

No. 685,721.

Patented Oct. 29, 1901.

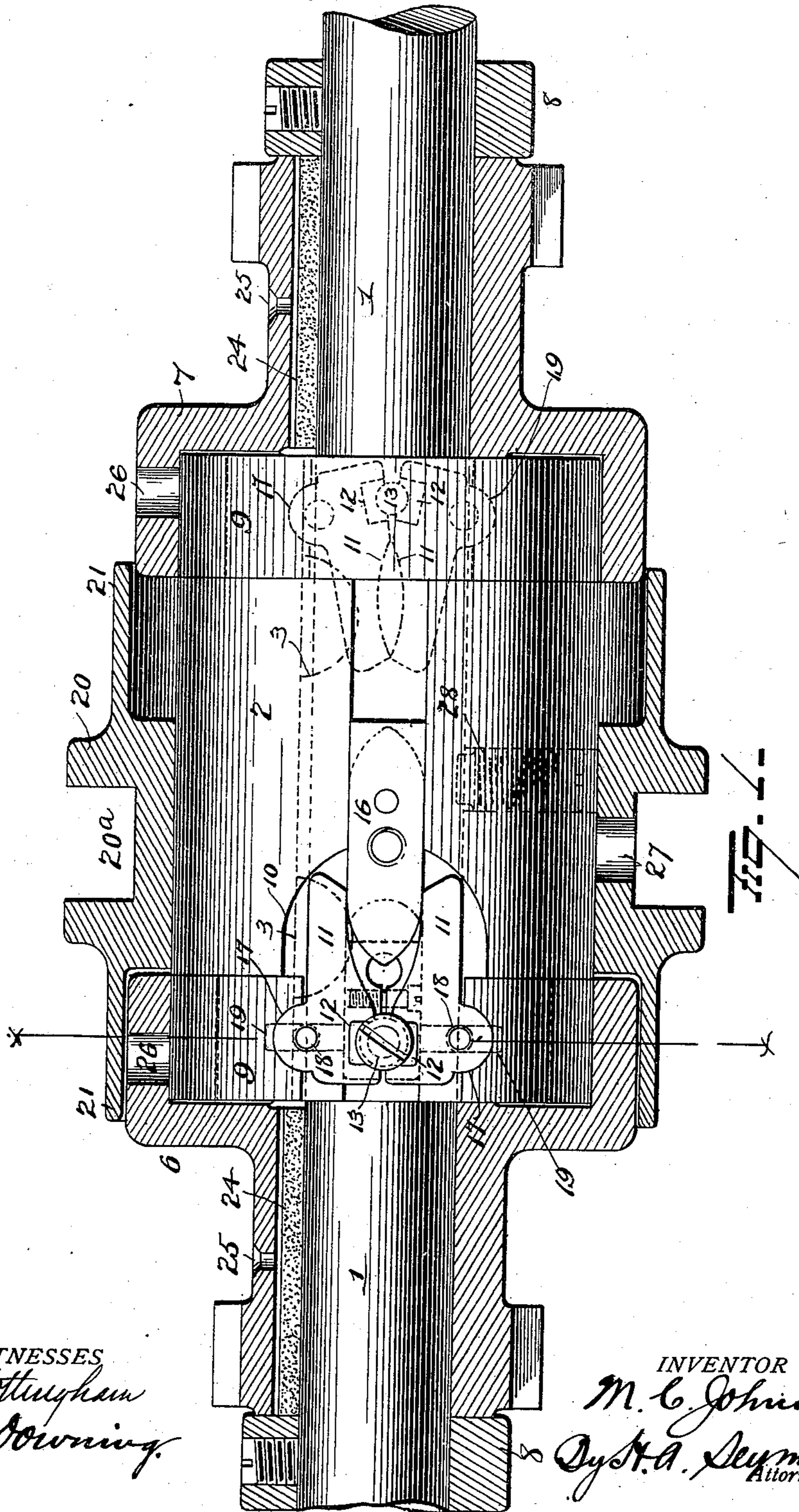
M. C. JOHNSON.

CLUTCH.

(Application filed Apr. 9, 1901.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES

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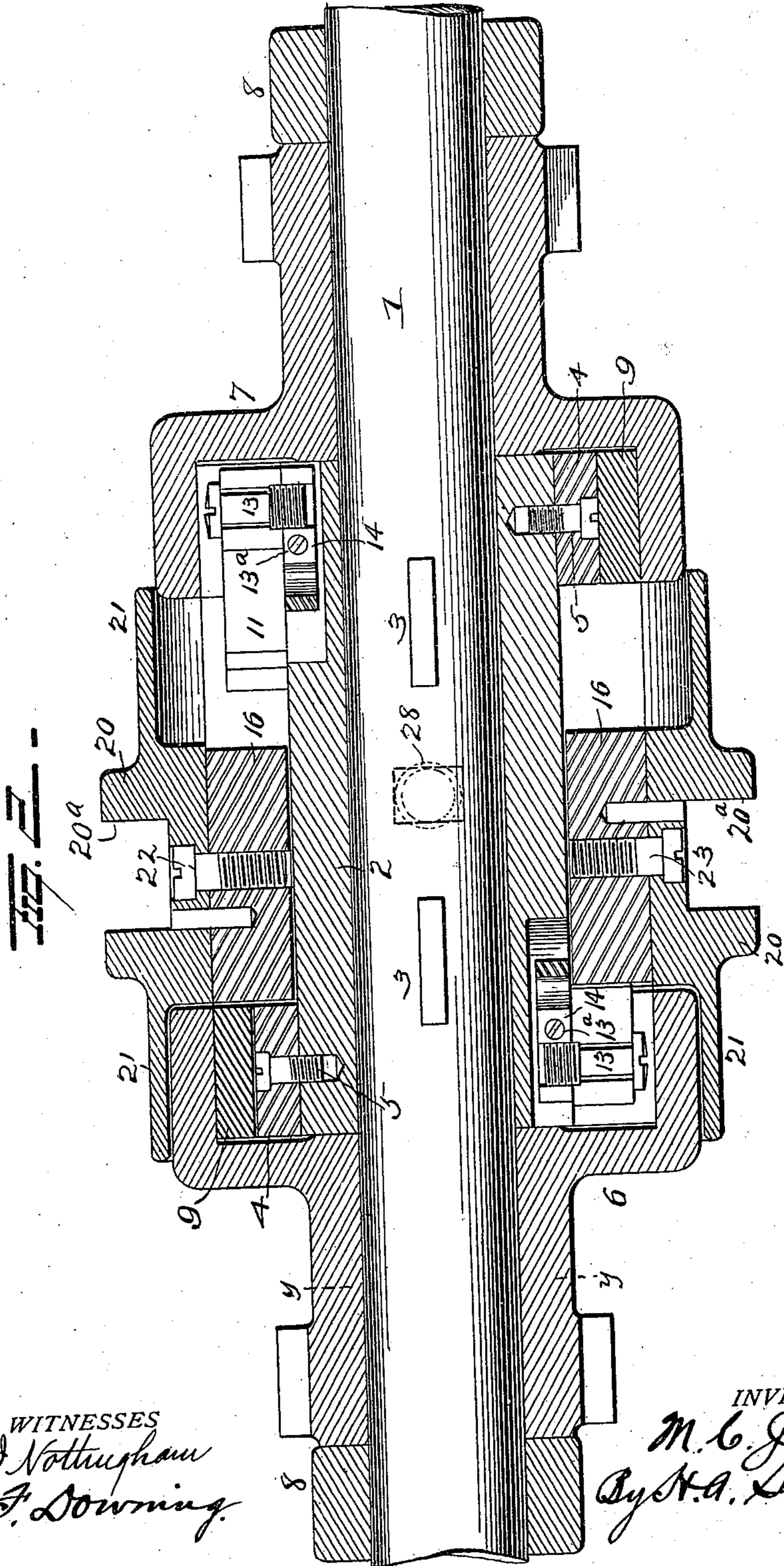
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3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

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FIG. 3.

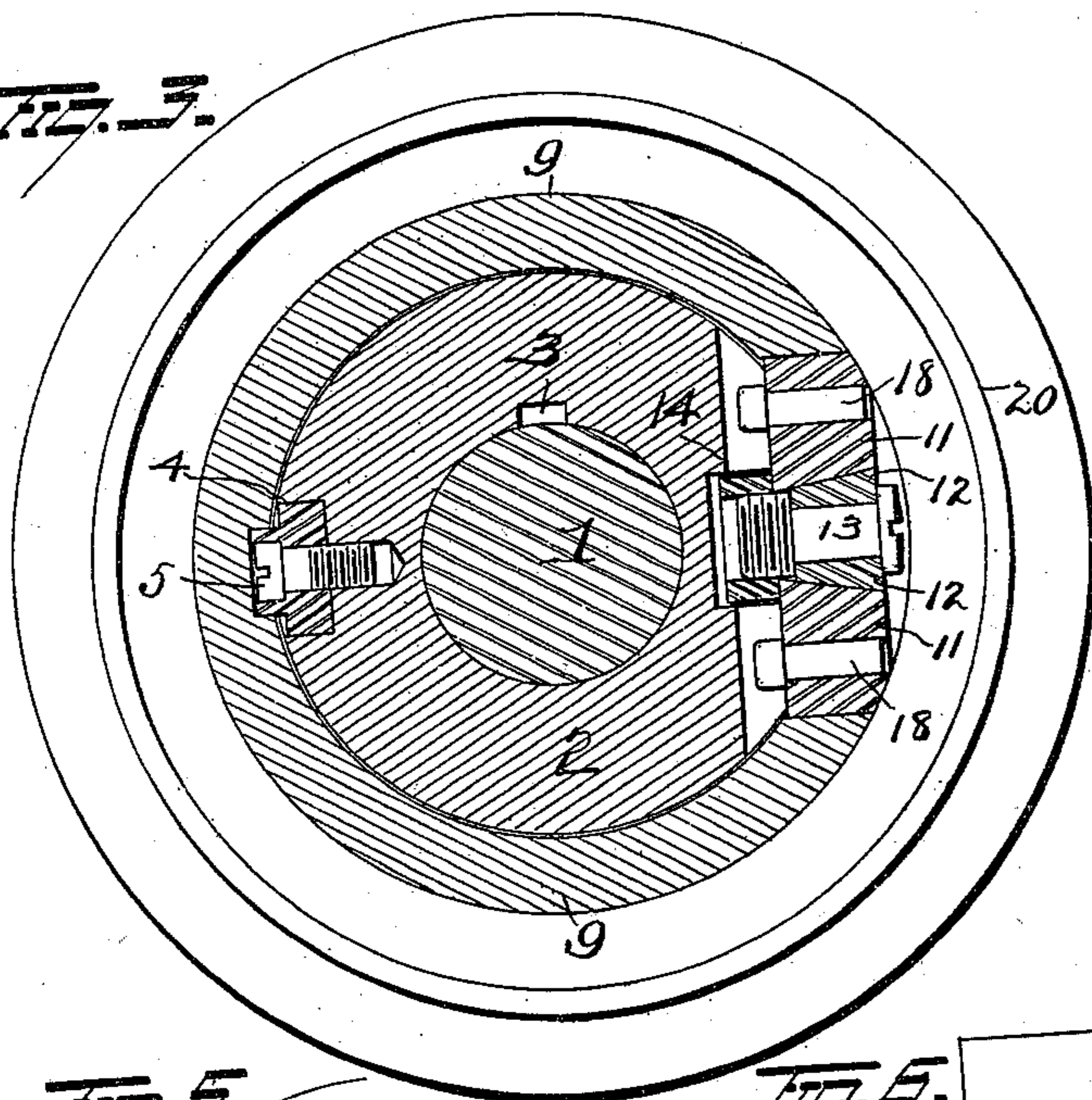


FIG. 4.

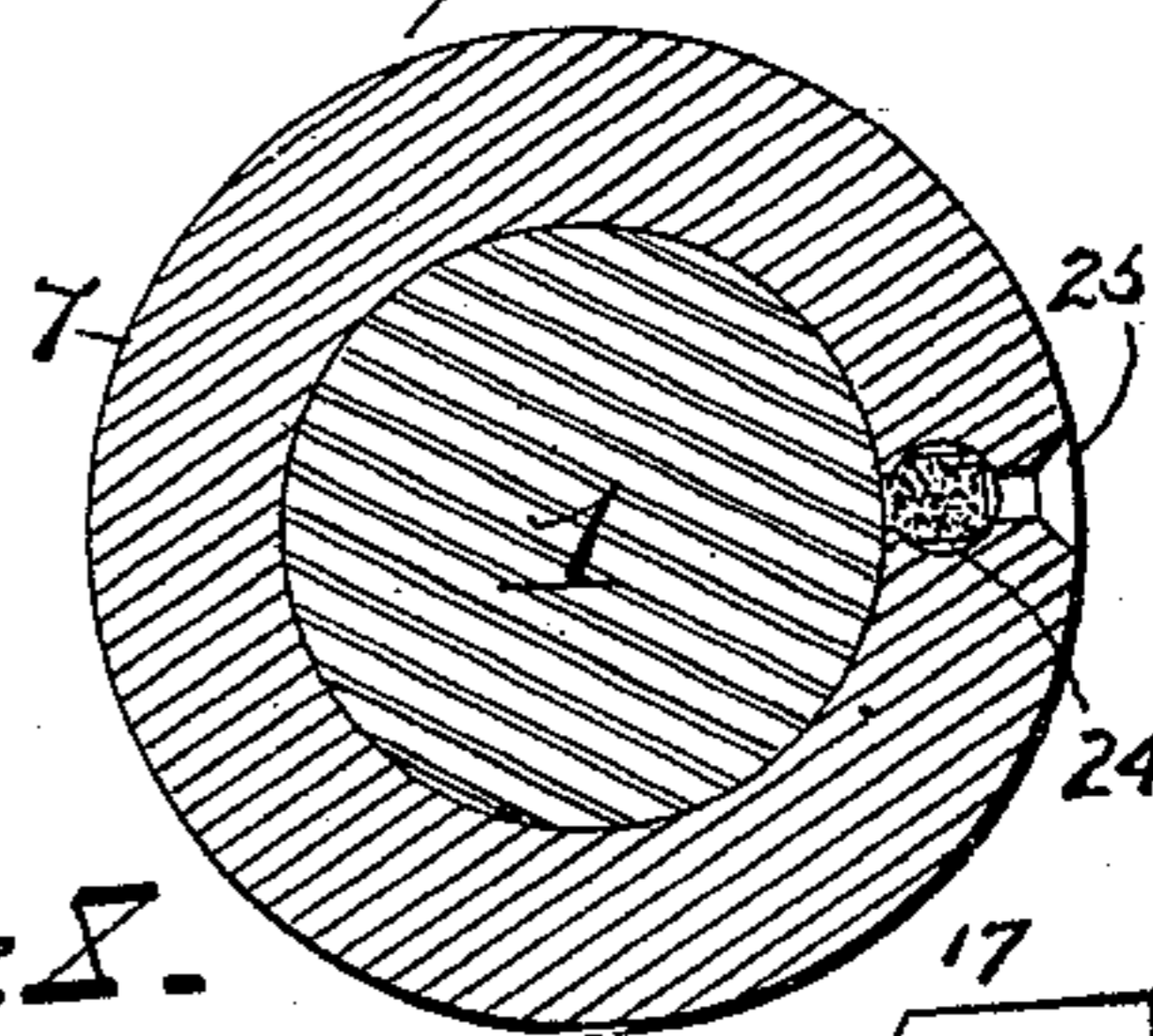


FIG. 5.

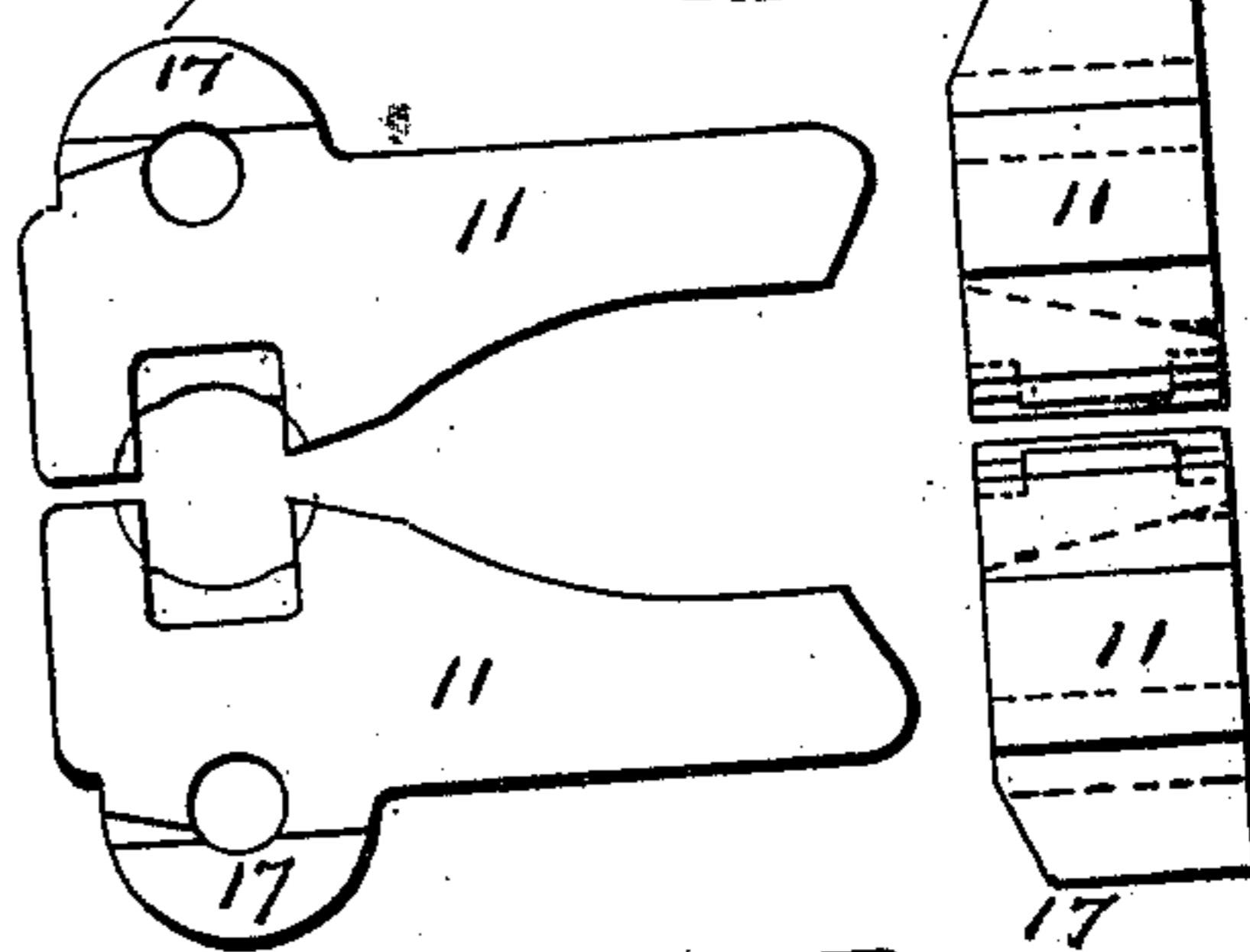


FIG. 6.

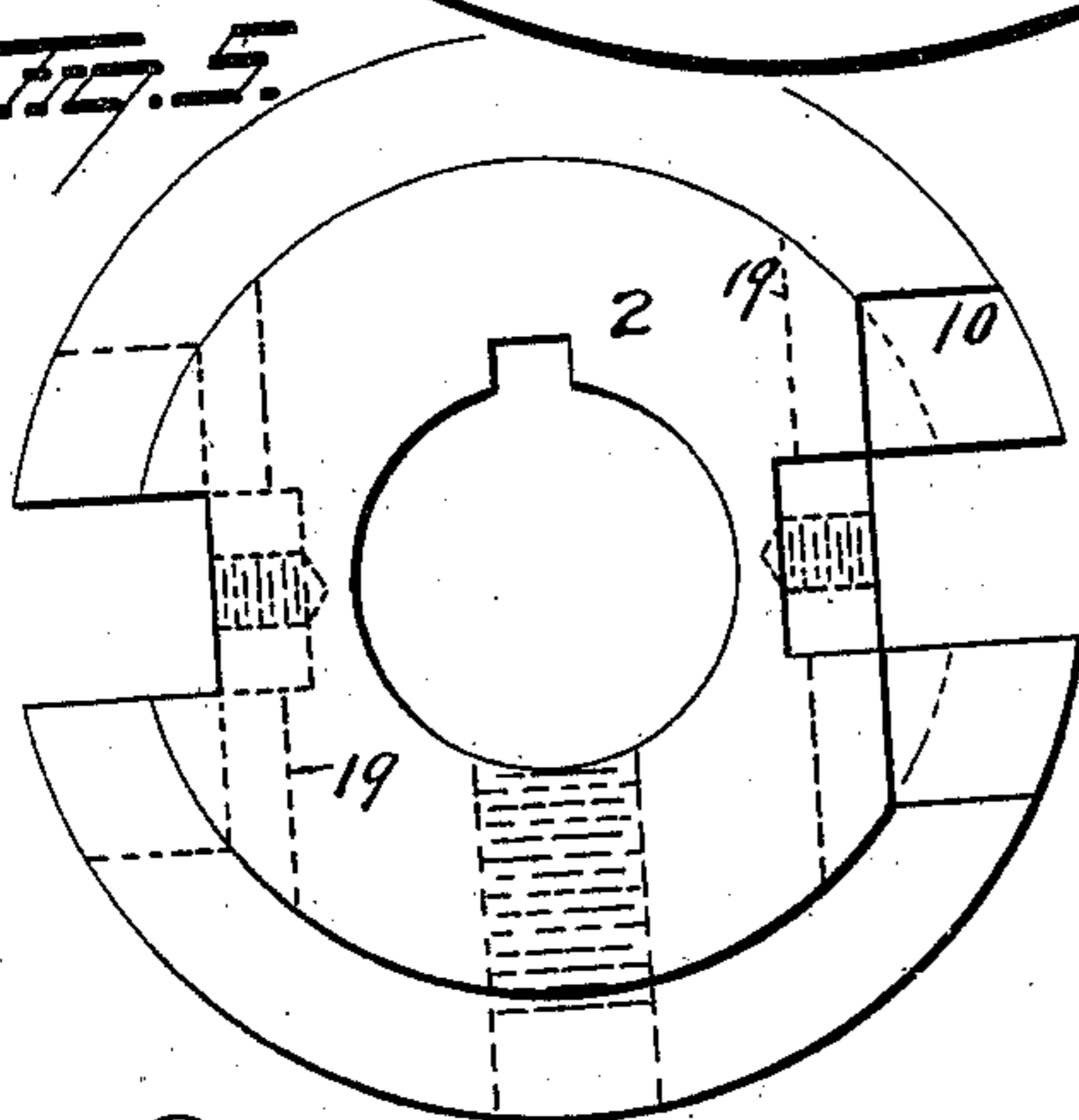


FIG. 7.

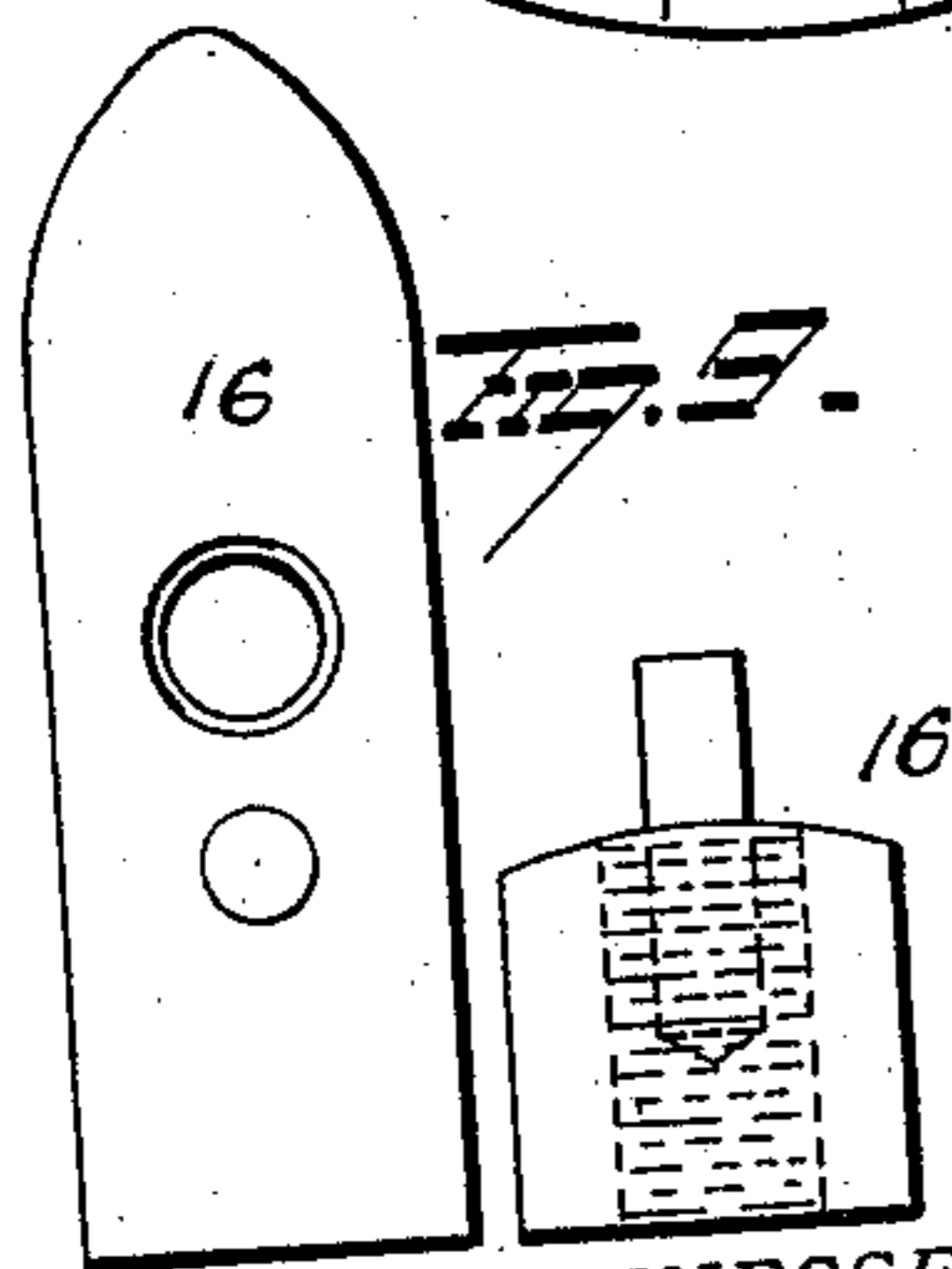
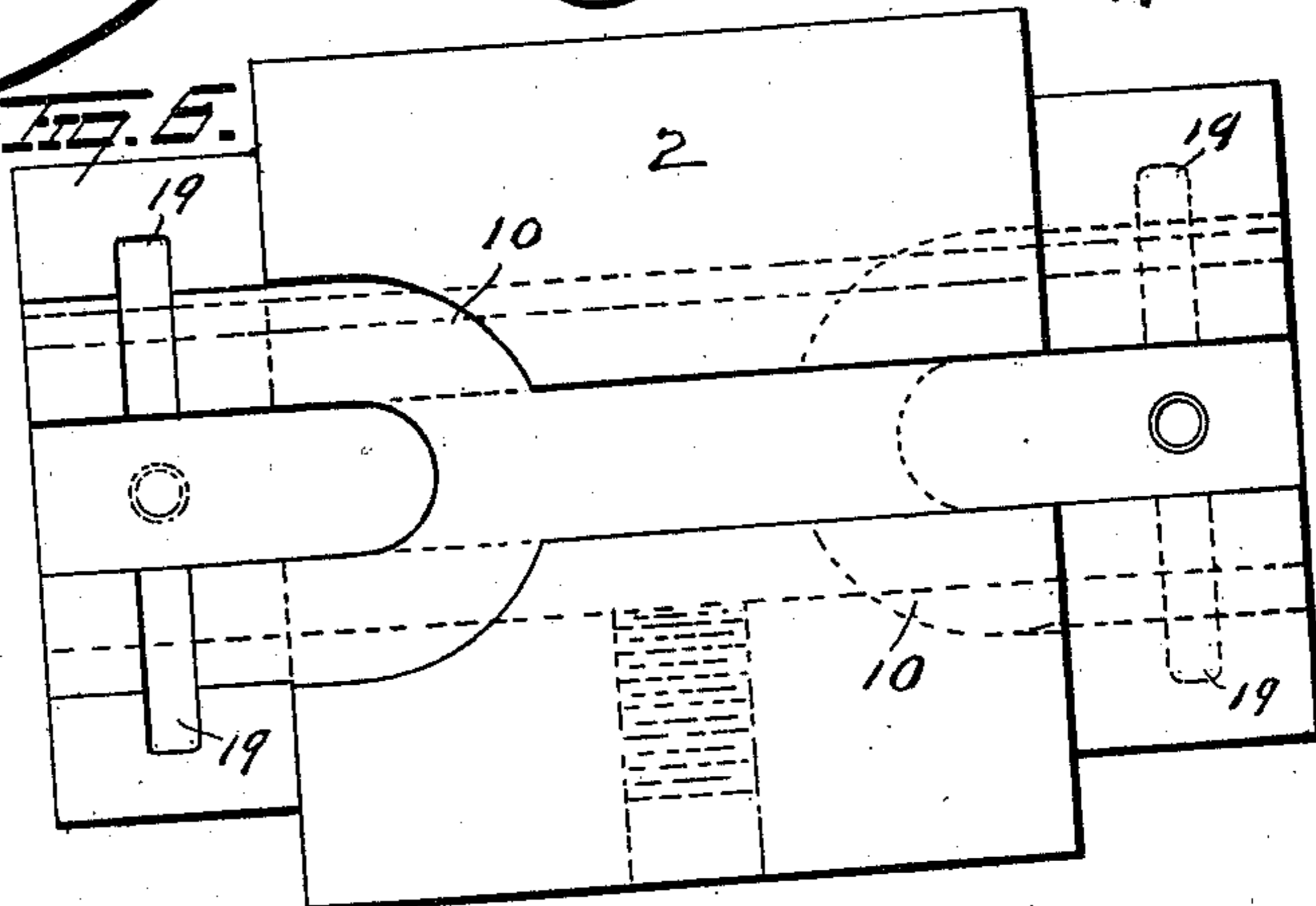


FIG. 9.

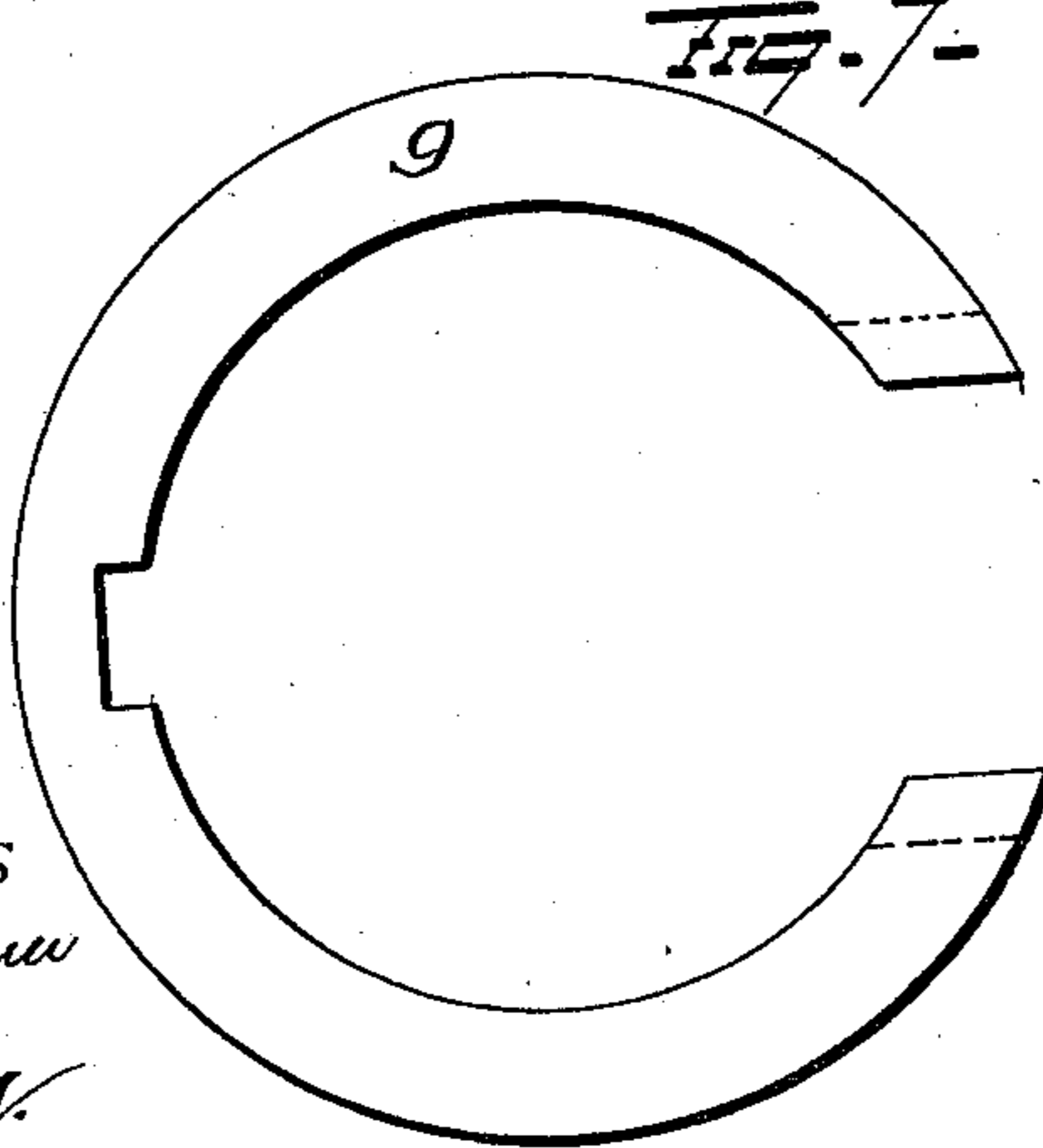


FIG. 10.

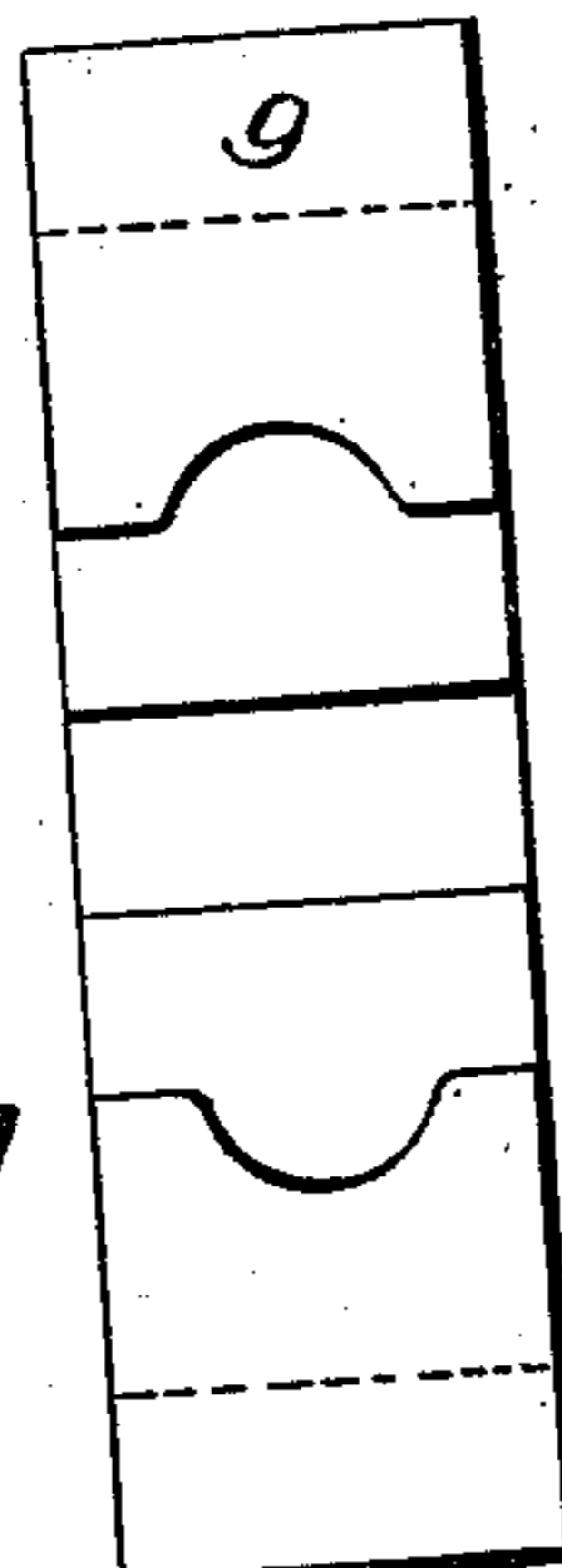
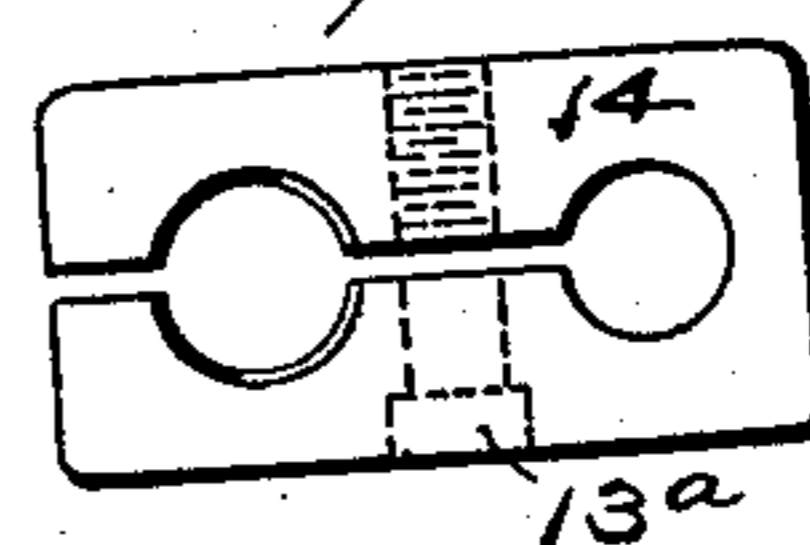


FIG. 11.



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UNITED STATES PATENT OFFICE.

MOSES C. JOHNSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE
HELIX GEAR COMPANY, OF HARTFORD, CONNECTICUT.

CLUTCH.

SPECIFICATION forming part of Letters Patent No. 685,721, dated October 29, 1901.

Application filed April 9, 1901. Serial No. 55,061. (No model.)

To all whom it may concern:

Be it known that I, MOSES C. JOHNSON, a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Clutches; 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.

My invention relates to an improved clutch, and more particularly to an improved friction-clutch, the object of the invention being to provide an improved device of this character which will be comparatively simple in construction, positive in its action, and which can be adjusted to take up wear, and thereby insure the perfect operation of the clutch for an indefinite period.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claim.

In the accompanying drawings, Figure 1 is a view in longitudinal section, illustrating my improvements. Fig. 2 is a view in longitudinal section taken at right angles to Fig. 1. Fig. 3 is a view in section on the line $x x$ of Fig. 3. Fig. 4 is a view in section on the line $y y$ of Fig. 2, and Figs. 5, 6, 7, 8, 9, and 10 are views of various details of construction.

1 represents a shaft, to which a sleeve 2 is secured by feathers 3 and a set-screw 28, and keys 4 are secured to the respective ends of sleeve 2 by screws 5 for a purpose which will more fully hereinafter appear. On shaft 1, at the respective ends of sleeve 2, friction-cups 6 and 7, respectively, are revolubly mounted and are held in proper position with relation to the sleeve 2 by collars 8, secured on the shaft by set-screws. The friction-cups 6 and 7 are constructed to overlap the ends of sleeve 2 and are provided with gears, as shown, or may be made with pulleys or any other means whereby motion can be transmitted. Between the inner flanged and overlapping ends of cups 6 and 7 and the sleeve 2 expansion-rings 9 are located and are held against rotary movement on the sleeve by the

keys 4, above referred to, which project into keyways in the inner face of the rings 9.

The sleeve 2 is recessed at its respective ends on the opposite sides thereof, as shown at 10, to receive toggle-levers 11, and as these toggle-levers and their cooperating mechanism are precisely alike the below detail description of the same at one end of sleeve 2 will apply alike to both ends thereof.

The levers 11 are provided in their adjacent faces, near one end, with inclined or beveled and angular pockets to receive wedges 12, having semicircular recesses or bearings in their adjacent faces for the reception of the smooth intermediate portion of a headed screw 13, the head thereof overlapping the wedges 12, so that any inward movement of the screw will force the wedges inward and, owing to the shape of the latter, press the levers apart. The inner end of the screw 13 is enlarged, and against this enlargement the inner ends of the wedges are disposed, so that the outward movement of the screw will draw the wedges outward. The enlarged inner end of screw 13 is threaded and screwed into a clamping-nut 14, which latter is located in a recess 15 in sleeve 2, and comprises a block split longitudinally from one end to near its other end and made with a threaded hole near the split end thereof to receive the screw 13, and said block is provided with a screw 13^a, located in a transverse threaded hole in the block and adapted to clamp the screw 13 securely between the split sections of the block or permit its ready removal when desired. The long ends of levers 11 are curved on their inner faces to receive the wedge-shaped blocks 16, hereinafter referred to, and are provided on their outer edges or faces in alinement with the pivotal point thereof with semicircular enlargements 17 to fit into correspondingly-shaped recesses in the ends of the expansion-ring 9, and pins 18 are secured centrally in said enlargements 17 and have their headed ends located in grooves 19 in sleeve 2 to guide the toggle-levers and prevent displacement thereof. When the long ends of the toggle-levers are forced together by the expansion-ring 9, the latter will be contracted in diameter sufficiently to permit the free rotation of the cup

6; but when the long ends of the levers are forced apart by the block 16 the curved enlargements 17 will, owing to their being pressed outward, so expand the ring 9 as to bind tightly against the inner face of the cup 6 and lock it to the shaft 1.

The mechanism for operating the toggle-levers to engage the respective cups 6 and 7 comprises a sliding sleeve 20, mounted on sleeve 2 and having flanged ends 21 to overlap the cups and preclude the admission of dust and dirt to the working parts. The sleeve 20 is also provided with a grooved central portion 20^a for the reception of a suitable lever or other operating means to move the sliding sleeve.

The blocks 16 are secured to the inner face of sliding sleeve 20 by means of screws 23 and are located on opposite sides of the sleeve 20 and mounted to slide in grooves extending from end to end of said last-mentioned sleeve. These blocks 16 are made wedge-shaped on their ends adjacent to the toggle-levers 11 and are adapted when moved toward one or the other of the cups 6 or 7 to force the toggle-levers apart and the expansion-ring 9 into engagement with the cup, and when the sliding sleeve 20 is disposed midway between the cups neither of the blocks 16 will be in engagement with the toggle-levers, and therefore both cups will rotate freely about shaft 1. It will thus be seen that when it is desired to lock cup 7 with shaft 1 it is simply necessary to move sleeve 20 to the right, when the wedge-shaped block 16 thereon will be forced between toggle-levers 11 and expand ring 9, thereby locking by friction the ring 9 and cup 7, and as the ring is secured against rotation on sleeve 2 by the key 4 and the sleeve 2 securely locked to shaft 1 by feathers 3 and set-screw 28 the cup 7 and shaft will be securely locked together. When the sleeve 20 is moved to the extreme left, it will lock the cup 6 and shaft together and when disposed midway between the cups neither will be locked to the shaft.

The cups 6 and 7 are made on their inner faces with grooves to receive felt or other strips 24, and openings 25 are made in the cups to permit the feeding of lubricant to said strips 24 and saturate the latter to lubricate the bearing. Openings 26 are provided in the friction-cups 6 and 7 to permit the insertion of a screw-driver to adjust the screw 13 and take up wear on the expansion-rings 9, and the sliding sleeve 20 is made with a hole 27 to permit access to the screw 28 to lock sleeve 2 to the shaft.

Various slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

In a clutch, the combination with a shaft, a sleeve secured thereon and having guides or grooves, friction-cups loose on the shaft and overlapping the respective ends of the sleeve, and expansion-rings between said cups and sleeve, a sliding sleeve on said first-mentioned sleeve and flanged to overlap the cups, toggle-levers for operating the expansion-rings, blocks carried by the sliding sleeve for operating the toggle-levers, and pins in the toggle-levers projecting into the guides or grooves in the first-mentioned sleeve to prevent displacement of said levers.

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

MOSES C. JOHNSON.

Witnesses:

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E. G. PARKHURST.