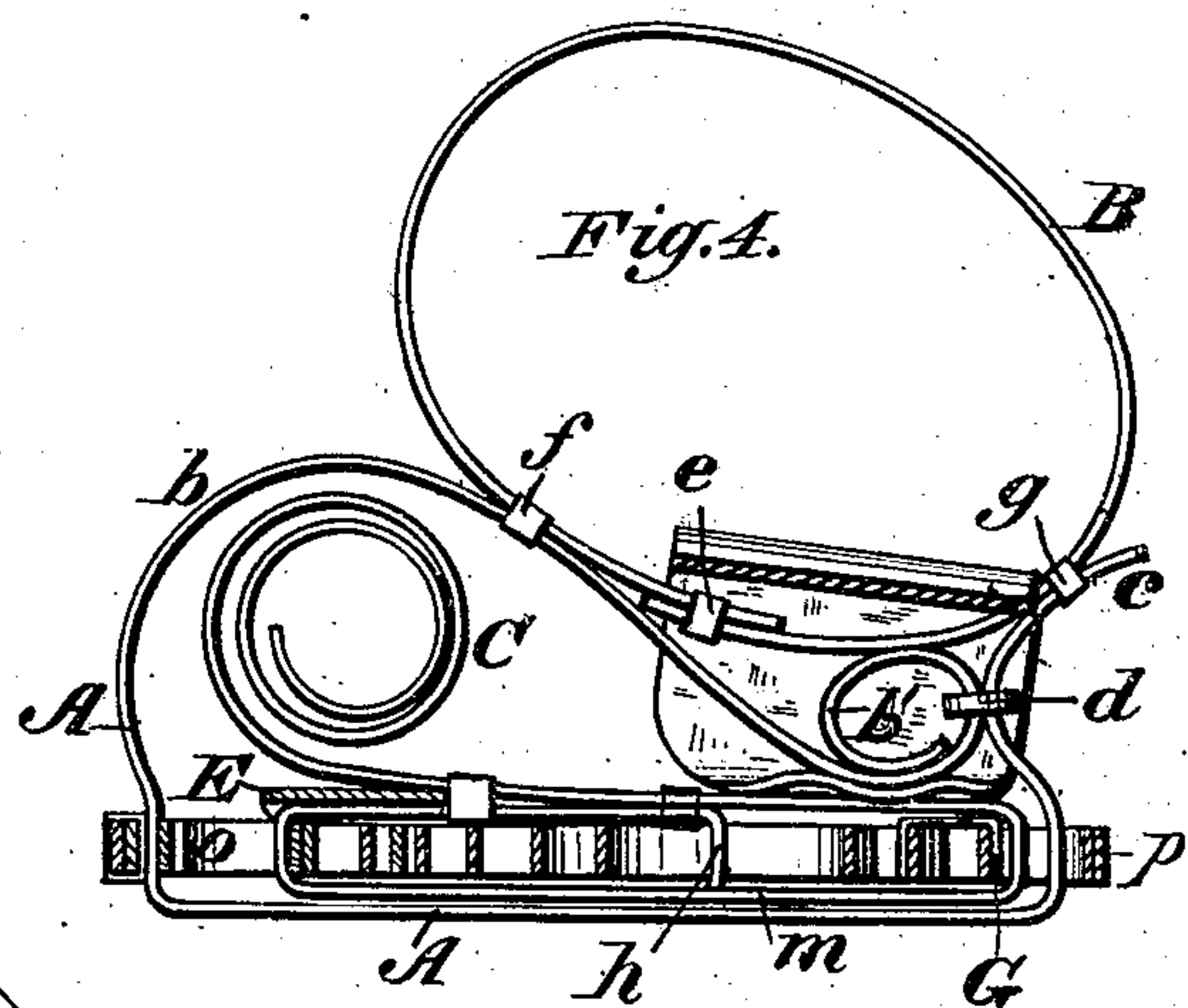
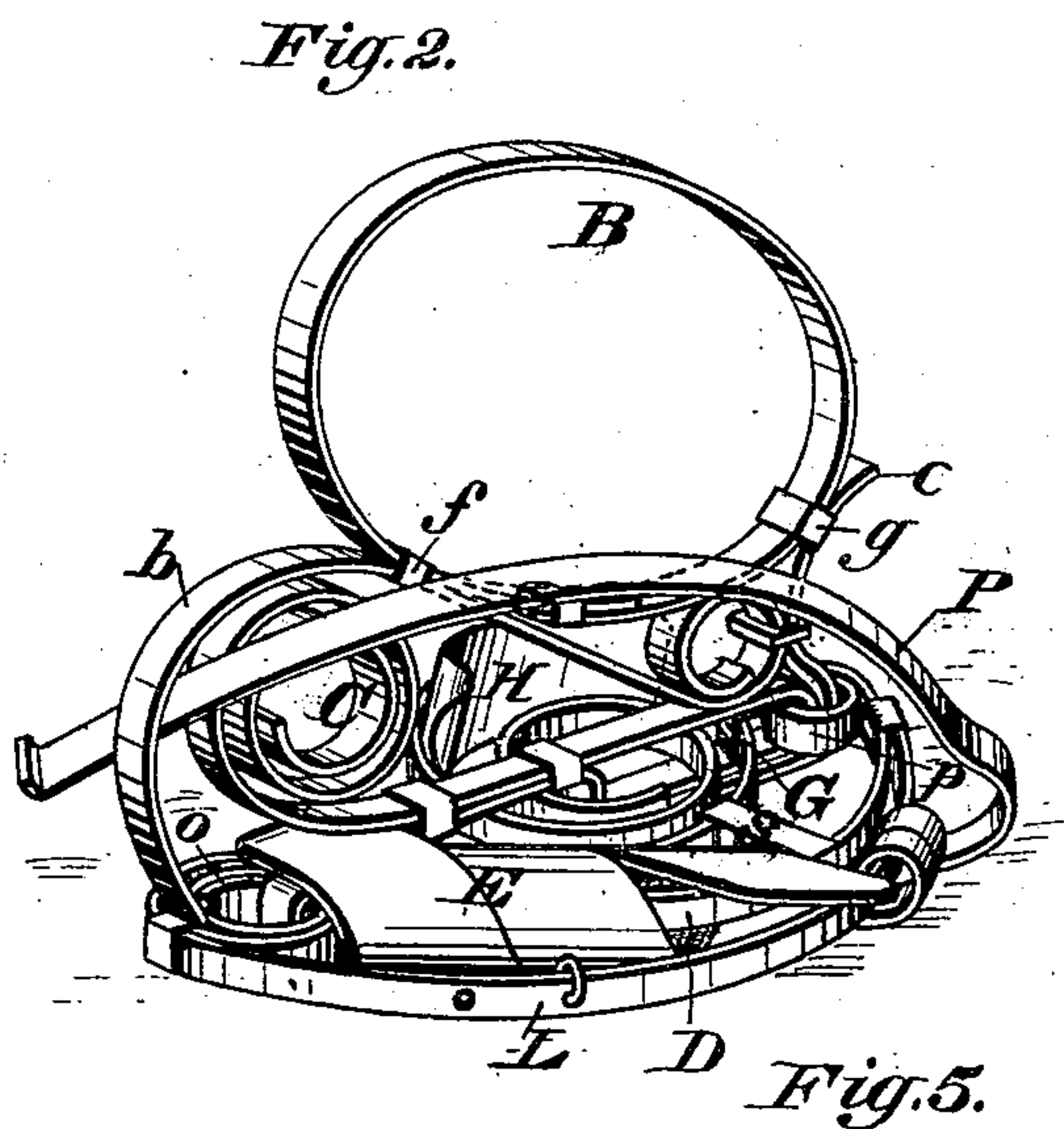
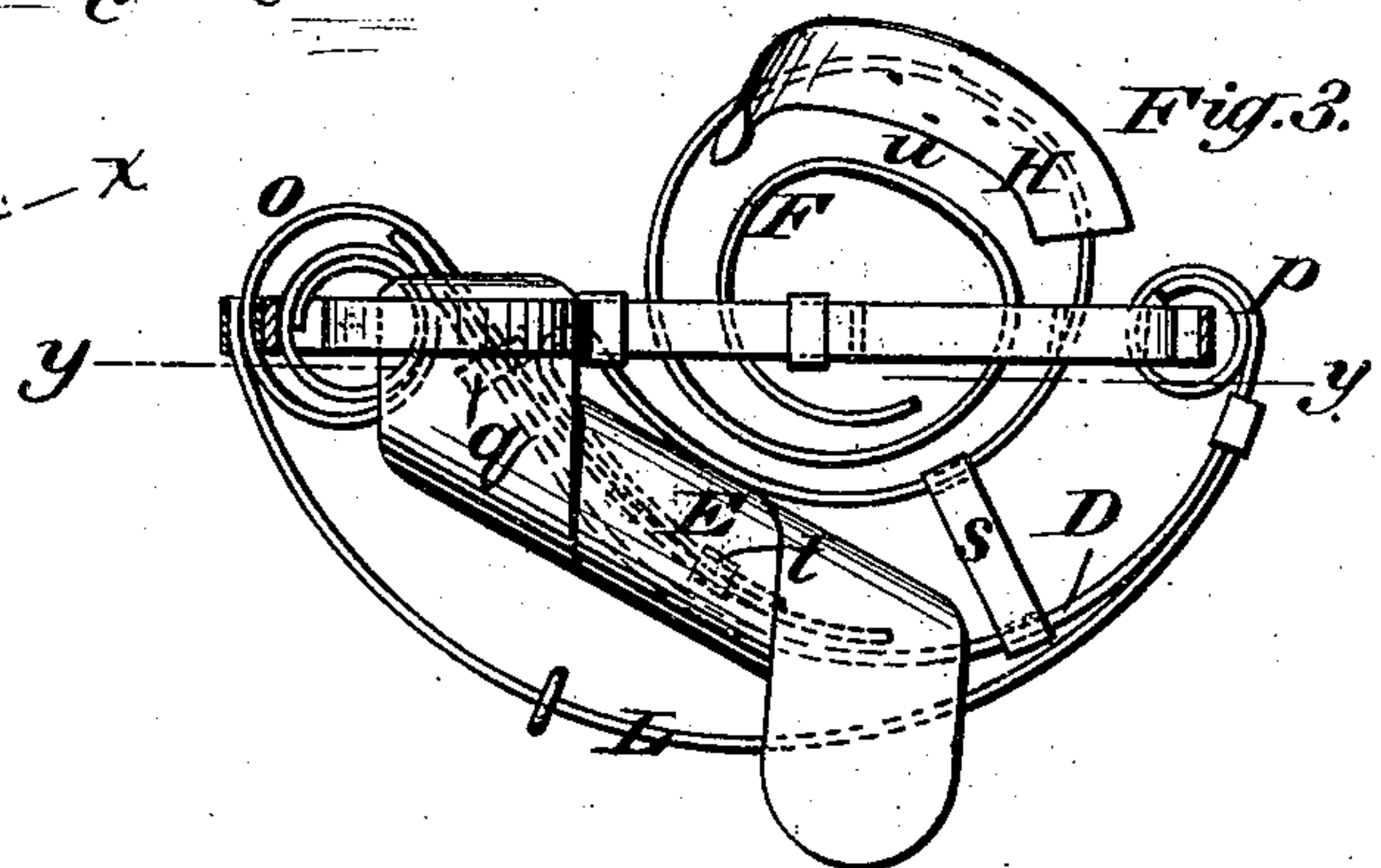
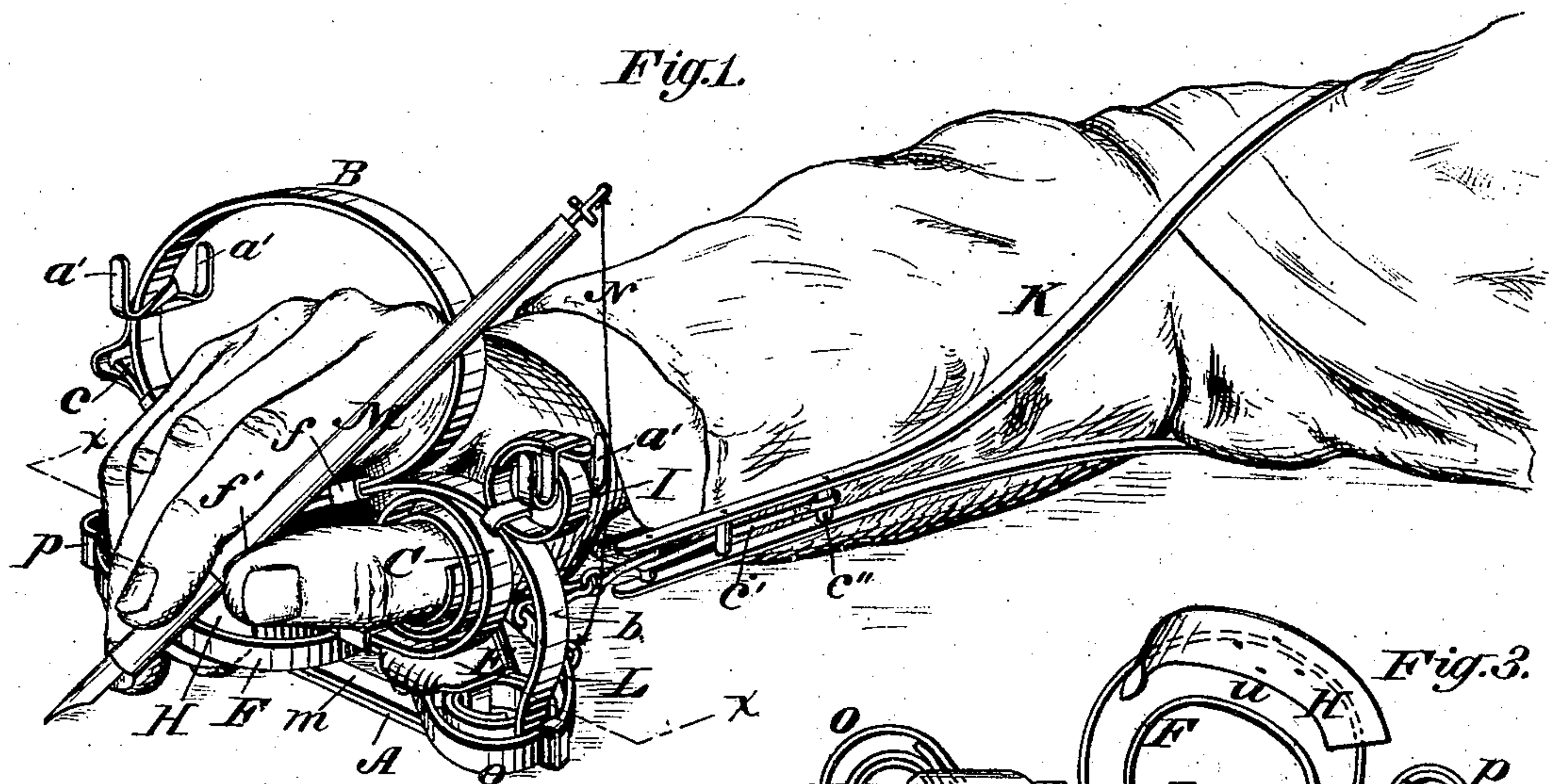


L. TWITCHELL.
Hand-Guide for Use in Teaching Penmanship.
No. 226,942. Patented April 27, 1880.



Witnesses:
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Walter S. Dodge.

Inventor:
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Fig. 6.

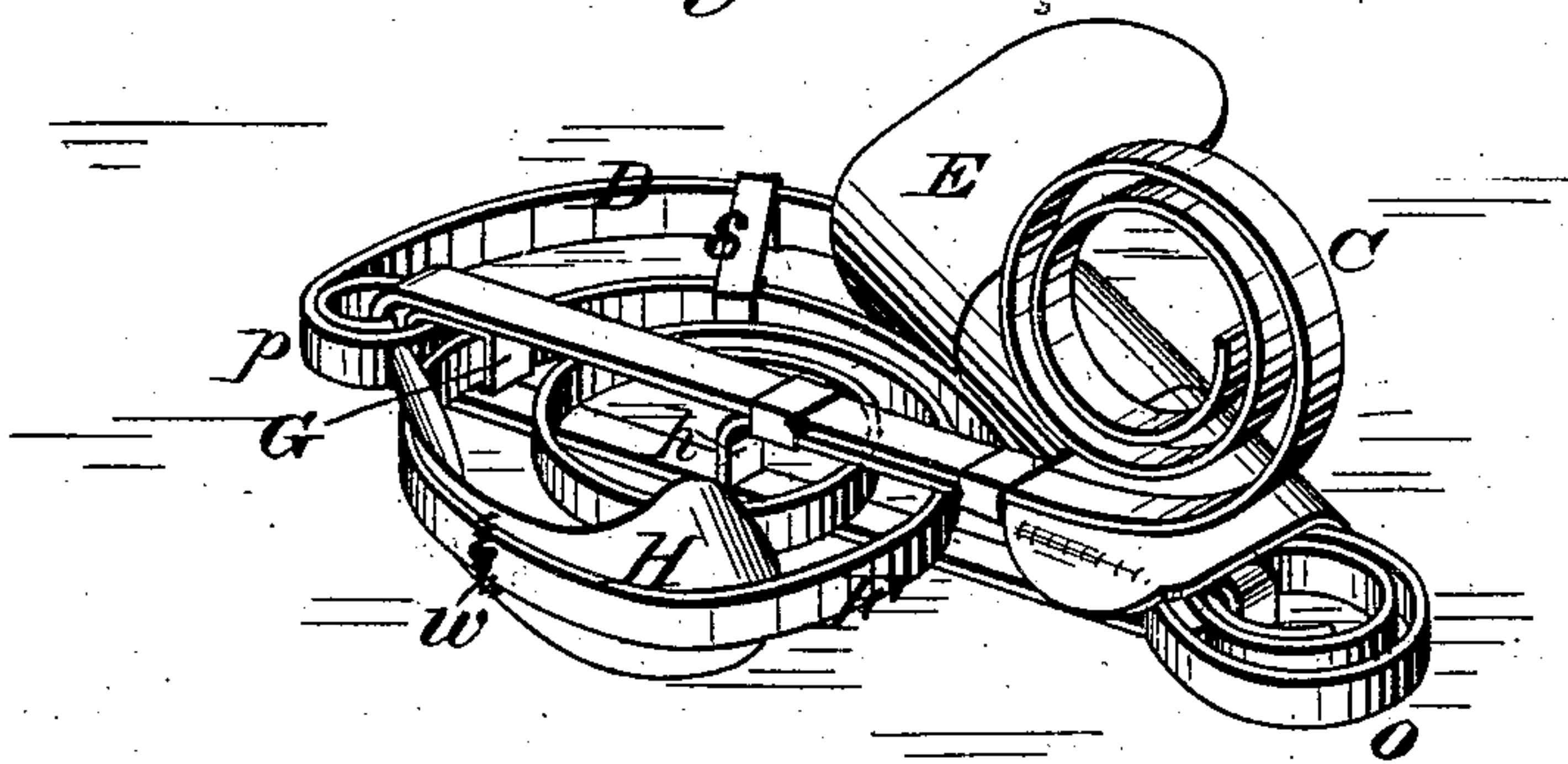


Fig. 8.

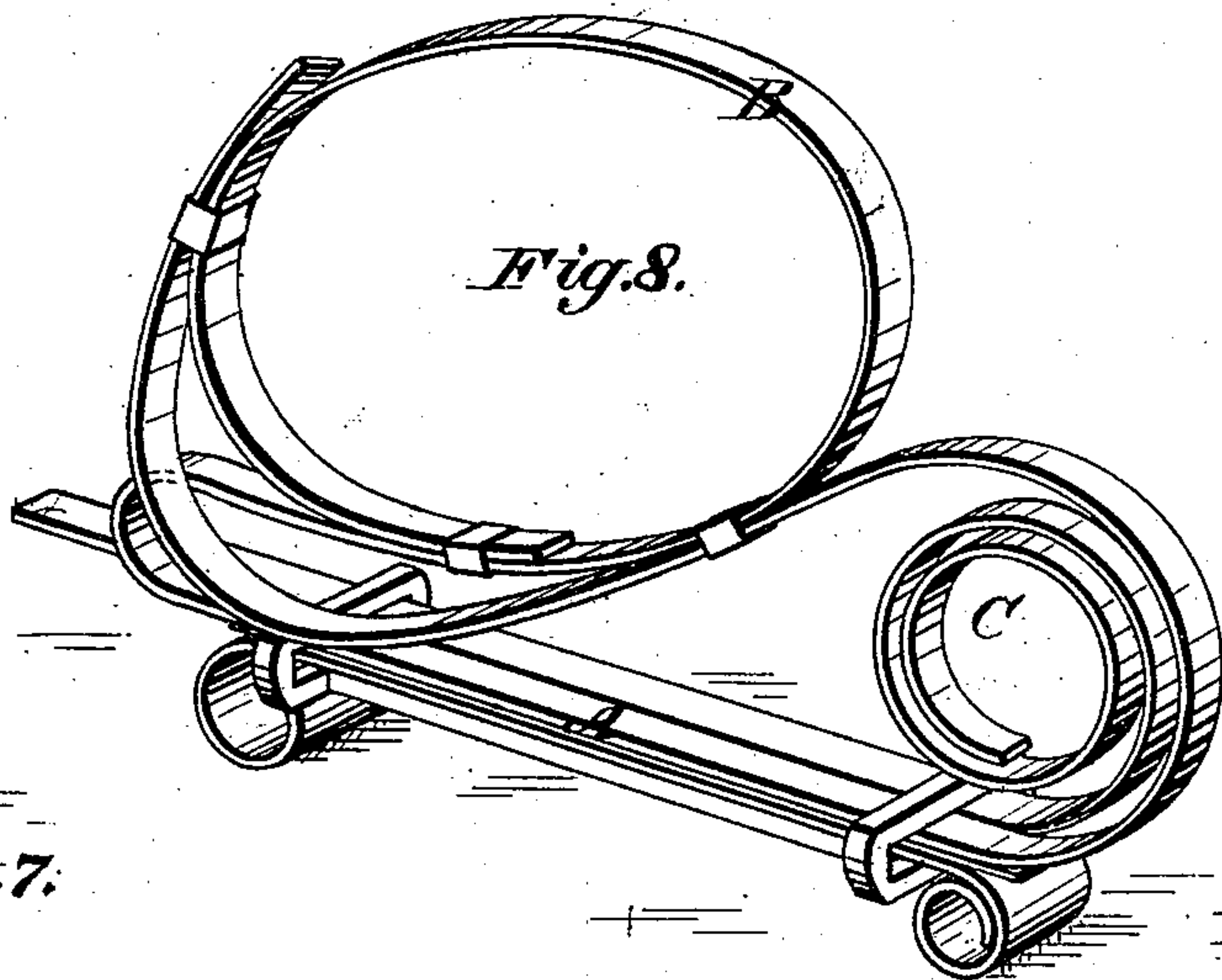


Fig. 7.

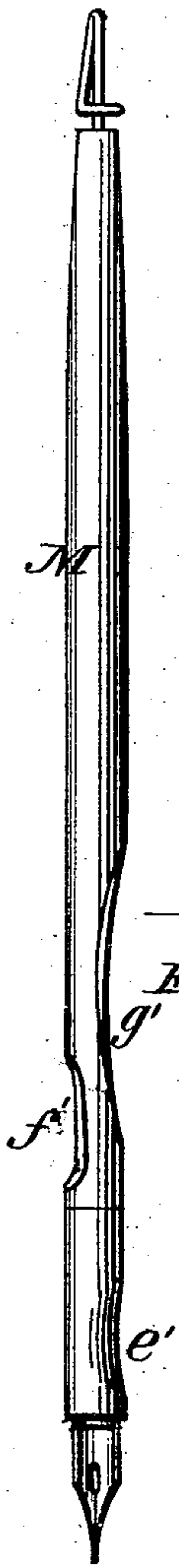
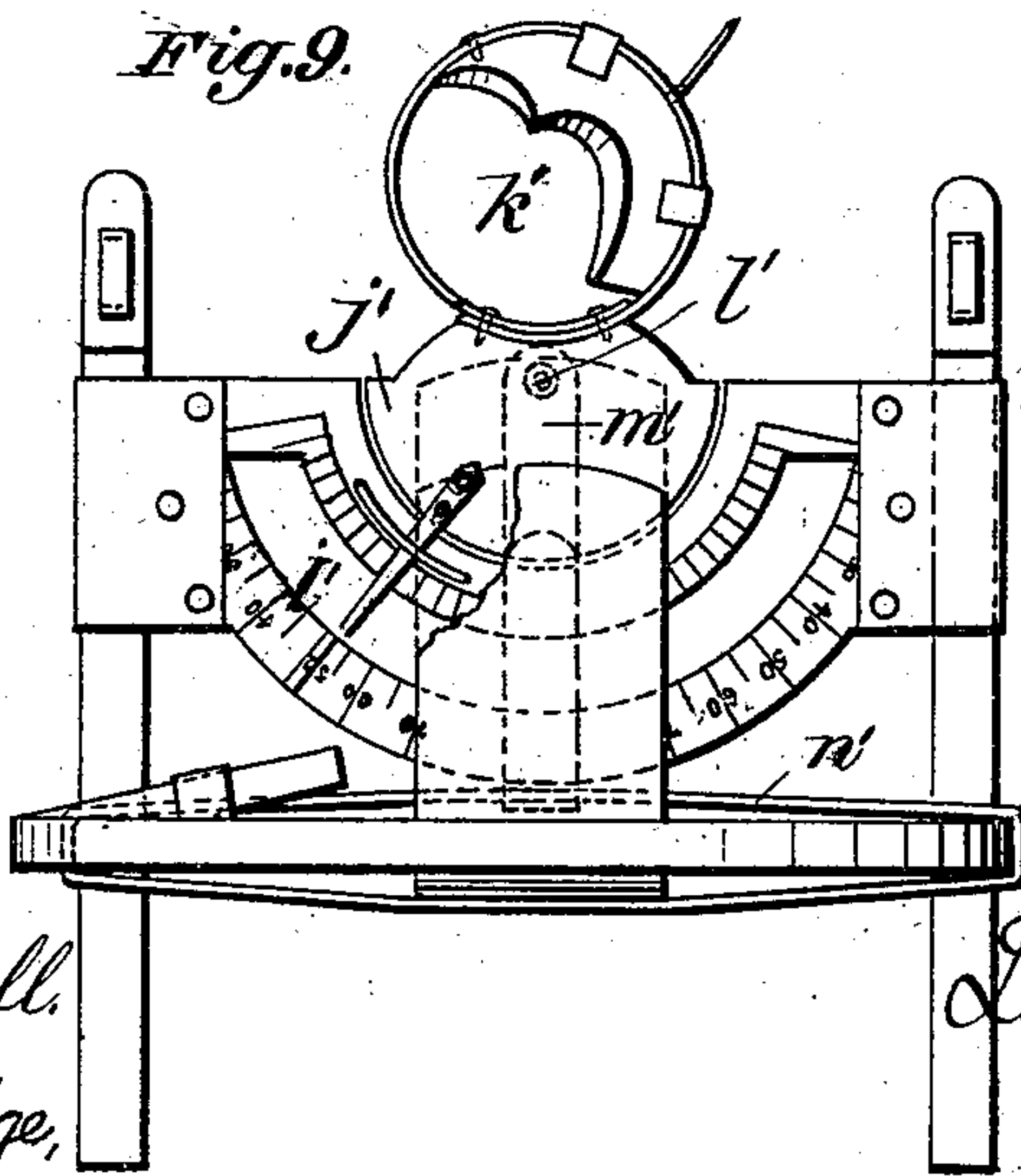


Fig. 9.



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UNITED STATES PATENT OFFICE.

LONSVILLE TWITCHELL, OF WASHINGTON, DISTRICT OF COLUMBIA.

HAND-GUIDE FOR USE IN TEACHING PENMANSHIP.

SPECIFICATION forming part of Letters Patent No. 226,942, dated April 27, 1880.

Application filed August 23, 1879.

To all whom it may concern:

Be it known that I, LONSVILLE TWITCHELL, of Washington, in the county of Washington and District of Columbia, have invented certain Improvements in Hand Rests and Guides for use in Teaching Penmanship, of which the following is a specification.

My invention relates to an instrument designed to secure a proper position and movement of the pen when writing, the construction being such that it sustains and guides the hand freely in the proper directions and indicates instantly any improper movement.

To this end the invention consists in the peculiar construction and combination of various details hereinafter described, but more particularly in a yielding support for the wrist, a yielding support for the palm of the hand, made adjustable as to size, height, and lateral inclination, a yielding support adapted to encircle the thumb, a yielding guide for the third and fourth fingers, an adjustable yielding connection to prevent a lateral twisting motion of the hand and wrist, devices to control the inclination of the pen-holder, a pen-holder specially adapted to secure a proper position of the fingers, and devices to indicate the inclination of the characters or letters as they are written.

The instrument is preferably made, as hereinafter described, of narrow strips of gutta-percha, vulcanized rubber, or celluloid, said materials being advantageous on account of their lightness, elasticity, and freedom from galvanic action.

In order that the instrument may be readily adjusted to suit the various requirements of different pupils, its several parts are made detachable from one another, so that any portion not required for use may be removed.

Figure 1 represents a perspective view of my complete instrument, except the indicator, in position for use. Fig. 2 represents a perspective view of the instrument with the forearm connection removed. Fig. 3 represents a horizontal cross-section of the instrument on the line $x x$, Fig. 1; Fig. 4, a vertical cross-section on the line $y y$, Fig. 3; Fig. 5, a perspective view of a supplemental hand-rest; Fig. 6, a perspective view of the instrument with the rest or support for the palm of the

hand detached; Fig. 7, a side view of the pen-holder; Fig. 8, a perspective view of the instrument in a slightly-modified form; Fig. 9, a view of the indicator for showing the angle of inclination of the writing.

The manner in which the instrument is constructed will be best understood by first referring to Fig. 4.

I first construct a support or base, A, to travel upon the paper, by taking a straight strip of material and bending its two ends upward, and then bringing said ends together at one side and uniting them by a loop or clasp, d .

It will be noticed that the end b is carried upward to a height of about two inches and curved gradually downward toward the opposite side, where it is curled upward into an eye or loop, b' , against the inside of the end c , which latter is carried upward and outward, as shown.

Upon the base thus constructed I mount a support and guide, B, for the palm of the hand, made in an oval form and consisting of a single strip of material bent into form, with its ends united by a slide or clasp, e , which admits of the rest being expanded and contracted so as to fit hands of different sizes. The support or rest B is attached to the base A by means of two sliding clasps, f and g , one at each side, which admit of the support being raised and lowered and of its being tipped sidewise, as occasion may render necessary. Within the elevated end of the base portion A there is located a thumb-support, C, consisting of an elastic spiral coil formed on one end of a strip, which is carried across to the opposite side of the instrument, thence downward and backward upon the base-piece, as shown at m , thence upward and inward again to the center, and finally downward, as shown at h , to serve as a central support and prevent the parts from sinking at the center under the weight of the hand.

The coiled thumb-rest, through which the thumb is inserted when the device is in use, is made highly elastic, so that while it tends to bring the thumb back to its normal position it admits of its being moved readily in all directions.

In order to hold the thumb-rest in place in

relation to the hand-rest and base, and for other reasons hereinafter enumerated, I provide a semicircular or bowed strip, D, and coil its ends into eyes or loops *o* and *p*, so that when the piece lies in a horizontal position the eyes can encircle the ends of the base-piece A and the ends of the piece on which the thumb-rest is formed and bind them together, as shown in Figs. 1, 2, 3, 4, and 6.

The strip D is made in two pieces or lengths, which are lapped at the middle and united by means of a clasp, *q*, as shown in Fig. 3.

As a means of sustaining the wrist, I provide a spring-support, E, consisting of a flat strip of considerable width coiled into a tubular form, with two ends extended in opposite directions. This tube is seated on and around the curved strip D, as shown in Figs. 2, 3, and 6, with one end extended under and secured by the thumb-rest, and the other end extended backward in position to receive the wrist of the pupil when the palm of the hand lies within the rest B.

In order to hold and guide the third and fourth fingers, which are relied upon to sustain and carry the hand when writing, I provide a horizontally and spirally coiled strip, F, and seat the same centrally in the base of the instrument, as shown, connecting one end by means of two clasps, *s* and *t*, with the piece D, and securing the other end in position by means of a link or staple, G, as shown in Figs. 2, 3, and 6.

The coil F is made of such size and shape that when the instrument is in use the third and fourth fingers will be brought to the proper position by inserting them in the space *u* between the two outer coils. The manner in which the strip is coiled admits of the fingers being carried upon the paper and of their being given all necessary motion.

To facilitate and assist the action of the coil F in returning the fingers to their normal positions I pivot on the inside of the outer coil an inclined curved plate, H, adapted to the form of the fingers, and extend from said plate to the coil on the outside a spiral spring, *w*, which serves to bring the plate back to its primary position after it has been tipped forward.

For the purpose of limiting the inclination of the pen-holder when required, I mount on top of the base-piece, above the thumb-rest, a sliding loop, I, secured by a clasp or slide, as shown.

In order to adapt the instrument for the purposes of a pen-rack when not otherwise employed, I provide the hand-rest and the loop I with arms *a'*, as shown in Fig. 1; but these arms are neither necessary nor essential, and may be omitted, if preferred.

The apparatus above described constitutes a complete and operative instrument for the purposes enumerated, and will be all that is required in many cases; but in order to adapt the instrument for any and all cases I apply thereto means for controlling the lateral move-

ment of the wrist and hand with reference to the fore-arm, and also means for controlling the inclination of the pen.

The device for controlling the wrist and hand consists, as shown in Fig. 1, of a large loop or strap, K, adapted to encircle the arm above the elbow, and extend thence along the inner side of the fore-arm nearly to the instrument, and connected at its inner end by an elastic cord, *e'*, to the middle of a semicircular strip, L, attached for this special purpose to the rear side of the instrument, as shown in Figs. 1 and 2. When the hand and fore-arm are carried in the proper manner directly across the paper with little or no bending of the wrist the elastic cord exerts a very light and almost inappreciable strain; but any bending or twisting action of the wrist in a lateral direction increases the strain of the cord, and thereby warns the pupil of his error, at the same time tending to bring the hand back to its proper position. The elastic cord is connected to the instrument by a spring-hook, which admits of its being readily detached. At its upper end the cord is attached to the upper one of a series of rollers, *e'*, in the elbow-loop, as shown in Fig. 1, so that by winding it around said rolls it may be shortened to adjust the instrument for short-armed pupils.

The pen-holder M forms a part of the instrument, and is connected thereto at its upper end by means of a thread or elastic cord, N, the lower end of which is secured to the rear side of the instrument, as clearly represented in Fig. 1. This arrangement of the holder allows the upper end of the holder to have the required amount of play, and permits it to tip forward as required, but at the same time prevents the holder from approaching too near a vertical position and tends to draw it downward from an elevated to a proper position.

As a means of sustaining and holding the instrument upon the hand, I use, when required, an adjustable elastic strip, P, extending over the hand obliquely from one side of the instrument to the other.

The free end may be secured in any suitable manner, and the fixed end may be fashioned, as shown in Fig. 2, into a coil to bear upon the paper and prevent the tipping of the instrument to the right.

For the purpose of guiding the pupil in the application of his fingers to the holder, the latter is provided, as shown in Fig. 7, with the notches or indentations *e'*, *f'*, and *g'*, located and shaped in such manner that when the fingers and thumb are placed therein the holder must assume the proper position in the hand, as indicated in Fig. 1 of the drawings.

The pen is held between the body or shaft of the holder and a sleeve slipped loosely thereon, so that by removing the sleeve the pen may be released without soiling the fingers.

While it is preferred to construct the instru-

ment in the precise manner shown in Figs. 1 to 6, the construction shown in Fig. 8 may be adopted. It differs from the other only in the curvature given to the ends of the pieces forming the base and thumb-support, the latter remaining unchanged in form and mode of action.

As a means of indicating at all times the exact angle or inclination of the characters being formed, I propose to use, in connection with the rest of the instrument, an indicator-hand controlled by the movement of the fingers, and arranged to travel over a graduated arc or scale. This device is represented in Fig. 9, and consists merely of a base-frame provided with a fixed semicircular scale, i' , and an index-hand secured to a movable plate, j' , and arranged to vibrate over the scale. The block or finger-piece j' is provided in its outer end with an opening, k' , to receive the third and fourth fingers, and is mounted at the middle on a pivot, l' , which latter is sustained by a horizontal bar, m' , arranged to slide endwise, and attached at its end to a rubber or equivalent spring, n' , as shown. This arrangement of the finger-piece permits the same to move freely in all directions under the action of the fingers, and as it moves the index or pointer shows upon the scale the exact angle at which the up-and-down strokes of the pen are made. This indicating apparatus may be placed beneath or inserted through the remainder of the instrument and attached thereto in any suitable manner.

The essential feature of the indicator consists in the combination of a finger-piece adapted to follow the movement of the fingers with an index and scale, and it is manifest that the form and arrangement of the details may be modified in many particulars without departing from the bounds of my invention.

When the student is inclined to bear down with excessive pressure upon my instrument I use, in addition to the rests or supports hereinbefore described, an inclined rest, such as shown in Fig. 5, applying the same, as shown in Fig. 4, so that its downwardly-turned end bears upon and receives a solid support from the base portion.

In using my instrument it is applied to the hand as shown in Fig. 1, and permitted to rest upon the paper, in which position it permits the hand as a whole, and its individual members separately, to be moved with perfect freedom in all proper and necessary directions. It gives support at all needed points and prevents improper movements and positions, so that the hand and its muscles are sustained and guided without tiring the pupil, who is thus enabled to acquire quickly a knowledge of and ability to execute the proper movements.

An important peculiarity of my instrument is that the parts are all elastic and capable of free movement and adjustment in suitable directions, and that the elastic supports tend

constantly to bring the hand and fingers back after each movement to their normal positions.

Having described my invention, what I claim is—

1. A hand rest and guide for use in teaching penmanship, having an elevated spring-support for the palm of the hand, substantially as described and shown.

2. The hand rest and guide provided with the loop B, adapted to encircle the body of the hand, said loop being made adjustable in size, substantially in the manner described and shown.

3. In a hand-rest for use in teaching penmanship, the palm-rest B, adjustable, substantially as described and shown, as to its lateral inclination.

4. In a hand rest and guide for use in teaching penmanship, a vertically-yielding wrist-support, substantially as described and shown.

5. In combination with a base frame or support, the wrist-support E, consisting of the elastic sheet wound into a spiral tubular form and fastened at one end.

6. In a hand rest and guide for use in teaching penmanship, a thumb-guide adapted to encircle the thumb and capable of moving under pressure in any direction, substantially as described and shown.

7. In a hand-guide for use in teaching penmanship, the thumb rest and guide consisting of the elastic spirally-wound strip secured at one end, substantially as described and shown.

8. The combination of the hand-support, adapted to sustain the hand in an elevated position, and a yielding guide, substantially such as described and shown, attached thereto and adapted to retain the ends of the third and fourth fingers and move freely in a horizontal direction to and from the main support.

9. In a hand guide and support for use in teaching penmanship, an upright tipping plate, H, sustained by a spring and adapted to bear against the third and fourth fingers, substantially as shown and described.

10. In a hand rest and guide for use in teaching penmanship, a tipping plate to bear against the third and fourth fingers, sustained by a spring.

11. In combination with a hand-support, substantially such as shown, a loop or stirrup adapted for application to the elbow of the user and a spring-connection extending from the loop directly to a central point on the rear side of the support, whereby the spring is caused to resist a lateral bending of the wrist.

12. In combination with the hand-rest, the elastic cord and the loop provided with the series of rollers or studs, as shown.

13. The combination of a hand rest and guide and a pen-holder having its upper end connected therewith by a thread or elastic cord, substantially as described.

14. In combination with a hand rest and guide, substantially such as described and shown, the supplemental wrist-support constructed and applied as shown and described.

5 15. In combination with the palm and thumb supports, the adjustable stop H, as described.

16. In combination with the hand guide and support adapted to encircle the hand, the adjustable oblique strap P.

10 17. The hand support and guide consisting, essentially, of the elastic strips A, B, C, D,

and E, curved and united substantially in the form and manner described.

18. In combination with a hand support and guide for use in teaching penmanship, a graduated scale and an indicator, substantially as described and shown, to indicate the inclination of the letters or characters.

LONSVILLE TWITCHELL.

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