

(No Model.)

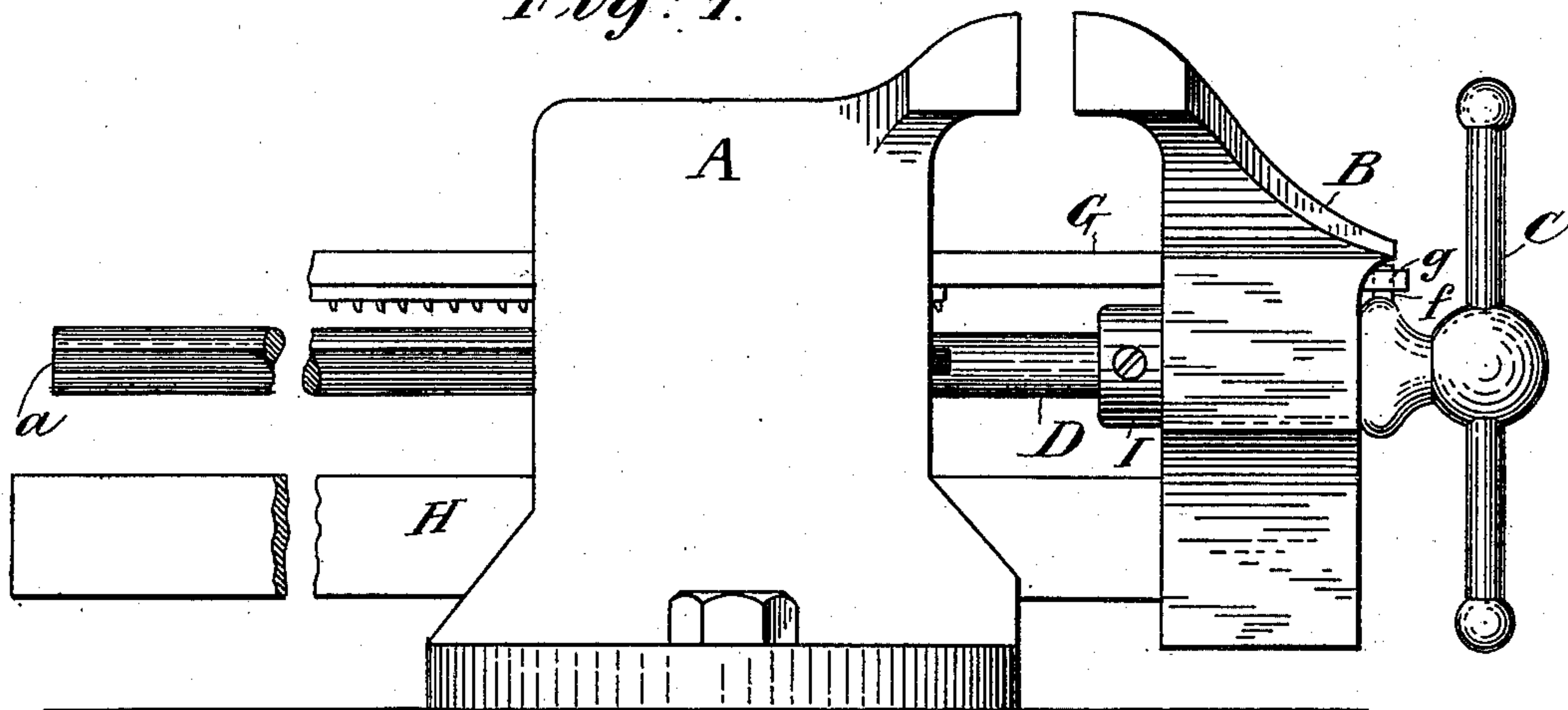
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M. G. LEWIS.  
BENCH VISE.

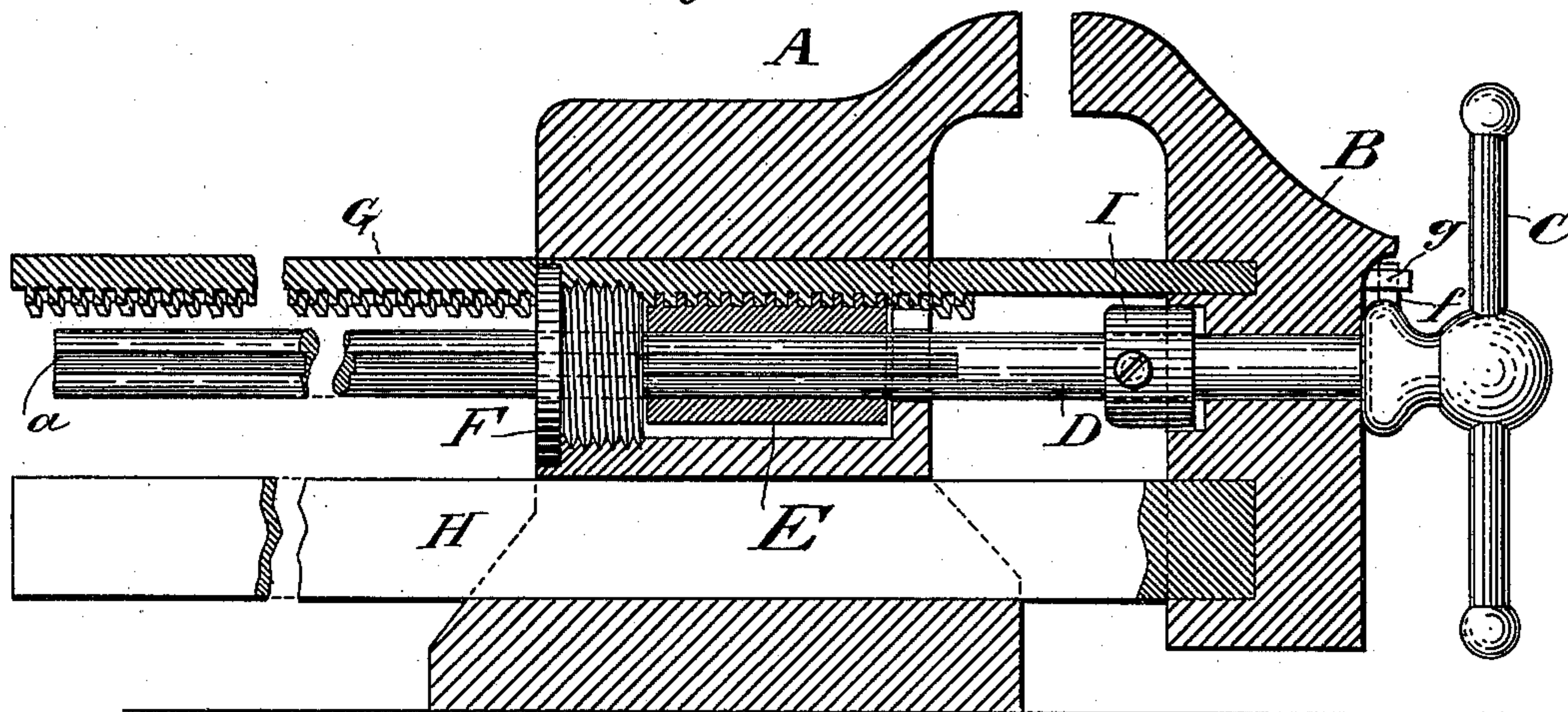
No. 596,661.

Patented Jan. 4, 1898.

*Fig: 1.*



*Fig: 2.*



**WITNESSES:**

L. H. Kline  
M. A. Wilson

INVENTOR

M. G. Lewis

BY

BT  
South Coast  
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(No Model.)

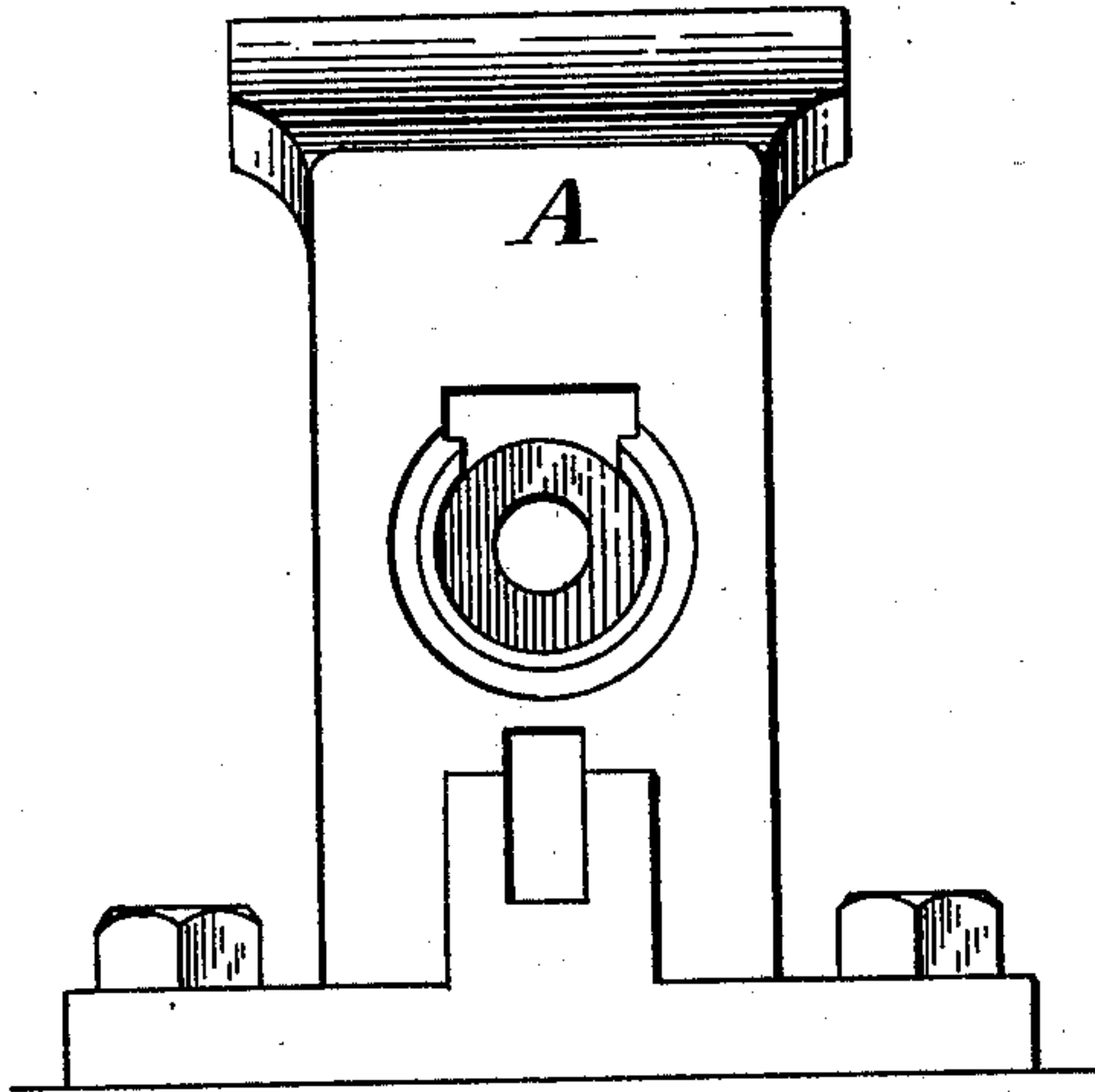
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M. G. LEWIS.  
BENCH VISE.

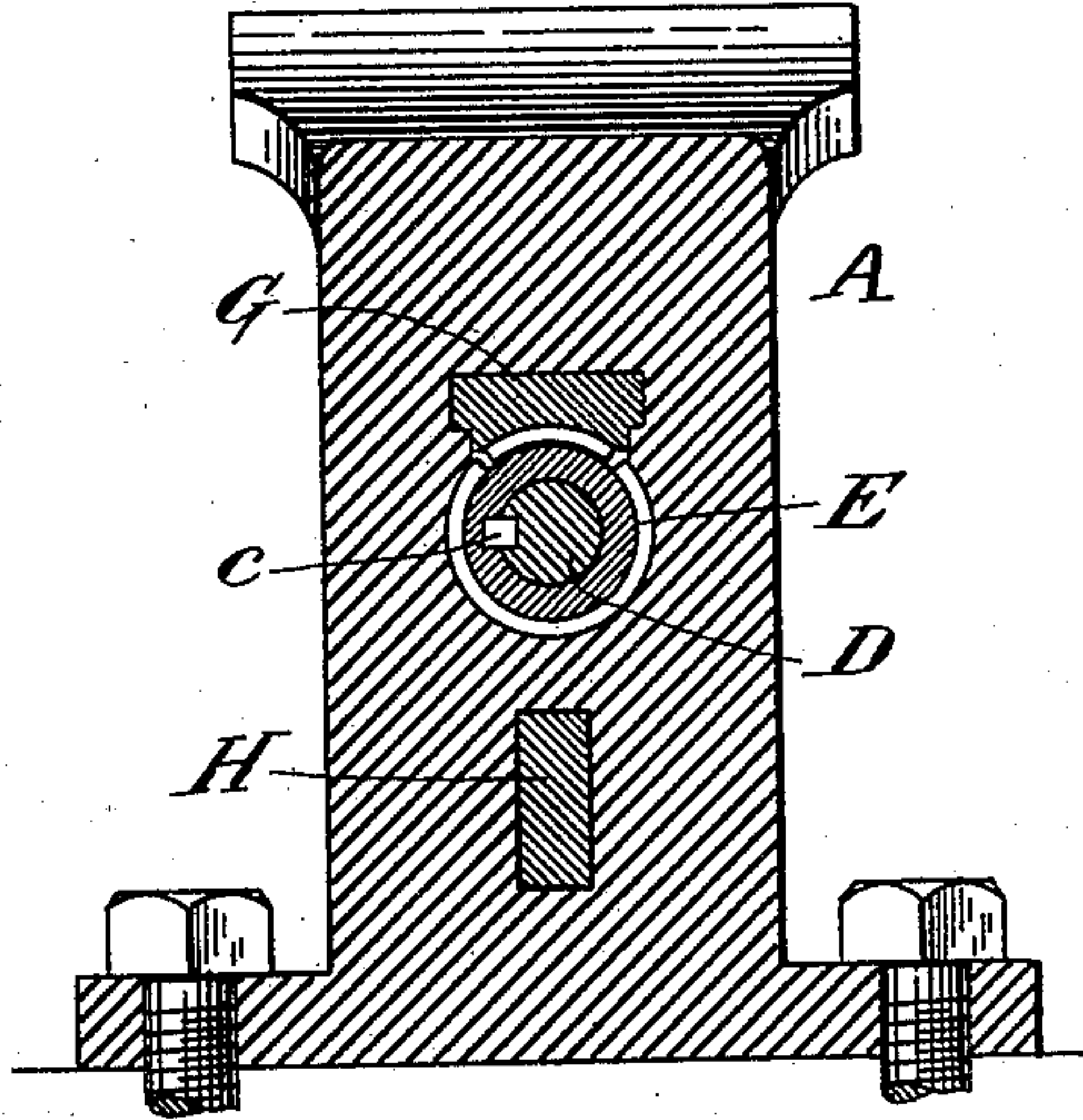
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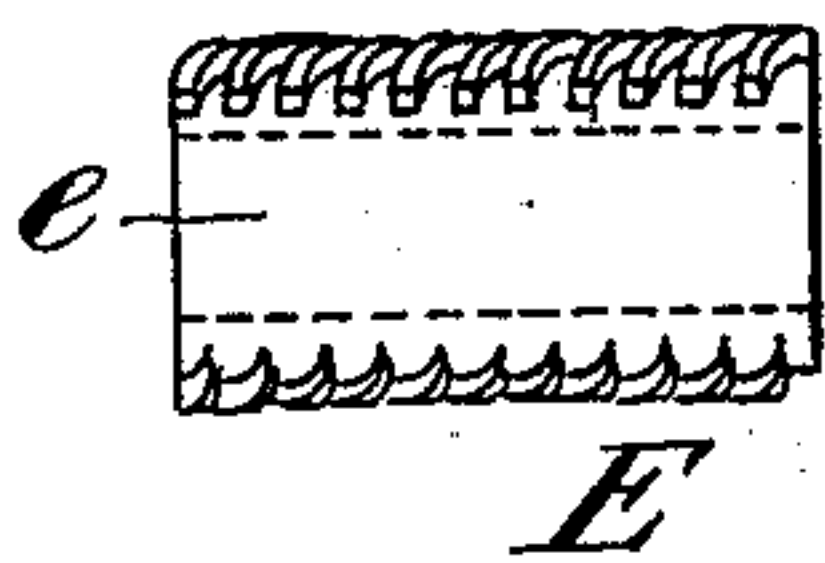
*Fig. 3.*



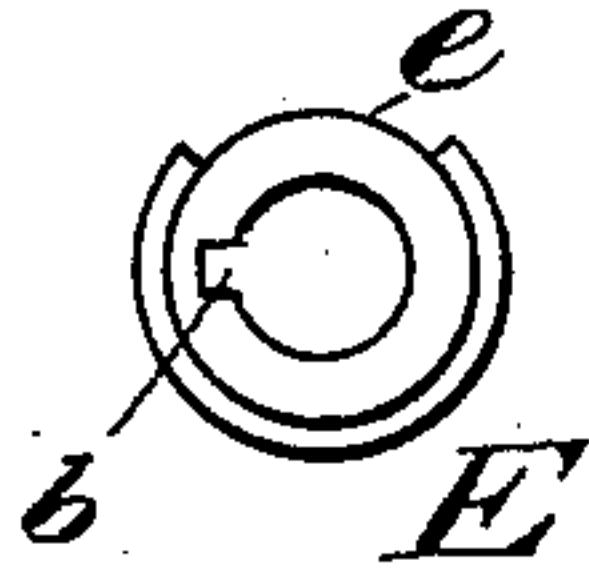
*Fig. 4.*



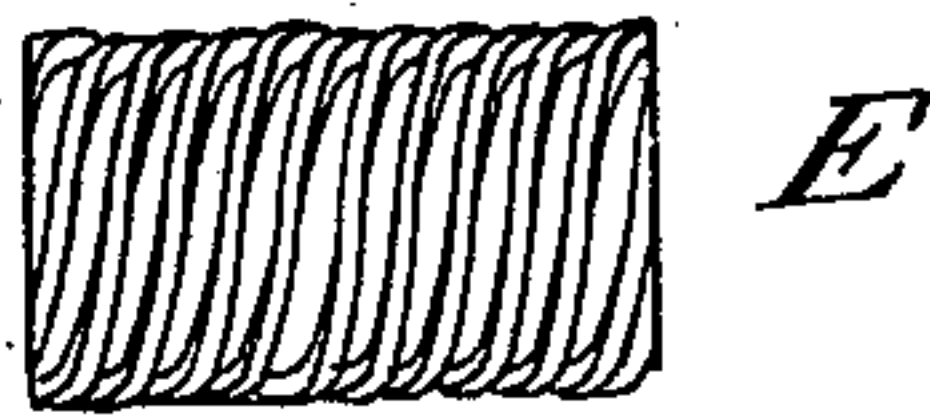
*Fig. 6.*



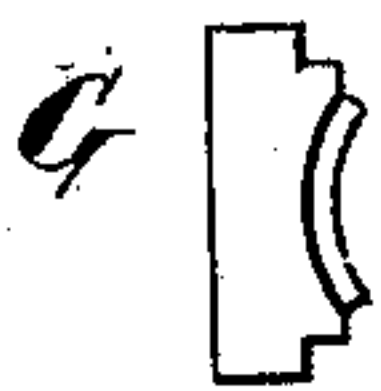
*Fig. 5.*



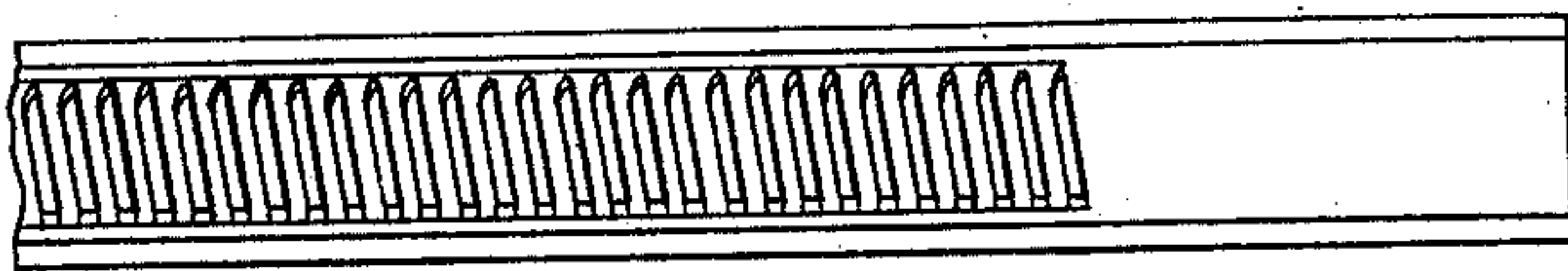
*Fig. 7.*



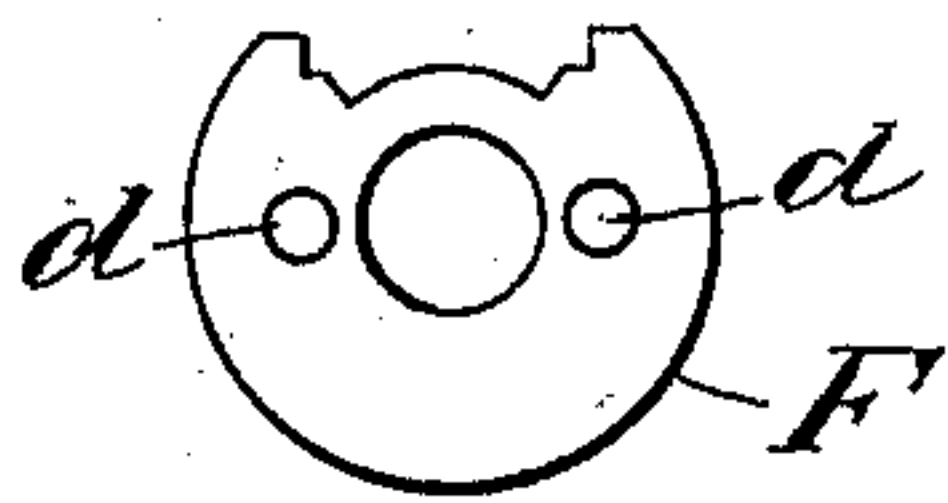
*Fig. 8.*



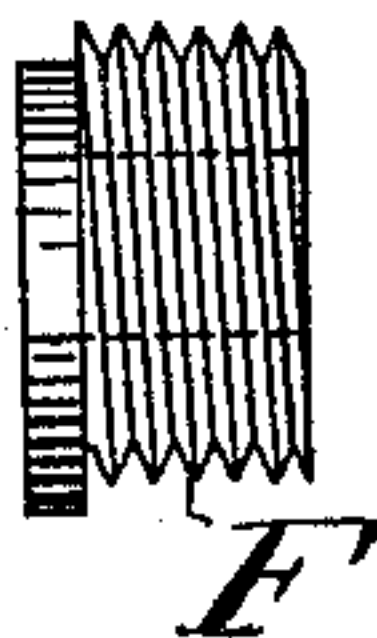
*Fig. 9.*



*Fig. 10.*



*Fig. 11.*



WITNESSES:

*J. H. Aliman*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

MORTIMER G. LEWIS, OF NEW YORK, N. Y.

## BENCH-VISE.

SPECIFICATION forming part of Letters Patent No. 596,661, dated January 4, 1898.

Application filed September 30, 1897. Serial No. 653,563. (No model.)

*To all whom it may concern:*

Be it known that I, MORTIMER G. LEWIS, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Bench-Vises, of which the following is a specification.

My invention has relation to bench-vises, and particularly to that variety now commonly called "rapid-transit" or "quick-action" vises, from the fact that they embody means for permitting a rapid movement of one head or jaw toward or from the other without the necessity of continuously turning the vise-screw, as is required in the ordinary forms of vises without such provision. In many previous vises of this variety independent levers, cams, springs, and appliances of various construction and arrangement have been employed to throw the clamping-screw and the nut (made sectional for the purpose) out of engagement with each other, so that the screw and its attached vise-head might be slipped back and forth; but these appliances are all more or less liable to get out of order or to become difficult to manipulate, and, more than all, they necessitate a separate and unusual, as well as an inconvenient, movement of the hand of the operator, distinct from the motion by which he effects the clamping or releasing of the piece of work within or from the vise.

The object of my invention is to provide a vise which shall be of few and simple parts, easy and cheap to construct, efficient in all respects, and wherein the movable vise-head may be released and rapidly shifted from one position to another by simply turning and then moving the usual lever back or forth, requiring no second lever, as in the above-mentioned previous forms. To accomplish all of this and to secure other and further advantages in the matters of construction, operation, and use, my improvements involve certain novel and useful arrangements or combinations of parts, peculiarities of construction, and principles of operation, as will be herein first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation, and Fig. 2 a longitudinal section and elevation, of one form of bench-vise, showing my improvements applied in connection therewith. Fig. 3 is an end elevation of the back or body, omitting the cap, the nut or screw, and the rack and rod; and Fig. 4 is a sectional view showing the rack, the screw, and the rod in place. Fig. 5 is an end view of the screw detached; Fig. 6, a plan of the top of the screw as it appears in Fig. 5, and Fig. 7 a plan of the bottom of the same. Fig. 8 is an end view of the rack shown in previous figures, and Fig. 9 a plan of the same with the working face turned uppermost. Fig. 10 is an end view, and Fig. 11 a corresponding side view, of the cap for the screw.

In all the figures like letters of reference, wherever they occur, indicate corresponding parts.

The vise may be of any ordinary shape or size and intended for any of the usual purposes, the form selected for illustration having no particular significance in this connection, and the improvements are of such character that, generally speaking, they may be easily applied upon existing forms without much expense for alteration of the patterns.

A is the stationary head or body of the vise, and B the movable head, both carrying the usual jaws between which the work is to be clamped.

C is the hand-lever, which in ordinary forms passes through the head of the clamping-screw. In the place of the usual form of clamping-screw I employ a rod or shaft, as D, which is to be turned by lever C, and this shaft is shown as supplied with a key-seat *a*, extending from its outer end to its limit of travel within the body.

Shaft D passes through a screw E, which is also key-seated, as at *b*, and carries a key or spline *c*, which, entering the seat provided for it in the shaft, insures that the shaft and screw must always revolve together, but permits the shaft to be easily moved back and forth through the screw. This special form of construction for these two parts is regarded



as simplest; but of course there are many other ways of keying or splining them, any of which may be adopted, if desired.

The screw is housed within body A, so that it may turn easily therein, but is prevented from moving lengthwise except through a small fraction of an inch, which enables it to adjust itself easily to engagement with the rack. Preferably the screw is inserted from the back, bearing at front against a part of the body of the vise, and the opening at back being closed by a screw-cap F. When constructed in this way, the cap is preferably seated in a countersink in the body, as indicated, so as not to project beyond the body, and for convenience in turning it to place it may be supplied with depressions, as *d d*, for the application of a suitable wrench; but the cap might be applied on the other side of the body or the screw be otherwise housed and retained in place.

The screw engages with a rack, as G, applied in some substantial manner to the movable head. This rack may be in any position; but I prefer that it shall be located above the screw, for in that position it will not collect and carry clippings and filings or the like, which would interfere with the perfect working of the parts.

In the special vise chosen for illustration a slide-bar, as H, is employed; but this might be omitted in some forms, the rack itself then forming also the bar by which the movable head is sustained.

The screw is cut away at a portion of its surface, as shown at *e*, so that when that portion is turned toward the teeth of the rack the rack will be free to be moved back and forth and therefore the movable head free to be adjusted by simply pulling or pushing it. To stop the screw at the point where it will release the rack, the knob of the shaft is supplied with a pin, as *f*, and this strikes an abutment on head B, as at *g*, and these parts are preferably so located that when lever C is in a vertical position (or a trifle back of the vertical) the screw and rack will be free from engagement and the lever remain in the vertical position until purposely disturbed. With the parts thus arranged the operator has only to turn the lever to the vertical and pull out the movable head with one hand, insert the piece of work with the other, push up the head, and effect the clamping by turning the lever in the usual way.

It is preferred that the threads upon the screw be parallel rather than made up of a continuous winding, as screws are most ordinarily made. Six or more threads to the inch will afford a good bearing and good initial engagement with the rack, but the number may be varied at will. The threads at their extremities on the side of the blank space *e* which is turned toward the rack to effect the engagement are sharpened, as indicated in

Fig. 6, and the threads of the rack are likewise sharpened, so that engagement may be made without difficulty or obstruction of one part by the other, and the screw is housed a little loosely, so that it may yield a little as the parts adjust themselves one to the other.

The collar I upon the shaft D, or the means by which the shaft is retained in place in head B, is set so as to allow of a little longitudinal movement of the shaft within the head in order that when the head is pushed up against the work and the shaft (and thereby the screw) turned the head may advance sufficiently to clamp the work without pushing the shaft in. Otherwise the clamping action would also have to overcome the friction on the spline, which by the above simple expedient is rendered unnecessary.

The screw-cap F is recessed at one part, so as to permit the rack to pass easily through it, and the cap fits the rack and shaft quite closely, so as to prevent entrance of foreign substances into the chamber containing the screw.

While the advance of the movable head under the action of the screw is short, it is abundant for all the usual uses of the vise for clamping work.

Being constructed and arranged substantially in accordance with the foregoing explanations, the improvements are found to admirably answer the purposes or objects of the invention above alluded to.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a bench-vise of the character herein set forth, the combination with the body and movable head, of a screw located in the body, a rack applied upon the movable head, and a shaft for turning the screw, the screw being cut away at one portion and keyed upon the shaft, substantially in the manner and for the purposes set forth.

2. In a bench-vise, the combination with the rack, of the screw cut away at a portion of its surface as explained, and the shaft keyed in and movable longitudinally through the screw, the threads of the screw and those of the rack being sharpened at their extremities, substantially as and for the purposes set forth.

3. In a vise of the character herein set forth, the rack attached to the movable head, said rack being mounted above and arranged to engage with the screw below it and to slide back and forth over the screw, substantially in the manner and for the purposes set forth.

4. In a bench-vise of the character herein set forth, the combination with the movable head, of the shaft keyed in and movable longitudinally through the screw, said shaft being supplied with a pin arranged to abut against an obstruction on the movable head, substantially as and for the purposes set forth.



5. In a bench-vise of the character herein set forth, the combination with the screw and the movable rack above it, of the shaft for turning the screw, said shaft being mounted  
5 in the movable head and arranged to move longitudinally therein and in the screw to which it is keyed, substantially as shown and described.

6. The combination with the rack and the  
10 shaft, of the cap-screw mounted in the vise-

body, said cap-screw being recessed to fit around the rack, substantially as and for the purposes explained.

Signed at New York, in the county and State of New York, this 25th day of September, A. D. 1897.

MORTIMER G. LEWIS.

Witnesses:

M. A. WILSON,  
WORTH OSGOOD.