No. 721,639. PATENTED FEB. 24, 1903.

F. J. WERMES.

BENCH VISE.

APPLICATION FILED SEPT. 25, 1902.

NO MODEL.

Fig. 1.

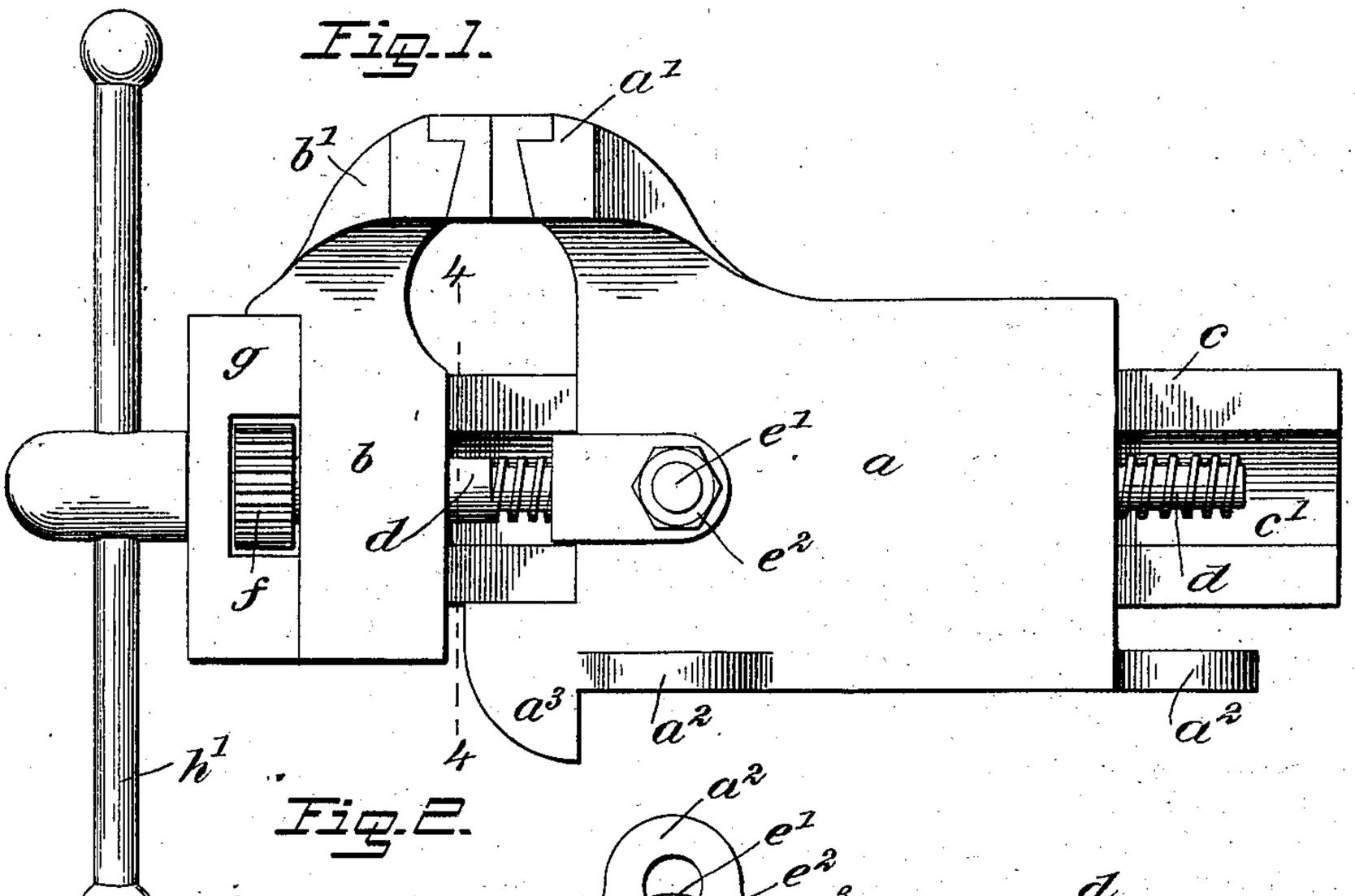



Fig. 2.

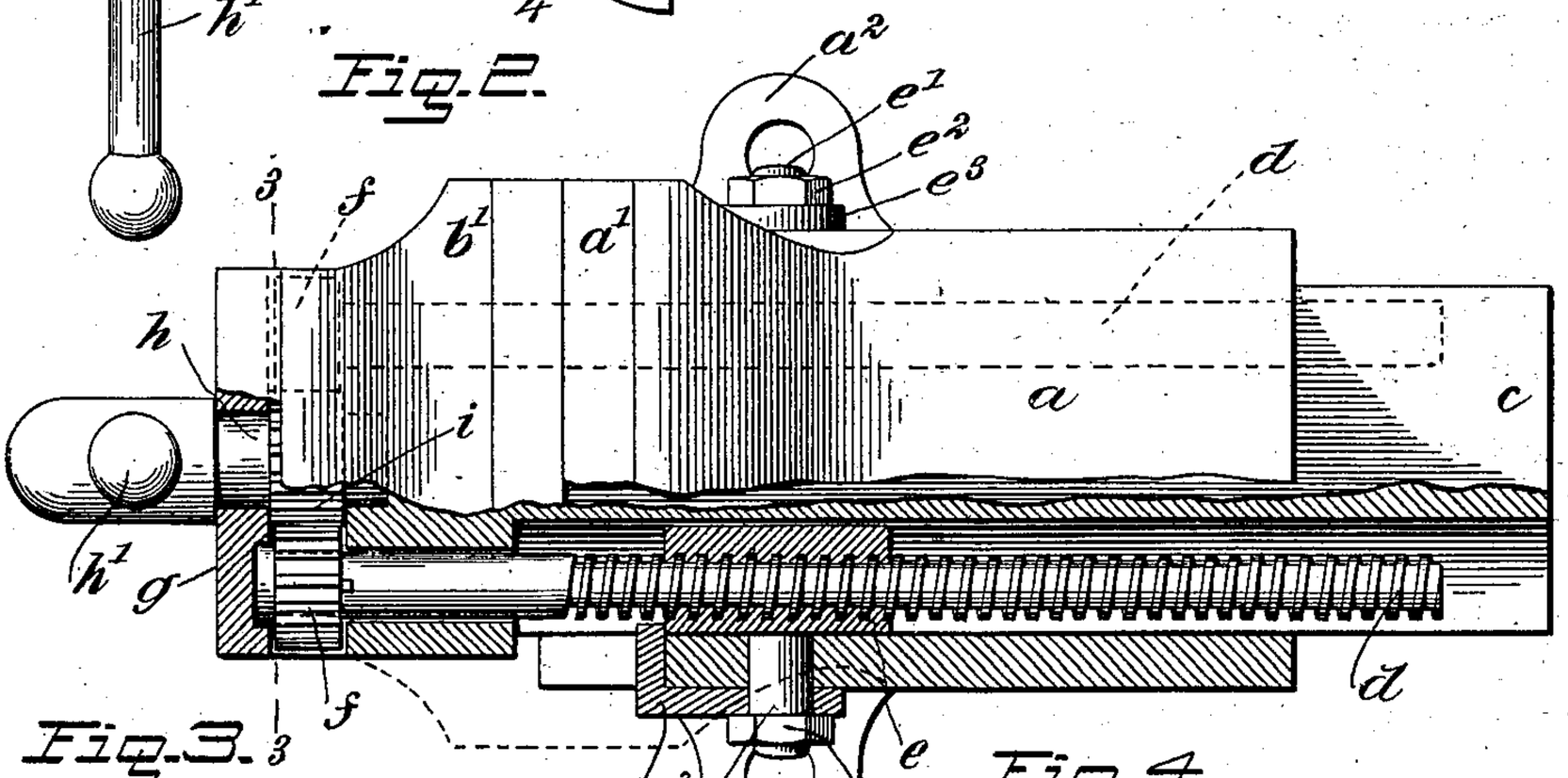



Fig. 3.

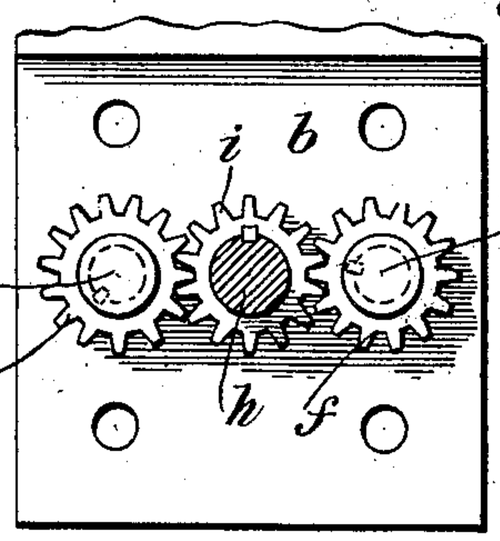
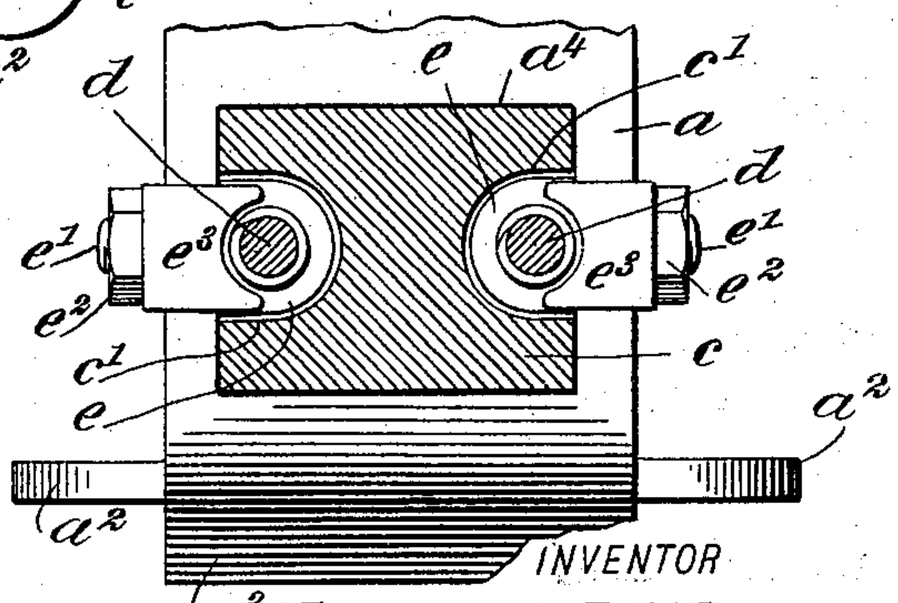



Fig. 4.




WITNESSES:

James P. Duhamel

Isaac B. Owens.

INVENTOR

Frederick J. Wermes

BY

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

FREDERICK J. WERMES, OF CINCINNATI, OHIO.

## BENCH-VISE.

SPECIFICATION forming part of Letters Patent No. 721,639, dated February 24, 1903.

Application filed September 25, 1902. Serial No. 124,774. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK J. WERMES, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and Improved Bench-Vise, of which the following is a full, clear, and exact description.

The purpose of this invention is to construct a vise by which a grip more powerful than heretofore may be effected and also in which the jaws will move true against each other. This end I attain by providing two screws arranged in a certain peculiar manner and coacting with novel devices for simultaneously driving them, these screws thus drawing equally on the jaws and holding them true the one with respect to the other. Also by the devices employed any desired leverage on the screws may be had, thus increasing the power of the device to any extent desired.

The invention involves various other novel features which will be fully described hereinafter.

This specification is an exact description of one example of my invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of the invention. Fig. 2 is a plan view thereof, partly in section. Fig. 3 is a front elevation showing the gears for turning the screws and illustrating the drive-shaft in section on the line 3 3 of Fig. 2, and Fig. 4 is a cross-section of the device on the line 4 4 of Fig. 1.

*a* indicates the body of the vise, on which is formed the stationary jaw *a'*.

$a^2$ indicates lugs on the body of the device for facilitating fastening it on a bench.

$a^3$ indicates a shoulder on the front of the body *a*, which is arranged to engage the bench in the usual manner.

*b* indicates the carriage or movable part of the vise, and *b'* the moving jaw. The slide or shank *c* is fastened to the inner side of the carriage *b* and projects inward through a suitable opening $a^4$ in the body *a*, thus slidably mounting the carriage. The sliding shank is formed on each side with longitudinal grooves *c'*, adapted, respectively, to receive the screws *d* and their corresponding nuts *e*.

The screws *d* are two in number, as indicated. Said screws have their front ends mounted to turn in the slide *b* and carry at said points the spur-gears *f*, attached, respectively, to the screws. These gears lie at the front side of the slide *b*; but their front faces are covered by a face-block *g*, which is fastened to the slide, as shown in Figs. 1 and 2. In connection with Fig. 3 it is to be assumed that this face is removed. A short drive-shaft *h* is mounted to turn in the face-block *g* and has fastened thereto, inward of the block, a spur-gear *i*, this gear being set between the two gears *f* and meshed with each.

*h'* indicates any suitable means for imparting a turning movement in either direction to the drive-shaft *h*. By turning this shaft the screws *d* may be rotated.

The nuts *e* of the screws are threaded to correspond therewith and have firmly attached thereto pins *e'*, which project, respectively, through the side walls of the body *a* and are fastened in place by nuts $e^2$, as shown.

$e^3$ indicates angular clips, which are engaged and held by the pins *e'* and extend inward to engage the front ends of the nuts *e* and assist in holding the nuts rigidly in position.

The vise is used in the ordinary manner—that is to say, by operating the handle *h'*. This causes the screws *d* to be turned. According to the arrangement of gears here shown the movement of the screws will be in opposite directions, and in order to cause the thus oppositely-moving screws to work uniformly on the carriage *b* and moving jaw *b'* the screws should be oppositely threaded and of course the nuts correspondingly formed. The screws will draw equally on the carriage, and thus cause it to squarely engage the moving jaw against the stationary jaw. This construction also insures against the wrenching of the jaw, which wrenching would tend to throw the jaws out of proper alinement. It is clear that by varying the sizes of the gears and the pitch of the screws the power of the vise may be increased or diminished at will, and by the arrangement shown it is possible to so arrange the parts as to attain great clamping force.

Various changes in the form, proportions, and minor details of my invention may be resorted to at will without departing from the spirit and scope thereof. Hence I consider myself entitled to all such variations as may lie within the scope of my claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A bench-vise, comprising a body having a longitudinal opening therein, a stationary jaw, a moving jaw, a shank attached to the moving jaw and slidably fitted in the opening of the body, said shank having longitudinal grooves in its sides, screws mounted to turn in the moving jaw and extending through said grooves, means for turning the screws, and nuts fastened rigidly to the sides of the body and projecting into the grooves of the shank and permanently engaged both with the body and screws, to receive the screws.

2. A bench-vise, comprising a body having a longitudinal opening therein, a stationary jaw, a moving jaw, a shank attached to the moving jaw and slidably fitted in the opening of the body, said shank having longitudinal grooves in its sides, screws mounted to turn in the moving jaw and extending through said grooves, means for turning the screws, nuts located in the grooves of the shank to receive the screws, pins attached to the nuts and secured in the body, and clips fastened to the body and projected into engagement with the nuts, for the purpose specified.

3. A bench-vise, comprising a body having a longitudinal opening therein, a stationary jaw, a moving jaw, a shank attached to the moving jaw and slidably fitted in the opening of the body, said shank having longitudinal grooves in its sides, screws mounted to turn in the moving jaw and extending through said grooves, means for turning the screws, nuts located in the grooves of the shank to receive the screws, pins attached to the nuts and fitted in the body, fastening means engaged with the outer ends of the pins to hold them, and L-shaped clips secured by the said fastening means and projected around the adjacent corners of the body to engage the nuts, for the purpose specified.

4. A bench-vise having a body with an opening therein, a stationary jaw, a movable jaw, a screw mounted to turn in the movable jaw, a shank attached to the movable jaw and sliding in the opening in the body, a nut working with the screw, a pin attached to the nut and fitted in the body, a fastening for the pin, and an L-shaped clip held by said fastening and projected around an adjacent corner of the body to engage the nut, for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK J. WERMES.

Witnesses:

ALEX. RAEBLING,

WM. H. BERLING.