

No. 758,840.

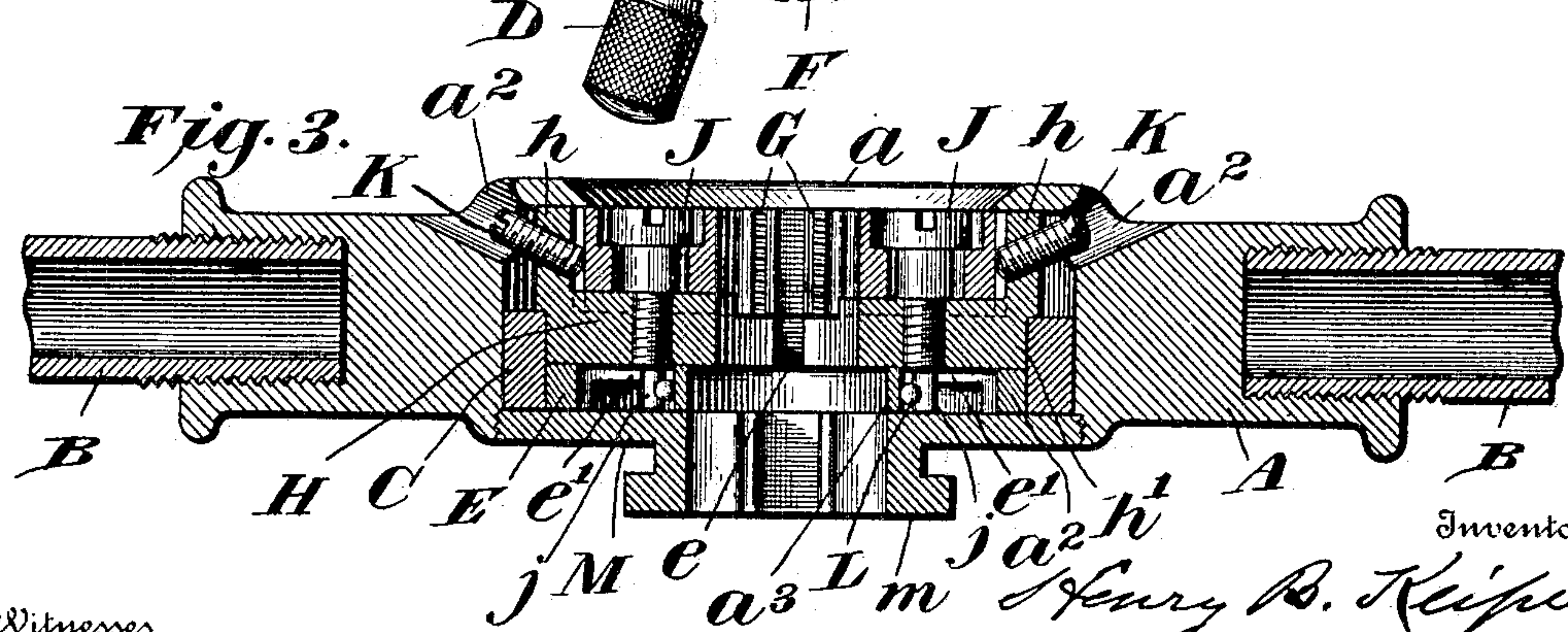
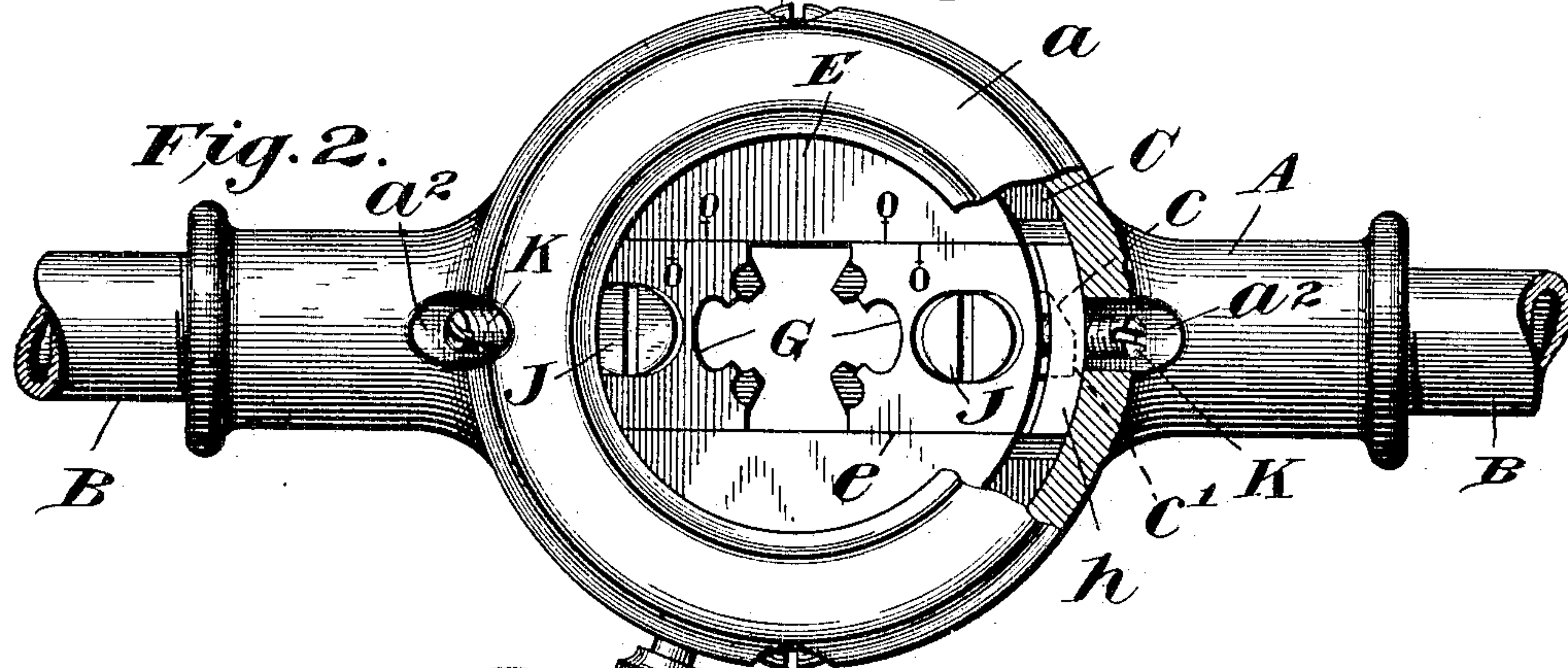
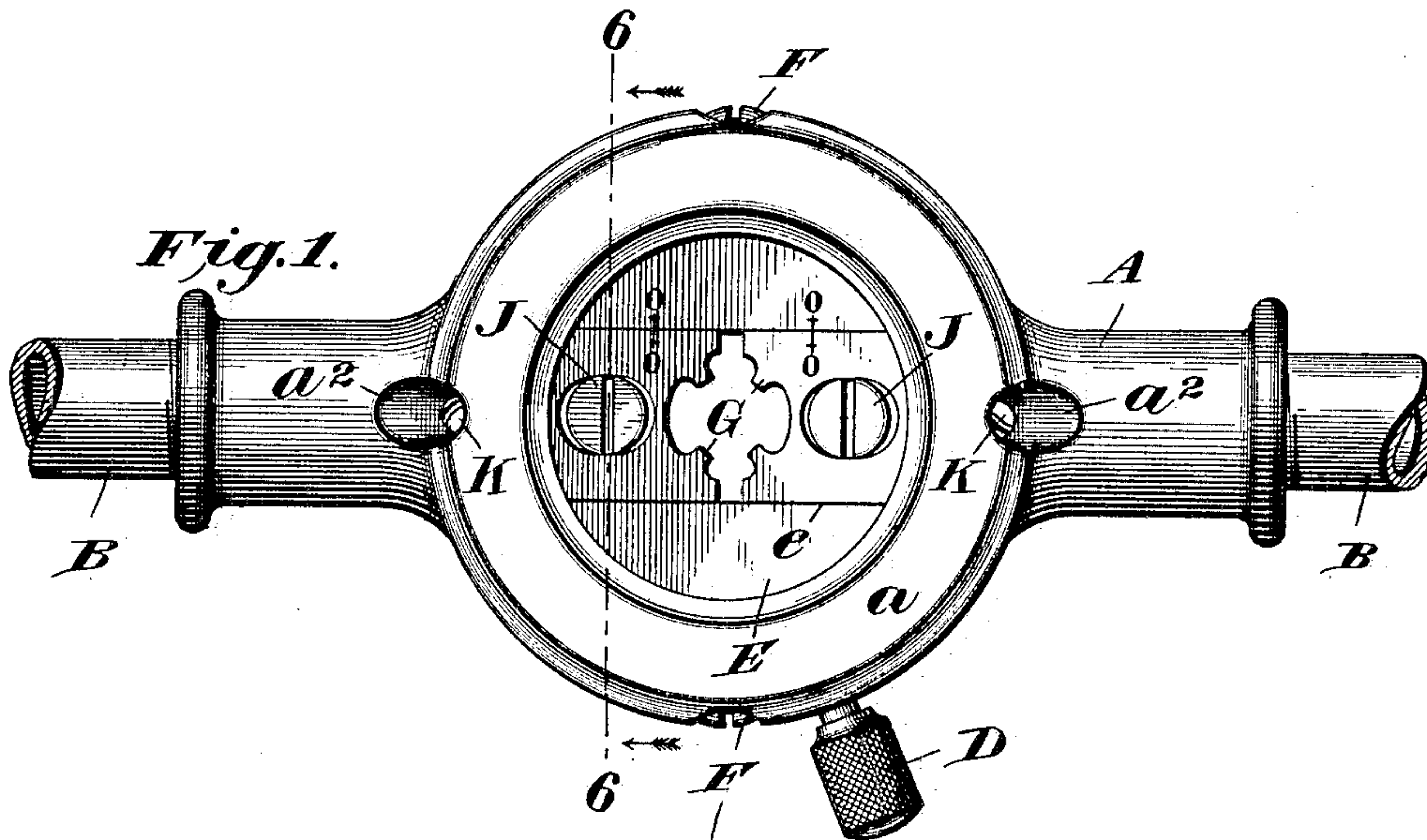
PATENTED MAY 3, 1904.

H. B. KEIPER.  
SCREW CUTTING IMPLEMENT.

APPLICATION FILED NOV. 29, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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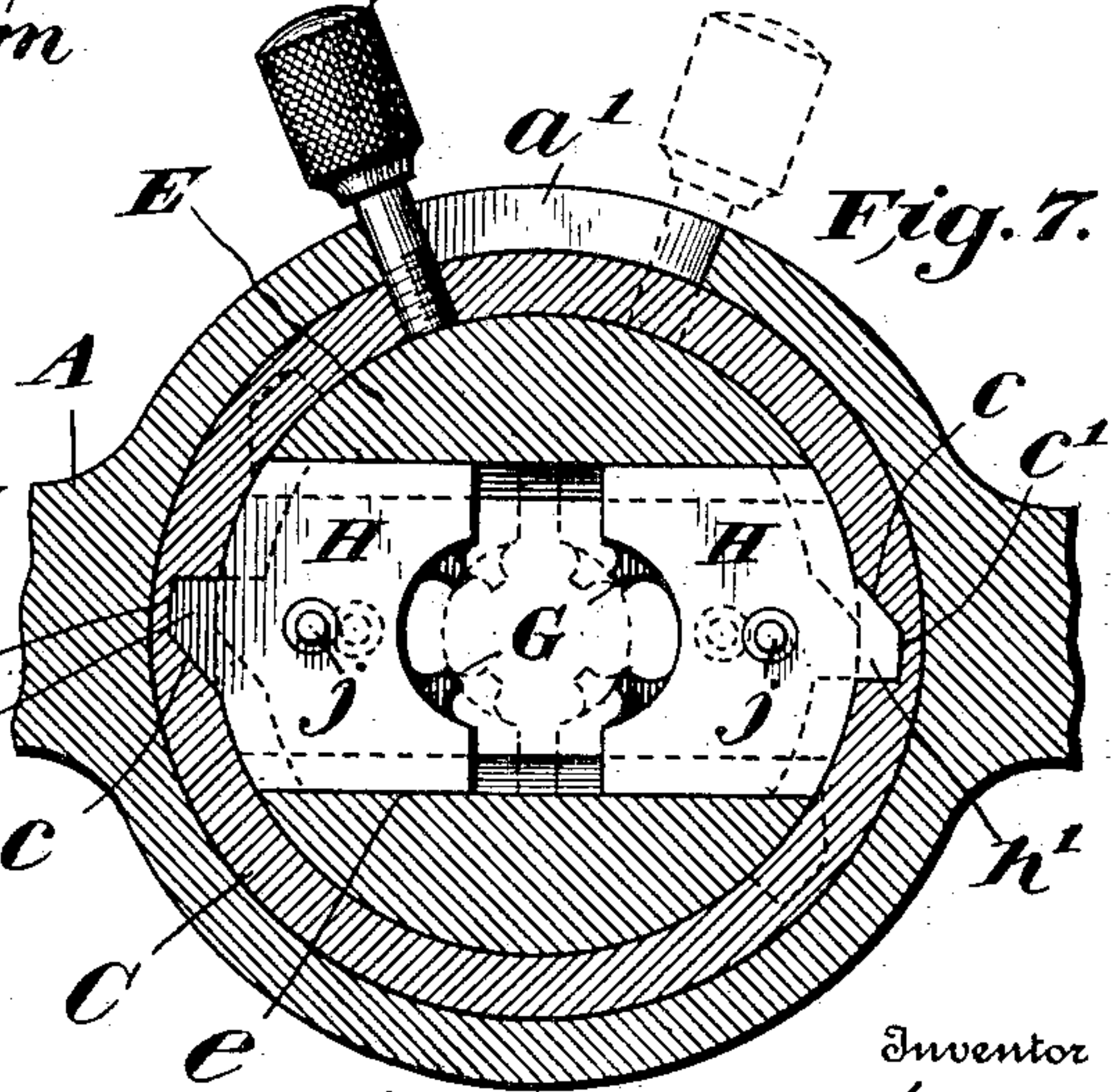
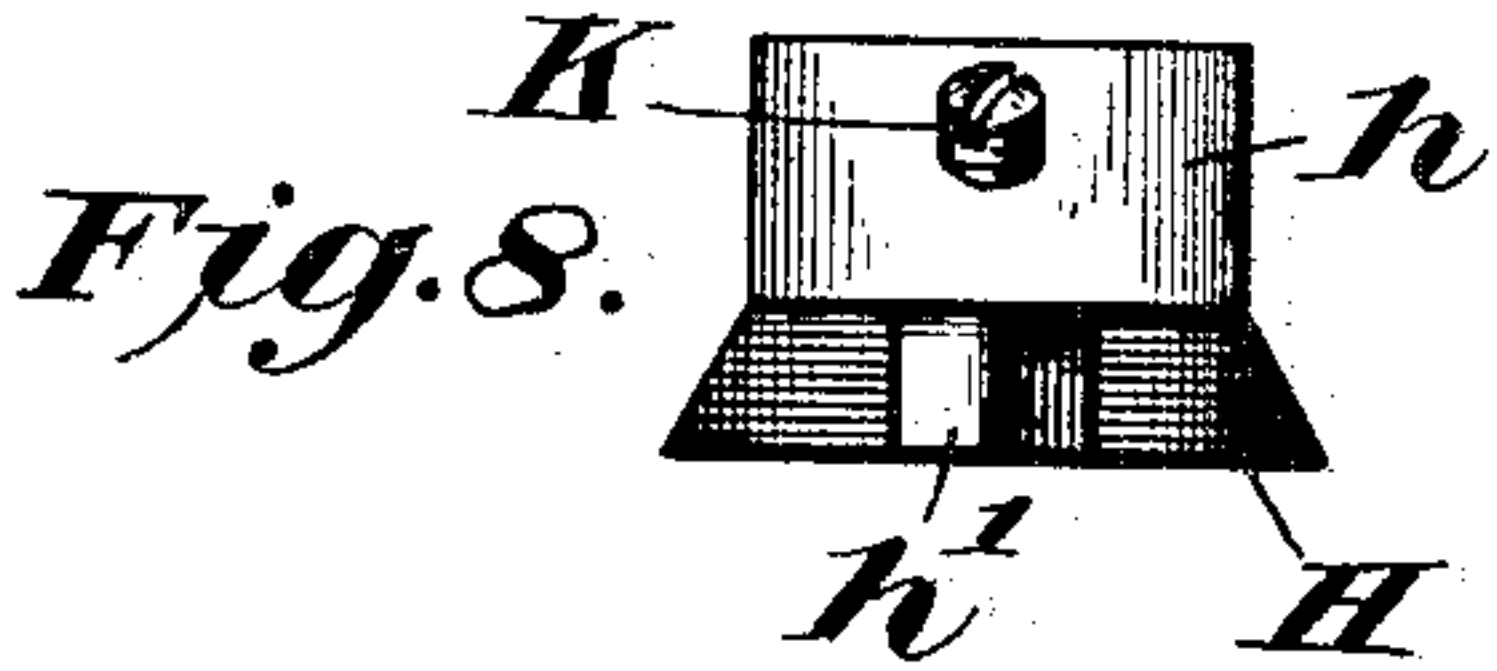
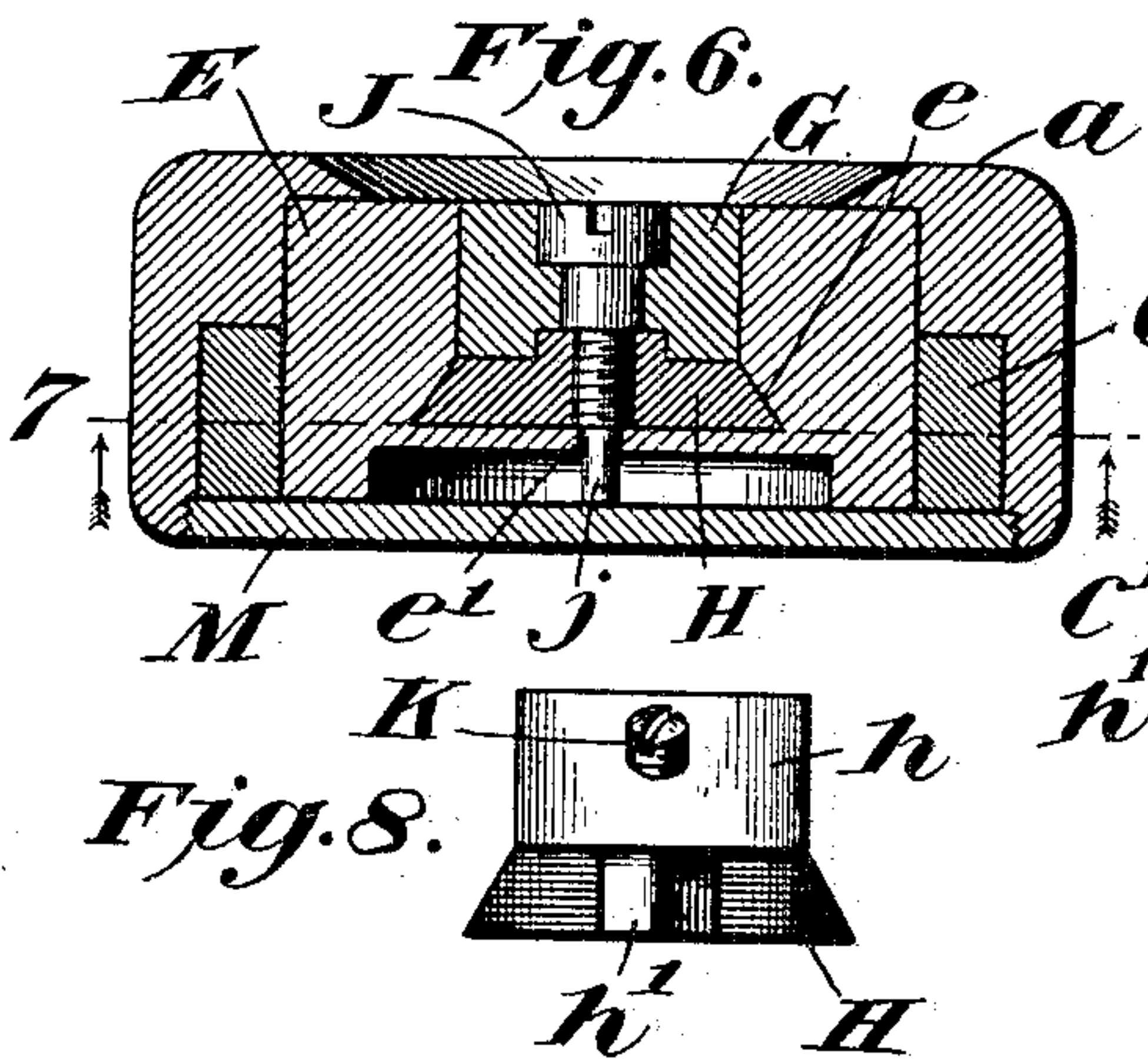
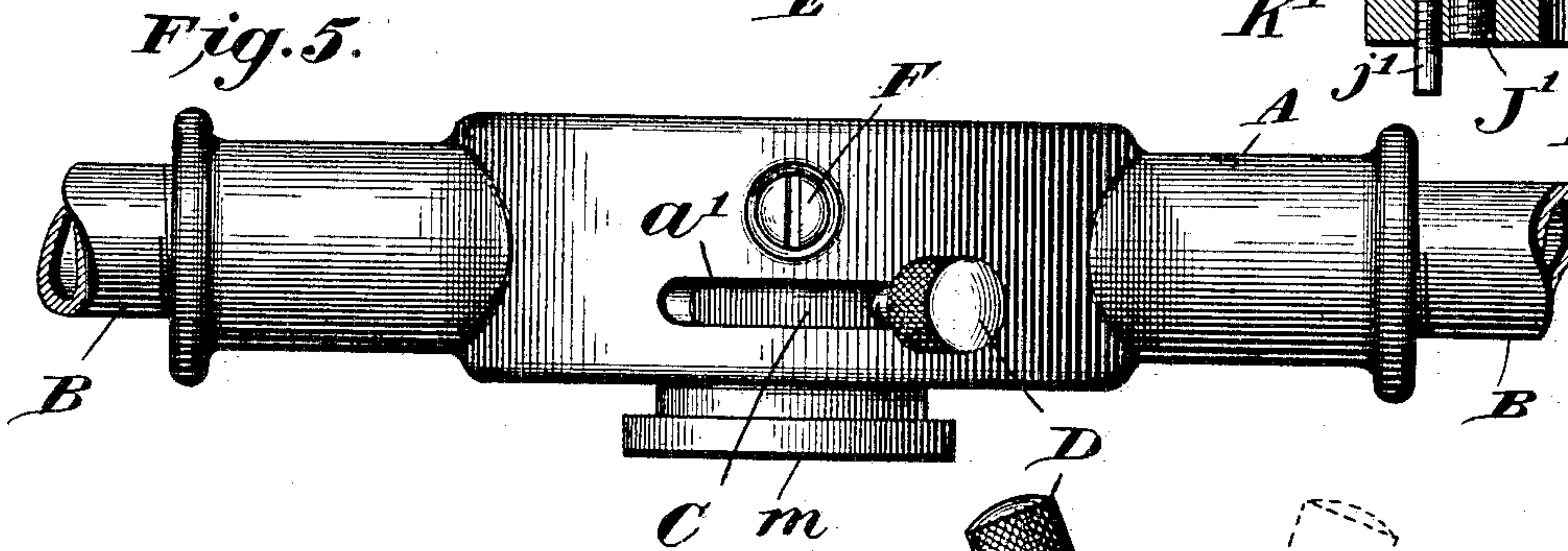
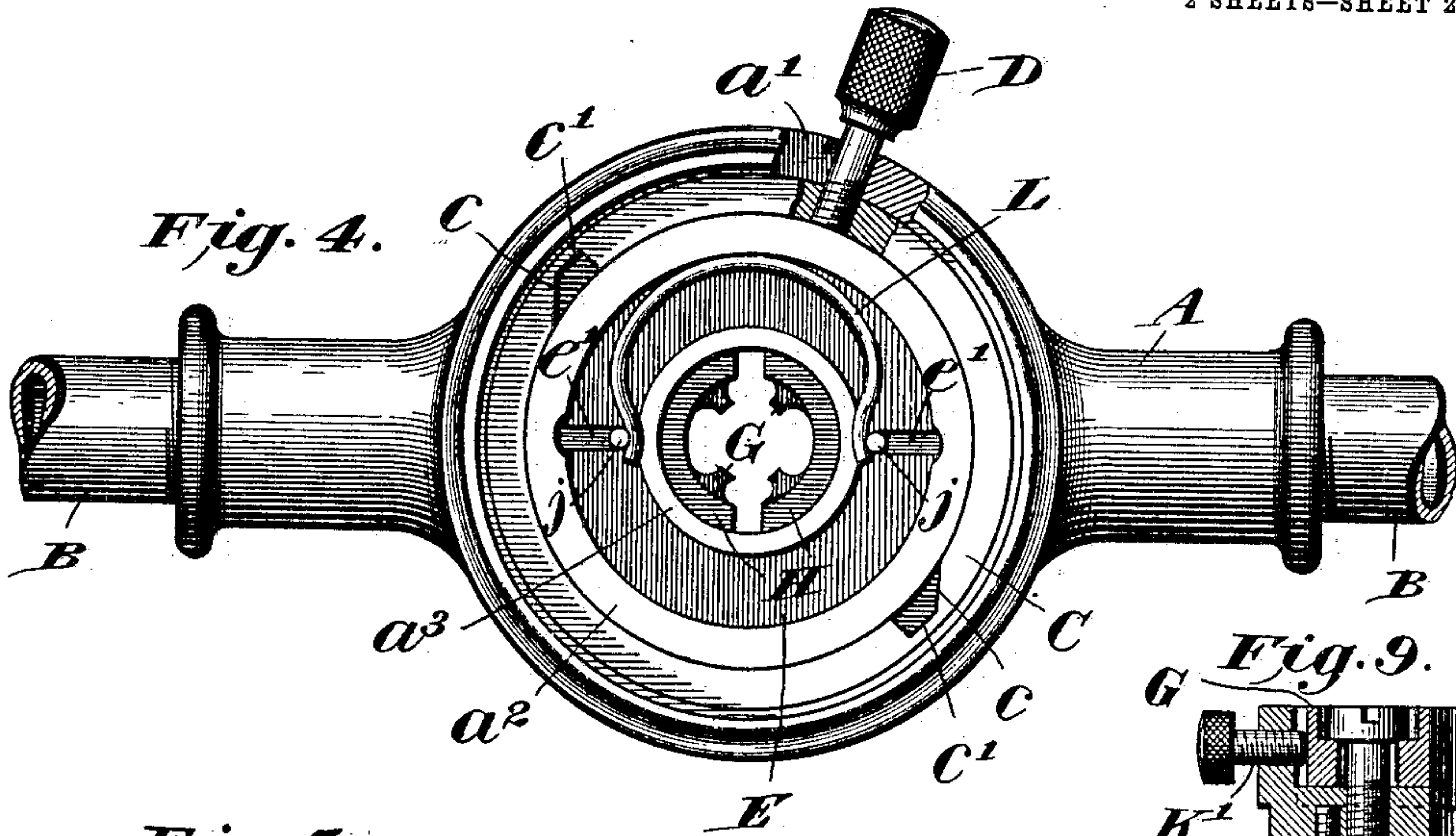
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

HENRY B. KEIPER, OF LANCASTER, PENNSYLVANIA.

## SCREW-CUTTING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 758,840, dated May 3, 1904.

Application filed November 29, 1902. Serial No. 133,229. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY B. KEIPER, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Screw-Cutting Implements; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to screw-cutting implements of that type in which opposite or radial dies or chasers are adjustably mounted in a suitable stock or holder; and the principal object is to provide a simple and efficient device of this character with improved means for delicate adjustment of the dies and with improved means whereby the dies may be closed upon the bolt, stud, rod, or pipe to be cut and instantly released or retracted therefrom without affecting their adjustment.

The invention will first be described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out more particularly in the annexed claims.

In said drawings, in which corresponding parts in the different figures are indicated by the same symbols of reference, Figure 1 is a plan view of a screw-cutting implement embodying my invention, showing the dies closed or in position for cutting threads on a bolt or other article. Fig. 2 is a similar view showing the dies open or retracted and a portion of the die-stock being broken away. Fig. 3 is a central longitudinal vertical section of the implement as shown in Fig. 1. Fig. 4 is a bottom plan view. Fig. 5 is a side elevation. Fig. 6 is a transverse vertical section on line 6 6 of Fig. 1 looking in the direction indicated by the arrows. Fig. 7 is a central horizontal section with the dies open or retracted, showing in dotted lines the positions of the parts when the dies are closed. Fig. 8 is an outer end elevation of one of the die-supporting slides; and Fig. 9 is a detail vertical section through a slide and die, showing a modification.

The implement illustrated and described

herein has two oppositely-disposed thread-cutting dies; but it will be understood that it may be provided with a greater number of dies radially arranged and that the invention is not limited to the present particular embodiment.

The letter A designates a die-stock, which is shown provided with handles B for rotating it. This stock has a circular opening there-through and preferably an inner flange *a* around the upper edge of said opening. Fitted within the lower part of this opening is a cam-ring C, the inner periphery of which is formed in this instance with oppositely-disposed cam-surfaces or inclines *c*, terminating in opposite recesses *c'*. A short lever or handle D for turning said cam-ring is screwed into or otherwise secured thereto and projects out through a slot *a'* in the stock. Fitted within said cam-ring is a collet or circular die-holding block E, having a central opening to receive the bolt or other article which is to be threaded. This collet may be rigidly secured in the stock by screws F, entered through the latter, or by other suitable means.

The letters G G denote the dies or chasers, the inner cutting ends of which may be either slanting or perpendicular, according to the character of the work to be performed. These dies are mounted on slides H, to which they are fastened by binding-screws J, and said slides, with the dies mounted thereon, are slidably fitted in the present instance in opposite radial ways *e* in the collet E. The sides of said ways are preferably incut at the bottom and the sides of the slides are correspondingly formed to fit therein, as shown in Fig. 6, or said ways and slides may be otherwise formed, so as to hold the latter against any but longitudinal movement in the ways.

The binding-screws J are entered through longitudinal slots in the dies, but are screwed into the slides, so that by loosening said screws the dies may be adjusted longitudinally of the slides. The contacting faces of the slides and dies may be formed with interfitting longitudinal ribs and grooves, as shown in Fig. 6, to guide the dies on the slides, or the dies may be guided solely by the ways in the collet. The slides are preferably formed with up-



standing projections  $h$  at their outer ends, through which adjusting-screws  $K$  are entered to abut against the outer ends of the dies. These adjusting-screws are shown in downwardly-inclined or slanting position, so that their heads may readily be reached by a screw-driver through suitable apertures or recesses  $a^2$  in the front or upper face of the stock. This is only a matter of convenience, however, and in some constructions the adjusting-screws might be inserted straight, or the screws might be provided with milled heads projecting above the upper surface of the stock, so as to be readily manipulated. The slides are also preferably formed with lower cam projections or lugs  $h'$  at their outer ends for engagement by the inner cam-surfaces or inclines  $c'$  of the cam-ring  $C$  to push the slides, with the dies carried thereby, inward; but normally the slides are held apart, the cam projections  $h'$  fitting in the recesses  $c'$  in the cam-ring. This is accomplished by means of a spring  $L$ , which pushes outward against the lower ends  $j$  of the binding-screws  $J$ , said lower ends, which are preferably reduced and not threaded, projecting through longitudinal slots  $e'$  in the bottoms of the guideways  $e$  of the collet. A stout wire bow-spring is shown, which lies within an annular recess on the under side of the collet and has its ends suitably bent to engage the lower stud ends  $j$  of the screws. Instead of this construction it may be preferable to have the spring engage suitable pins or studs on the under sides of the slide projecting through slots in the collet, as the lower ends of the binding-screws do in this case, whereby when the screws are loosened or unfastened the spring will still be held properly in place. Such construction is represented in Fig. 9, wherein the symbol  $J'$  denotes the binding-screw and  $j'$  denotes a pin on the under side of the slide. In this figure instead of an inclined adjusting-screw a horizontal adjusting-screw  $K'$  is shown, having a milled head.

A plate or cap  $M$  may be screwed into the lower end of the opening in the stock, with its inner face flush against the inner and outer rings or flanges  $a^2$  and  $a^3$  on the bottom of the collet, between which the annular recess for the spring is formed. It may be desirable in some instances to make either or both of these rings or flanges separate and to fit them in place, in which case they will be held in position by the plate  $M$ . Said plate, as shown, has a central boss  $m$  on its lower side, which is milled to facilitate turning the plate and which is formed with an opening to permit the passage of the bolt or other article to be threaded.

When the lever  $D$  is at one end of the slot  $a'$ , the cam-ring  $C$  is held so that its inner recesses  $c'$  receive the cam projections  $h'$  of the slides, and the latter, with the dies mounted thereon, are thus held apart by force of the

spring  $L$ ; but on moving the lever to the other end of the slot the cam-ring is turned, and the cam-surfaces  $c$  thereof ride against said cam projections on the slides, and thus move the latter inward against force of the spring. In this latter position the dies are of course held in cutting position upon the rod, bolt, pipe, or other article on which threads are to be cut. By reference to Fig. 7 it will be observed that when the slides are moved inward the highest points of the inner surface of the cam-ring bear against the cam projections on the slides, so that no pressure or strain on the dies can throw them open; but in order to move the dies at all the lever  $D$  must be moved a considerable distance. A perfect locking device for the dies, whether closed or open, is thus effected. However, the lever may easily be turned, and the dies will then be retracted instantly by force of the spring.

Inasmuch as the binding-screws  $J$  are screwed through the slides, and hence rigidly fixed therein, the pressure of the spring on the lower stud ends of said screws cannot affect the adjustment of the dies, nor can such adjustment be affected by the turning of the cam-ring, since this acts only on the slides. Hence the dies may be adjusted as desired, and they may be moved in upon the article to be threaded and instantly released or moved out therefrom without changing such adjustment.

The front face or top of the collet is shown provided with index-marks and the dies with similar marks, all denominated by the "zero" character. When the dies are adjusted so that the index-marks thereon register with those on the collet, the dies will cut threads of a particular diameter. It is obvious that by providing series of such indices either on the dies or on the collet the dies can be adjusted accurately to cut threads on bolts or other articles of different standard diameters.

Where more than two dies are employed, the construction is substantially similar to that described, the slides being mounted in radial or other suitably-disposed ways or channels, so as to move the dies radially or in and out toward and from the center of the device, and the cam-ring being formed to engage all the slides simultaneously.

I do not confine myself to the specific construction shown of the cam-ring and cooperating cam projections on the slides or to the particular form of spring, since other forms may be adopted; but the present construction is shown as the simplest and most efficient.

The collet or die-holder, with the parts mounted therein, and its surrounding cam-ring may of course be used in any thread-cutting implement or machine and may or may not be mounted in any suitable stock.

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

1. In a screw-cutting implement, a collet or



holder, slides mounted therein carrying radial cutting-dies, the latter being fastened to said slides by binding-screws entered through longitudinal slots in the dies, whereby the dies may be adjusted on the slides, a spring engaging the lower ends of said screws and thereby forcing the slides outward, and means for moving the slides inward to close the dies and for releasing them.

2. In a screw-cutting implement, a collet or holder having guideways therein, slides mounted in said guideways carrying radial cutting-dies, the latter being secured to said slides by binding-screws entered through longitudinal slots in the dies and screwed through the slides and having their lower ends projecting through longitudinal slots in the guideways, a spring engaging said lower ends of the screws and forcing them outward, and means for moving the slides inward to close the dies and for releasing them.

3. In a screw-cutting implement, a collet or holder, slides mounted therein carrying cut-

ting-dies adjustable thereon, means for binding said dies on said slides, studs depending from said slides, a spring engaging said studs and thereby forcing the slides outward, and means for moving said slides inward to close the dies and for releasing them.

4. In a screw-cutting implement, the combination of a stock having an opening therein, a collet or holder fixedly mounted in said stock having suitable ways, slides in said ways having upstanding projections at their outer ends, dies adjustably fastened on said slides, inclined adjusting-screws entered through said projections on the slides and abutting said dies, recesses in the stock for access to said screws, and means for moving the slides in and out to close and retract the dies.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY B. KEIPER.

Witnesses:

L. B. KEIPER,

J. GUY ESHLEMAN.