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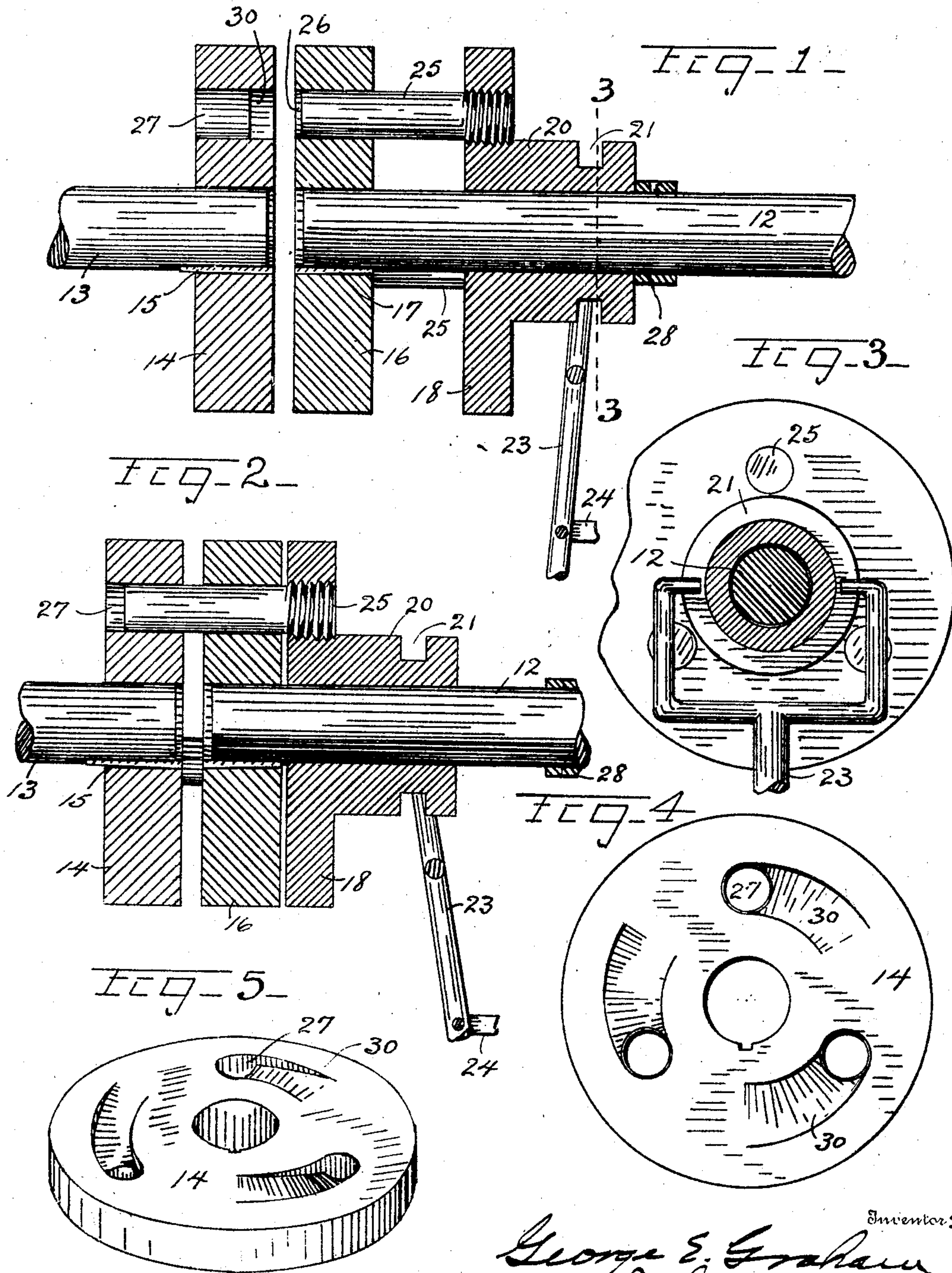
PATENTED AUG. 1, 1905.

G. E. GRAHAM & J. F. MITCHELL.

CLUTCH.

APPLICATION FILED JAN. 18, 1905.

2 SHEETS—SHEET 1



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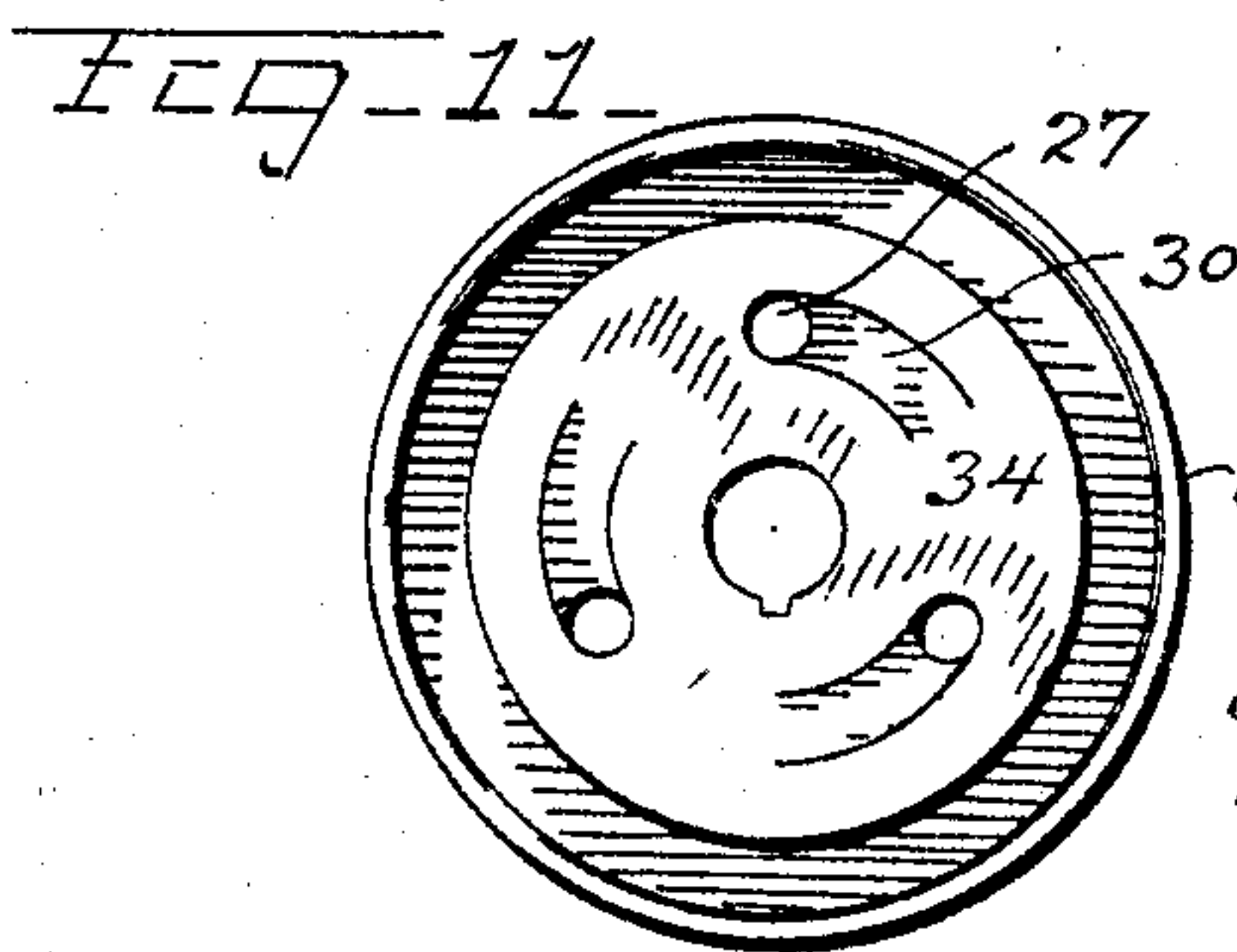
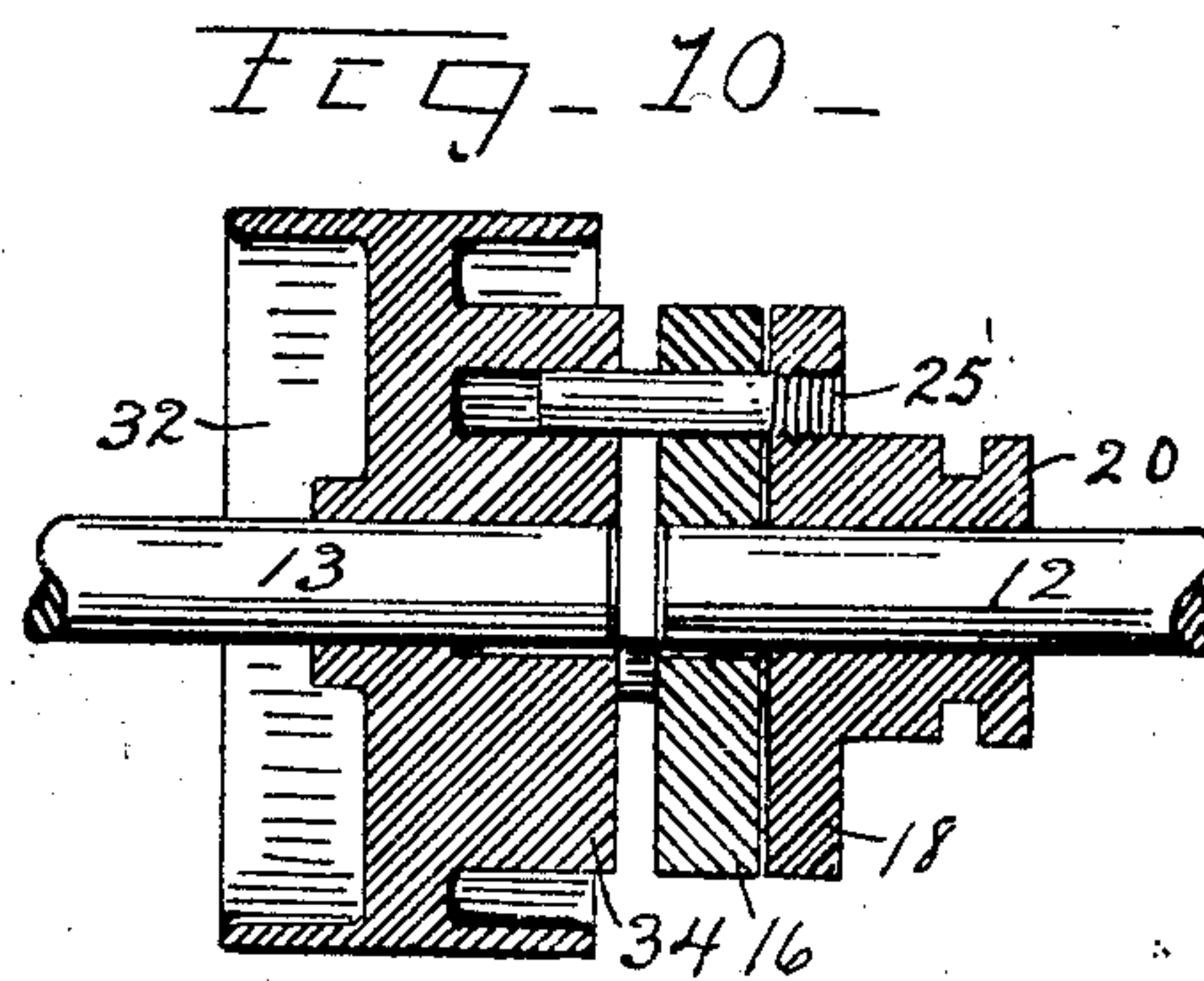
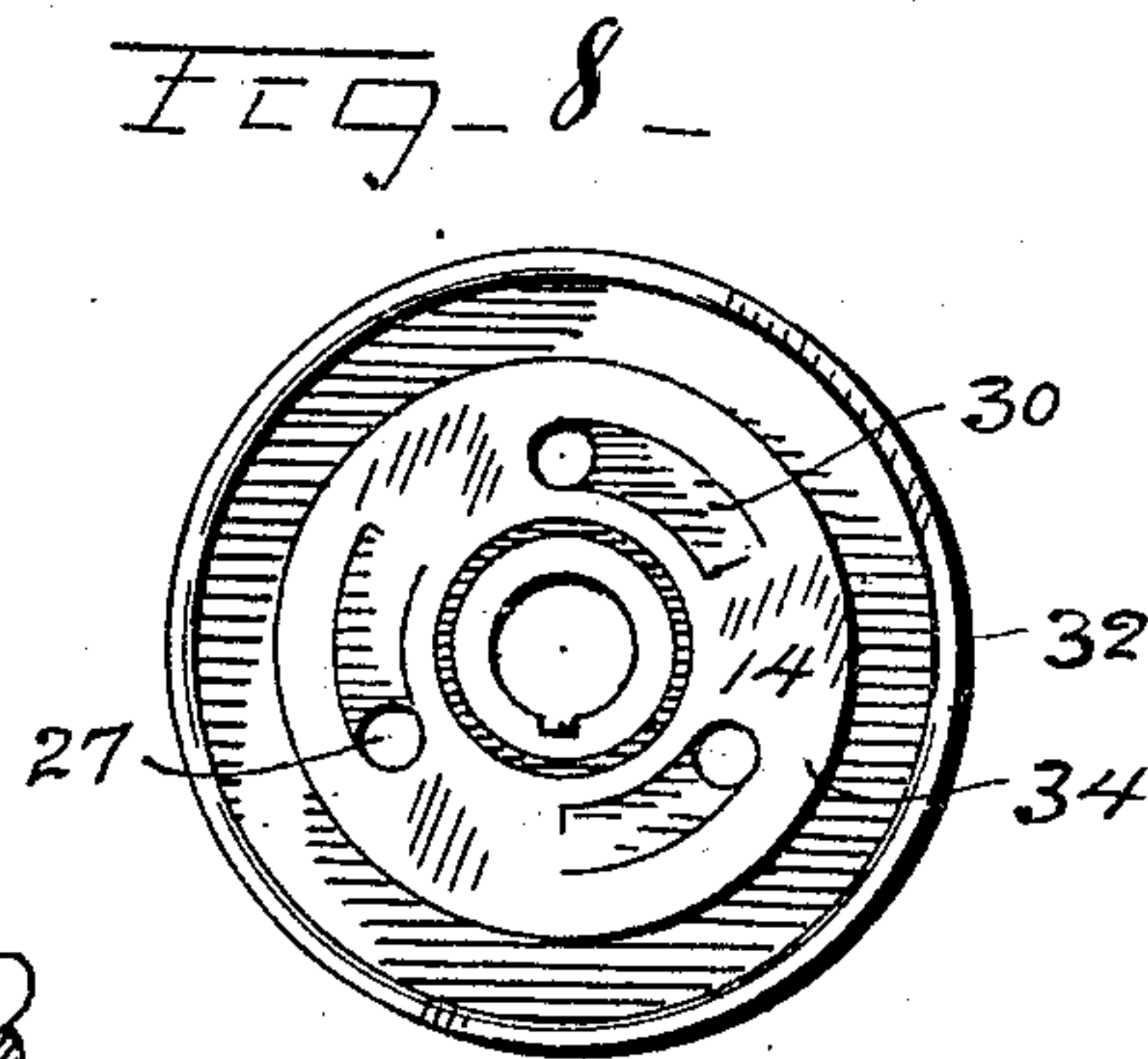
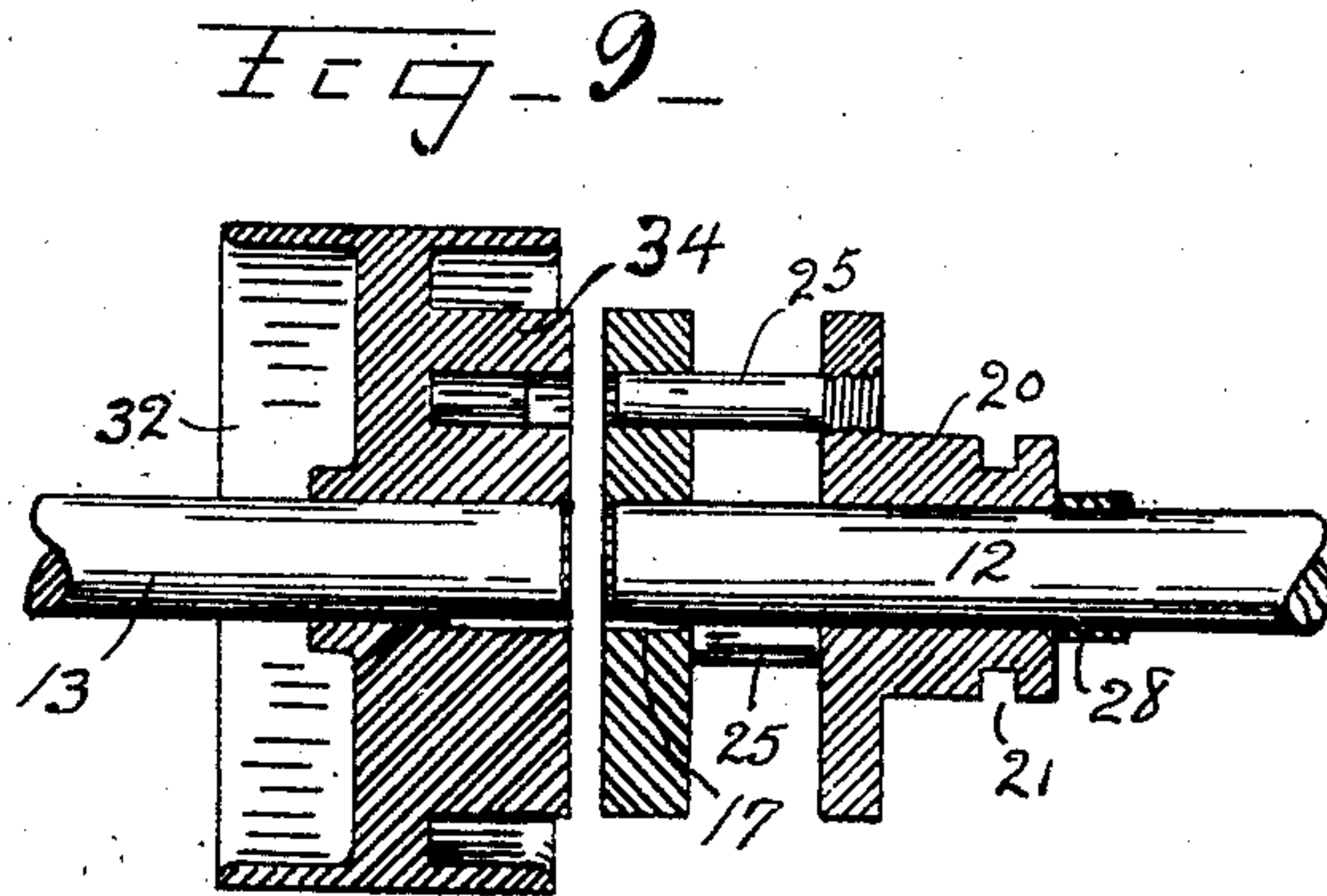
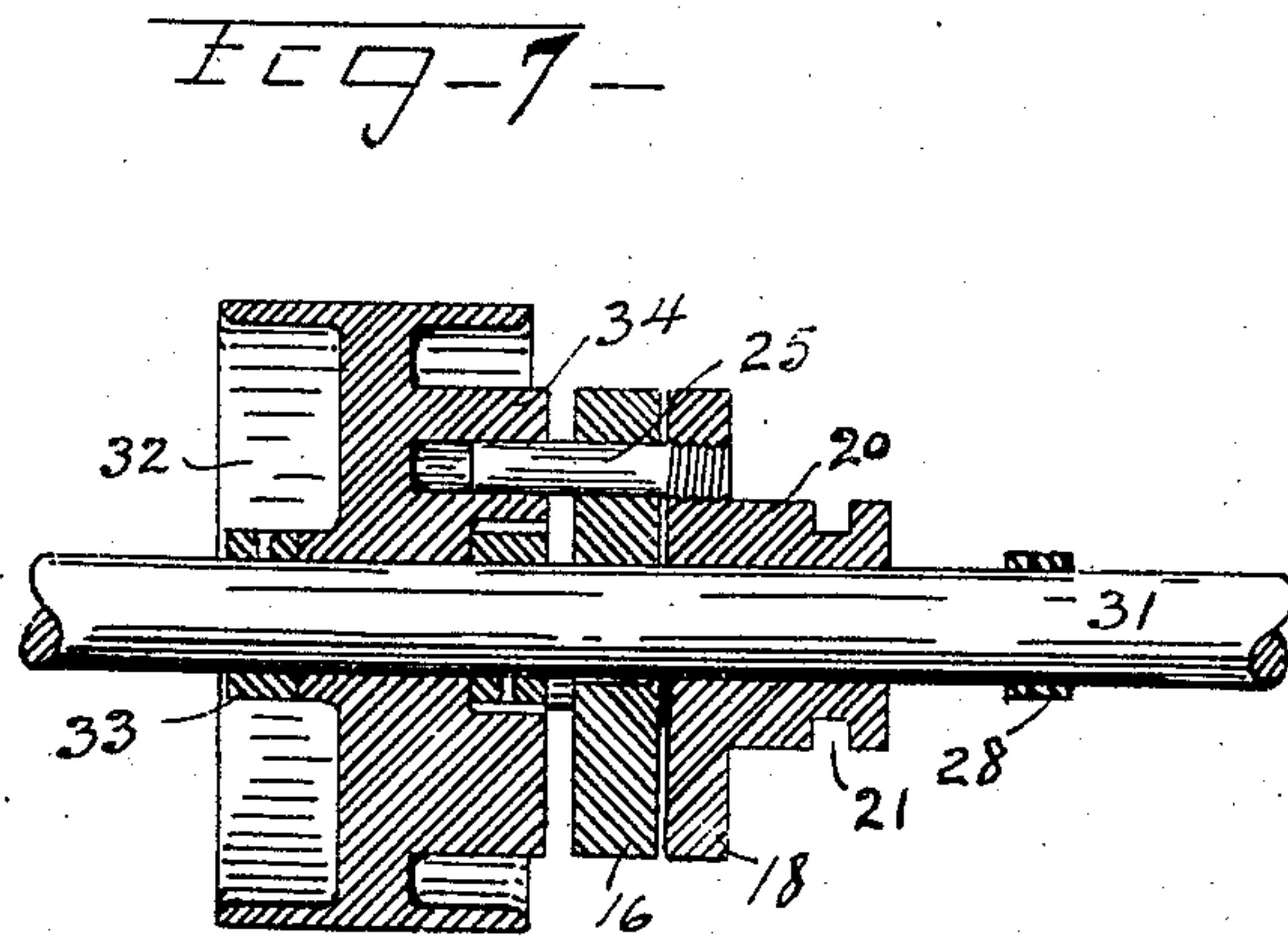
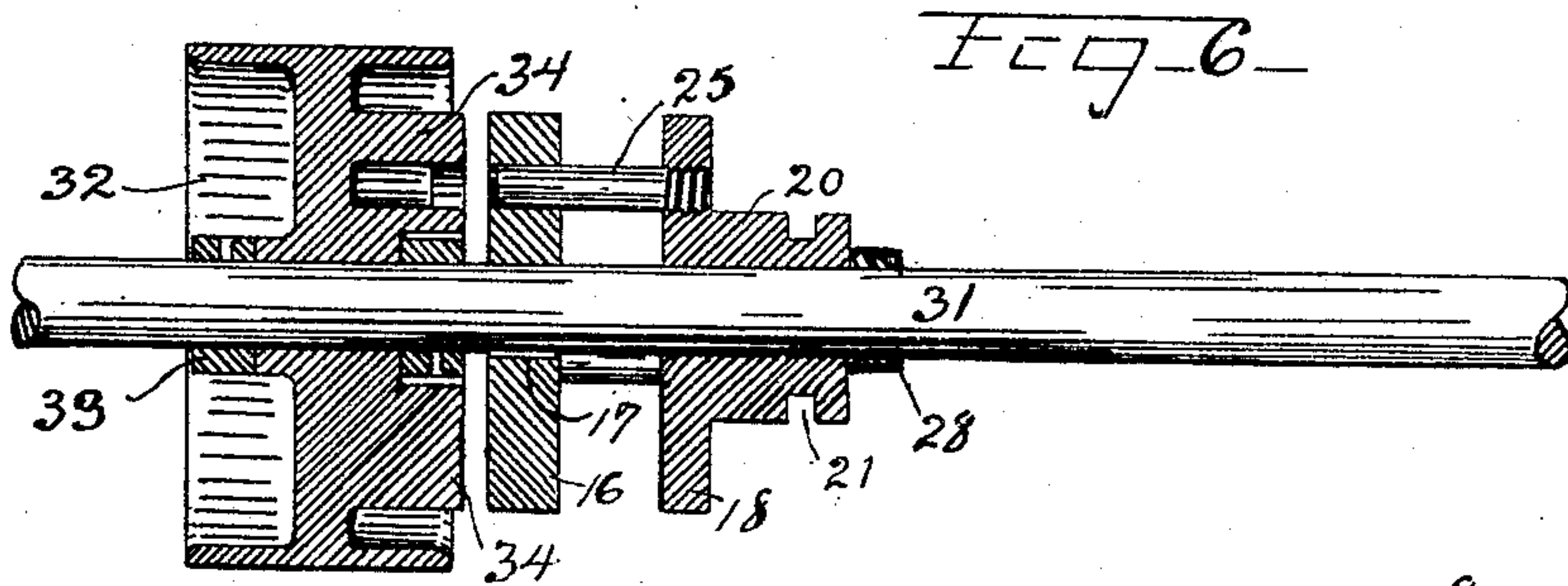
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CLUTCH.

APPLICATION FILED JAN. 18, 1905.

2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

GEORGE E. GRAHAM AND JOHN F. MITCHELL, OF STEVENSON, ALABAMA.

## CLUTCH.

No. 796,205.

Specification of Letters Patent.

Patented Aug. 1, 1905.

Application filed January 18, 1905. Serial No. 241,647.

*To all whom it may concern:*

Be it known that we, GEORGE E. GRAHAM and JOHN F. MITCHELL, of Stevenson, county of Jackson, and State of Alabama, have invented a certain new and useful Clutch; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters and figures refer to like parts.

The object of this invention is to provide a simple and effective clutch mechanism free from any projection calculated to catch the clothing and injure a person and that can readily be repaired and parts replaced and that will operate when the parts are on separate shafts, whether said shafts are in exact alinement or not. Furthermore, with this arrangement the sliding part of the clutch may be very loosely mounted, so that it can never stick.

One feature of the invention consists in providing inclined approaches in the face of the driven member leading to the holes or abutments, so that the coupling-pins will gradually enter their places in the holes or against the abutments in the driven member, and there will be no liability whatever of said pins failing to engage the driving member. Furthermore, said inclined approach is widened at the beginning, so as to aline the coupling-pin and guide it to its place in the hole or against the abutment. This prevents failures in the operation of the clutch, even when the ends of the pins are worn somewhat or the shafts are not in exact alinement.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Figure 1 is a central longitudinal section of the clutch arranged for coupling shafts, the clutch being out of engagement. Fig. 2 is the same, the clutch being in engagement. Fig. 3 is a transverse section on the line 3 3 of Fig. 1. Fig. 4 is a side elevation of the engaging face of the driven member or disk. Fig. 5 is a perspective view of the same. Fig. 6 is a central longitudinal section of the clutch in connection with a pulley and on a single shaft, the clutch not being in operation. Fig. 7 is the same with the clutch in operation. Fig. 8 is a side elevation of the engaging face of the driving member shown in Fig. 6. Fig. 9 is a central longitudinal section of the clutch adapted to

couple two shafts and also drive a pulley, the clutch being out of operation. Fig. 10 is the same with the clutch in operation. Fig. 11 is a side elevation of the engaging faces of the driving member in Figs. 9 and 10.

In Fig. 1 we have shown a driving-shaft 12 and a driven shaft 13. A disk 14 is secured on the driven shaft 13 by a key 15, so that said disk 14 may be called the "driven member." On the adjacent end of the driving-shaft 12 a disk 16 is secured rigidly by a key 17, so said disk may be called the "driving member." Neither the disk 14 nor 16 is slidable; but they are both stationary on their shafts. A disk 18 is mounted slidably on the shaft 12. Said disk 18 may therefore be called the "sliding member." It has connected with it a hub 20, having a peripheral groove 21, in which inwardly-extending pins 22 from the yoke of the clutch-lever 23 extend. Said clutch-lever is pivoted at 24, so that when thrown said lever will move the sliding member 18 toward or away from the driving member 16. Three pins 25 are screwed in the sliding member 18 and extend into the holes 26 through the driving member 16, and when the clutch is thrown into operation the pins 25 will enter the corresponding holes 27 in the driven member 14 and rotate said member and its shaft B. A stop 28 is provided to limit the oscillation or uncoupling movement of the sliding member, so that the pins 25 will not escape from the driving member 16 and also will not project beyond the face of said driving member. The parts are also arranged so that when the clutch is in operation said pins will not project beyond the face of the driven member. Therefore with this construction there is no projection to catch on the clothing or otherwise injure any one who may be working with it or come in contact with said clutch. The engaging face of the driven member 14 is preferably made as shown in Figs. 4 and 5, with the inclined approaches 30 leading to the holes 27. These approaches are curved concentric with the center of the driven member or disk. At their inner ends the width of said approaches is substantially the same as that of the holes 27; but at their outer ends they are wider than said holes for the purpose of receiving the ends of the pins when the shafts are not in exact alinement with each other and to guide the ends of said pins into said holes. As seen in Fig. 5, said inclined approaches



begin about midway between the holes and gradually increase in depth until their depth equals about one-third the thickness of the disk. The depth should be sufficient to always cause the pin to engage the face of the hole 27. The face of the hole 27 opposite the inclined approach may be called an "abutment," being the part against which the ends of the pins bear while in operation, and in this connection it might be said that while the holes 27 are better still instead of them mere lugs or abutments may be used. The length of the inclined approaches may also be modified. Preferably, however, they should begin about midway between the holes.

In Figs. 6, 7, and 8 we show a modified arrangement as compared with the first five figures. There all the parts are mounted on a single shaft 31. The driven member is a pulley 32, loosely mounted between collars 33 and 34, secured on each side of it to the shaft to hold said pulley from longitudinal movement. On the side of the pulley adjacent the other clutch members there is a lateral extension 34 of the same nature and arrangement as the disk 14 shown in Figs. 1 to 5, but integral with the pulley. It is provided with holes and inclined approaches the same as shown in Figs. 4 and 5. The hub-opening of said combined pulley and clutch-disk is enlarged on the side next to the other clutch members in order to receive the collar 34. In mounting the parts the collar 34 is first secured in place on the shaft; but the pulley is put in its place, and then the collar 33 is secured.

In Figs. 9, 10, and 11 another modified form is shown, being the placing of the construction shown in Figs. 6, 7, and 8 on the ends of two adjacent shafts like those shown in Fig. 1—that is, while in Figs. 6, 7, and 8 a pulley-clutch is shown, in Figs. 9, 10, and 11 there is shown the combination of a pulley-clutch and a shaft-coupling. There the pulley is keyed to the driven shaft 13, so that when the pulley is driven the shaft will also be driven, and when the pulley is not driven the shaft will not be driven. Otherwise the construction is the same as described in the previous Figs. 6, 7, and 8.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a clutch, a member to be driven provided on one side with abutments, inclined approaches leading to said abutments, a driving member with holes through it registering with said abutments, a sliding member mounted adjacent said driving member, pins secured in said sliding member adapted to extend through said driving member and engage said inclined approaches and abutments in the driven member, and means for moving said sliding member.

2. In a clutch, a member to be driven with holes through it and inclined recesses in the side of said member approaching said holes, said inclined recesses being concentric with the center of said driven member, a driving member with holes through it registering with the holes in the driven member, a sliding member mounted adjacent said driving member, pins secured to said sliding member adapted to extend through the holes in the driven member and enter the inclined approaches in said driven member, and means for moving said sliding member.

3. In a clutch, a member to be driven with holes through it and inclined recesses in the side of said member approaching said holes, said recesses being concentric with the center of the driven member and each wider at the beginning than at the hole, a driving member with holes through it registering with the holes in the driven member, a sliding member mounted adjacent said driving member, pins secured to said sliding member adapted to extend through the holes in the driven member and enter the inclined approaches in said driven member, and means for moving said sliding member.

In witness whereof we have hereunto affixed our signatures in the presence of the witnesses herein named.

GEORGE E. GRAHAM.  
JOHN F. MITCHELL.

Witnesses:

W. W. SANDERS,  
W. R. BOGART.