

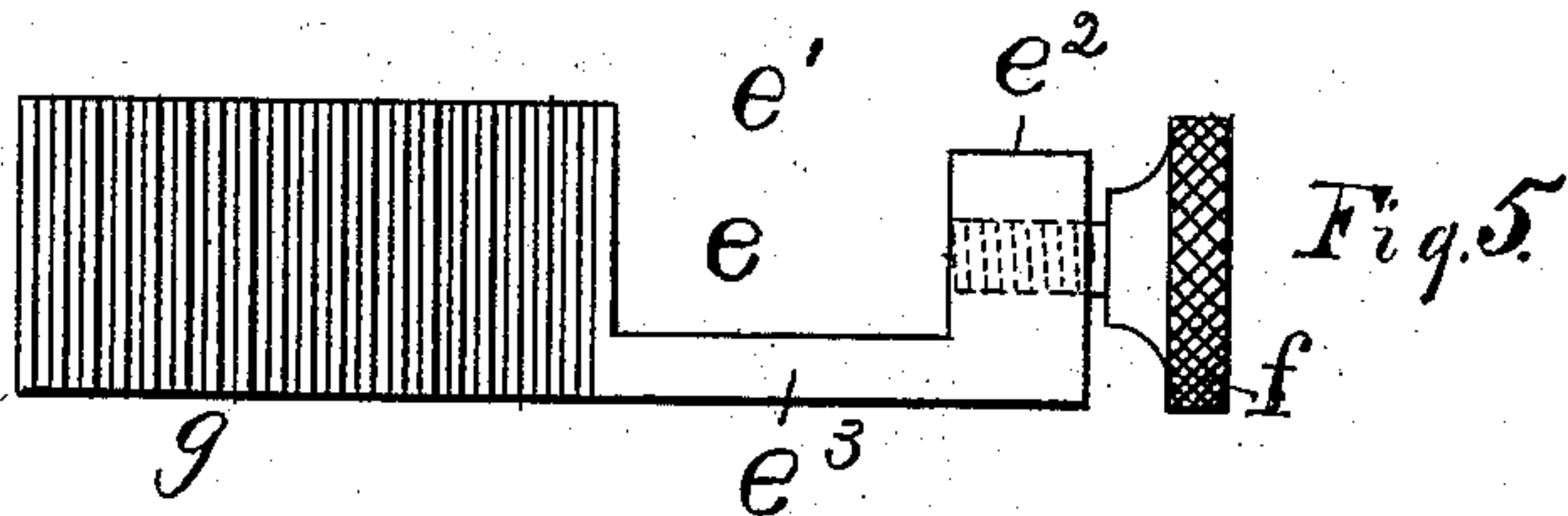
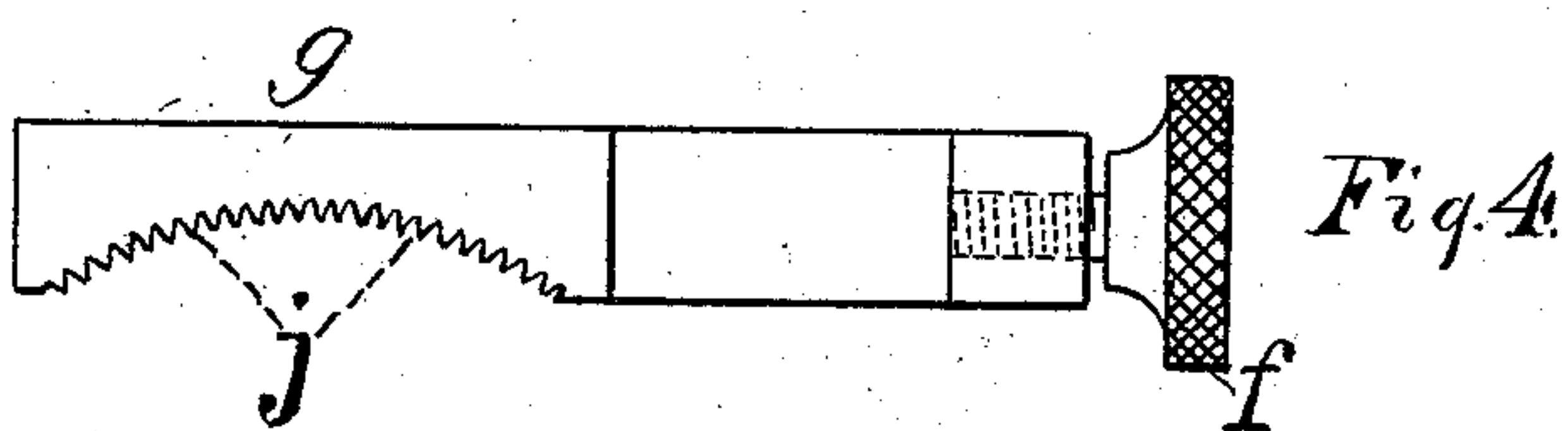
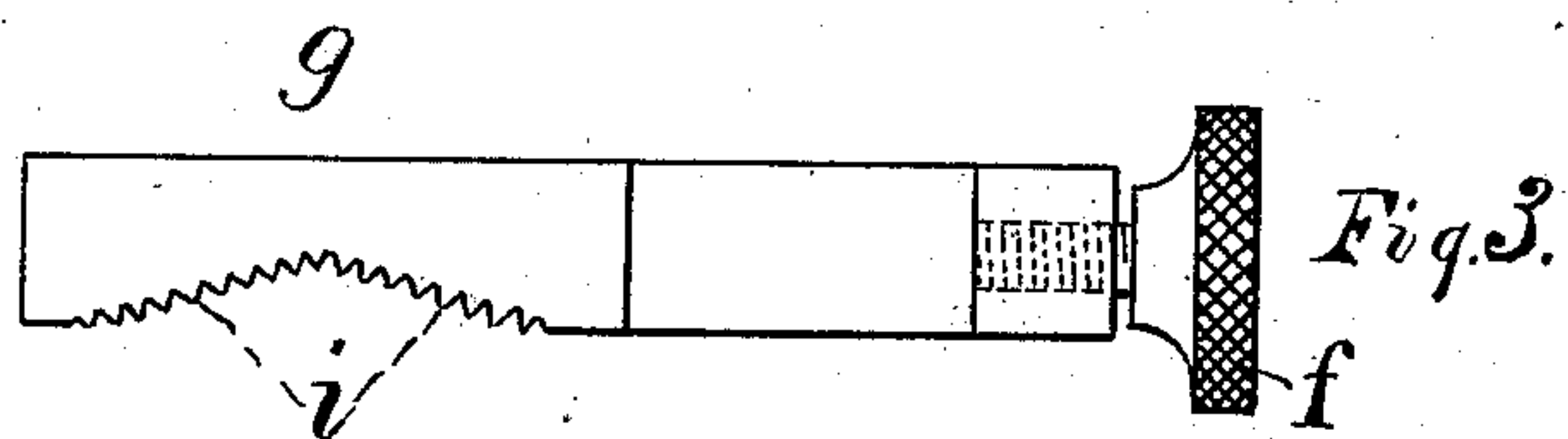
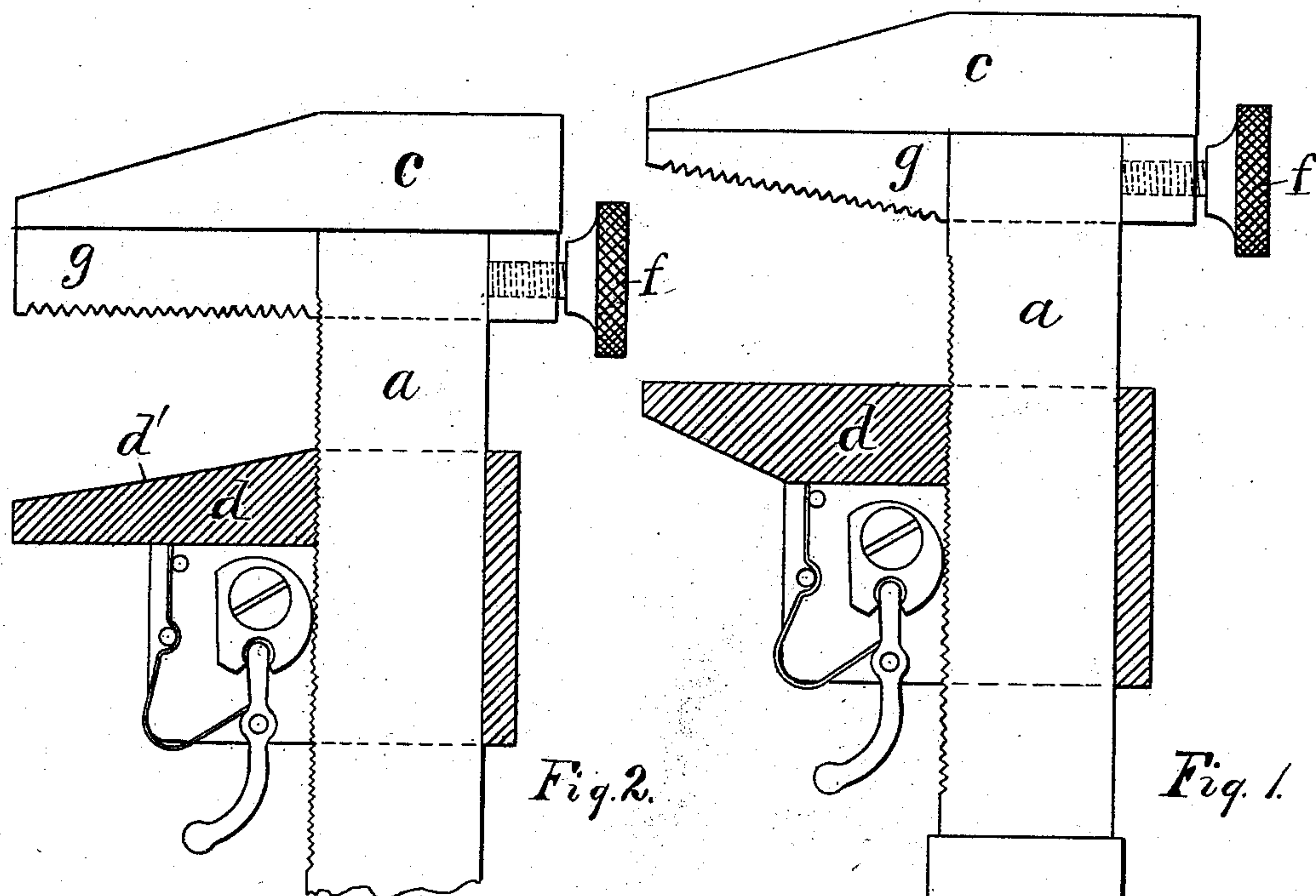
(No Model.)

H. W. ATWATER.

WRENCH.

No. 376,504.

Patented Jan. 17, 1888.



Attest:
L. Lee.
J. Henry Kaiser.

Inventor.
Henry W. Atwater
By- Crane & Miller Attys

UNITED STATES PATENT OFFICE.

HENRY W. ATWATER, OF EAST ORANGE, NEW JERSEY.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 376,504, dated January 17, 1888.

Application filed April 14, 1887. Serial No. 231,833. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. ATWATER, a citizen of the United States, residing at East Orange, Essex county, New Jersey, have invented certain new and useful Improvements in Removable Jaws for Wrenches, fully described and represented in the following specification and the accompanying drawings forming a part of the same.

10 The object of this invention is to cheapen the manufacture of the removable jaw and to facilitate its application to the shank of a bar-wrench; and the improvement consists in a novel form and arrangement for the socket by
15 which the jaw is fitted to the bar or shank of the wrench.

Instead of making the socket open toward its rear end, and thus requiring the application of some transverse fastening device across the
20 mouth of the socket, as shown in United States Patents Nos. 214,697 and 51,961, I form the socket with a lateral opening having a lug at its rear side, and am thus enabled to draw the jaw toward the bar or shank by a mere clamp-screw
25 inserted through such lug and pressed upon the rear side of the shank. The mere slackening of such clamp-screw then serves to release the jaw, and the lateral opening of the socket then permits its removal from the shank
30 without the delay occasioned by detaching any removable fastenings. The lateral opening of the socket also greatly facilitates the manufacture of the removable jaw, as such socket, to be well fitted to the shank, requires
35 milling out by a rotary cutter, and the depth of the socket is only about one-third as great when formed in the side of the jaw as when formed in the rear. The jaw may thus be held more readily during the milling operation
40 and subjected to much less strain than when cutting out a deep socket, and the cutters employed may be of smaller size and less expensive.

45 The improvement may be applied to any of the detachable jaws used with straight-shank wrenches, and several jaws with operative faces of different forms are therefore shown herein.

50 Figure 1 is a side view of an entire wrench having the auxiliary jaw formed with inclined face and applied to the head of the wrench. Fig. 2 represents a similar wrench without the

handle, and having the sliding jaw formed with a smooth sloping face, and the removable jaw of parallel form with serrated face. 55 Fig. 3 represents a removable jaw having its face inclined from both ends toward the center, and Fig. 4 a removable jaw with curved face. Fig. 5 represents a plan of any of the said jaws, as they are all constructed with
60 sockets of the same form.

a represents the shank of the wrench, *b* the handle, *c* the head, and *d* the sliding jaw.

The jaws *c* and *d* (shown in Fig. 1) have parallel faces adapted to grasp an ordinary 65 bolt or nut, and the removable jaw *g* is formed with sloping serrated face, so as to convert the wrench into a pipe-wrench when applied either to the head or the sliding jaw *d*.

In Fig. 2 the sliding jaw *d* is shown with a 70 smooth sloping face, *d'*, and the auxiliary jaw *g* is formed with a face parallel to the head *c*, so as to furnish the roughened surface necessary to co-operate with the sloping face *d'*.

In Fig. 3 the auxiliary jaw has its face 75 formed with two inclines, *i*, sloped toward the center, so as to grasp the pipe when turned in either direction; and in Fig. 4 a roughened concavity, *j*, is formed in the working-face of the jaw to operate in a similar manner. Each 80 of these jaws is formed with a socket, *e*, open at one side, *e'*, and having at its rear a lug, *e''*, through which is inserted a set-screw, *f*, to press upon the rear side of the shank *a*. The rear side of the shank being flat, a very slight 85 movement of the set-screw serves to clamp the jaw to the shank or to release it therefrom. The lug *e''* is connected with the removable jaw only by a tongue, *e'''*, and is bent at a right angle with such tongue. The function of the screw is merely to keep the jaw 90 from slipping off of the wrench-shank when in use, as all the real strain is sustained by the contact of the jaw with the shank *a* and with the head *c* or slide *d*, on which it is pressed 95 when used. The laterally-open socket is much more convenient for application to the shank than the jaw slotted at the rear end, as in United States Patents Nos. 214,697 and 51,961. I hereby disclaim the said patents, and limit 100 myself to the construction I have shown and claimed herein.

What I claim is—

1. The herein-described removable serrated

jaw for bar-wrenches, having in its rear end a socket open at one side, whereby it may be attached to the wrench-shank.

2. The combination, with the removable
5 jaw having in its rear end a socket open on one side, of the means, substantially as described, for holding the jaw in position.

3. The removable serrated jaw for bar-wrenches, constructed as herein shown and
10 described, with the tongue e^3 projected from its rear end at one side, and the lug e^2 at a right angle with the tongue, forming the socket

e , open at one side, e' , and the lug being provided with the set-screw f , projected through the lug e^2 into the rear side of the socket, as 15 and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY W. ATWATER.

Witnesses:

HENRY J. MILLER,

FREDERICK C. FISCHER.