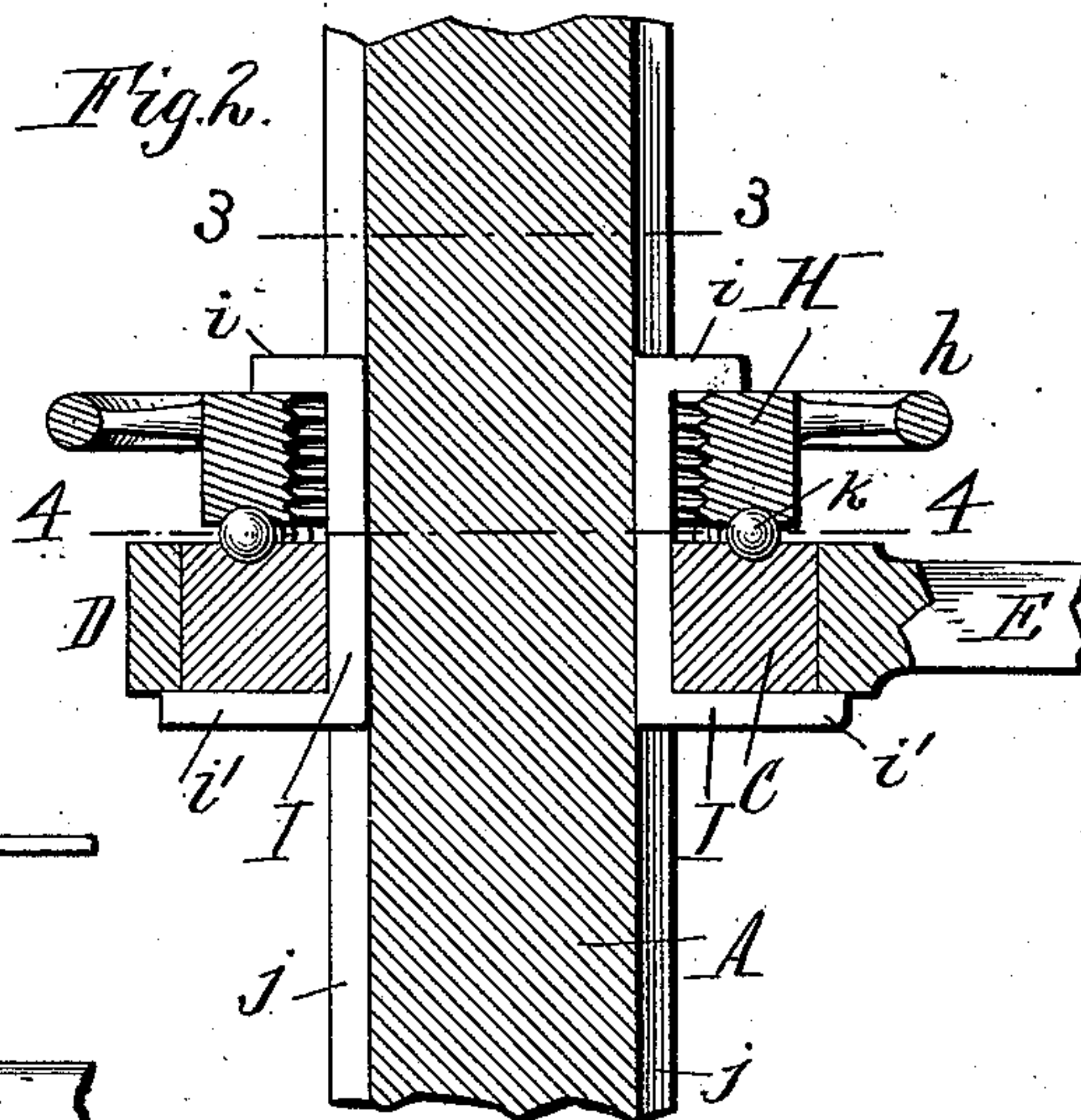
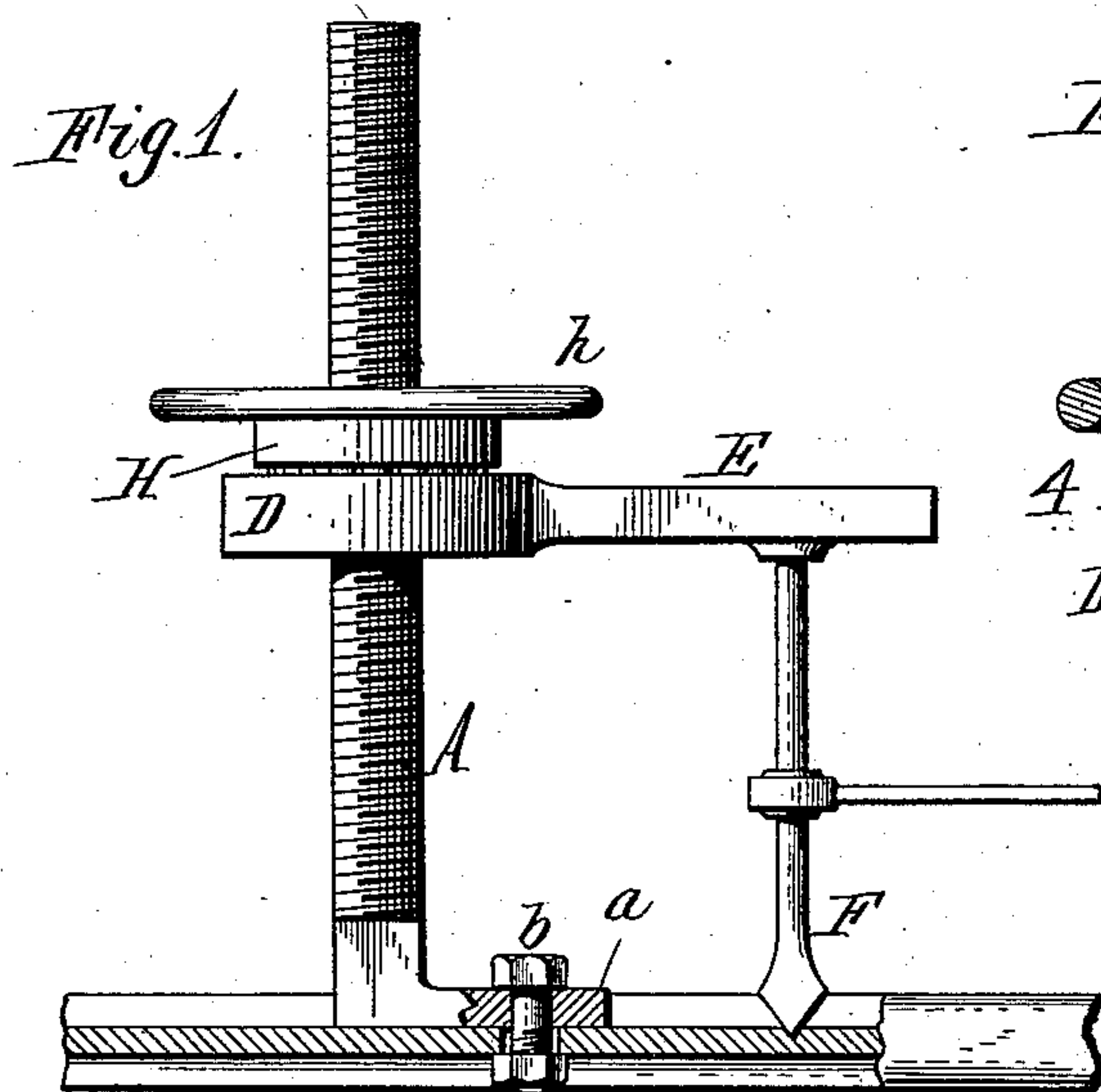


(No Model.)

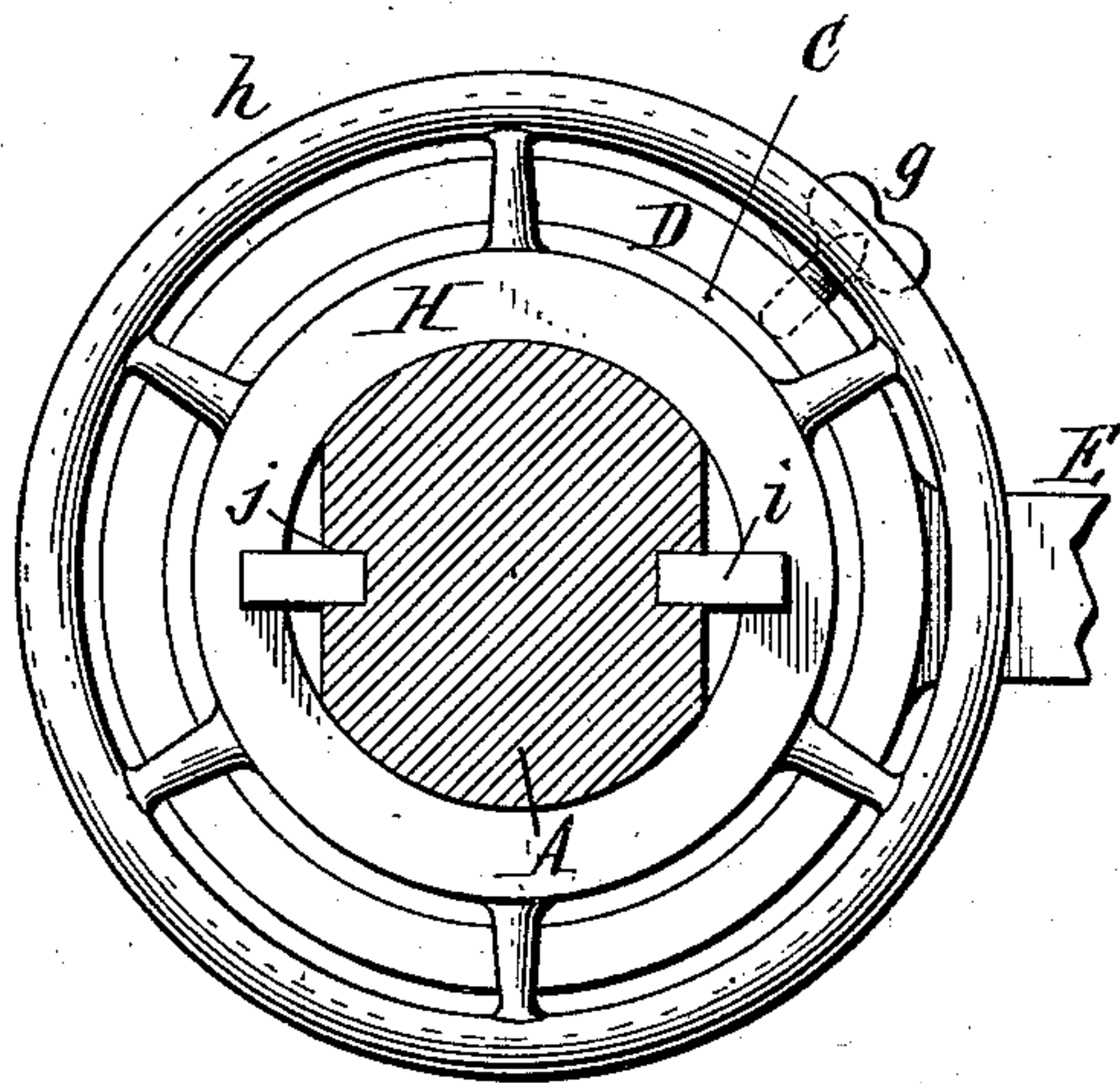
E. B. PETRIE.  
DRILL BRACE.

No. 543,267.

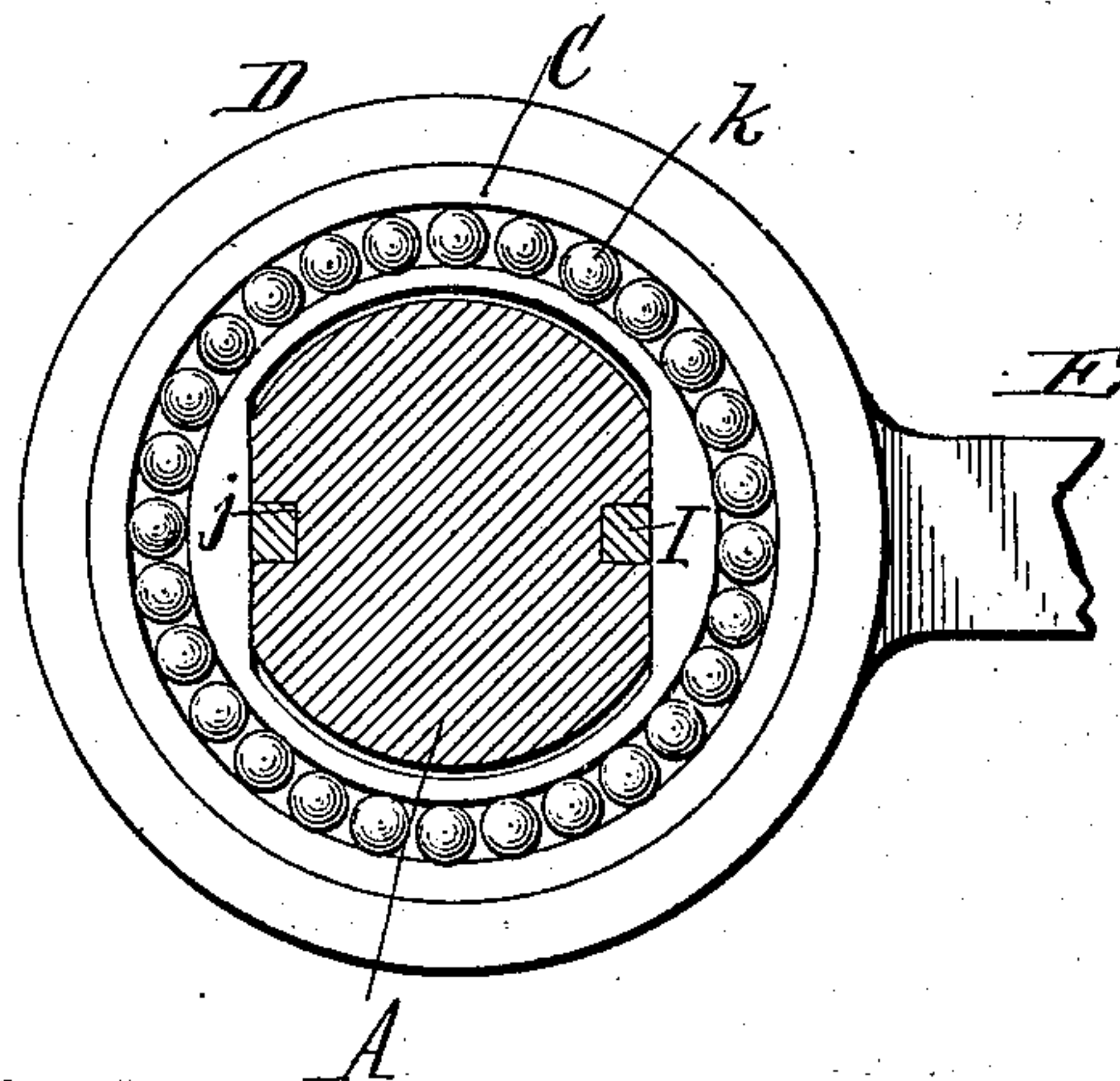
Patented July 23, 1895.



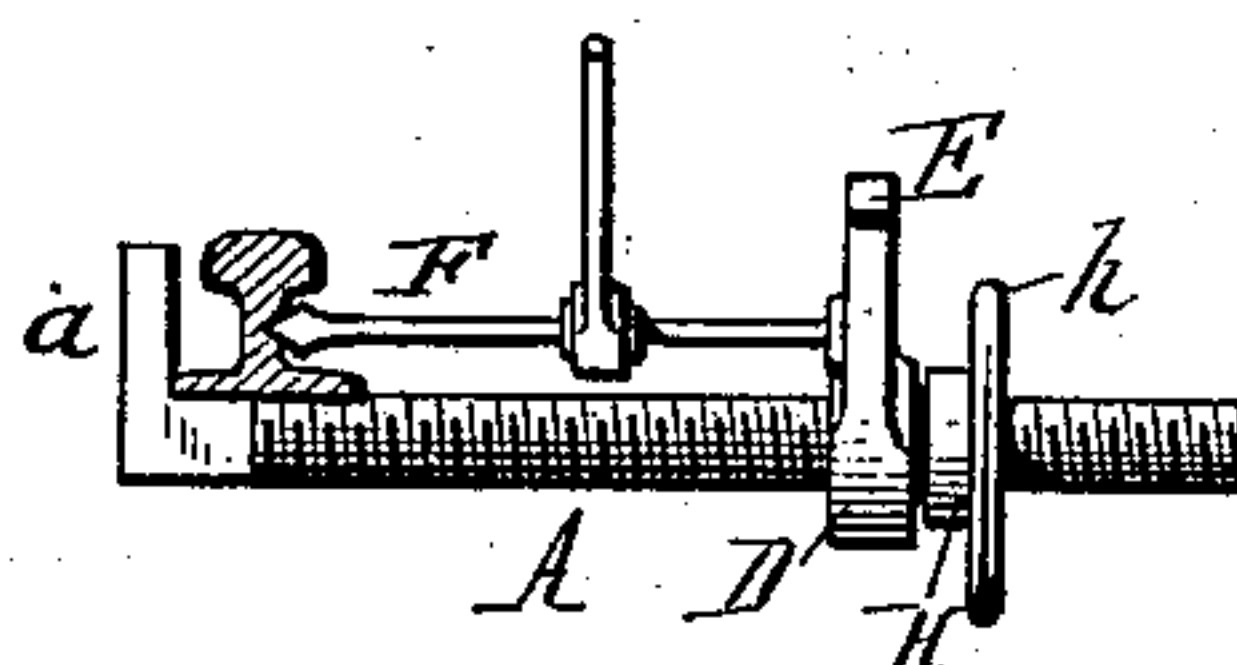
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



WITNESSES.

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INVENTOR.

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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

ENOS B. PETRIE, OF BUFFALO, NEW YORK.

## DRILL-BRACE.

SPECIFICATION forming part of Letters Patent No. 543,267, dated July 23, 1895.

Application filed September 15, 1894. Serial No. 523,115. (No model.)

*To all whom it may concern:*

Be it known that I, ENOS B. PETRIE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Drill-Braces, of which the following is a specification.

This invention relates to a drill-brace designed more particularly for use in connection with a ratchet or hand-drill for boring rivet or bolt holes in railroad-rails and in structural iron or steel, such as beams.

My invention has the object to provide an inexpensive implement of this character which is readily applied to a rail or other part to be drilled, and whereby the drill may be conveniently fed forward as the work progresses.

In the accompanying drawings, Figure 1 is a top plan view of my improved drill-brace, partly in section, showing its application to a rail. Fig. 2 is a fragmentary longitudinal section of the brace on an enlarged scale. Figs. 3 and 4 are cross-sections thereof in lines 3-3 and 4-4, Fig. 2. Fig. 5 is an elevation of the drill-brace, showing another method of applying the same to a rail.

Like letters of reference refer to like parts in the several figures.

A is a stationary feed-screw or externally screw-threaded stem having at one end a foot or flange *a*. When the device is applied to a rail or beam which already has one or more holes and in which it is desired to drill an additional hole or holes, the foot of the feed-screw is placed against the side of the rail or beam and temporarily secured thereto by a bolt *b*, passing through one of the holes of the rail or beam and an opening formed in the foot, as shown in Fig. 1. When the device is applied to a rail having no holes for the passage of a fastening-bolt, the feed-screw may be placed under the rail, with its foot bearing against the side of the rail opposite that on which the drill is arranged, as shown in Fig. 5.

C is a head or disk arranged to slide lengthwise on the feed-screw A, but held against rotation thereon. For this purpose the feed-screw is flattened on opposite sides, as shown in Figs. 3 and 4, and the opening of the disk which receives the screw is correspondingly flattened. The concentric portions of the

disk-opening between its flattened portions are of sufficiently larger radius than the feed-screw to clear the threads of the latter, so as to allow the disk to slide freely on the screw toward and from the foot *a*.

D is a ring or collar surrounding the disk C and carrying a laterally-extending brace or arm E, which receives the thrust of the drill F. This brace-arm is formed on or secured to one side of the ring D, and the latter is preferably capable of circumferential adjustment on the sliding disk C, so that the brace-arm may be turned on the disk for bringing it opposite the place on the rail or beam where a hole is to be drilled.

The ring D may be adjustably secured to the disk by a thumb-screw *g*, arranged in a threaded radial opening formed in the ring and bearing against the face of the disk, or by any other suitable means.

The drill F may be of any ordinary construction, and the rear end of its spindle bears against the face of the brace-arm E.

H is a rotary feed-collar or screw-nut which traverses the feed-screw A, and whereby the sliding disk which carries the brace-arm is moved toward and from the rail or other part to which the drill-brace is applied. This feed-collar engages with the sectional screw-threads of the feed-screw and may be provided with a hand-wheel *h* or other suitable means for turning it. The disk C is connected with the feed-collar by a coupling which compels the disk to move longitudinally on the feed-screw with the feed-collar, and at the same time permits the necessary rotary movement of the collar.

In the construction shown in the drawings the disk is connected with the feed-collar by keys I, passing through the bores of the disk and the feed-collar, and each provided at its outer end with an outwardly-projecting lip *i*, which overlaps the adjacent edge of the feed-collar, and at its opposite end with a similar lip *i'*, which overlaps the inner side of the disk and its surrounding ring D. The body portions of these keys slide in longitudinal grooves *j*, formed in opposite sides of the feed-screw.

To reduce the friction between the feed-collar and the sliding disk, a ball-bearing is interposed between these parts, as shown, the



parts being formed in their opposing faces with annular grooves, in which the balls  $\frac{1}{2}$  run.

In the use of my improved drill-brace, after applying the feed-screw to the work, the disk  
5 or head which carries the brace-arm is advanced on the feed-screw by the forward rotation of the feed-collar until the brace-arm bears against the rear end of the drill-spindle. As the boring progresses the brace-arm is  
10 gradually fed forward by turning the feed-collar, whereby the carrying-disk is advanced on the screw.

The requisite pressure of the drill against the work is thus exerted without any special  
15 effort on the part of the operator, it being only necessary to give the feed-collar a slight forward turn from time to time until the hole is bored. After completing the operation the brace-arm is readily returned to its former  
20 position, preparatory to drilling another hole, by turning the feed-collar backward.

I claim as my invention—

1. The combination with a feed screw, of a non-rotary head or disk capable of longitudinal  
25 movement on said feed screw and carrying a brace arm, a rotary feed collar engaging with said feed screw, and a coupling connecting said head or disk with said feed collar, substantially as set forth.

30 2. The combination with a feed screw or externally threaded stem, of a non-rotary head or disk capable of sliding lengthwise on said screw or stem and carrying a laterally extending brace-arm, a feed collar engaging with

said feed screw, whereby said carrying head 35 or disk is moved on the feed screw, and a ball bearing interposed between the feed collar and said head or disk, substantially as set forth.

3. The combination with a flat-sided screw 40 stem, of a disk or head capable of longitudinal movement on said stem and having a flat-sided bore, a brace arm arranged on said head or disk, and a rotary feed collar or nut engaging with said screw stem and connected with 45 said head or disk, substantially as set forth.

4. The combination with a screw-stem provided with a longitudinal groove, of a head or disk sliding on said screw stem and carrying 50 a brace-arm, a rotary feed collar or nut engaging with said screw stem, and a connecting key arranged in the groove of the screw stem and having lips which overlap the feed collar and said head or disk, substantially as set forth. 55

5. The combination with a supporting stem, of a non-rotary head or disk capable of longitudinal movement on said stem, a ring or collar capable of circumferential adjustment on said head or disk and carrying a brace arm, 60 and a feed device for moving the head or disk on said stem, substantially as set forth.

Witness my hand this 6th day of September, 1894.

ENOS B. PETRIE.

Witnesses:

CARL F. GEYER,  
ELLA R. DEAN.