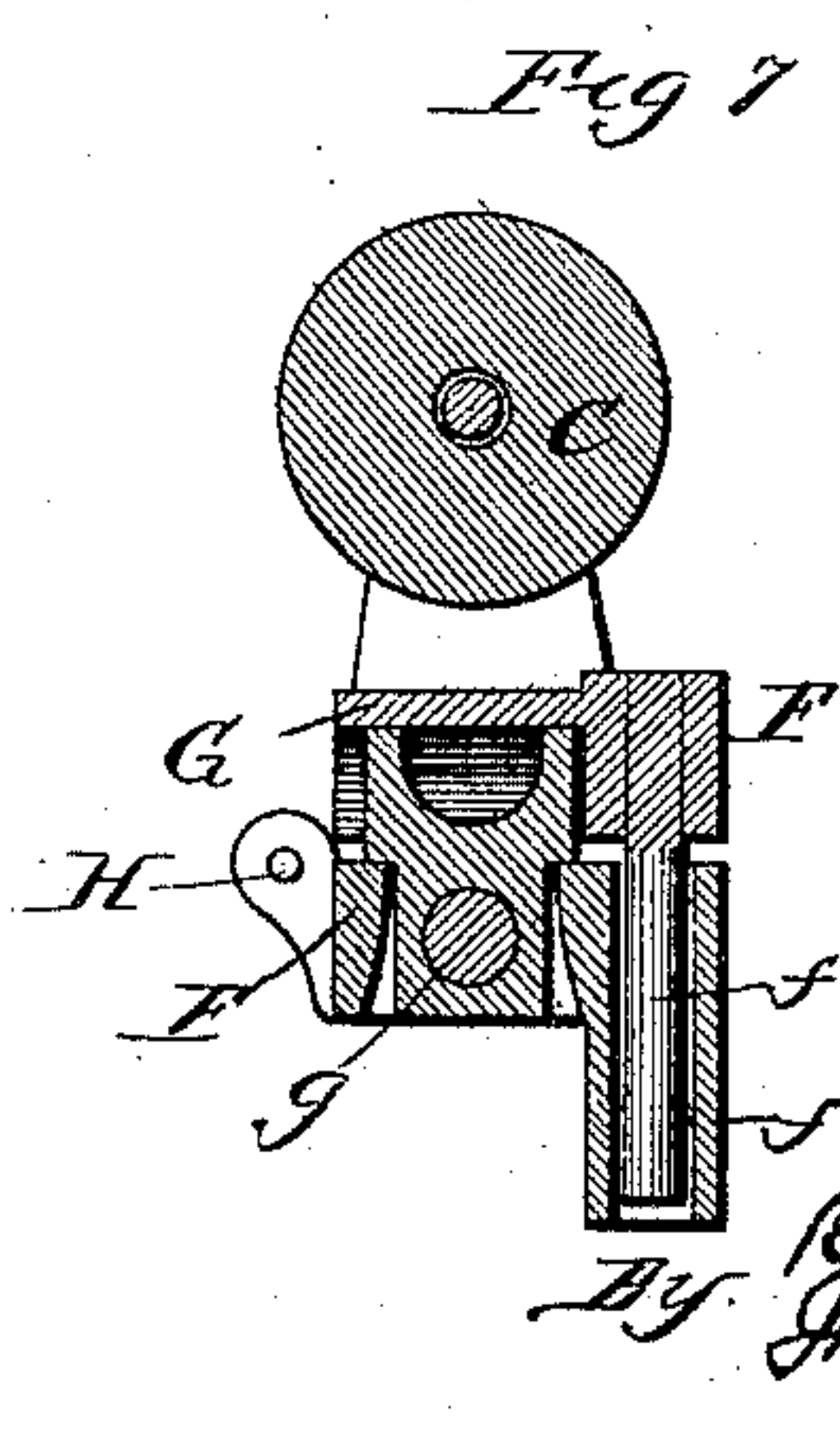
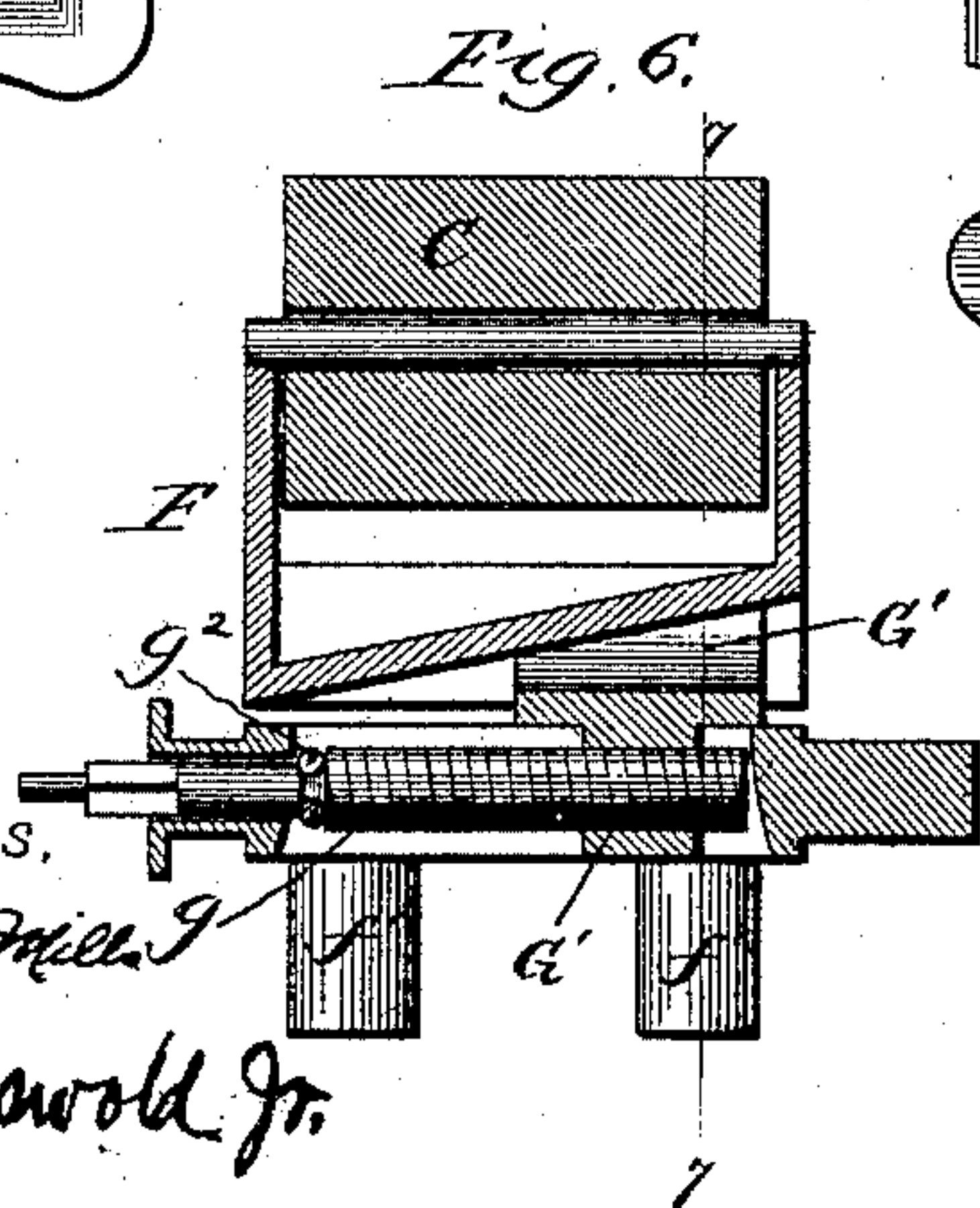
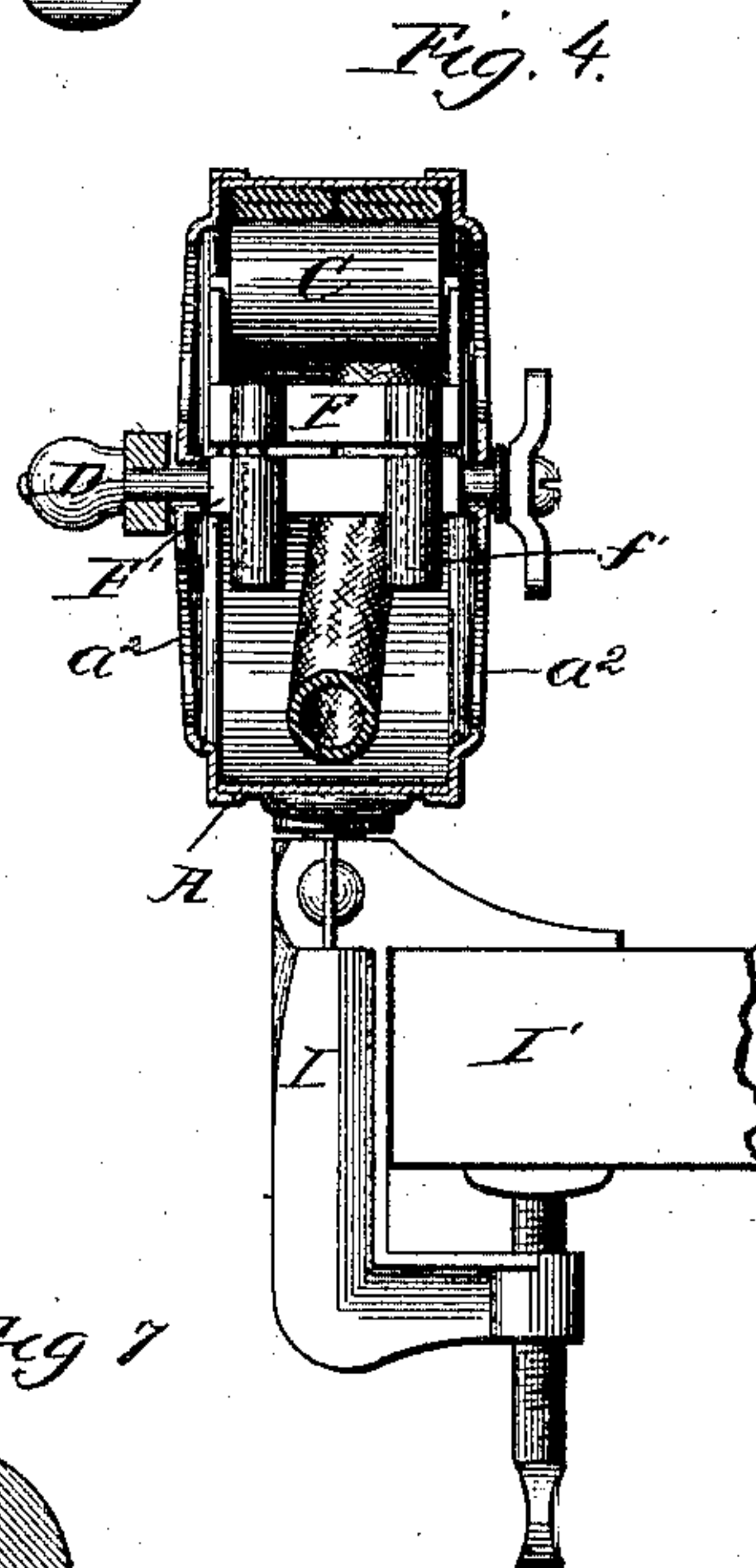
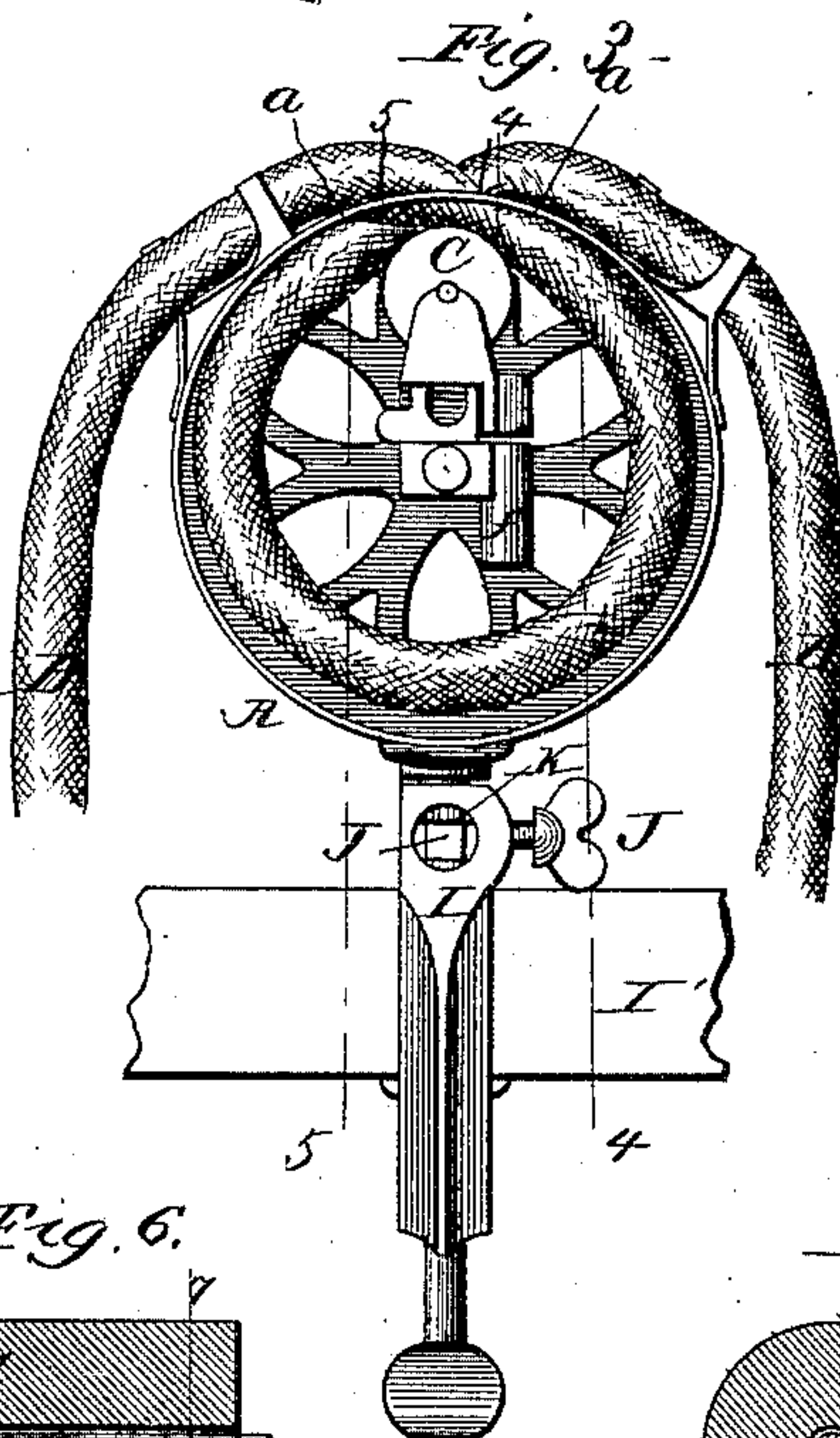
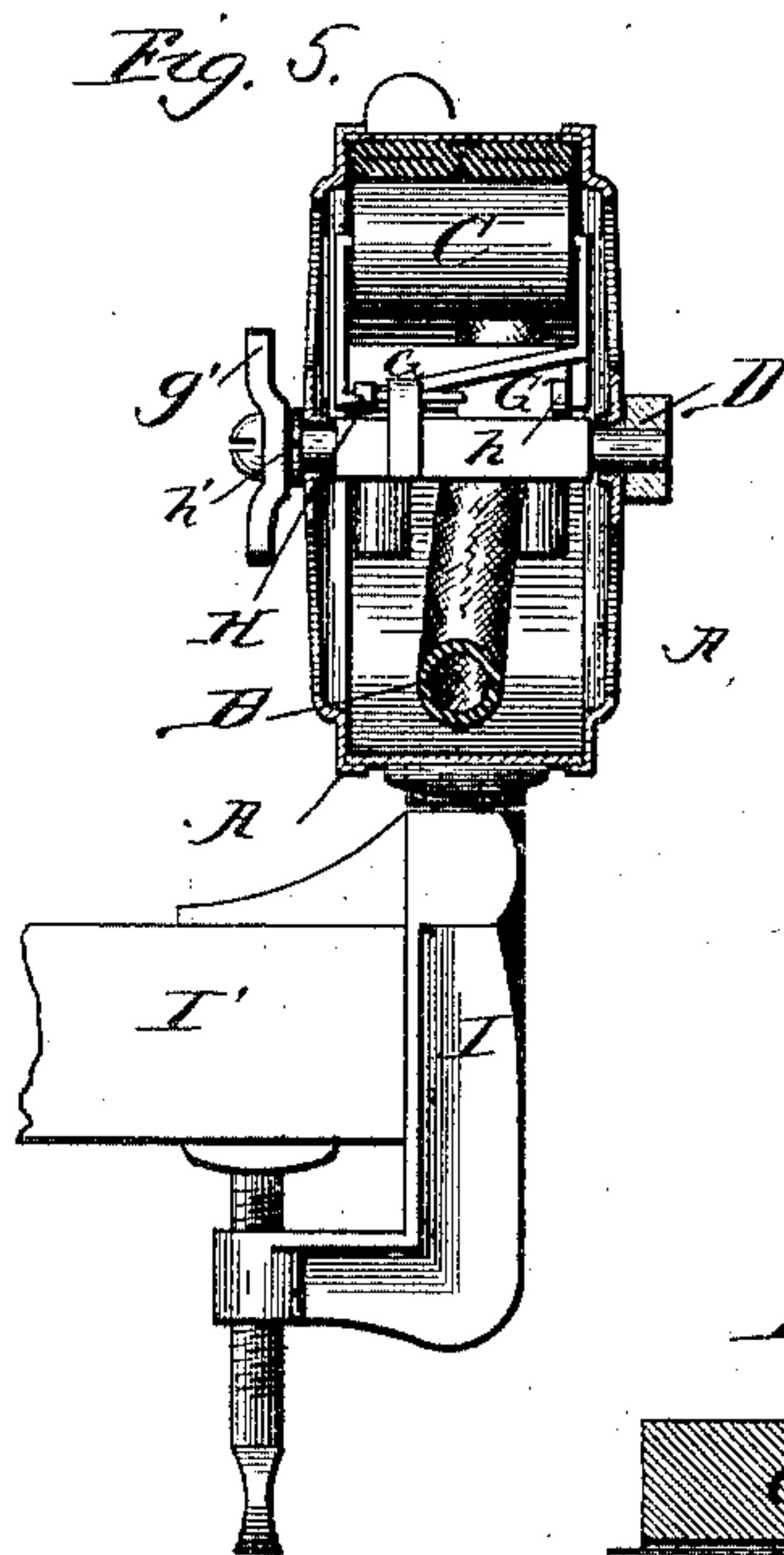
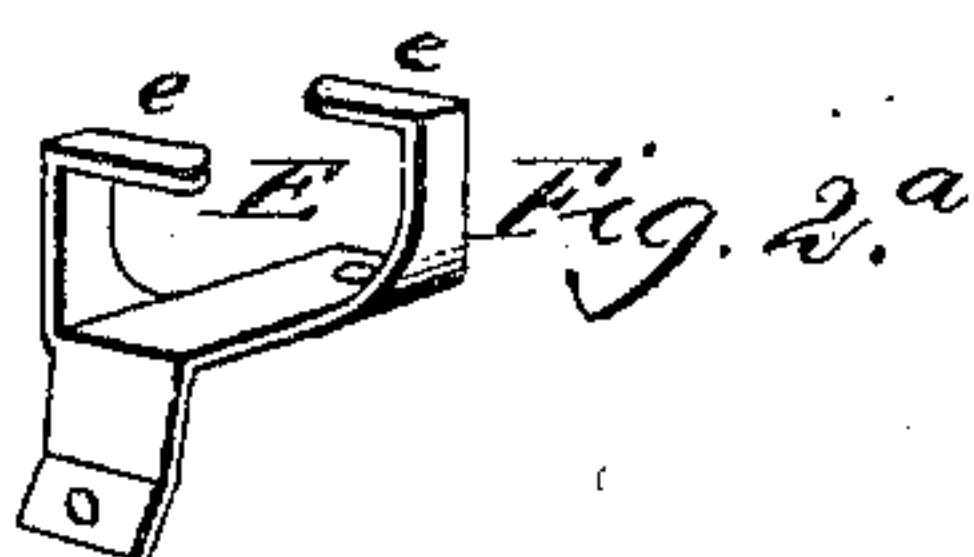
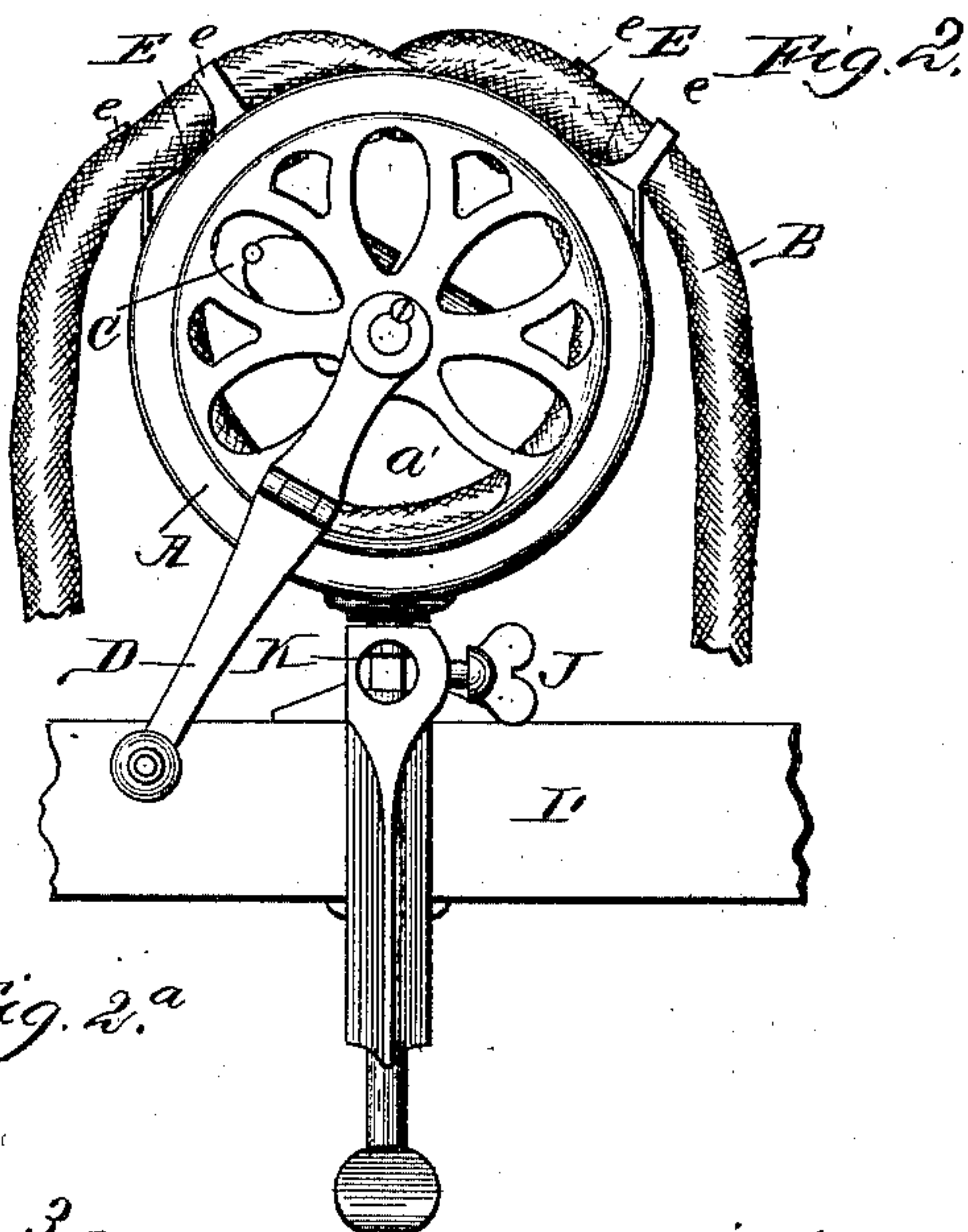
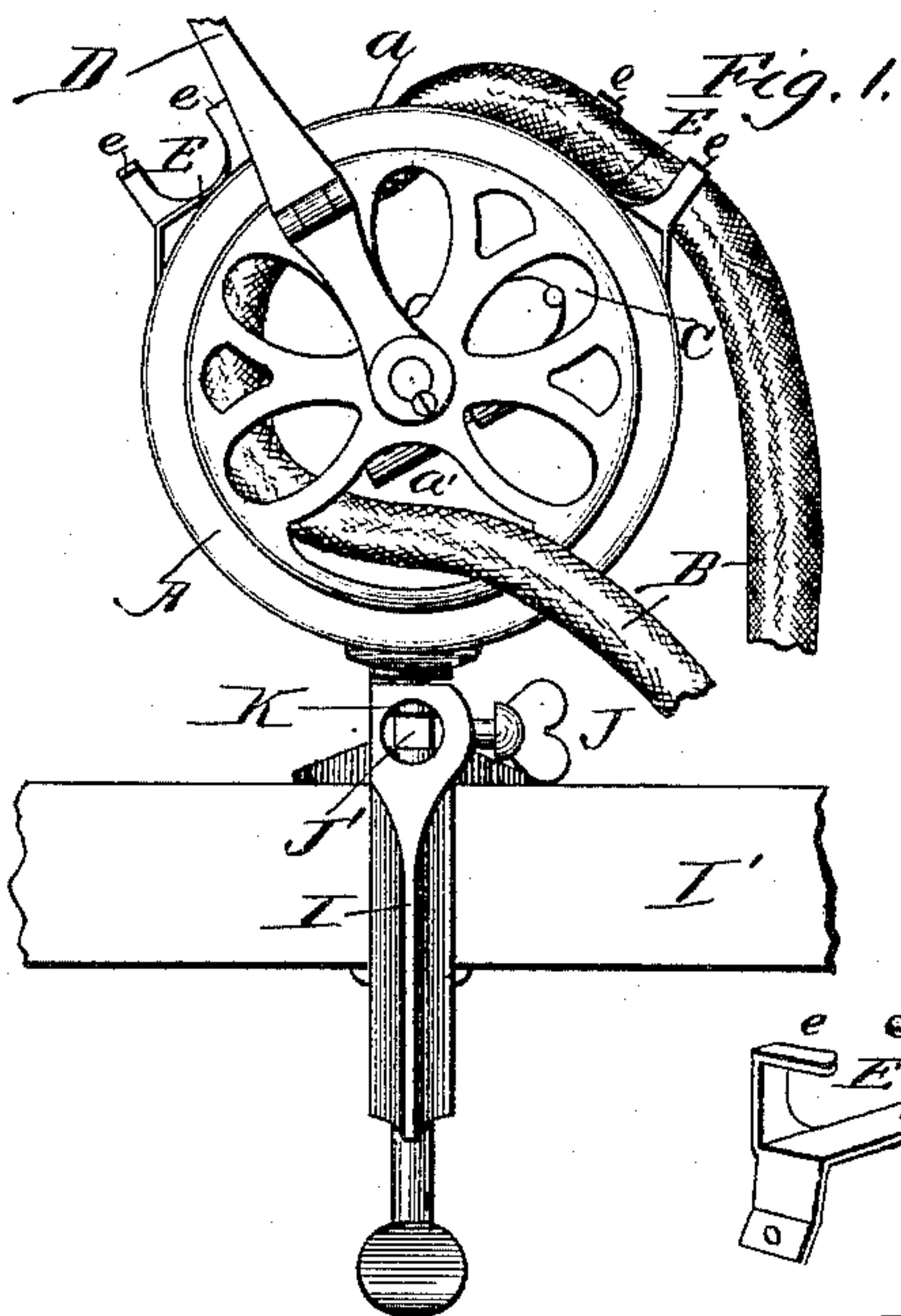


(No Model.)

W. C. CARROLL & B. F. HALES.  
SURGICAL PUMP.

No. 444,690.

Patented Jan. 13, 1891.



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# UNITED STATES PATENT OFFICE.

WILLIAM C. CARROLL AND BURTON F. HALES, OF CHICAGO, ILLINOIS.

## SURGICAL PUMP.

SPECIFICATION forming part of Letters Patent No. 444,690, dated January 13, 1891.

Application filed October 18, 1890. Serial No. 368,508. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM C. CARROLL and BURTON F. HALES, of Chicago, in the State of Illinois, have invented certain new and useful Improvements in Surgical Pumps, of which the following is a specification.

Our invention relates to that class of surgical pumps in which a flexible tube coiled within a cylindrical casing is used in conjunction with a traveling roller working along the tube for propelling any liquid through the same; and the objects of our improvements are, first, to provide improved means for adjusting the traveling roller relatively to the tube in order to regulate the pressure of said roller upon the tube and adapt the same to different sizes of tube, and, second, to better the construction of the mechanism for connecting the instrument to a table or bed-rail in either vertical or horizontal position, and to prevent the instrument from turning or shifting its position under the strain applied to its crank in operation. These objects we have attained by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a rear elevation of such instrument containing our invention and showing the manner of inserting the tube in the casing. Fig. 2 is a like view with the tube in place within the casing. Fig. 2<sup>a</sup> is a detail showing, in perspective, one of the tube-holders detached from the casing. Fig. 3 is a similar view to that shown in Fig. 2 with the rear plate of the casing removed to show the means for regulating the roller as applied to the casing. Fig. 4 is a section on the line 4 4 of Fig. 3, looking toward the left. Fig. 5 is a section on the line 5 5 of Fig. 3, looking toward the right. Fig. 6 is a detail showing, in enlarged side elevation, the roller, its shaft, and the manner of connecting it with its shaft. Fig. 7 is a detail showing a section on the line 7 7 of Fig. 6, looking toward the left.

In the drawings, A designates the cylindrical casing, which is provided with the usual openings at *a*, Fig. 3, for inserting the tube B. As at present constructed, the tube has one of its ends inserted at one of these openings and pushed round, following the interior of the cylindrical casing, and out at the other, this operation being one which cannot be

easily and readily performed. To remedy this, we provide an opening *a'* in one of the end caps or pieces *a*<sup>2</sup> of the casing at the side opposite to the openings *a* and large enough to allow the tube to pass in when folded upon itself, so that by throwing the traveling roller C to one side, as seen in Fig. 1, one end of the tube can be inserted at the large opening *a'* and run out at the opening *a* at the right. Then by moving the crank D so as to shift the traveling roller to the opposite side, as seen in Fig. 2, the opposite end of the tubing can be inserted at said opening *a'* and run out at the opening *a* at the left. In like manner the tube can be drawn out at the opening *a'*.

Exterior to the openings *a* we provide plates E, which are securely attached to the cylindrical casing and provided at their diagonally-opposite corners with two hooks *e*, the points of which are extended in opposite and parallel directions. The space between said hooks corresponds with the diameter of the tube, so that by bringing the tube under one of said hooks it may be readily deflected to one side sufficiently to enable it to spring back under the other, and thus be held by the operation of both said hooks securely to the casing.

For regulating the traveling roller relatively to the tube and adapting the same to different sizes of tube we support the yoke F or frame in which it is journaled upon the operating-shaft F', with which the crank D is connected, by means of a sliding connection composed of an arm or arms *f*, working in a sleeve or sleeves *f'*, attached to the operating-shaft, so as to permit the yoke to move toward and from the operating-shaft. The bottom or inner part of the yoke is provided with an inclined piece G, and the operating-shaft is slotted or recessed to receive the inner end of a piece G' and permit the same to move lengthwise of said shaft. A screw *g* is arranged in the slot or recess of the operating-shaft for operating the piece G' by means of a thumb-piece *g'* on the end of said screw, whereby the piece G' may be either drawn against the incline G for forcing the traveling roller out against the tube or pushed back to permit the recoil of the tube to throw said roller back, said screw being shouldered and provided with a split washer *g*<sup>2</sup>, which



rests against the open end of the slot in such manner as to cause the screw to remain in a fixed longitudinal position and move the piece G' in either direction by reverse rotations of the screw.

An adjustable stop is provided, which consists of a screw H, adapted to strike a lug or projection h on the piece G' at the point required to limit the amount of pressure of the traveling roller on the tube.

The thumb-piece turns with the operating-shaft, and in order to prevent the rotation of said shaft from loosening it a washer h' is fixed thereto and adapted to receive the friction of the end cap of the casing, which would otherwise be upon the thumb-piece.

The instrument is provided with the screw-clamp I for attaching it to the table or bed-rail I'. As usually made, this clamp is provided with a cylindrical socket, adapted to hold the cylindrical shank of the instrument by means of a set-screw, as J. We have provided the same with two sockets K, intersecting each other at right angles, and arranged the same set-screw so that it will tighten the shank, in either of the sockets, to hold the instrument in a vertical or a horizontal position, or attach it, in either of these positions, to a horizontal table-leaf or vertical bed-rail. We also make that portion J' of the shank upon which the set-screw impinges square or angular in cross-section, the other portion being left cylindrical, which will permit the instrument to be turned freely in the socket when the screw is loosened and at the same time furnish a flat surface for the inner end of the screw to rest upon when tightened, which will prevent the turning of the instru-

ment by the application of such force as can readily be applied with the fingers of the operator upon the thumb-piece.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a surgical pump of the class described, and in combination, the yoke for supporting the traveling roller, provided with an inclined piece, as G, connected with the operating-shaft by a radially-sliding connection, a sliding piece adapted to work in connection with said inclined piece, and a screw and thumb-piece for operating the same, substantially as specified.

2. In a surgical pump of the class described, and in combination, the yoke for supporting the traveling roller, provided with an inclined piece connected with the operating-shaft by a radially-sliding connection, a sliding piece in connection with said inclined piece, a screw and thumb-piece for operating the same, and an adjustable stop for regulating the amount of movement of said sliding piece, as specified.

3. In a surgical pump of the class described, and in combination, the clamp I, provided with two cylindrical sockets intersecting each other at right angles, a set-screw adapted to both of said sockets, and a cylindrical shank having that portion of its surface which falls in the line of the set-screw made angular in cross-section, as and for the purpose specified.

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