

No. 742,281.

PATENTED OCT. 27, 1903.

J. A. BLAKE.
BENCH VISE.

APPLICATION FILED APR. 24, 1903.

NO MODEL.

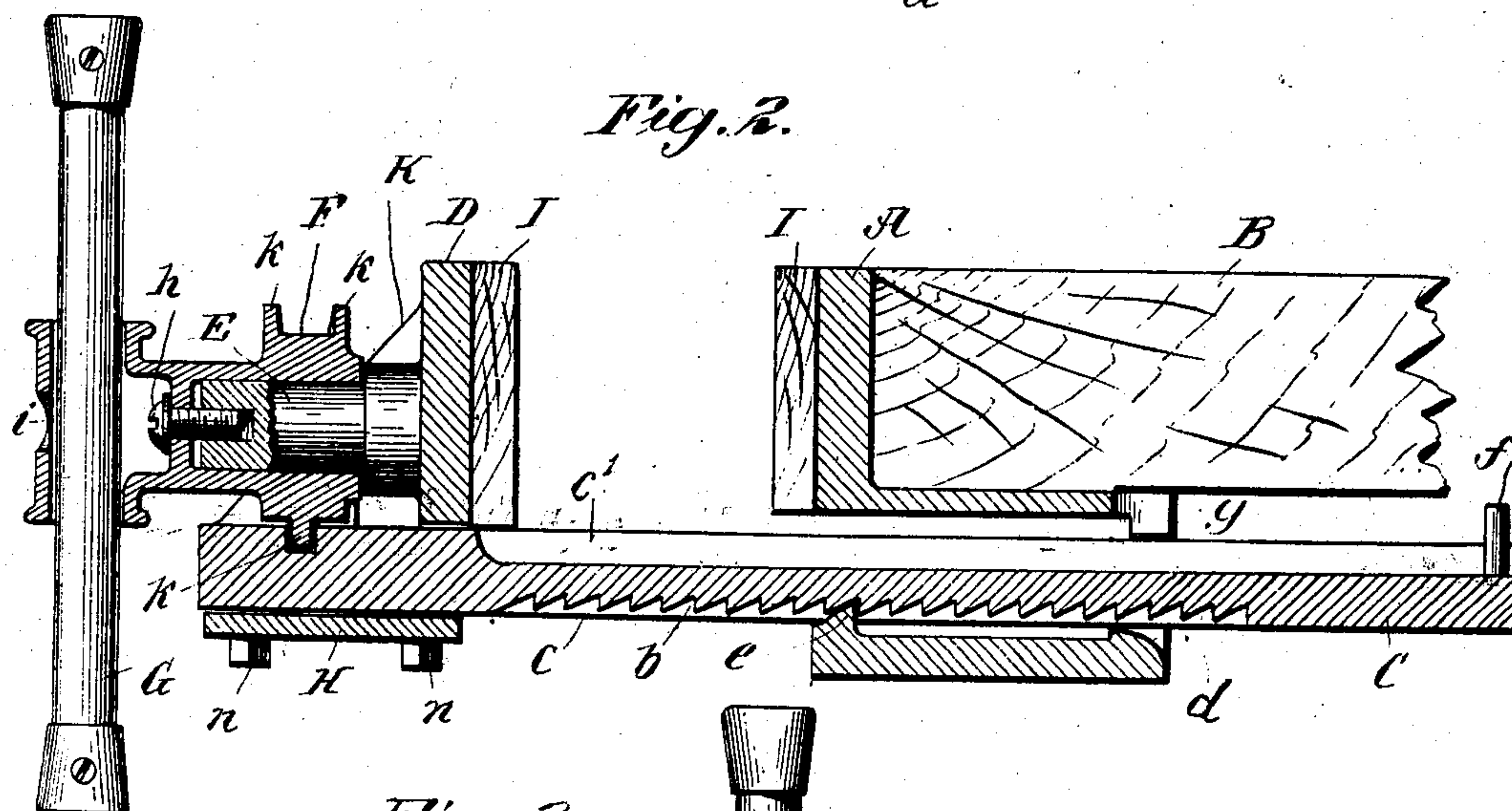
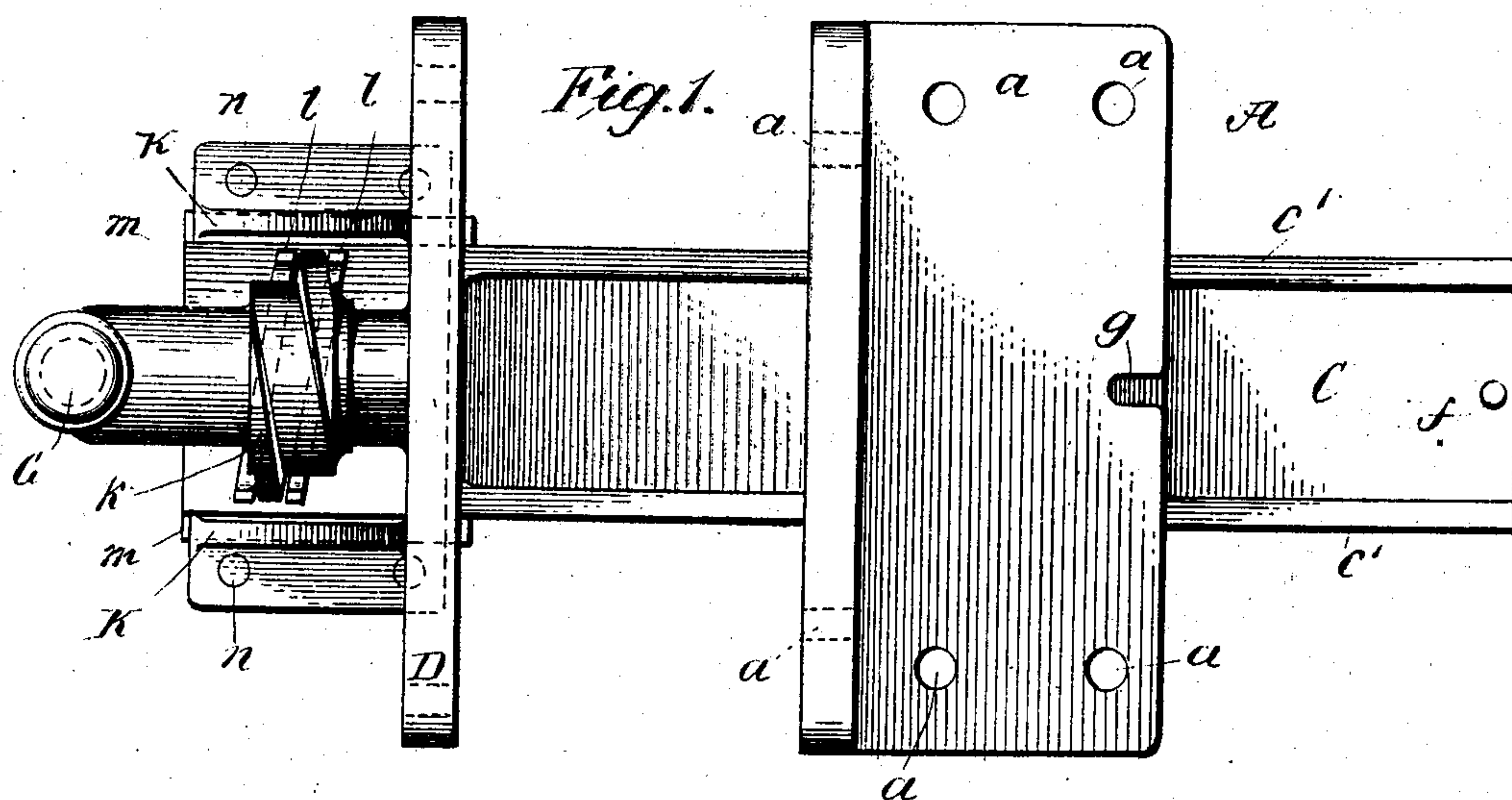
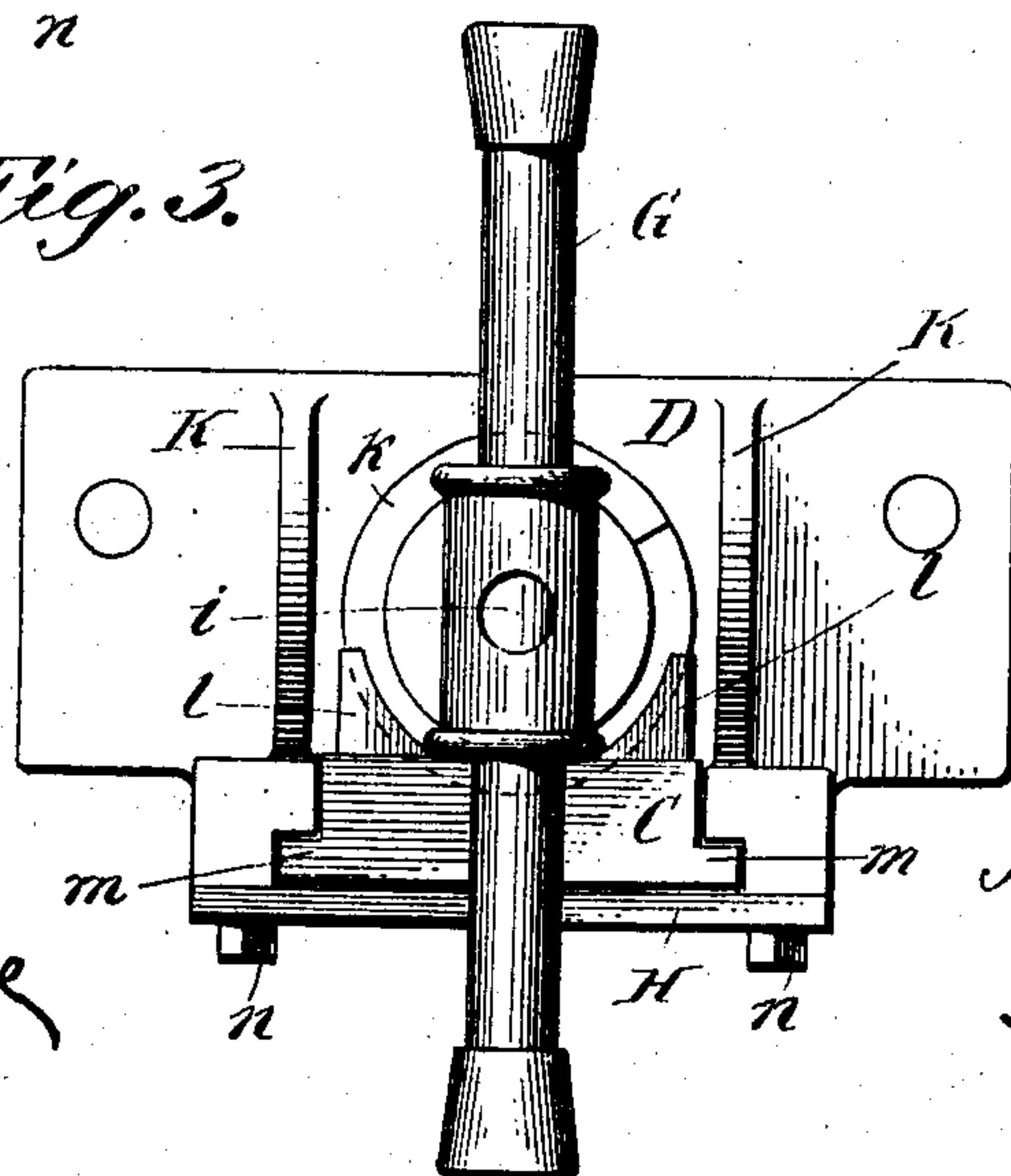


Fig. 3.



WITNESSES:

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BENCH-VISE.

SPECIFICATION forming part of Letters Patent No. 742,281, dated October 27, 1903.

Application filed April 24, 1903. Serial No. 154,072. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. BLAKE, a citizen of the United States, and a resident of Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Bench-Vises, of which the following, taken in connection with the accompanying drawings and letters marked thereon, is a full, clear, and exact specification.

My present invention has relation to that class of bench-vises wherein the movable head is adjustable rapidly toward or from the stationary head to close or open the vise to receive the work, after which the final pressure may be applied by a slower movement of the movable head. This general class of bench-vises has come to be known as "rapid-transit" vises.

The object of my present invention is to provide or produce a bench-vise of the general class above named which shall be of few and simple parts, easy to make and operate, and which shall be substantial, reliable, and effective for the purposes for which it is intended.

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 and peculiar features of construction, 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 top or plan view of a bench-vise constructed and arranged for operation in accordance with my invention and involving my improvements, the two heads being separated by a little distance or the vise being partly opened. Fig. 2 is a central longitudinal section and elevation corresponding with Fig. 1, but showing the vise in position on the edge of a bench and showing also the manner of applying wooden or other strips against the metallic faces of the heads. Fig. 3 is an end elevation corresponding with Figs. 1 and 2, showing the front or movable head.

In all the figures like letters of reference

wherever they occur indicate corresponding parts.

The general form of bench-vise shown in the drawings is chiefly intended for wood-workers' use; but it might be employed by metal-workers and others, and it should be understood that the size or form of the bearing-faces of the vise-heads may be varied to correspond with the uses for which the vise is intended, as may also the size or weight of the different parts.

A represents the stationary vise-head, the same being adapted to be secured to a bench and to receive the slide-bar. B represents a portion of the bench on the edge of which it may be desired to secure the vise. For this purpose the stationary head is supplied with any number of bolt or screw holes, as at *a*. The lower portion of the head A is slotted to receive the slide-bar on which the movable head is mounted.

C is the slide-bar, of which the under face is provided with a series of teeth, as at *b*, at its central part, forming a rack of any desired width, the teeth of which do not project below the plain margin *c*, which is located on either or both sides of the rack. The rear portion of the slot in the head A is rounded down, as at *d*, and the front portion of this slot is supplied with one or more substantial catches, as *e*, adapted to engage with the teeth of the rack, so as to firmly hold the bar C against movement toward the front whenever the work is clamped between the vise-heads, but permitting the bar to be easily moved in the opposite direction.

At *f* is a removable pin located in the end of the slide-bar, the same operating as a stop to prevent the vise from being opened too far, the stop being arranged to enter a suitable recess *g* in the stationary head A. This recess may be omitted, if desired.

Under the construction and arrangement so far described if the front end of the slide-bar be slightly elevated, so as to remove the teeth of the rack from the catch *e*, the bar may be moved in its inclined position back and forth as rapidly as may be required, the margin *c* riding smoothly on the curved portion *d* at the back of the stationary head.

When the bar is down, so that the teeth of the rack engage with the catch *e*, the bar cannot be moved forward; but the teeth of the rack may be pushed backward over the catch *e* without otherwise purposely elevating the front end of the bar. Thus it will be seen that the vise may be opened or closed very rapidly, saving much time in this movement over the ordinary forms of vises. Of course this rapid adjustment would not serve to pinch or clamp the work very tightly between the heads, but is only employed to bring the heads approximately to the position in which they can be made to clamp the work. For the final secure clamping of the work the front or movable head is so mounted upon the slide-bar that it may be powerfully advanced or retracted thereon through a short distance.

D represents the adjustable head. It is supplied with a stud *E*, on which a screw-sleeve *F* is mounted to be turned after the manner of an ordinary vise-screw—that is, by means of an ordinary vise handle or lever, as *G*, or by other ordinary means. The sleeve *F* at the inner end abuts against a shoulder on the stud *E* and is prevented from being drawn off the stud by a suitable holding-screw, as at *h*, the same passing through a bridge in the sleeve *F* and being tapped into the end of the stud *E*. This holding-screw *h* is easily entered and seated from the exterior, as through an opening *i* provided for the purpose.

The sleeve *F* constitutes the clamping-screw, being provided with a short thread or worm, as *k*, the same making a little more than one complete turn, as indicated in Fig. 1. This thread engages a corresponding recess in the upper surface of the front end of the slide-bar, and this recess is prolonged by projections or abutments, as *l l*, which rise above the upper surface of the bar and afford an elongated bearing for the thread. While the projecting thread is shown as formed on the sleeve and the recess and abutments, constituting the nut for the thread, are shown as formed on the slide-bar, it is plain that the sleeve might be recessed and the raised thread be formed on the slide-bar, if preferred.

On each side of the slide-bar *C* are short guides *m m* to receive and hold the corresponding recessed portions of the adjustable head, and the adjustable head is secured in place by a cross-plate, as *H*, applied to the under side of this head, as by bolts *n n*.

When the parts are in place substantially as indicated and the vise opened so as to conveniently receive the work, the work will be clamped by turning the handle *G* in one direction or unclamped by turning it in the opposite direction after the manner of employing the ordinary vise-screw. The movement of the head *D* under the influence of the screw is ample for all required clamping purposes, and the screw is made abundantly

strong, so as to afford the required pressure. The greater or more extended adjustments of the front head are always to be made by the rapid adjusting of the slide-bar back and forth. The ends of the thread or worm *k* strike against the top of the slide-bar when the sleeve is turned in either direction to the limit desired, and thus the sleeve is prevented from being turned too far and the thread therefore secured against accidental disengagement with its nut; but other forms of stops may be used in connection with the sleeve.

At *I I* are blocks or other pieces such as are usually inserted in metallic vises to prevent damage to the work by great pressure thereon. It is not always necessary to employ these pieces, and they may be omitted, if desired.

The slide-bar shown is broad in comparison with its depth in order to make the structure compact. To contribute vertical strength to this bar, the upper as well as the lower side may be supplied with projecting margins, which latter are shown at *c' c'*.

K K are buttresses for the upright portion of the movable head, whereby the latter is made perfectly rigid and capable of withstanding the effects of blows upon the work which may be held between the vise-heads.

The parts may be made of any size and any weight, and the improvements will be found advantageous in bench-vises for any purpose, and particularly so for woodworkers' use.

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, a stationary head slotted to receive the slide-bar and provided with a catch, a slide-bar having a rack with which said catch engages and a plain portion beyond which the teeth of the rack do not project, the back of the slot in the stationary head being rounded down and the plain portion of the bar being arranged to slide upon the said rounded portion, substantially as explained.

2. In a bench-vise, the combination of a slotted stationary head having a stationary catch, a slide-bar adjustable and capable of being tilted in the slot, and a movable head mounted on the slide-bar, said slide-bar being supplied with a rack and a marginal strip at the side of the rack, substantially as and for the purposes set forth.

3. In a bench-vise, the combination with a slide-bar and a movable head mounted thereon, of a sleeve and means for turning the same, said sleeve engaging with the slide-bar and arranged to move said head back and forth thereon, the ends of the thread upon the sleeve being arranged to engage the top of the slide-bar, substantially as explained.

4. In a bench-vise, the combination with a slide-bar and a movable head mounted thereon, of a sleeve and means for turning the

same, a stud for supporting the sleeve and means for connecting the latter with the stud, the sleeve being arranged to engage with the slide-bar, substantially as and for the purposes set forth.

5 5. In a bench-vise, the combination with a slide-bar of a movable head mounted thereon and a sleeve with projecting thread for adjusting the head back and forth, the said
10 head being supplied with a removable cross-

piece extending beneath the slide-bar, substantially as shown and described.

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

JOHN A. BLAKE.

Witnesses:

JAMES R. HINDS,
FRANK WENZEL.