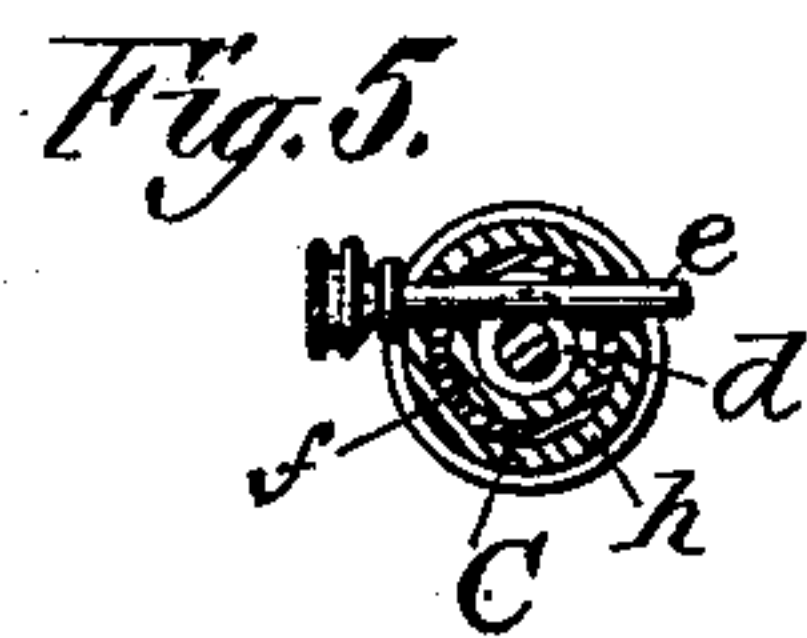
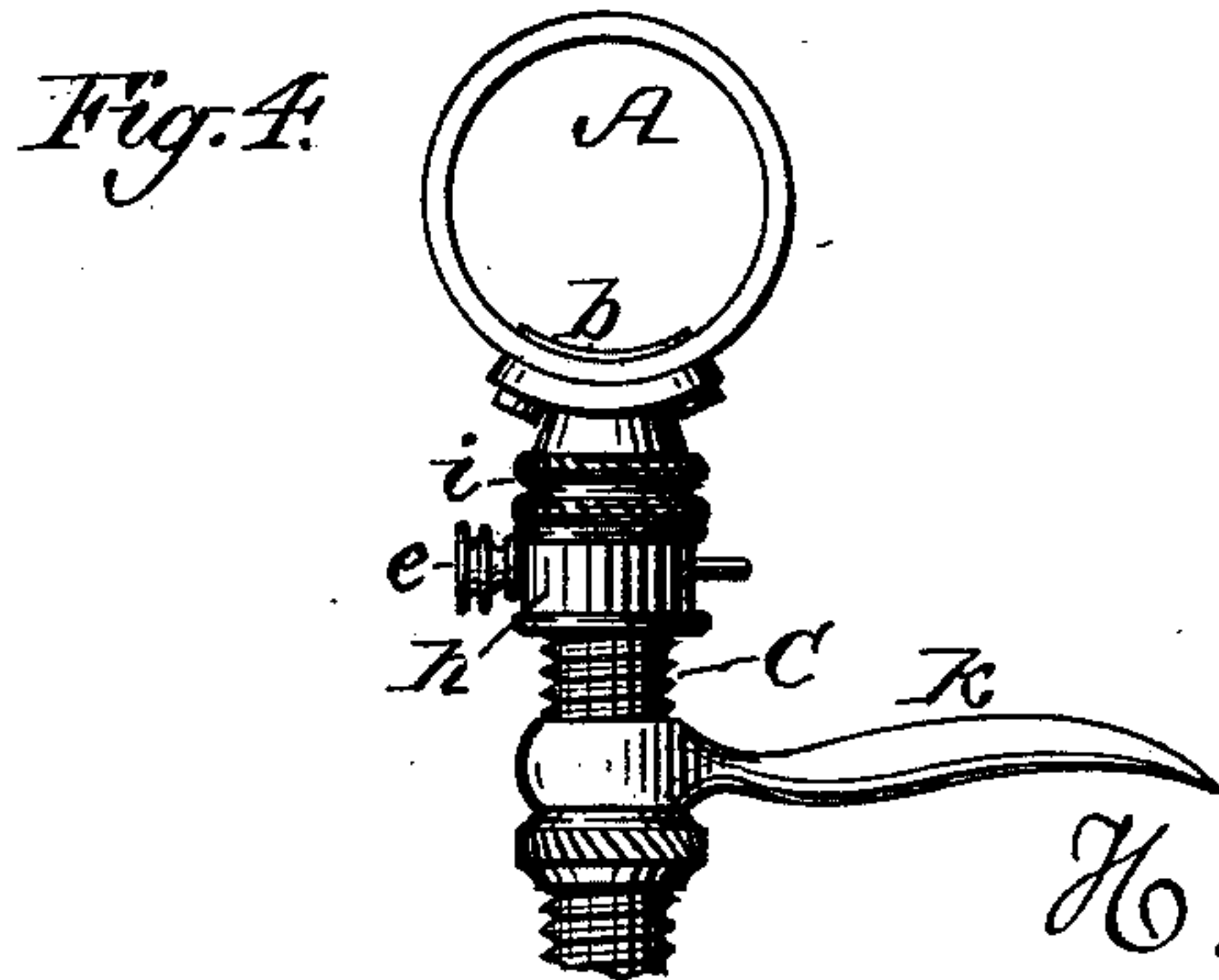
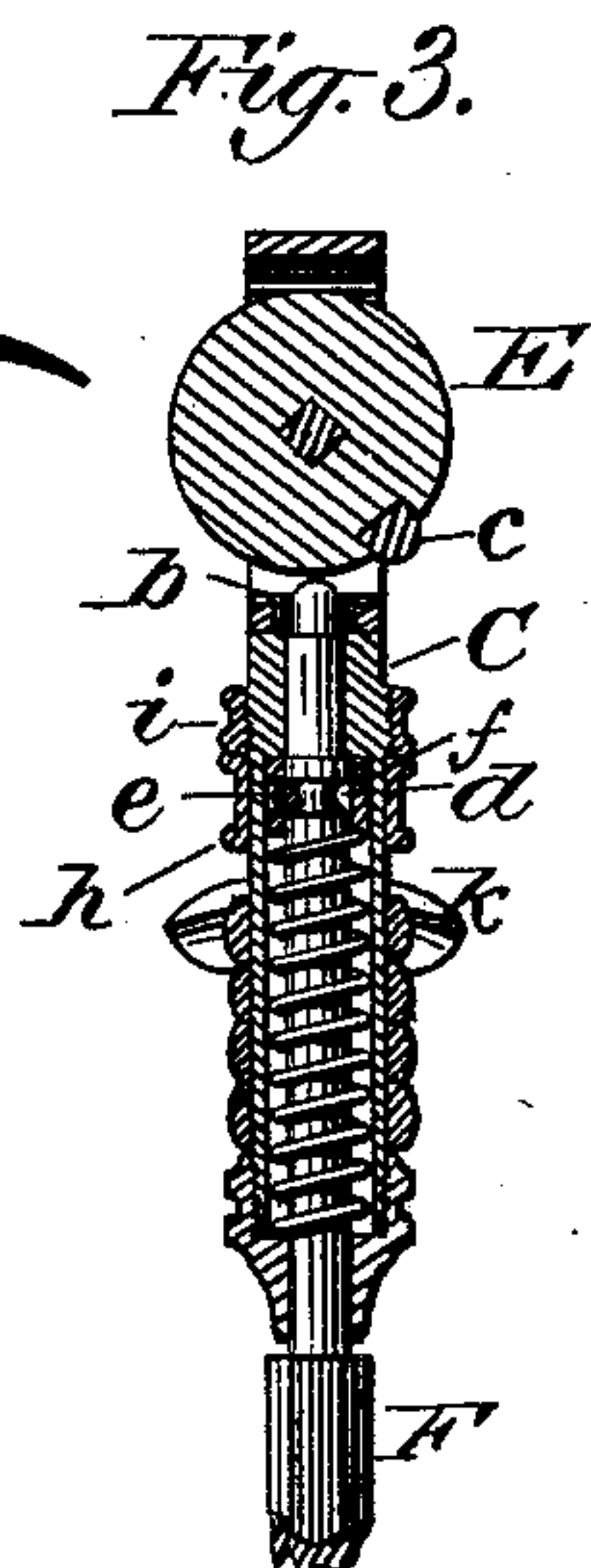
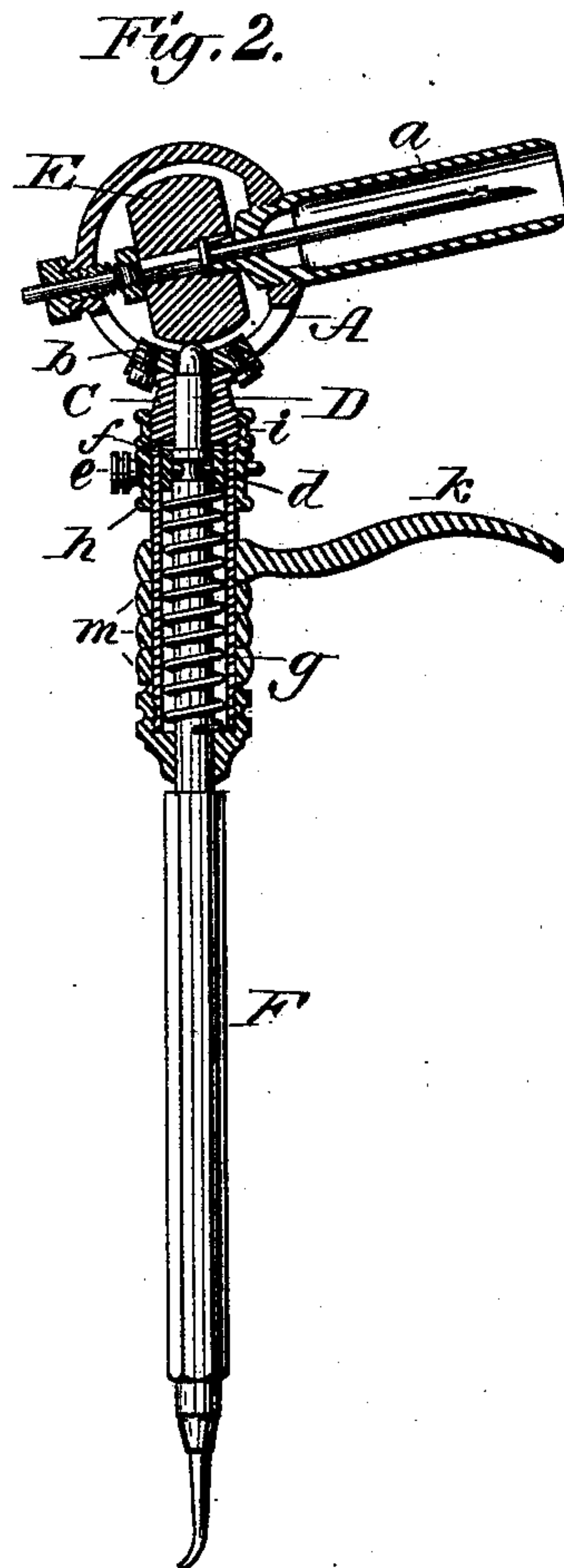
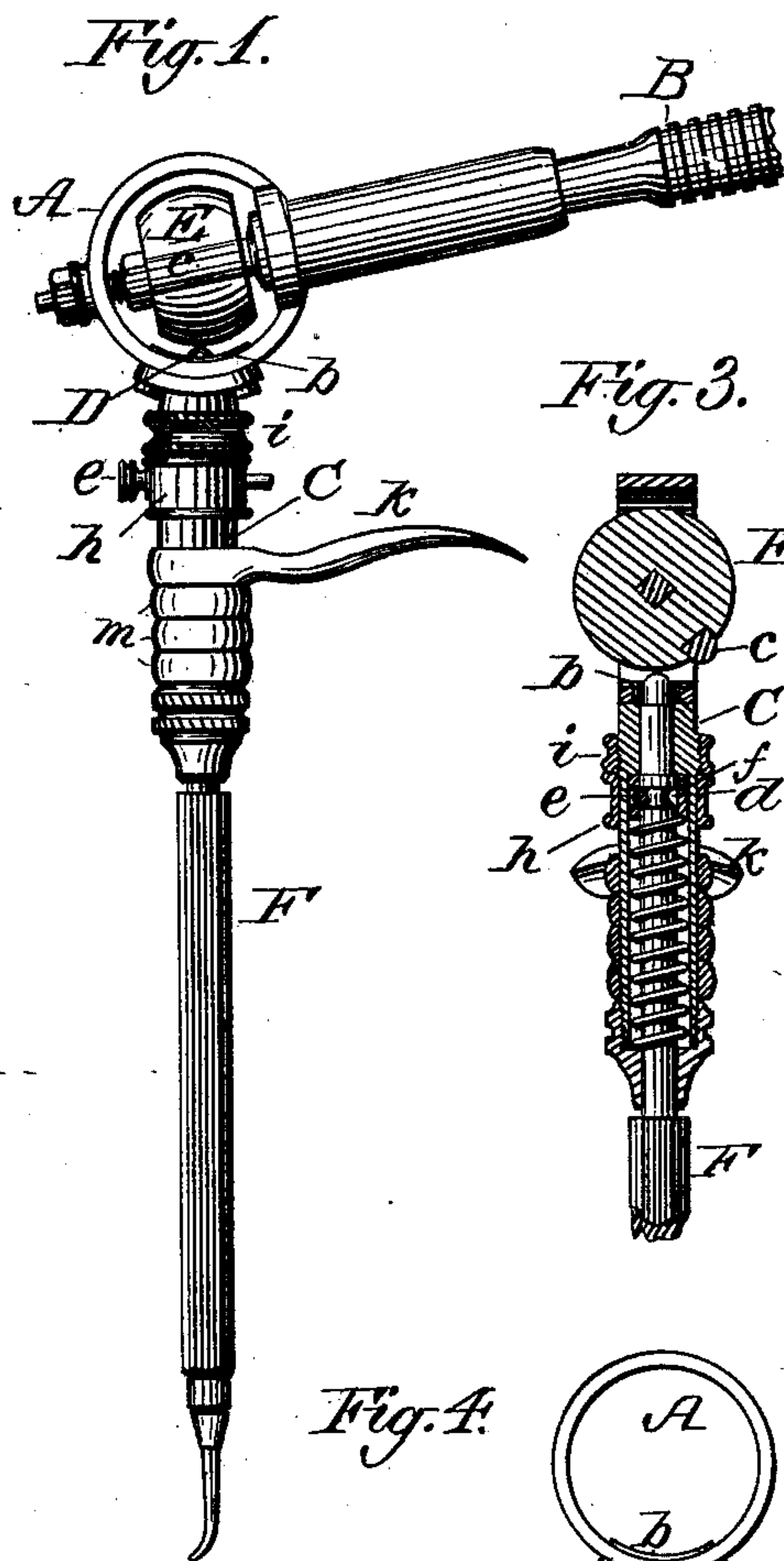


H. D. JUSTI.  
Dental-Pluggers.

No. 215,226.

Patented May 13, 1879.



Witnesses:  
William H. Dodge.  
Wm. P. Twitchell.

Inventor:  
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By his Attys.  
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# UNITED STATES PATENT OFFICE.

HENRY D. JUSTI, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN DENTAL PLUGGERS.

Specification forming part of Letters No. Patent **215,226**, dated May 13, 1879; application filed March 10, 1879.

*To all whom it may concern:*

Be it known that I, HENRY D. JUSTI, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Dental Pluggers, of which the following is a specification.

My invention relates to that class of instruments which are designed to be driven by a dental engine or other motor, and to that particular form of said instruments in which a cam-wheel delivers a direct and positive blow upon the tool or tool-holder; and consists in an eccentric spheroidal wheel, arranged to impart the hammering action to the tool or tool-holder; in the peculiar manner of mounting the wheel, in order to admit of the instrument being moved freely in all directions; in means for controlling the force of the blow; in an adjustable side arm, by which to hold the instrument.

Figure 1 represents a side elevation of the instrument; Figs. 2 and 3, longitudinal central sections of the instrument in planes at right angles to each other; Fig. 4, a side view, illustrating a modified construction of the adjustable side arm; Fig. 5, a cross-section on the line *x x*.

A represents a flat circular ring, provided on one side with a rigid tubular extension, *a*, adapted to receive and fit snugly upon the end of an ordinary hand-piece or tool-holder, B, of a dental engine. The ring has its lower side slotted longitudinally to receive the tenoned end of a tubular body or socket, C, which is secured by means of an inside plate or washer, *b*, as shown, whereby the body or socket is permitted to slide or swing around the ring. Centrally through the ring and into the tube B there extends a shaft or spindle, D, the end of which is adapted to be held and rotated by the tool-carrying devices of the hand-piece. Within the ring upon the shaft or spindle there is secured a wheel, E, made in the form of a sphere, with two sides flattened, and arranged concentric with the ring. On one side the wheel is provided with an eccentric or projecting rib, *c*, designed to act upon the tool and serve as a hammer. This rib has its outer edge curved laterally in such manner as to be concentric with the wheel

and the ring. F represents the tool or tool-shank, inserted into and through the socket or body C in such manner as to be capable of a free rotating and sliding movement therein, and with its upper end protruding upward into the ring in such manner as to be acted upon and driven downward by the rib or cam at each rotation of the wheel. The spheroidal form of the wheel and the sliding connection between the body and ring admit of the body and tool being swung laterally, as occasion may require, without in the least affecting the action of the wheel upon the tool. This lateral movement of the tool, combined with the rotary movement, of which the entire instrument is susceptible, around the hand-piece, admits of the tool being readily adjusted to any and all positions required in practice, and this, too, although the hammering action is secured by the direct action of a wheel on the driving-spindle. As a means of elevating the tool or shank after the action of the depressing-wheel, the shank is provided with a circumferential groove, *d*, and connected by a transverse pin, *e*, to a collar, *f*, mounted within the body, and urged upward by a spiral spring, *g*. The pin *e* extends outward through slots in the body, and is seated in an outside sliding collar, *h*, which, by bearing against a fixed adjustable collar, *i*, limits the upward movement of the tool-shank. By adjusting the collar *i*, which is connected by a screw-thread with the body, the point to which the end of the shank rises, and consequently the distance which the shank is depressed by the wheel, may be varied, and in this way the force of the downward blow or stroke may be varied with great nicety and precision.

In order that the instrument may be readily adjusted to suit operators having hands of different sizes and shapes, it is provided on one side with an arm, *k*, to fit within the palm of the hand, and this arm made adjustable vertically. The adjustment may be secured, as shown in Figs. 1, 2, and 3, by causing the end of the arm to encircle the body, and placing above and below it rings or sleeves *m* to fill out the space between the arm and shoulders at the ends of the body, the rings being removable from one side of the arm to the



other, so that it may be fixed at any point desired. If preferred, the outside of the body may be threaded, and the arm screwed thereon, and fastened by a jam-nut, as shown in Fig. 4.

The arm may be modified in form, and other adjusting devices substituted in place of those shown.

I do not claim in this patent the arm, broadly, but merely the attachment of the same to the instrument in such manner as to admit of its adjustment thereon.

It is manifest that the details of construction may be modified in many respects without affecting the general mode of operation of the parts, and without departing from the limits of my invention.

I am aware that a cam-wheel has been arranged to deliver a direct blow upon a tool-holder, and that such tool-holder has been arranged to swing around the shaft of the cam-wheel without lateral play, and that the force of the blow has been regulated by mounting the cam-wheel in a head or support adjustable upon the body.

My improvements consist in giving the wheel the spheroidal form, arranging the body or tool-carrier to swing laterally, and in applying an adjustable stop to limit the play of the tool, so as to avoid the expense and complication incident to an adjustment of the wheel and its support.

While the ring and slide are preferred as a means of maintaining the relation between the wheel and body, it is obvious that other devices may be substituted for the purpose,

my invention consisting, broadly, in the combination of a laterally-swinging body or tool with a cam-wheel, the operating portion of which is curved in the direction of its axis.

Having described my invention, what I claim is—

1. The combination, substantially in the manner shown and described, of a spheroidal cam-wheel, a body or holder connected therewith by means which permit a swinging movement of the axis of the wheel, and a sliding shank or stem mounted in the body in position to be acted upon by the cam-wheel.

2. The circular ring, in combination with the tubular body connected thereto by the sliding joint, the sliding shank within the body, and the spheroidal cam-wheel within the ring.

3. In combination with the tubular body, the cam-wheel, having its center fixed in relation to the body, the sliding shank mounted in the body and acted upon by the cam, and adjustable devices, substantially such as shown, to limit the sliding movement of the shank toward the cam.

4. In combination with the body, cam-wheel, and sliding shank or stem, the screw-collar or nut *i*, applied as shown.

5. In a dental tool for use in one hand, the combination of a body and side arm, *k*, connected adjustably thereto, substantially as shown and described.

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