

No. 637,249.

Patented Nov. 21, 1899.

C. F. HALL.

APPARATUS FOR REFITTING DISK VALVES.

(Application filed Nov. 25, 1898.)

(No Model.)

2 Sheets—Sheet 1

Fig. 2.

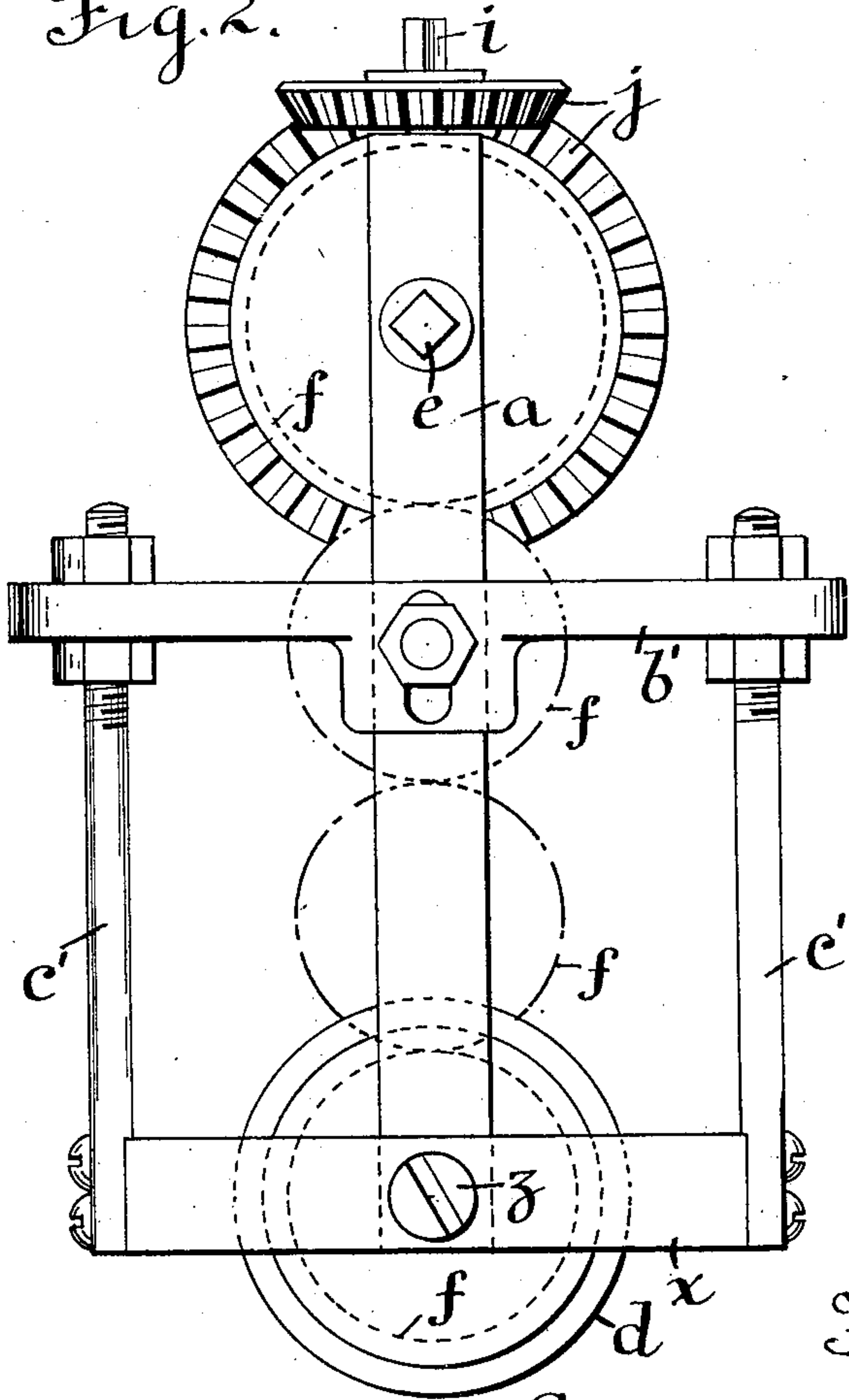


Fig. 1.

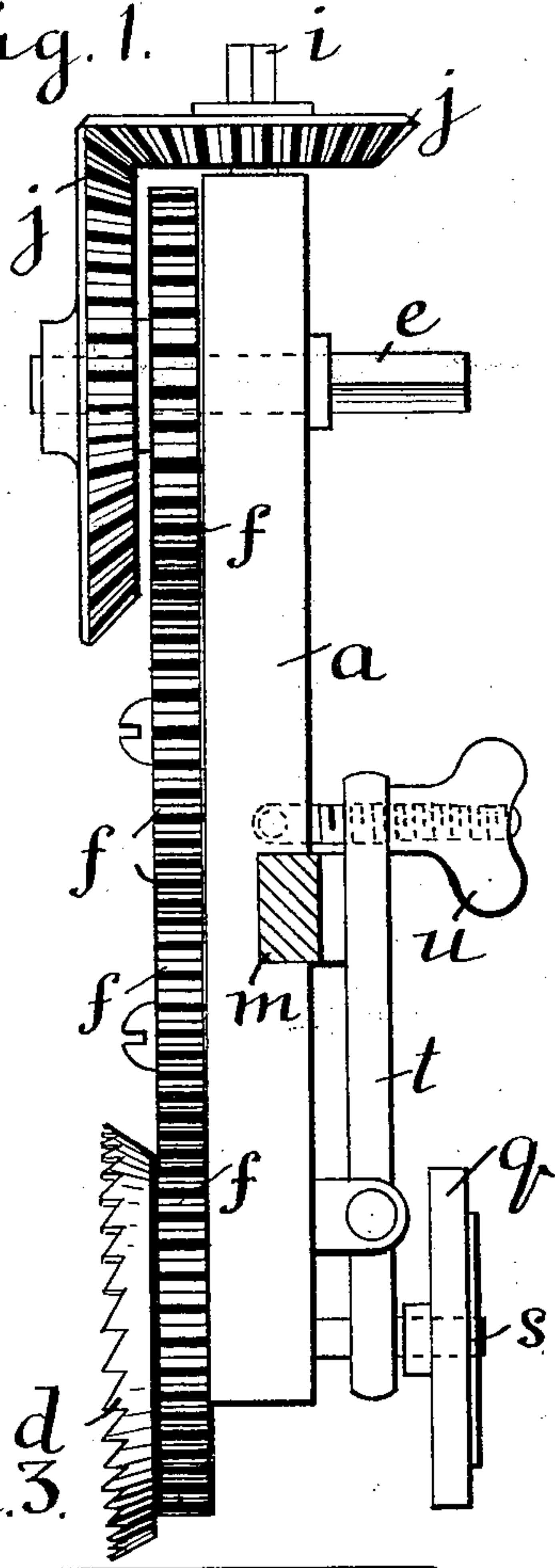


Fig. 3.

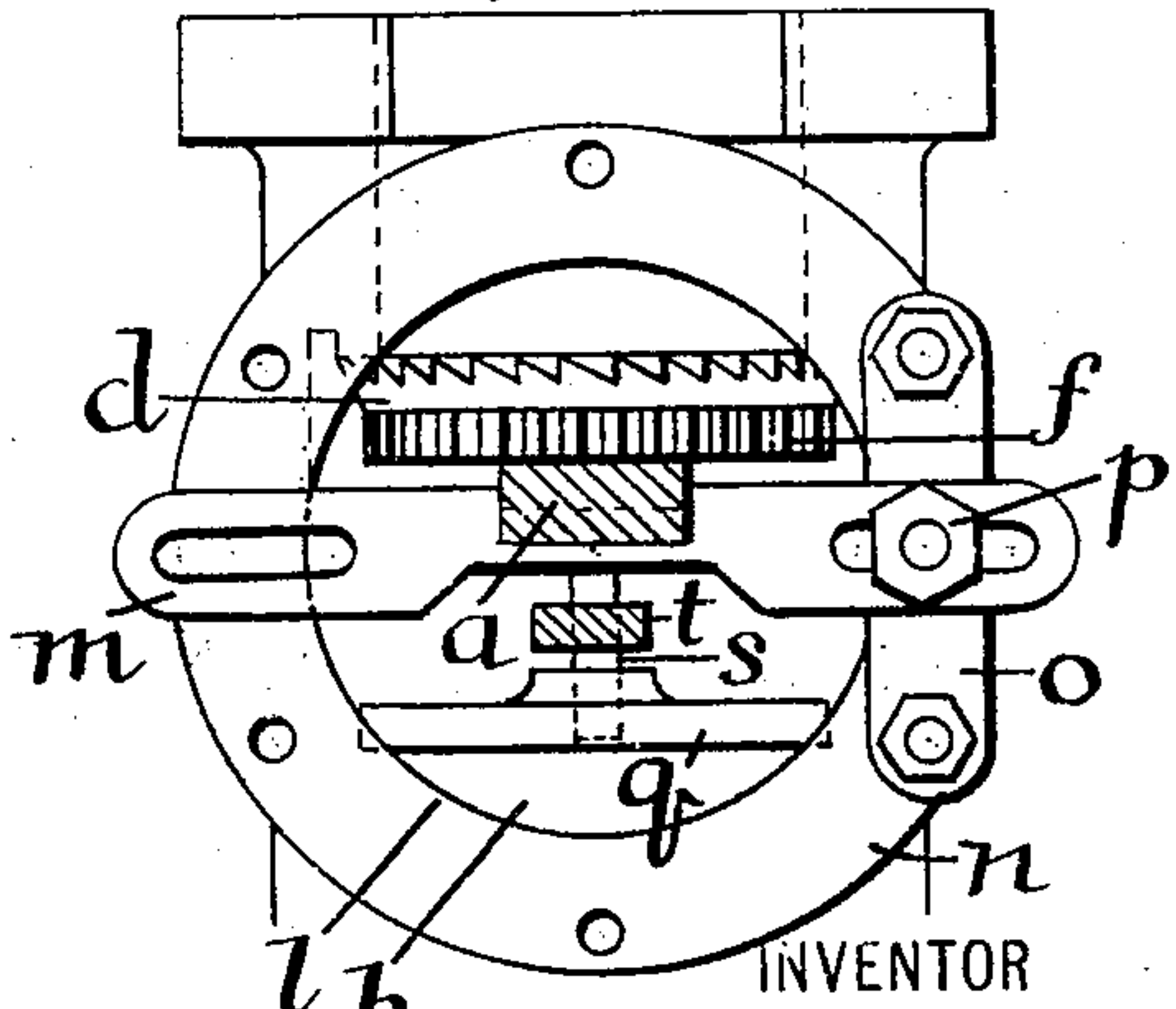
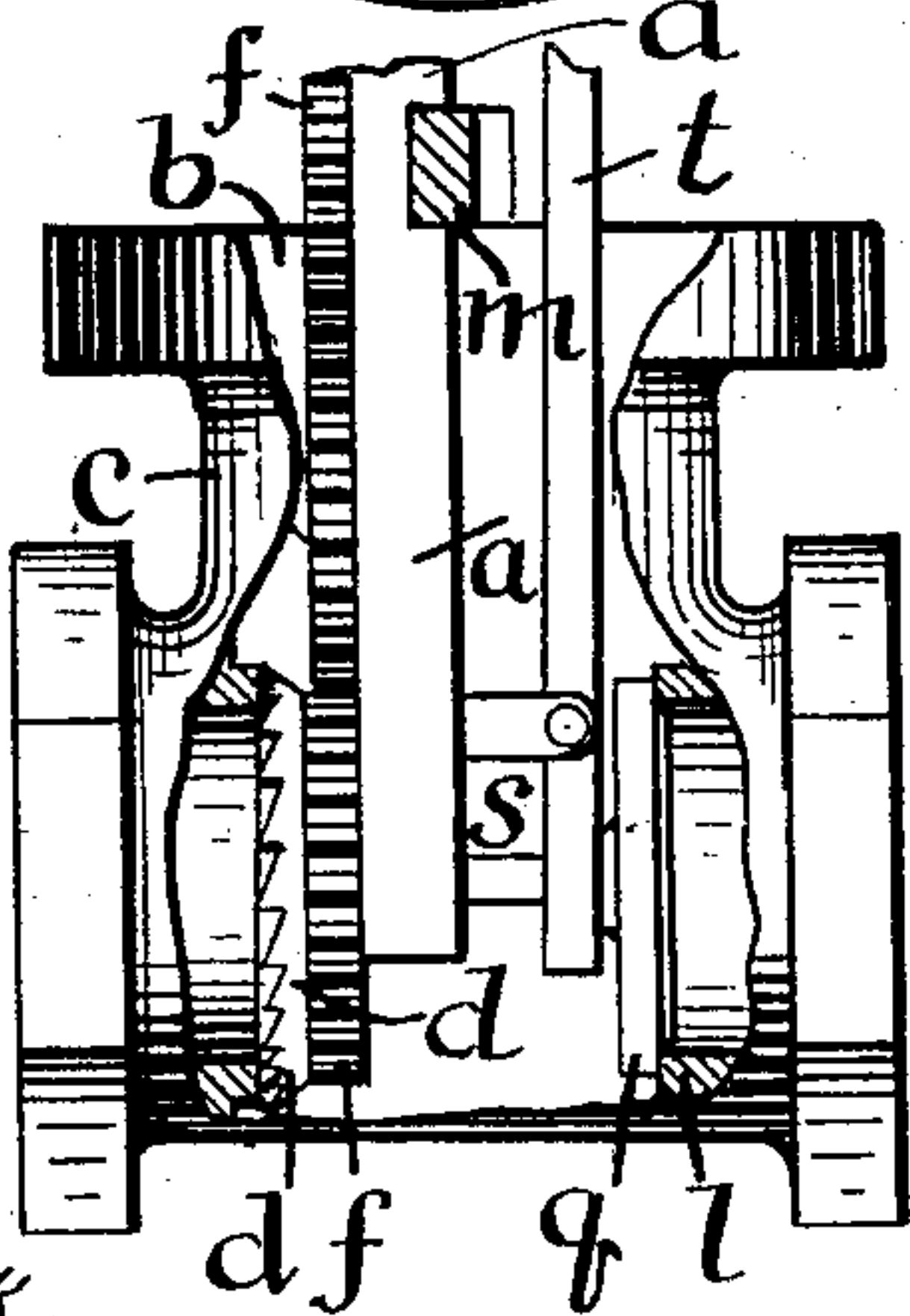


Fig. 4.



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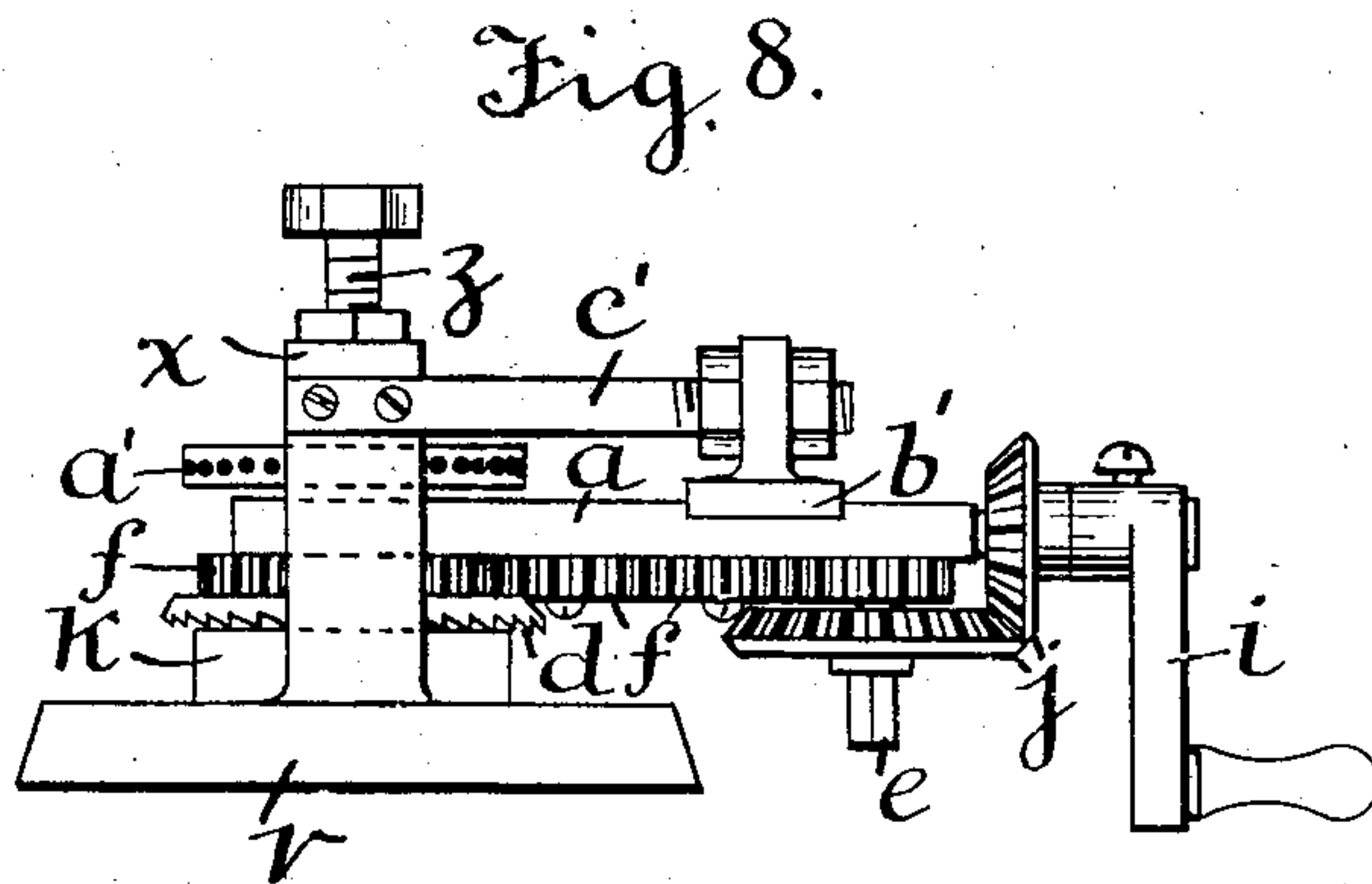
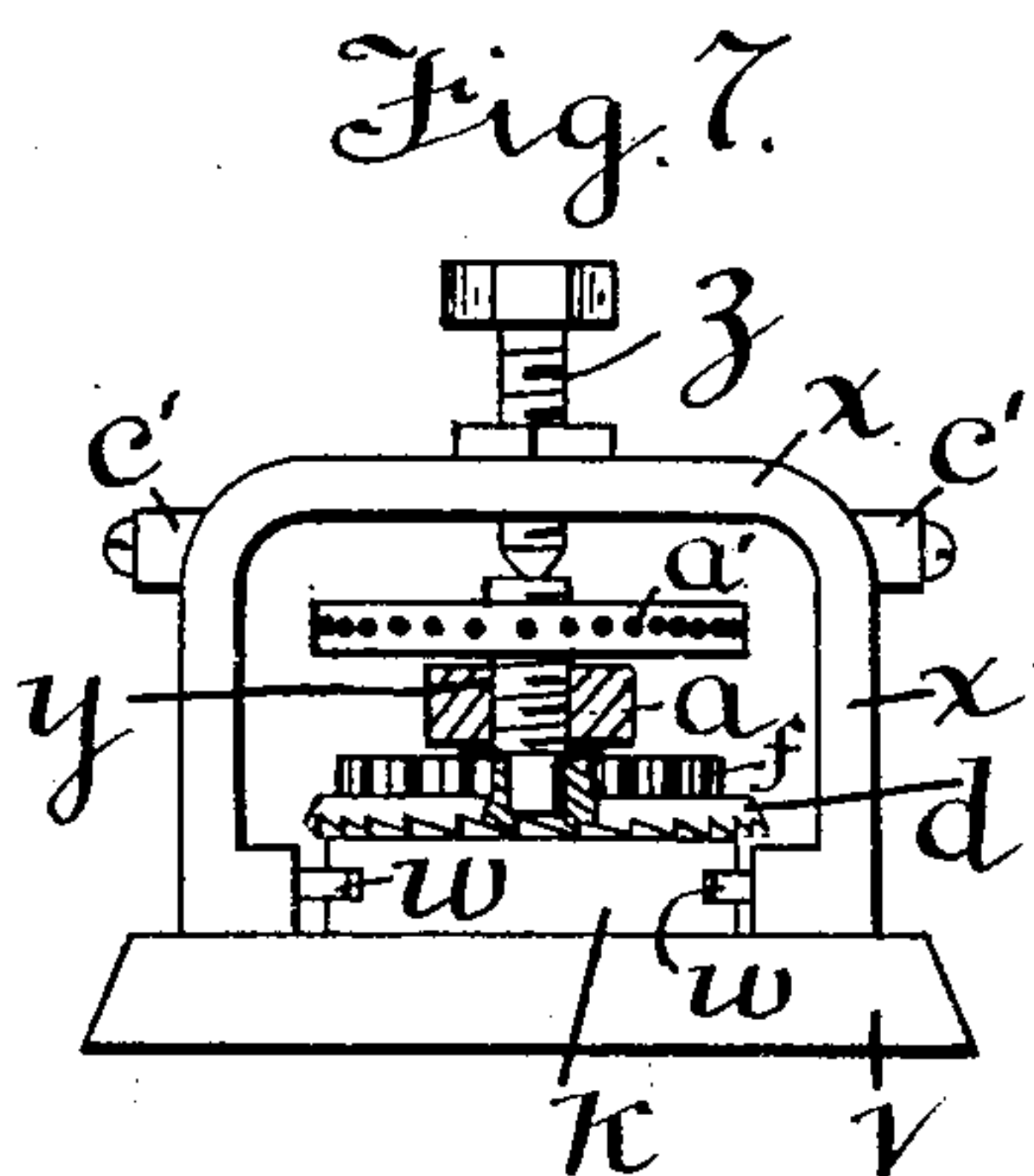
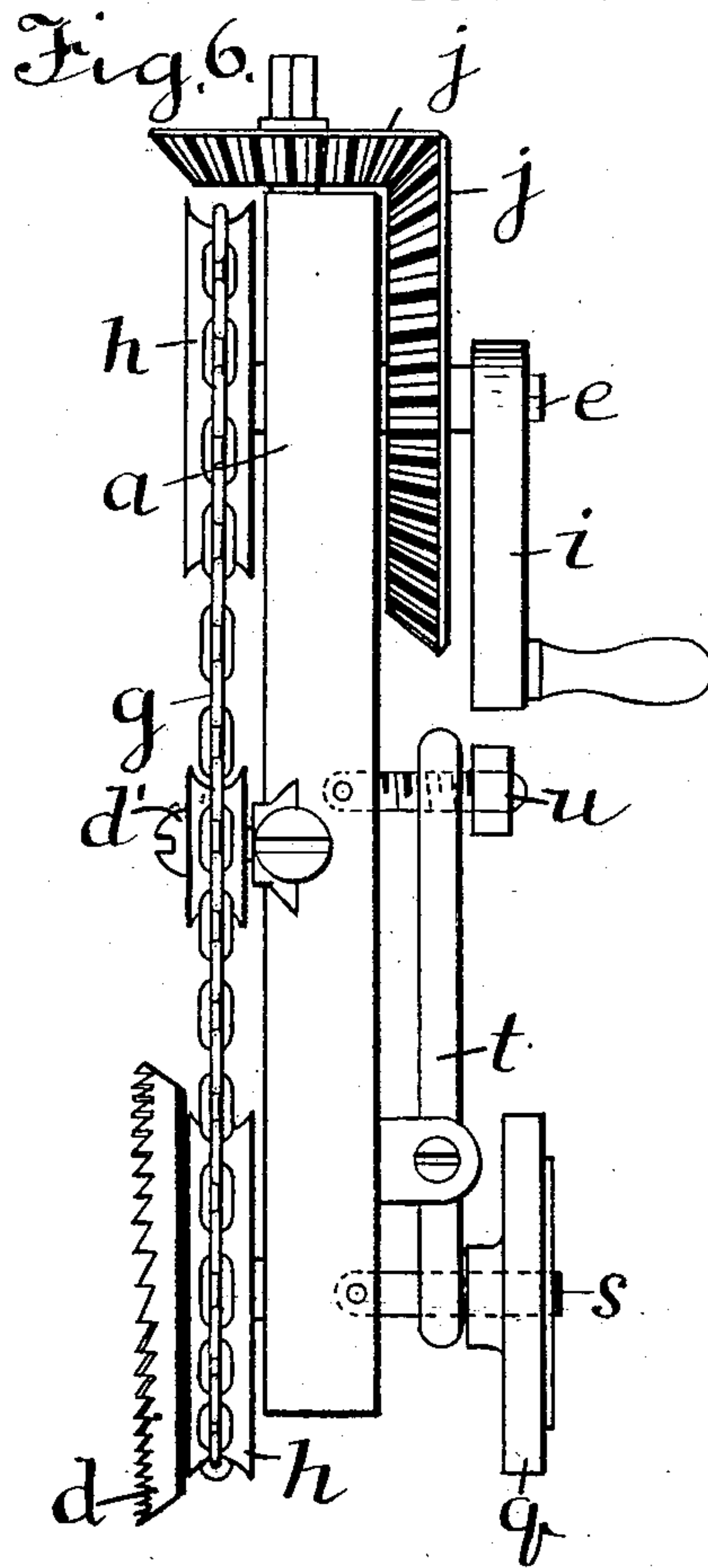
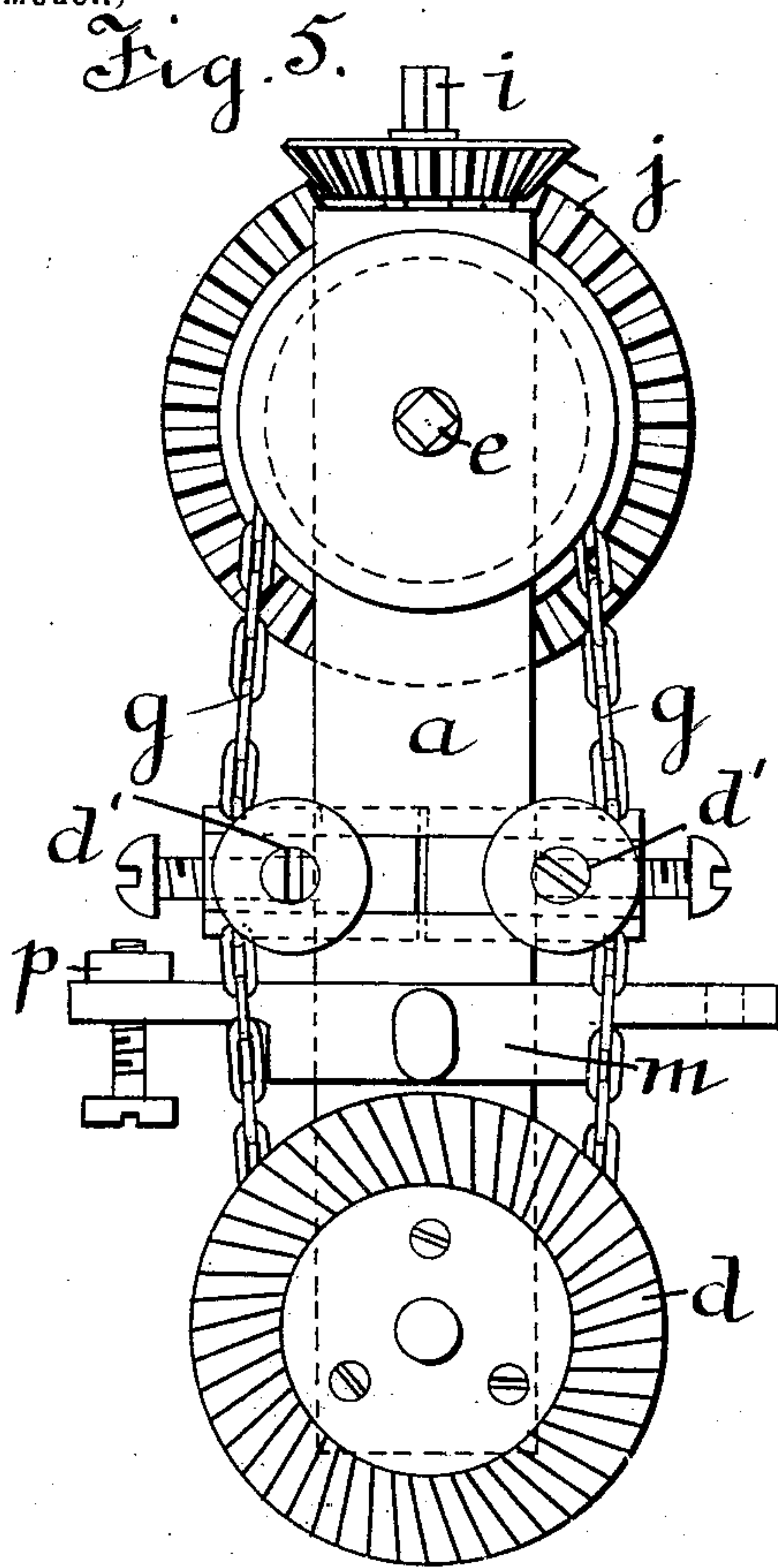
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR REFITTING DISK VALVES.

SPECIFICATION forming part of Letters Patent No. 637,249, dated November 21, 1899.

Application filed November 25, 1898. Serial No. 697,389. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. HALL, a citizen of the United States of America, and a resident of Skaneateles, county of Onondaga, and State of New York, have invented certain new and useful Improvements in Apparatus for Refitting Disk Valves, of which the following is a specification.

My invention relates to milling apparatus to be worked by hand for refitting disk valves and their seats, especially gate-valves; and it consists, essentially, of the milling-tool and its driving apparatus adapted for both the valves and the seats.

It also consists of improvements in various details of the apparatus, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of the apparatus for refitting the seats of gate-valves, with a part in section. Fig. 2 is a plan view of the apparatus of Fig. 1 adapted for refitting the valve-disks. Fig. 3 is a top view, and Fig. 4 a side elevation, partly broken out, of a gate-valve case and means for attaching the apparatus for refitting the seats, with parts in section. Fig. 5 is a front elevation of the seat-refitting apparatus modified as to the driving-gear. Fig. 6 is a side elevation of the apparatus of Fig. 5. Fig. 7 is an end elevation, and Fig. 8 a side elevation, of the apparatus of Fig. 2 adapted for refitting the valve-disks, the post or stock of Fig. 7 being in cross-section.

In the construction of my improved apparatus I provide first a post or stock *a*, such as may be inserted in the mouth *b* of the valve-case *c*, with the milling-tool *d*, mounted upon one of its sides near one end suitably to rotate in a plane parallel with the longitudinal plane of the post and so as to be geared with the crank-shaft *e*, similarly mounted near the upper end of the post, and I gear the said milling-tool and crank-shaft together in any approved way for rotating said tool, as by the train of toothed wheels *f* or by a belt or chain *g*, with suitable pulleys *h* on the milling-tool and crank-shaft, respectively, and I also gear the crank-shaft with another crank-shaft *i* by a pair of bevel-wheels *j*, the latter crank-shaft being set in the end of the post for enabling the crank-shaft to be turned in a plane at right

angles to that of the crank-shaft *e* for more conveniently using the apparatus in the positions of Figs. 7 and 8 for refitting the valve-disks *k*.

For securing the apparatus in the valve-case *c* to refit the seats *l* a cross-bar *m* is attached to the post to be clamped on the flange *n* by suitable clamps *o p* or other like appliances, and to set up the milling-tool *d* to the work a bearing disk or bar *q* is employed to rest against the opposite seat *l* as a base, from which to obtain pressure against the tool, said disk being slidable on the stud-pin *s*, with a lever *t* and a set-screw *u* to apply the pressure, the stud-pin being attached to the back of the stock coincident with the axis of the milling-tool, the lever pivoted to lugs also on the back of the stock and above the stud-pin, and the adjusting-screw attached to the back of the stock a suitable distance above the milling-tool for location above the mouth of the valve-case when the milling-tool is in the working position.

For using the apparatus for refitting disk valves, as *k*, a base *v* is provided, on which the disks may be secured by keys *w* or other approved means, said base having a yoke *x*, carrying a pivot center *z* over the center of the base. The stock *a* has a pivot *y*, on which the milling-tools and the terminal wheel of the driving-train *f* turn, and pivot *y* is screw-threaded in the stock *a* and provided with a hand-wheel *a'* for feeding the milling-tool. The pivot center *z* is adjustable to follow the pivot and maintain the proper stress on the milling-tool.

The yoke *x* and the post *a* are in this application coupled by a cross-bar *b'* and arms *c'* for staying one by the other.

When the chain or a belt is used for driving the milling-tool, adjustable tightening-pulleys *d'* will be employed to maintain proper tension of the same.

An emery or other grinding wheel may be used instead of the milling-cutter represented, if desired.

I claim—

1. In valve-refitting apparatus, the combination of a post or stock, a rotary milling-tool mounted on one side of said post or stock near one end with its axis in transverse relation to the lengthwise direction of the post or stock,



a crank-shaft mounted at the other end of said post or stock parallel with the axis of the milling-tool, said milling-tool and crank-shaft geared together for driving the milling-tool, and means for clamping the milling-tool on the face of the part to be refitted consisting of the bearing-disk, stud-pin, lever and adjusting-screw constructed substantially as described.

2. In valve-refitting apparatus, the combination of a post or stock, a rotary milling-tool mounted on one side of said post or stock near one end with its axis in transverse relation to the lengthwise direction of the post or stock, a crank-shaft mounted at the other end of said post or stock parallel with the axis of the milling-tool, said milling-tool and crank-shaft geared together for driving the milling-tool, another driving-crank mounted on the end of the post or stock with its axis in the lengthwise direction of the post or stock and geared with the first-mentioned crank-shaft, and means for clamping the milling-tool on the face of the part to be refitted substantially as described.

3. In valve-refitting apparatus, the combination of a post or stock, a rotary milling-tool mounted on one side of said post or stock near one end with its axis in transverse relation to the lengthwise direction of the post or stock, a crank-shaft mounted at the other end of said post or stock parallel with the axis of the milling-tool, said milling-tool and crank-shaft geared together for driving the milling-tool, the bar and bolts to clamp the post or stock in the valve-case with the milling-tool in operative relation to the valve-seat, and means for clamping the milling-tool on the face of said seat suitably for refitting it consisting of the bearing-disk, stud-pin, lever and adjusting-screw constructed substantially as described.

4. In valve-refitting apparatus, the combination of a post or stock, a rotary milling-tool mounted on one side of said post or stock near one end with its axis in transverse relation to the lengthwise direction of the post or stock, a crank-shaft mounted at the other end of said post or stock parallel with the axis of the milling-tool, said milling-tool and crank-shaft geared together for driving the milling-tool, the bar and bolts to clamp the post or stock in the valve-case, with the milling-tool in operative relation to the valve-seat, and means for clamping the milling-tool on the face of said seat consisting of the disk-base, stud-pin, lever and set-screw constructed substantially as described.

5. In valve-refitting apparatus, the combination of a post or stock, a rotary milling-tool mounted on one side of said post or stock near one end with its axis in transverse relation to the lengthwise direction of the post or stock, a crank-shaft mounted at the other end of said post or stock parallel with the axis of the milling-tool, said milling-tool and crank-shaft geared together for driving the milling-tool, another driving crank-shaft mounted on the end of the post or stock with its axis in the lengthwise direction of the post or stock and geared with the first-mentioned crank-shaft, and means for clamping the milling-tool on the face of the part to be refitted, consisting of the base-disk, yoke, and centering feed-screw, said yoke having stay connections with a cross-bar attached to the post or stock substantially as described.

Signed by me, at New York, N. Y., this 4th day of March, 1898.

CHARLES F. HALL.

Witnesses:

HARRY C. WALLACE,  
G. C. DURSTON.