

No. 715,729.

Patented Dec. 9, 1902.

J. E. ZIMMERMANN.  
SHEET METAL JACK SPOOL.

(Application filed Feb. 14, 1902.)

(No Model.)

2 Sheets—Sheet 1.

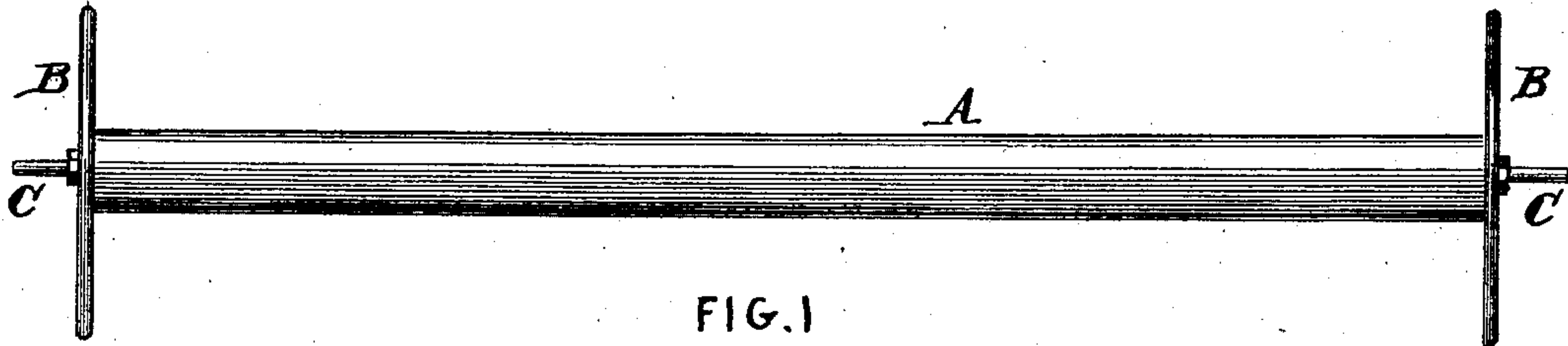


FIG. 1

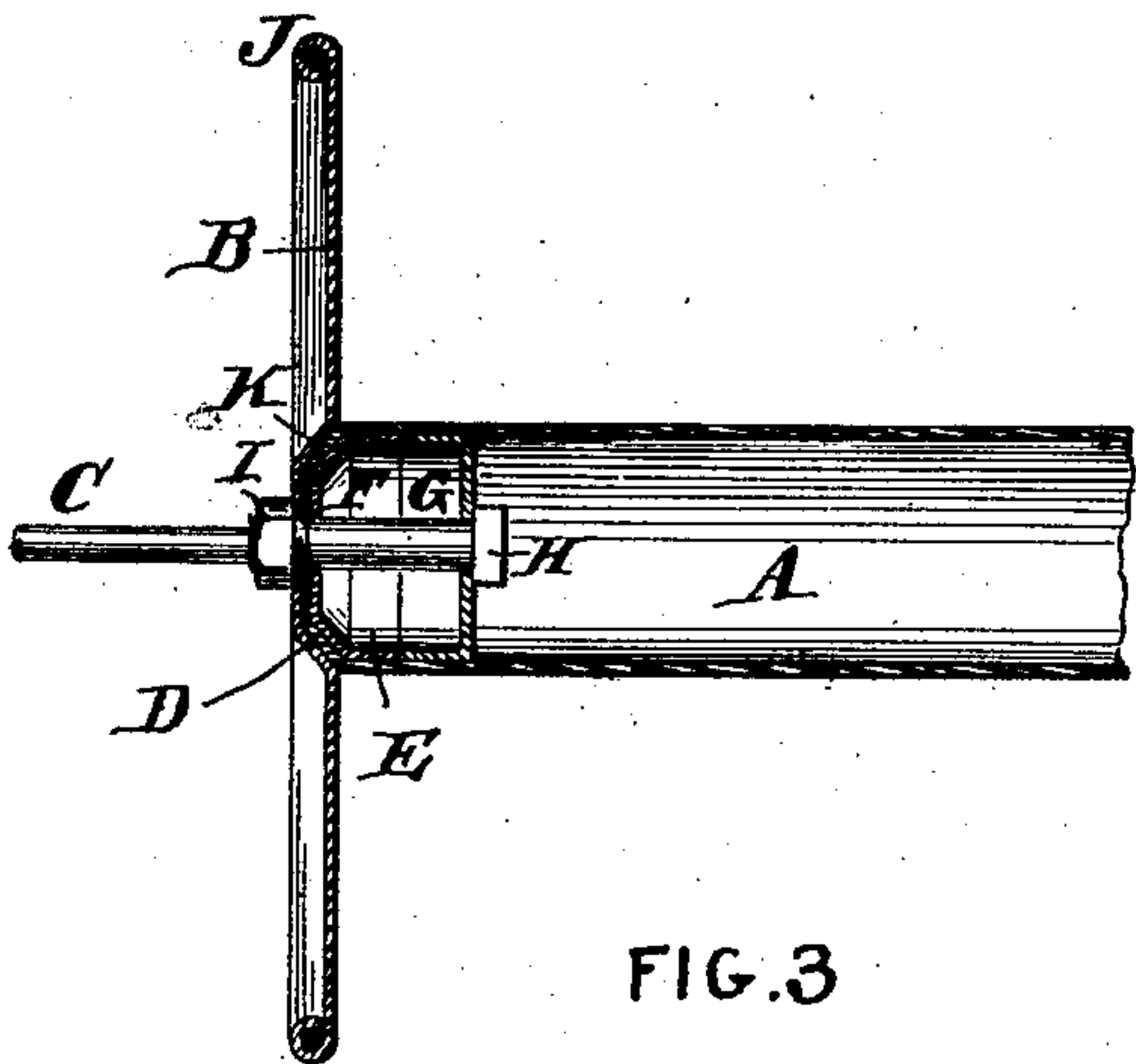


FIG. 3

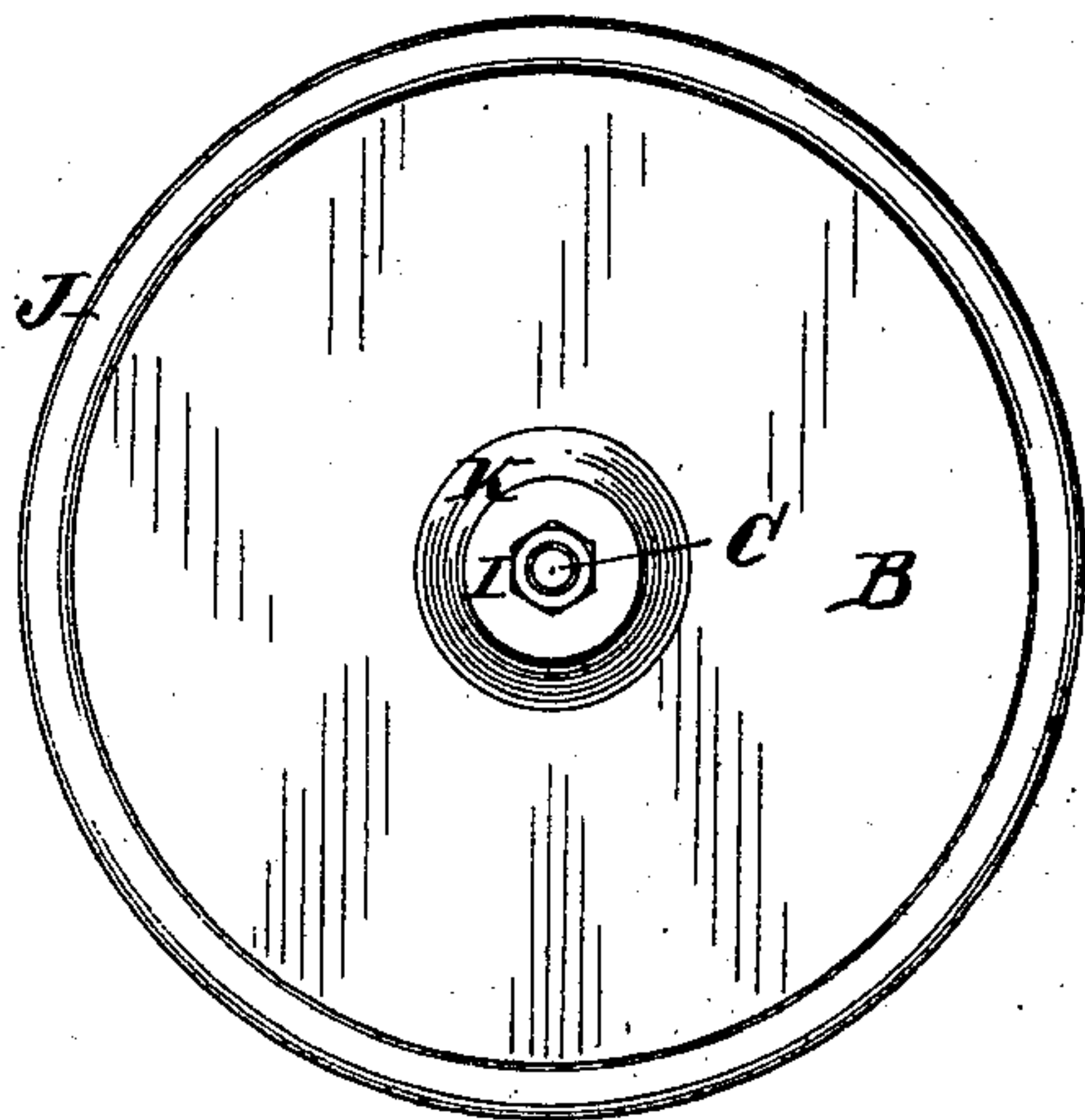


FIG. 2

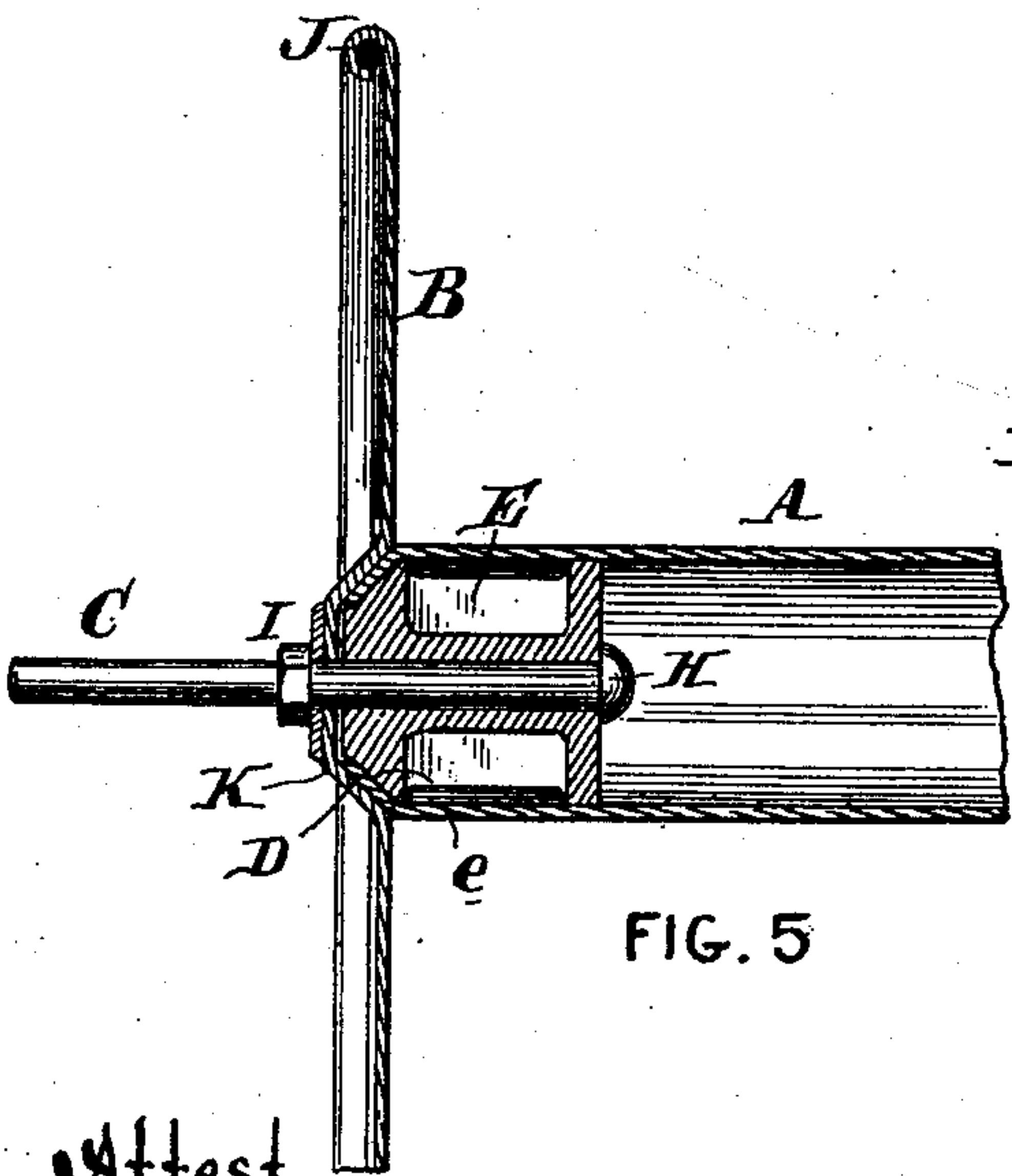


FIG. 5

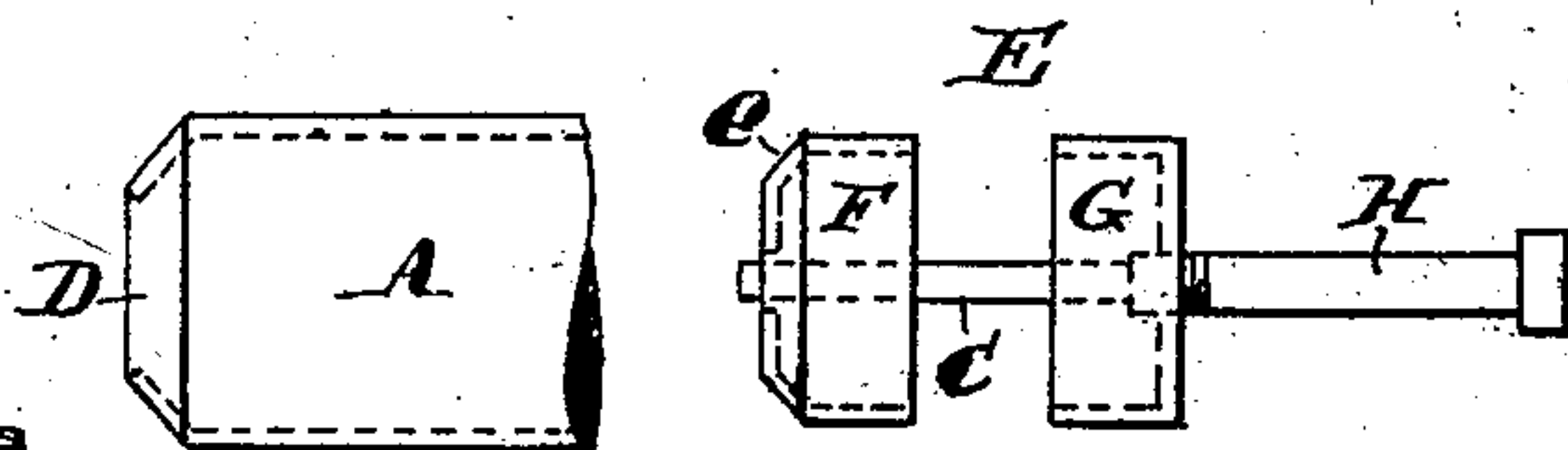


FIG. 4

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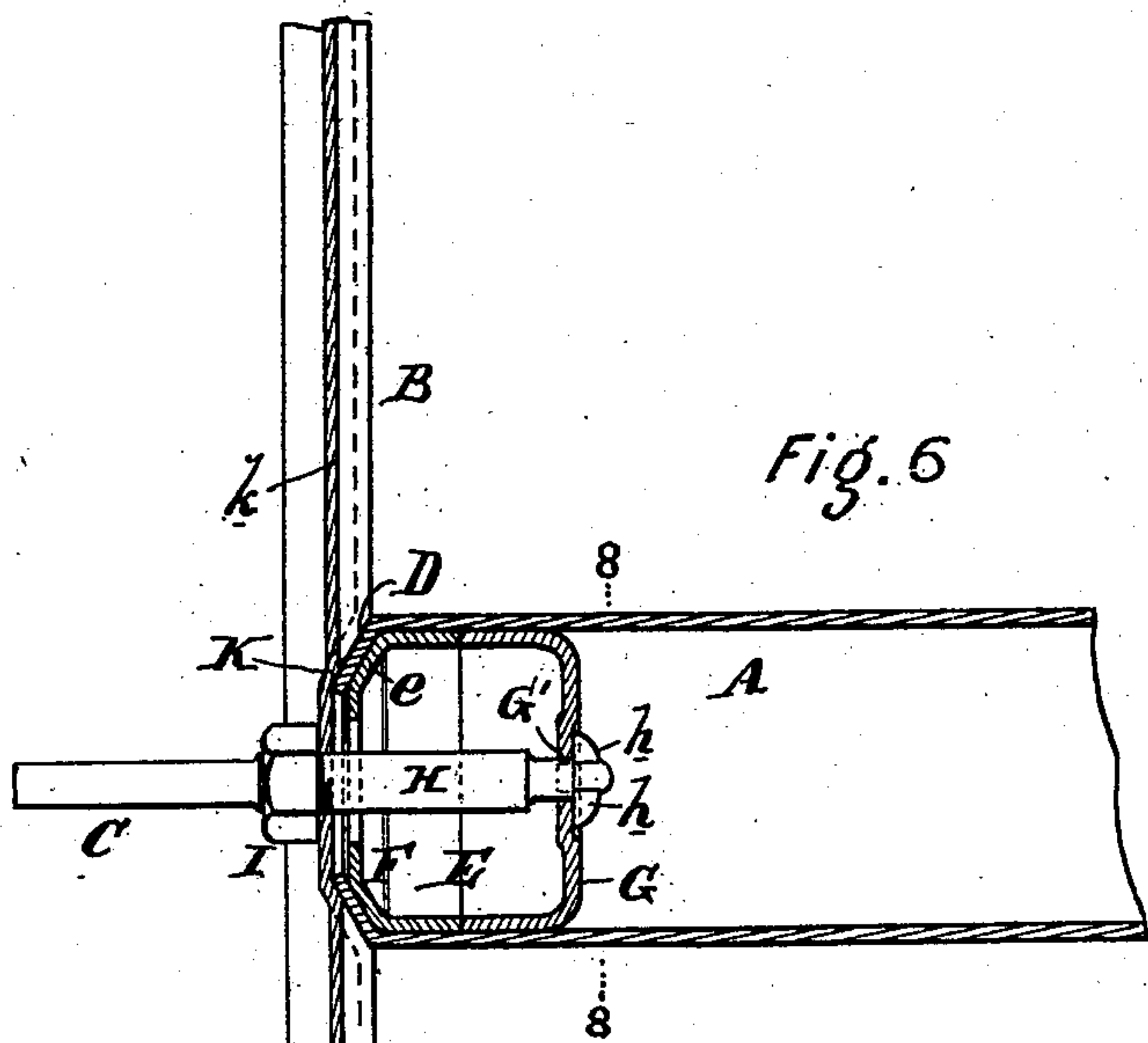


Fig. 6

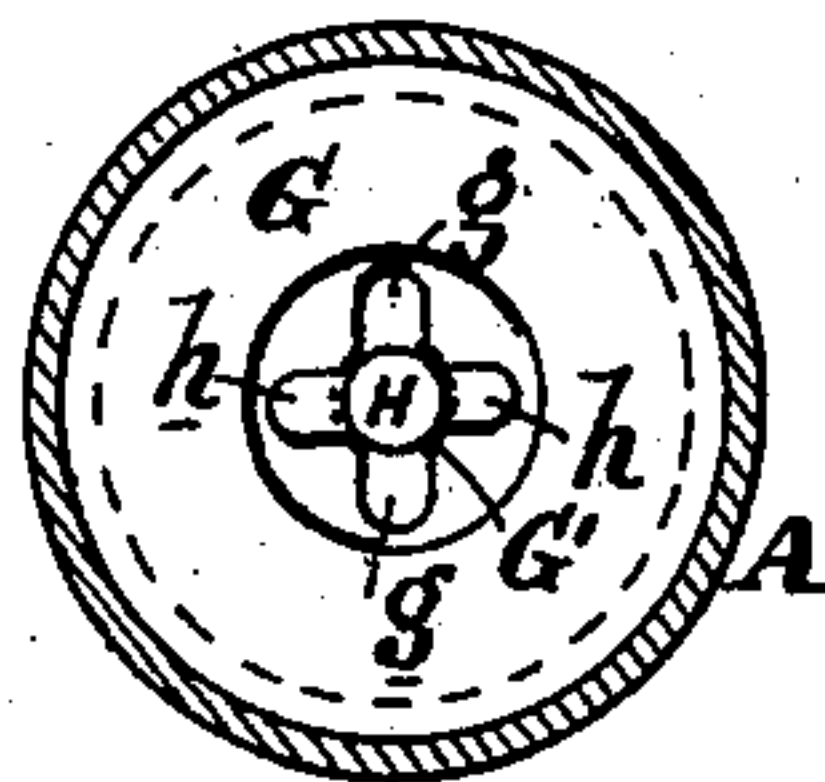


Fig. 8

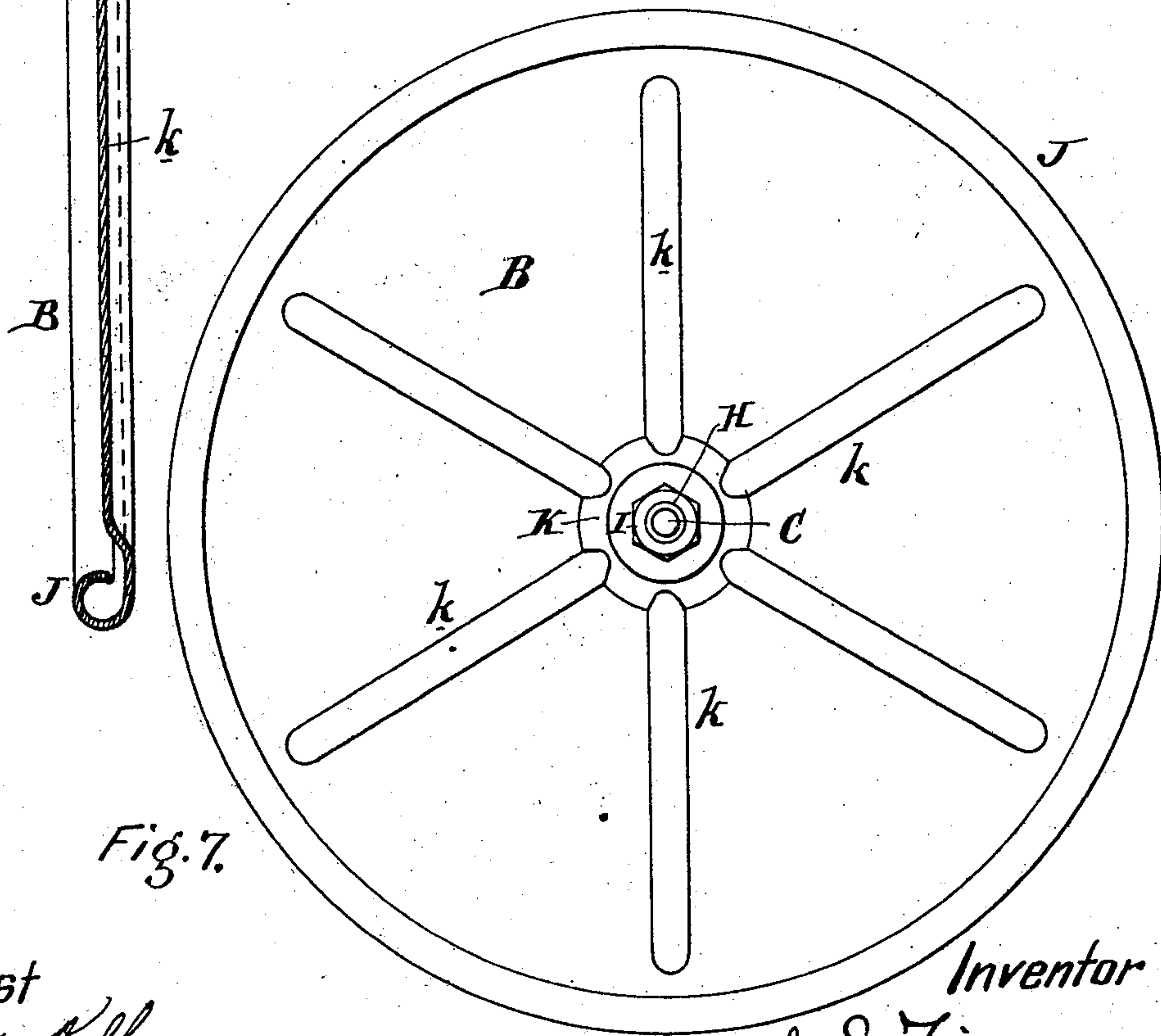


Fig. 7

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# UNITED STATES PATENT OFFICE.

JOHN E. ZIMMERMANN, OF WILLOWGROVE, PENNSYLVANIA, ASSIGNOR  
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## SHEET-METAL JACK-SPOOL.

SPECIFICATION forming part of Letters Patent No. 715,729, dated December 9, 1902.

Application filed February 14, 1902. Serial No. 94,051. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. ZIMMERMANN, of Willowgrove, Montgomery county, State of Pennsylvania, have invented an Improvement in Sheet-Metal Jack-Spools, of which the following is a specification.

My invention has reference to sheet-metal jack-spools; and it consists of certain improvements fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a construction of jack-spool which shall be inexpensive, while at the same time embodying the qualities of indestructibility, lightness, and proof against any condition which would cause injury to the yarn when being wound on or off the spool.

In carrying out my invention I form the spool of metal, and preferably wholly of sheet and tubular steel, the barrel being clamped to the heads in such a manner as to avoid all interference with the yarn in being wound on and off the spool.

My invention also embodies details of construction, all of which will be better understood by reference to the drawings, in which—

Figure 1 is a side elevation of a jack-spool embodying my invention. Fig. 2 is an end elevation of same. Fig. 3 is a sectional elevation of one end of the spool. Fig. 4 is an elevation showing the details of the clamp separated. Fig. 5 is a sectional elevation of one end of a jack-spool, showing a modified form of clamp. Fig. 6 is a sectional view similar to Fig. 3, enlarged. Fig. 7 is an end elevation of the spool-disk, and Fig. 8 is a cross-section on line 8 8 of Fig. 6.

A is the barrel, B B are the heads, and C C are the end journals for supporting the spool. The barrel A is made of light steel tubing, and the heads B B are made of stamped or pressed sheet metal. These heads are circular and have their peripheries beaded, as at J, to give strength and smoothness. The beads are turned outward, so that the inner faces of the heads are smooth and allow the yarn to run on and off properly. The central portion of the heads is preferably cupped out-  
wardly, as at K, and of a diameter corre-

sponding to the diameter of the barrel A for reasons to be explained hereinafter. The ends of the barrel are flanged inwardly, as at D, and preferably so as to form conical ends which are adapted to the cone-shaped central depressions in the heads constituting the cups K.

E represents clamping-bushings fitting within the barrel and placed therein before both ends are flanged, said bushings each carrying a long bolt H, extending through the center of the corresponding head, which is held in place by a nut I, screwed upon the bolt. The projecting ends of these bolts form the journals C and are smooth and of slightly less diameter than the body of the bolts. The bushings E each consist of the two parts G and F, the former being stamped and drawn out of sheet-steel and the latter formed of a short section of steel tubing with one end flanged in to form a conical end *e*, or stamped and drawn up from sheet-steel, as in the case of the part G. The conical end *e* is shaped so as to fit snugly against the inner face of the conical flange D of the barrel A, as shown. It will now be readily understood that these parts F G abut upon each other and are centered within the barrel and constitute a clamp E, which is drawn against the inner face of the flange D of the barrel by the bolt H, and the head B is clamped against the outer face of the flange D by the nut I of the said bolt. This construction is simple, inexpensive, and durable. It also permits of dismantling, when desired, if from any cause the head should be badly damaged and a new head required to be attached. The clamp E acts as a firm support for the bolt and holds it centrally. It thereby gives great rigidity to the extension C as a journal. The manner of joining the barrel and heads presents no obstructions by which the yarn could become caught or broken, and the whole spool is most excellently adapted for the special purpose of a jack-spool.

While I have preferred to make the flange D conical and the parts *e* and K to correspond, I do not limit myself to any special angle for the flange, as the essential feature is simply to enable such flange to be clamped between



the head and an internal clamp through the agency of a bolt, which may, if desired, also act as a journal for supporting the spool.

In place of making the clamp E of stamped or drawn sheet-steel I may form it of a casting, as shown, for example, in Fig. 5, the particular shape or construction of this clamp being immaterial to my invention.

While my invention is specially designed as a jack-spool, I wish it to be understood that a spool embodying the above improvements may be used for any purpose for which it may be found adapted.

In many cases the rough usage of the spools requires special strengthening of the disk B, and this I accomplish by forming the disks with radial ribs *k*, which extend from or near the beaded rim to the cupped center K, as clearly shown in Figs. 6 and 7. By extending the ribs *k* into the cupped portions K the junction makes a specially rigid and strong hub portion. If desired, the disks may be ribbed for strengthening in any other manner; but it is advisable in most cases that the ribs shall project outwardly, so as to be out of contact with the yarn or material wound upon the spool. I would also point out that in the constructions shown in Figs. 3, 4, and 5 the bolt H has an ordinary head, and hence cannot be drawn outward through the clamp E for repair in case of the breakage of the journal C. To obviate this possible difficulty, I prefer to make the head of the bolts T-shaped by providing their inner ends with lugs *h h*, as shown in Figs. 6 and 7, and providing the aperture in the clamps E with holes *G'*, having notches *g*, as shown in Fig. 8. In this manner the bolt may normally be tightly held in place, and yet by loosening nut I it may be turned and withdrawn for replacing with a new bolt or for repairs.

While I prefer the construction herein set out and shown, as being excellently adapted for the commercial embodiment of my invention, I do not limit myself to the minor details of construction, as they may be modified without departing from the spirit of the invention.

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

1. In a metal spool, the combination of a tubular barrel having its ends provided with inwardly-directed conical flanges, sheet-metal heads having central socket portions to receive the conical flange ends of the barrel, clamp-blocks upon the interior of the barrel adapted to clamp the inner faces of the conical flanges, bolts extending from the clamp-blocks through the heads, and nuts screwed upon the bolts for clamping the heads down upon the outer faces of the conical flanges while at the same time forcing the clamp-blocks against the inner faces of said conical flanges.

2. In a metal spool, the combination of a tubular barrel having its ends internally

flanged, sheet-metal heads fitting upon the ends of the barrel, clamps loosely held within the barrel and fitting against the inner faces of the flanges, and clamping-bolts extending through the clamps and heads for clamping them upon the flanges of the barrel.

3. In a metal spool, the combination of a tubular barrel having its ends internally flanged, sheet-metal heads fitting upon the ends of the barrel, clamps loosely held within the barrel and fitting against the inner faces of the flanges, and clamping-bolts extending through the clamps and heads for clamping them upon the flanges of the barrel and having extended portions C to constitute journals.

4. In a metal spool, the combination of a tubular barrel having its ends internally flanged, sheet-metal heads fitting upon the ends of the barrel, sheet-metal clamps loosely held within the barrel and formed tubular to fit the barrel and flanged for fitting against the inner faces of the flanges of the barrel, and clamping-bolts extending through the clamps and heads for clamping them upon the flanges of the barrel.

5. In a metal spool, the combination of a tubular barrel having its ends internally flanged, sheet-metal heads fitting upon the ends of the barrel, clamps formed of the sheet-metal parts F and G abutting substantially as shown and held within the barrel and fitting against the inner faces of the flanges, and clamping-bolts extending through the clamps and heads for clamping them upon the flanges of the barrel.

6. In a metal spool, the combination of a tubular barrel having its ends inwardly flanged, sheet-metal heads having their centers cupped to receive the flanged barrel ends, clamping-blocks upon the interior of the barrel arranged to clamp the inner surfaces of the flanges of the barrel, and clamping-bolts extending through the clamping-blocks and heads for clamping the heads upon the outer surfaces of the flanges of the ends of the barrel.

7. In a metal spool, the combination of a tubular barrel having its ends flanged, sheet-metal heads having their ends recessed to receive the flanged end of the barrel, clamp-blocks upon the inside of the barrel for clamping the inner surfaces of the flanges of the ends of the barrel, bolts extending through the heads and attached to the clamp-blocks, and clamping-nuts screwed upon the bolts and pressing upon the outer surfaces of the heads for holding them upon the outer surfaces of the flanged ends of the barrel.

8. In a metal spool, the combination of a tubular barrel having its ends internally flanged, sheet-metal heads fitting upon the ends of the barrel, clamps loosely held within the barrel provided with bolt-holes *G'* notched at *g* and fitting against the inner faces of the flanges, and clamping-bolts provided with lugs *h* and extending through the clamps and heads for clamping them upon the flanges of



the barrel and having extended portions C to constitute journals.

9. In a metal spool, the combination of a tubular barrel having its end inwardly flanged, sheet-metal heads adapted to fit the flanged ends of the barrel, clamping-blocks upon the interior of the barrel having apertures for clamping-bolts, and adapted to clamp the inner faces of the flanged ends of the barrel, and clamping-bolts extending through the clamping-blocks and sheet-metal heads and having ends detachably held to the clamping-blocks but capable of being withdrawn outwardly through them when necessary.

10. In a metal spool, the combination of a tubular barrel, having its ends inwardly

flanged, sheet-metal heads having their centers cupped to receive the barrel ends and provided with radial ribs  $\frac{1}{2}$  extending from the cupped center, clamping-blocks upon the interior of the barrel and clamping the inner face of the flange thereof, and clamping-bolts extending through the clamping-blocks and heads for clamping the heads upon the outer surfaces of the inwardly-directed end flanges of the barrel.

In testimony of which invention I have hereunto set my hand.

JOHN E. ZIMMERMANN.

Witnesses:

R. M. HUNTER,  
R. M. KELLY.