

(No Model.)

H. R. BORIE.

TAP FOR SCREW THREADING SOCKETS.

No. 332,781.

Patented Dec. 22, 1885.

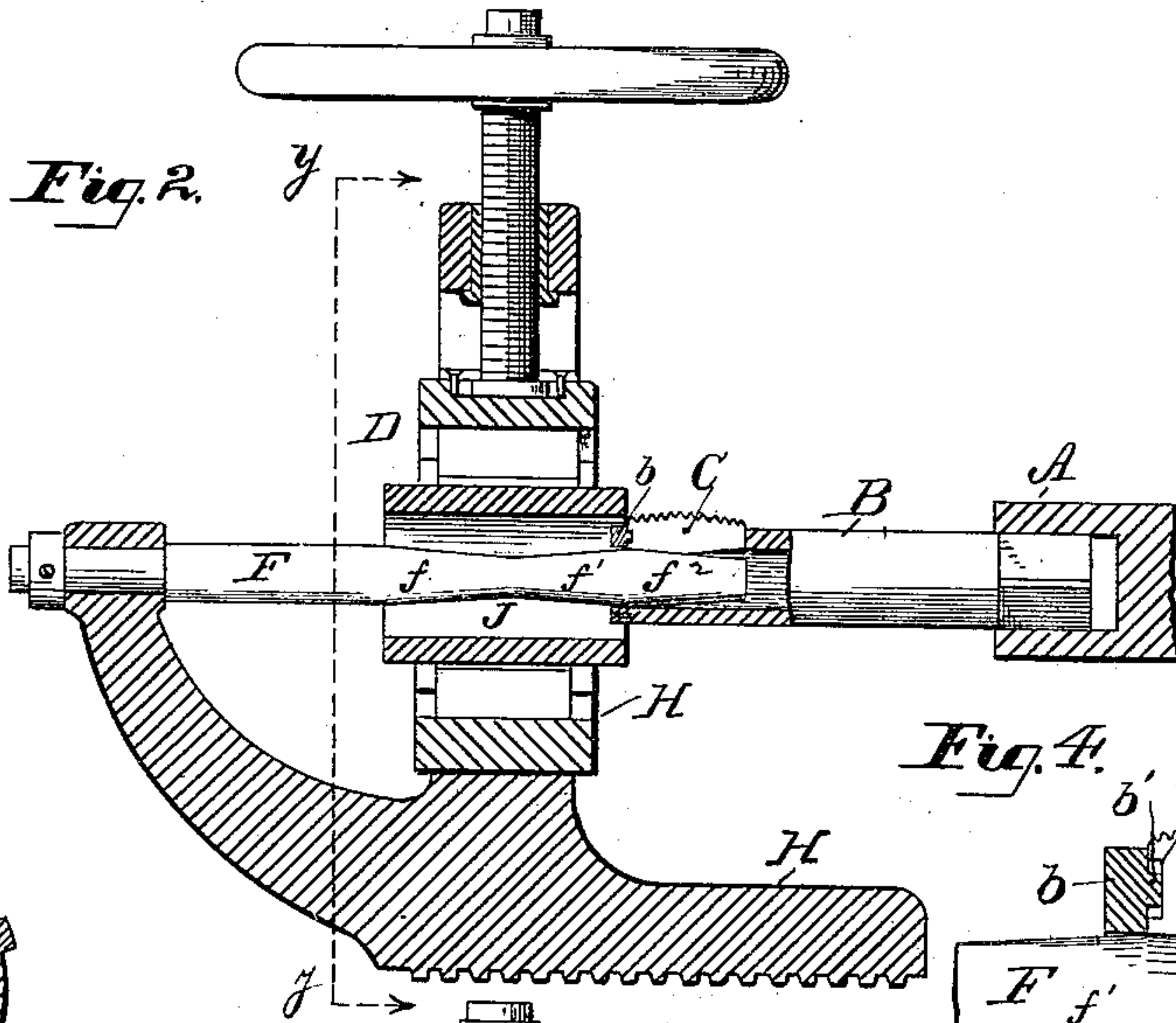
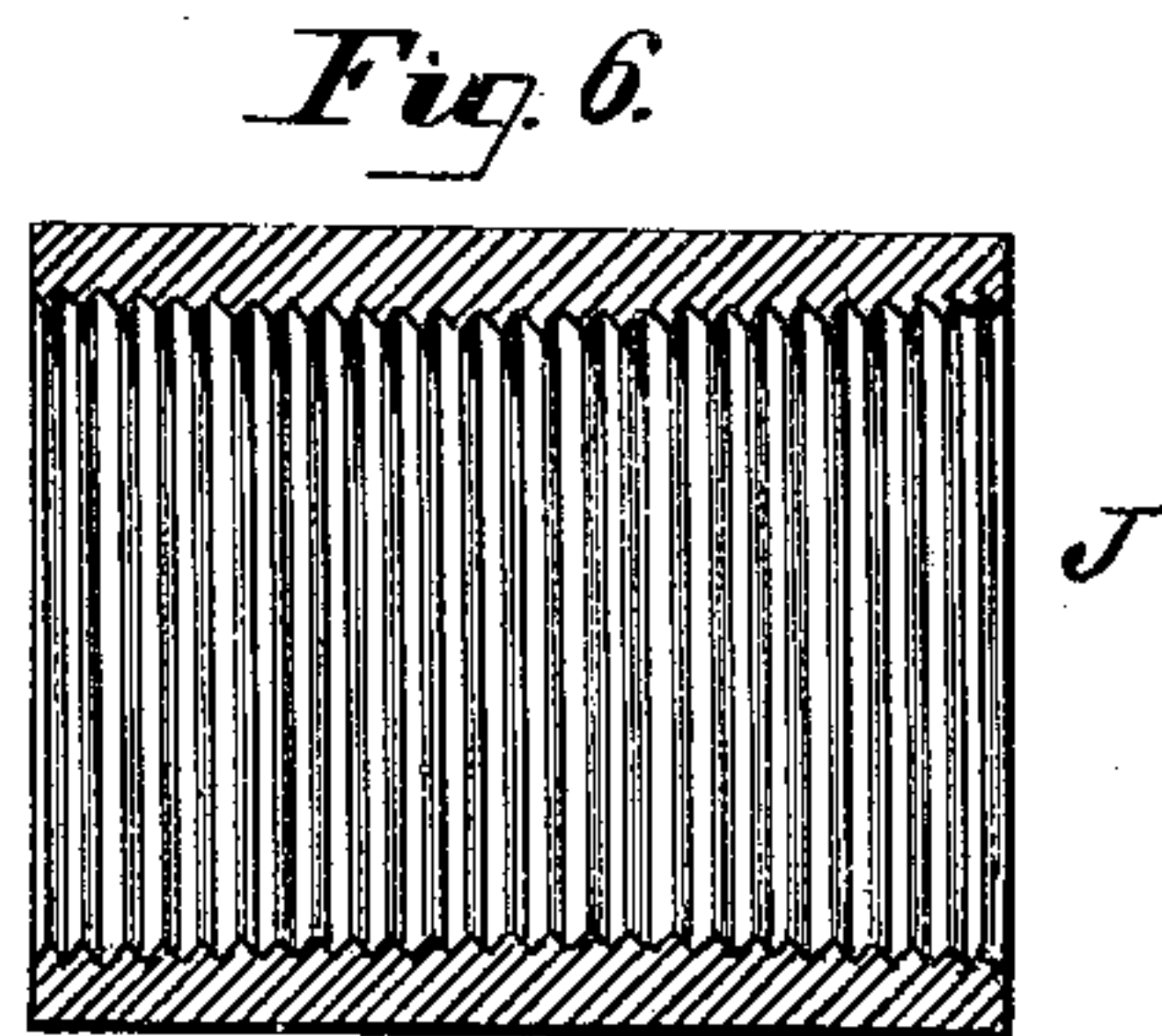
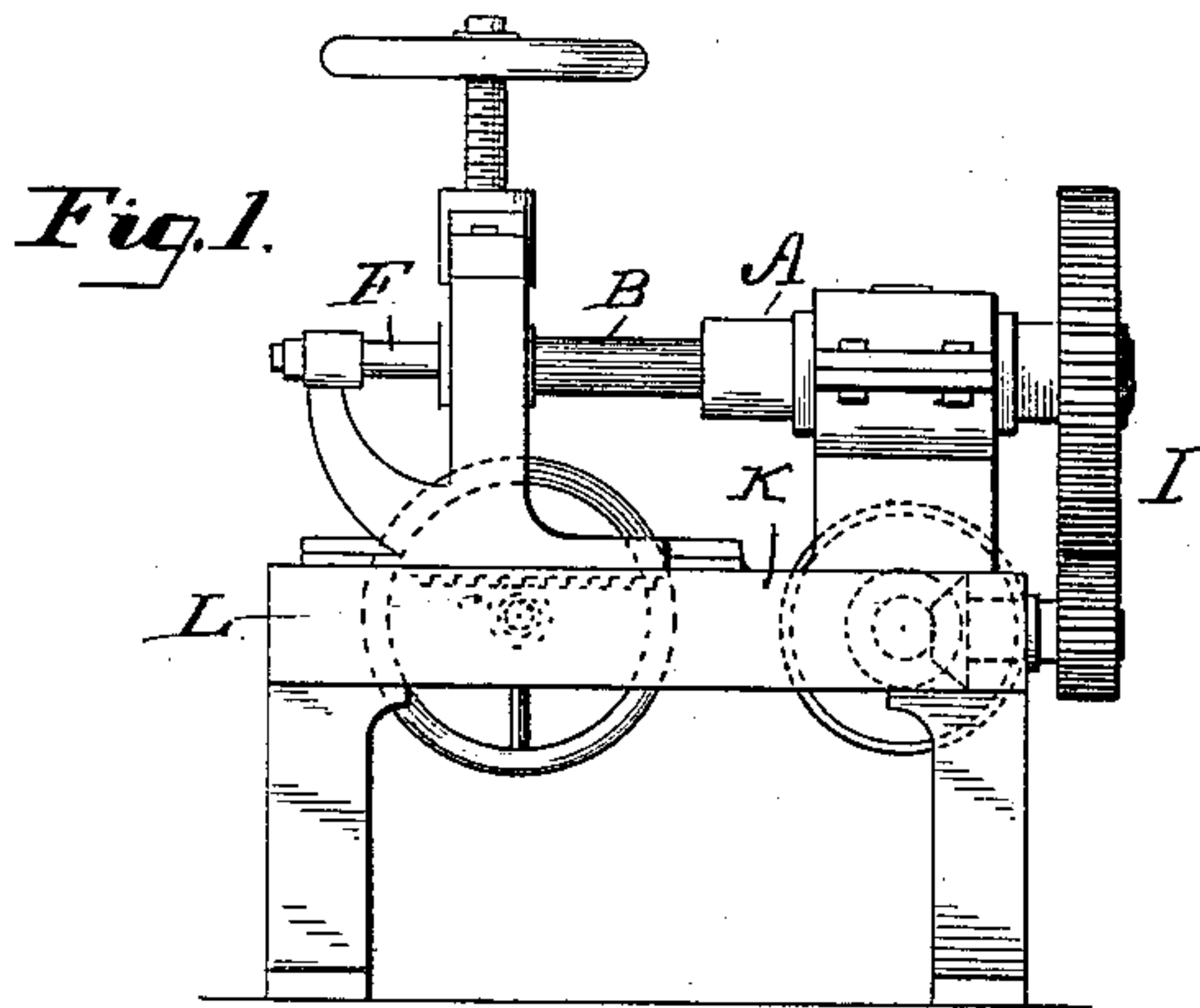


Fig. 3.

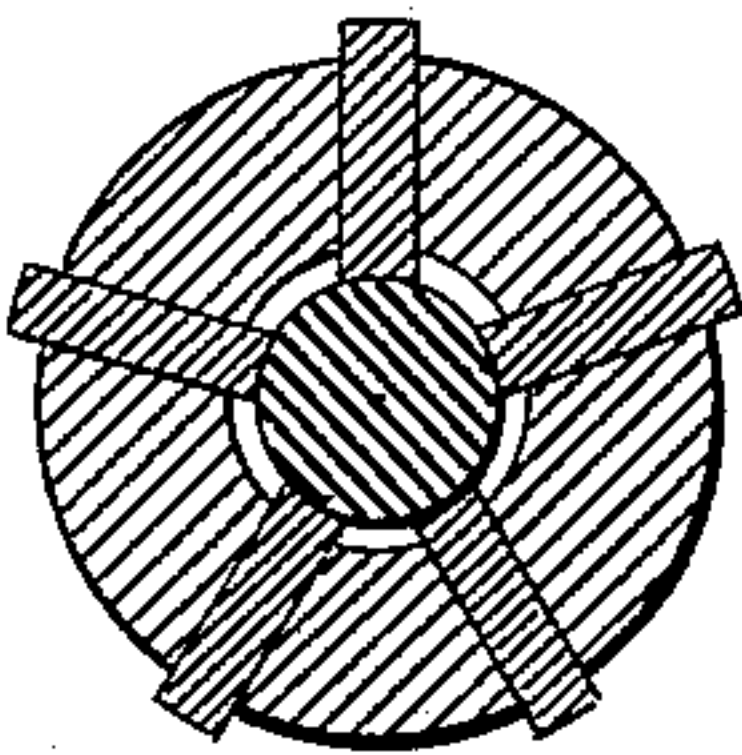


Fig. 4.

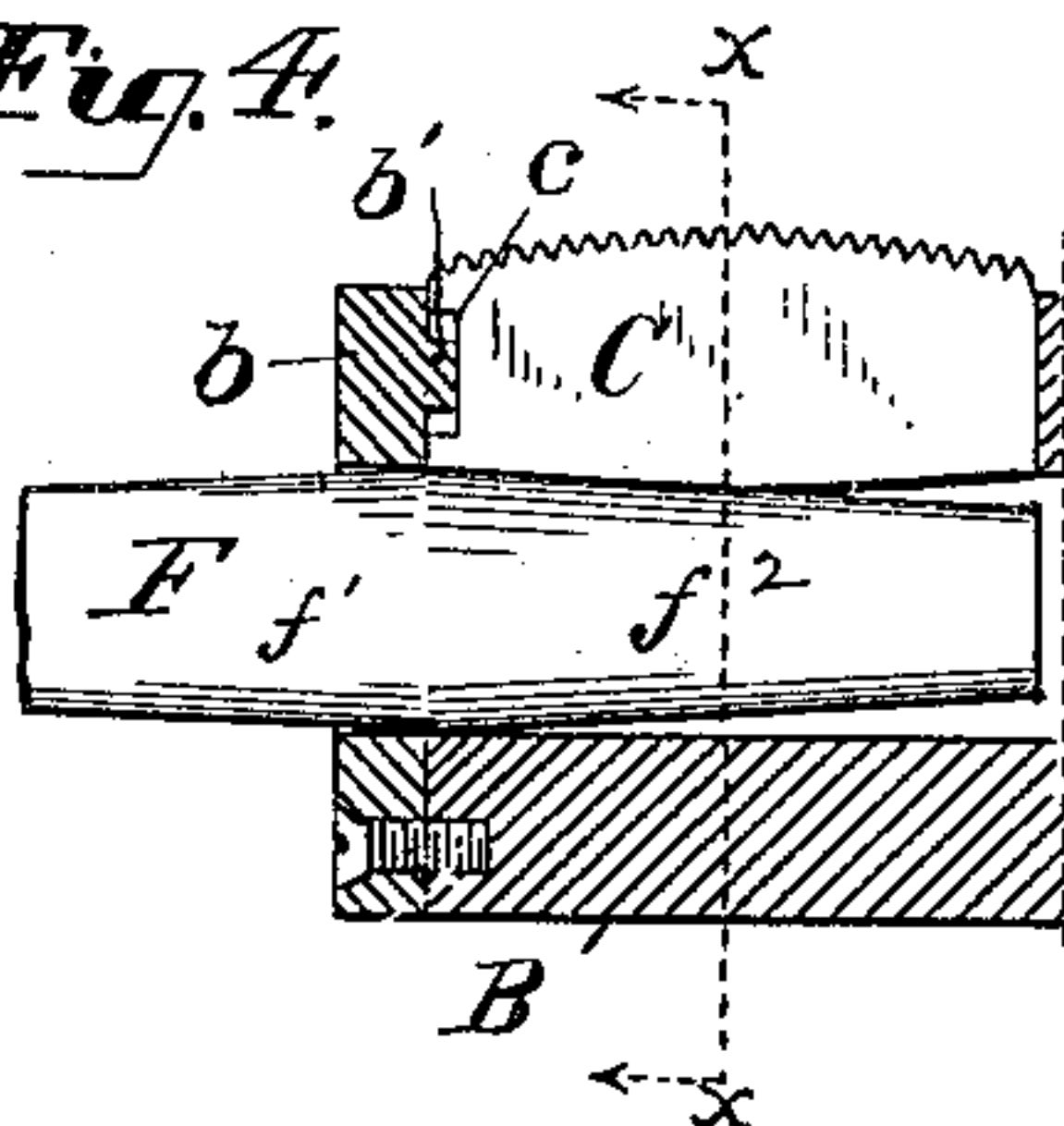
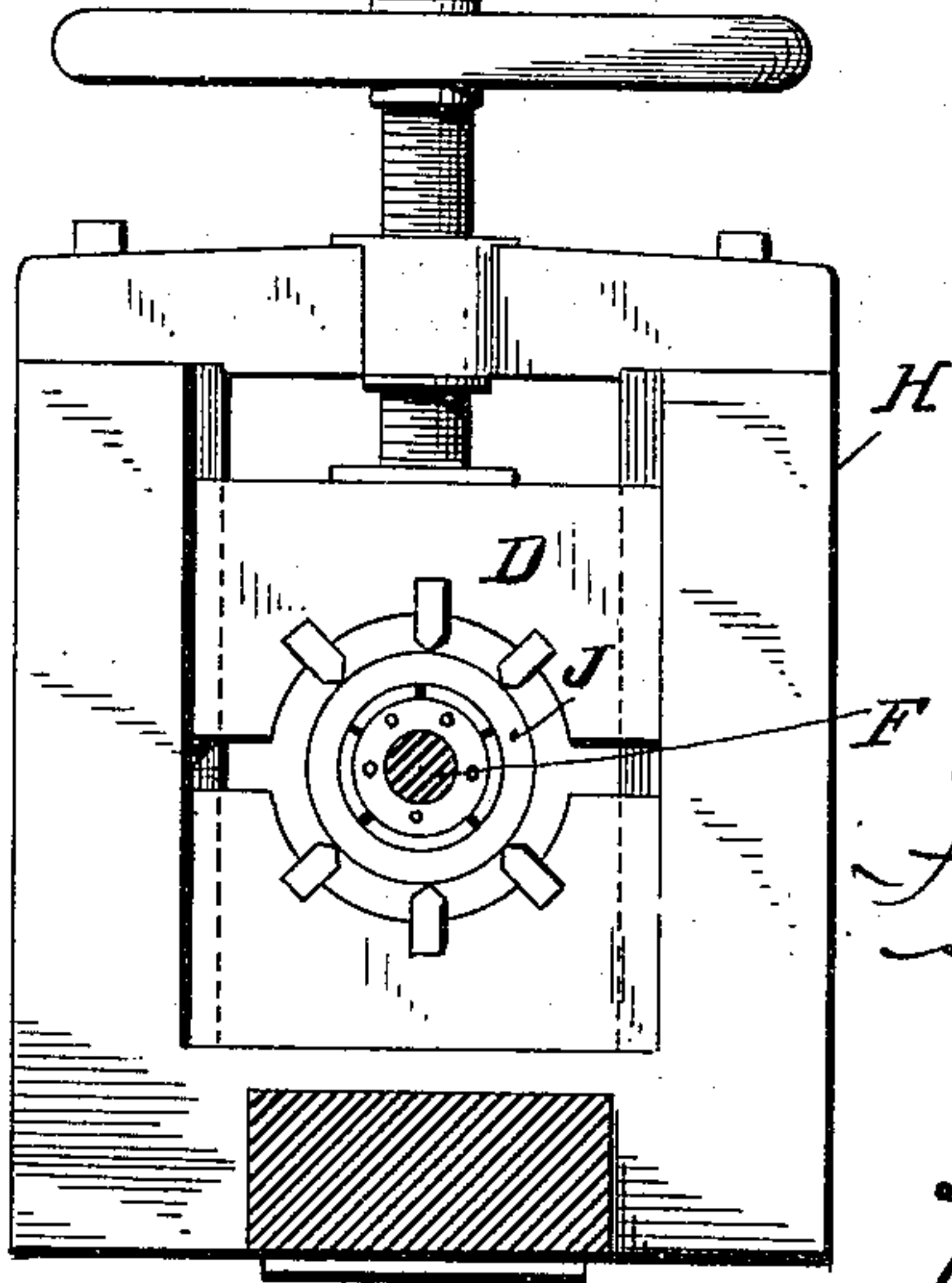


Fig. 5.



WITNESSES:

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TAP FOR SCREW-THREADING SOCKETS.

SPECIFICATION forming part of Letters Patent No. 332,781, dated December 22, 1885.

Application filed July 21, 1885. Serial No. 172,222. (No model.)

To all whom it may concern:

Be it known that I, HIRAM R. BORIE, a citizen of the United States, residing in the city and county of New Castle, and State of Delaware, have invented a new and useful improvement in taps for cutting threads in sockets and other articles formed with tapering, cylindrical, or irregular surfaces, of which the following is a specification.

My invention relates to a class of devices employed for cutting threads upon tapering sockets, unions, or other fittings, or upon fittings of variable contour.

My invention is an improvement upon such devices of the foregoing class as have to my knowledge been heretofore employed.

Apparatus embodying my invention is represented in the accompanying drawings and described in this specification, the particular subject-matter claimed as novel being herein-after definitely specified.

In the accompanying drawings, which represent apparatus conveniently embodying my improvements, Figure 1 is a side elevation of an apparatus conveniently embodying my invention. Fig. 2 is a longitudinal central sectional side elevation of the chuck, shaping-spindle, spindle-holder, spindle, and tap-shank. Fig. 3 is a transverse sectional elevation through the tap-shank and tap-cutters in the plane of the dotted line xx of Fig. 4. Fig. 4 is a longitudinal partly-sectional and partly side elevational detail through the tap-shank and tap-cutters, showing also a portion of the shaping-spindle. Fig. 5 is an end elevational view of the parts represented in Fig. 2, section being supposed in the plane of the dotted line yy on said Fig. 2, and sight being taken in the direction of the arrows on said line. Fig. 6 is a longitudinal central side sectional elevation of a threaded socket.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a spindle or kindred revolving device, which is suitably mounted for revolution upon a bed-plate or frame, K. The spindle is provided with a tubular tap-shank, B, the outer extremity of which is provided with a series of radially-disposed tap-cutters, C, which are conven-

iently contained in radial slots in the tap-shank, and retained by means of an annular cap, b , applied to the outer extremity of the tap-shank, and provided with lugs b' , which take into notches c in the outer extremities of the tap-cutters. The tap-cutters, in the form of apparatus represented, are formed with oppositely-tapering longitudinal edges—one of them toothed—which taper oppositely from a central transverse line, which is indicated by the dotted line xx of Fig. 4. The spindle, tap-shank, and tap-cutters are adapted to be revolved by any convenient means—as, for instance, by the toothed gear I.

D is a chuck of any preferred description, which is adapted to contain the socket J or other fitting to be threaded.

F is what I term the “shaping-spindle,” it being a horizontal spindle conveniently connected with the traveling holder H, and provided, in the form shown, with three conical or tapering surfaces, $f f' f''$. This spindle is adapted to rotate freely in its housing for the purposes of avoiding friction.

The chuck and traveling holder are, in the form of apparatus represented, adapted to be moved toward or from the tap-shank by the rack and pinion L, (represented in Fig. 1,) or by any other convenient means.

Such being a description of a good construction of my apparatus, its operation will be readily understood. A socket being secured in the chuck, and the spindle, tap-shank, and tap-cutters being set in revolution, the chuck and shaping-spindle are caused to advance against the revolving cutters. In so doing, as represented in Figs. 2 and 4, the conical surface f'' of the shaping-spindle, encountering the advance incline of the tap-cutters, occasions the deflection of the tap-cutters in such manner as to impart to half of the length of the socket a tapering thread, while in the further advance of the parts the encounter of the rear incline of the cutters with the conical surface f' will occasion the threading of the remaining portion of the socket, so that said socket is provided with a reversely-tapering thread, as represented in Fig. 6.

It is obvious that, instead of occasioning the advance of the chuck and shaping-spindle

against the tap-shank cutters, the tap-shank cutters and spindle A may be advanced against the chuck and shaping-spindle.

It will also be readily understood that the machine may be so organized that the tap-shank and its cutters may be stationary, while the chuck may revolve.

It is also obvious that it is immaterial what form of chuck or what form of holder for the shaping-spindle be employed, just as it is immaterial what form of tap-shank or spindle for actuating the same be employed.

It is obvious, again, that any convenient means for retaining the tap-cutters removably in place can be resorted to other than that represented, which, however, is a convenient arrangement.

It will likewise be obvious that by providing cutters of varying shapes and shaping-spindles of corresponding shapes the apparatus may be adapted for cutting threads on sockets of variable contour or for cutting threads on true cylindric form sockets.

It is proper for me to state that I am not the originator of a shaping-spindle having inclined surfaces and operating in conjunction with tap-cutters which bear against said inclined surfaces, and that to such construction, broadly, I lay no claim.

Having thus described my invention, I claim—

1. The combination, in a tapping-machine, of the traveling holder provided with the shaping-spindle, and with the chuck maintained by said holder in concentricity with said shaping-spindle, the hollow tap-shank provided with the tap-cutters, the spindle for occasioning the rotation of the tap-shank, suitable means for occasioning the rotation of the spindle, and suitable means for occasioning the advance and retreat of the holder, chuck, and shaping-spindle, substantially as and for the purposes set forth.

2. The combination, in a tapping-machine, of a shaping-spindle having tapering surfaces, with the tubular tap-shank B, having radial seats for the tap-cutters, the tap-cutters C, and the annular cap for retaining said tap-cutters, substantially as set forth.

In testimony whereof I have hereunto signed my name this 18th day of July, A. D. 1885.

HIRAM R. BORIE.

In presence of—

J. BONSALE TAYLOR,
WM. C. STRAWBRIDGE.