

No. 764,778.

PATENTED JULY 12, 1904.

E. G. STAUDE.
COUNTER.

APPLICATION FILED NOV. 3, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

FIG. 1.

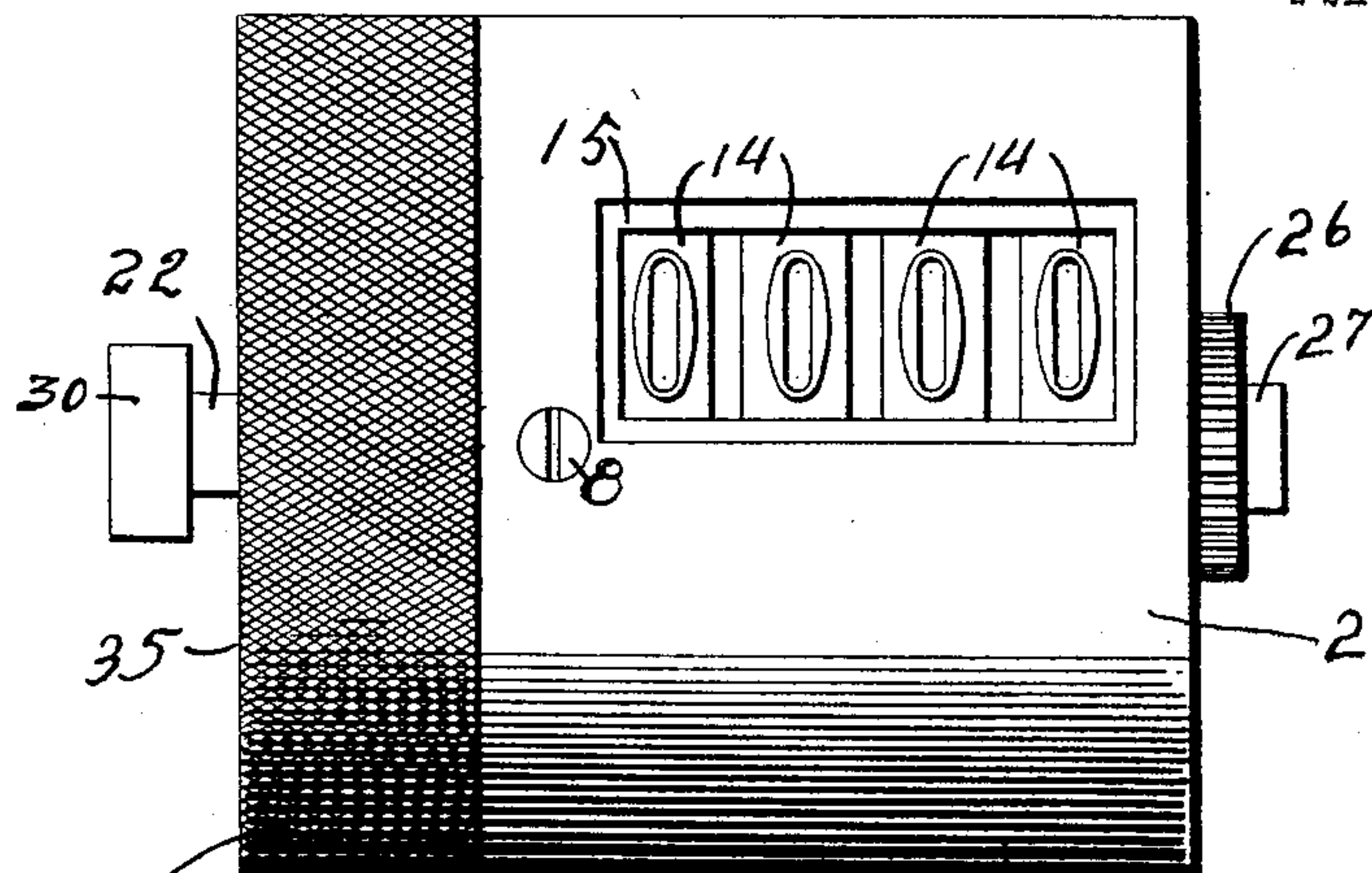


FIG. 2.

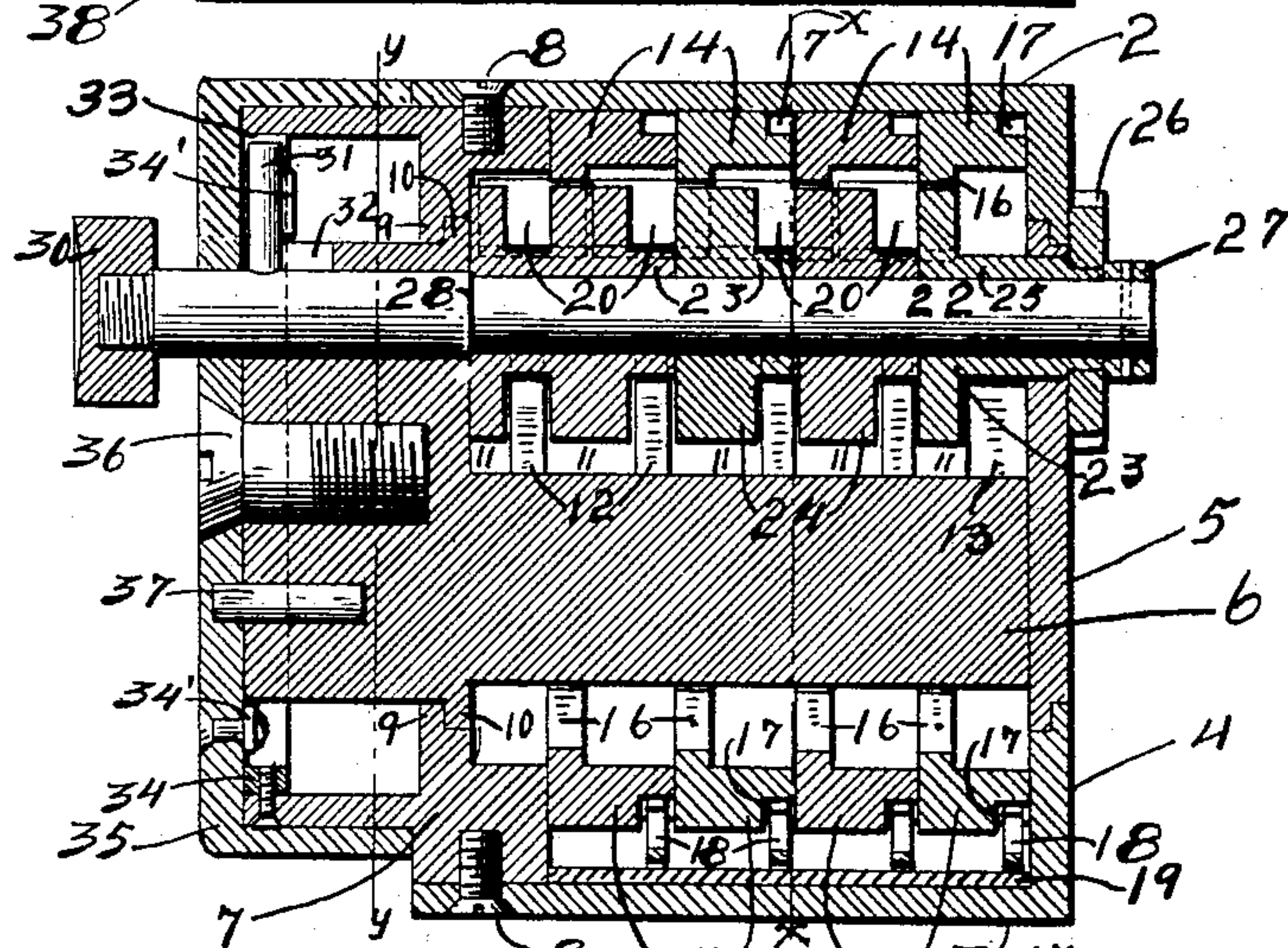
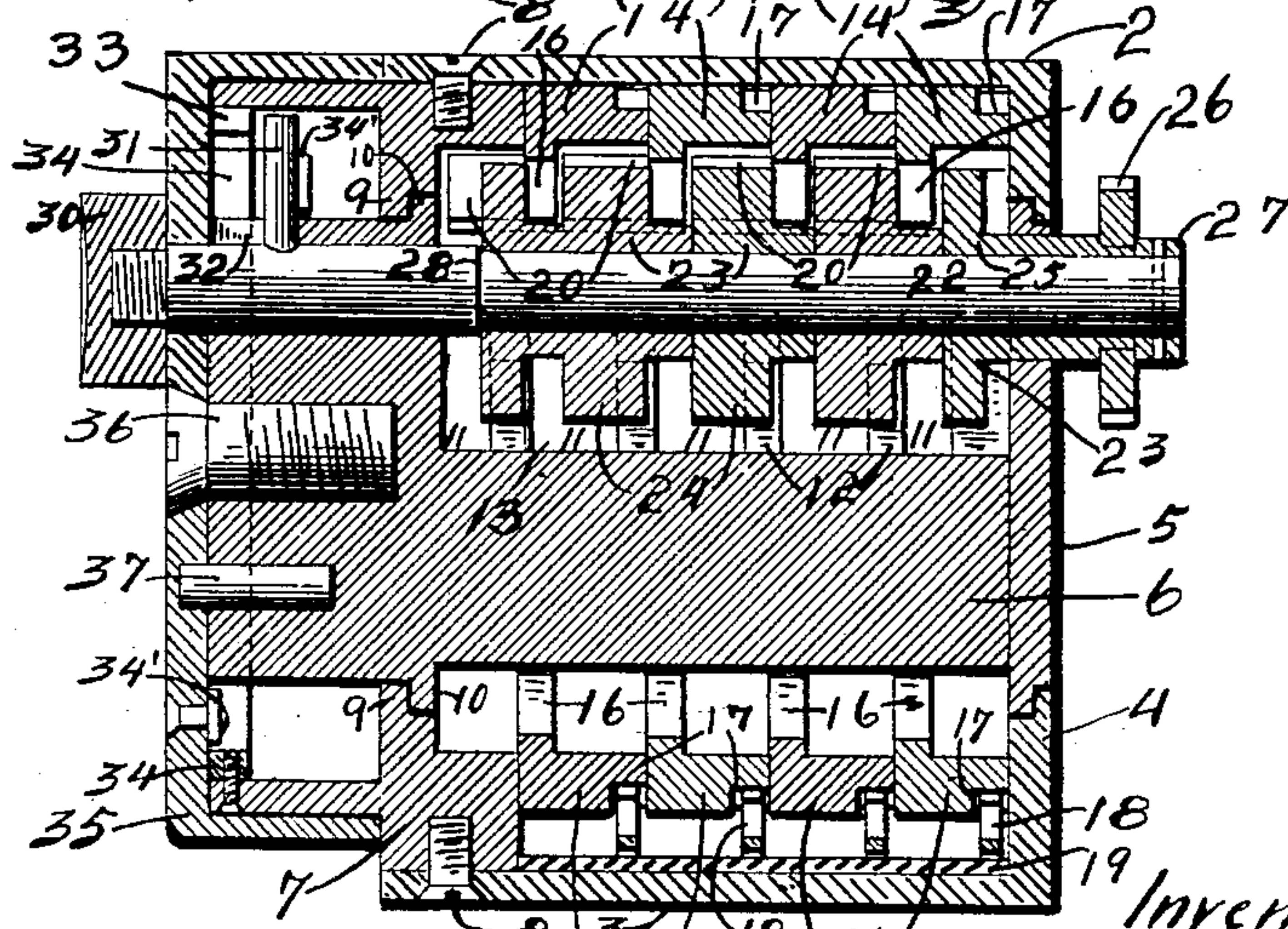


FIG. 3.



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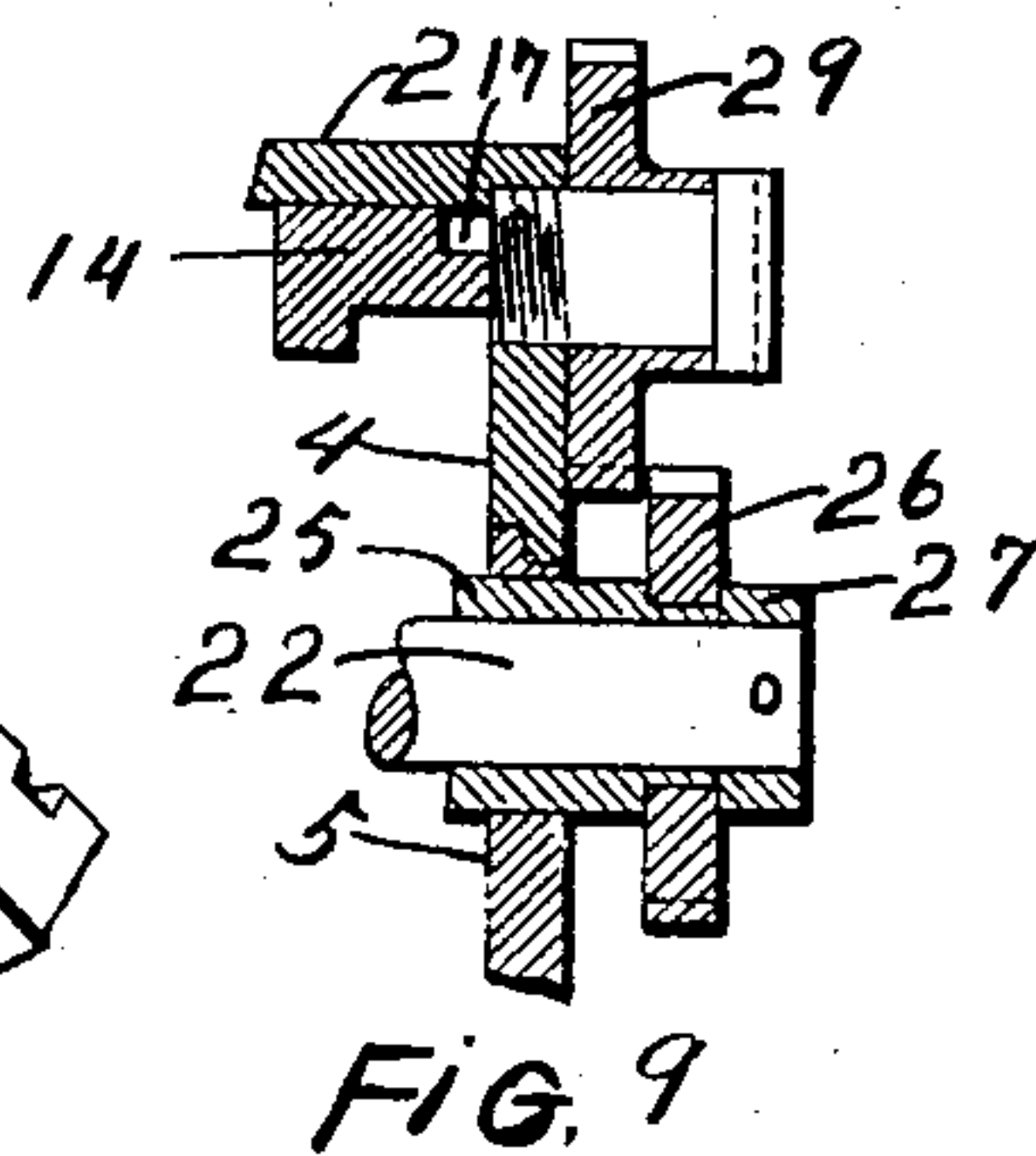
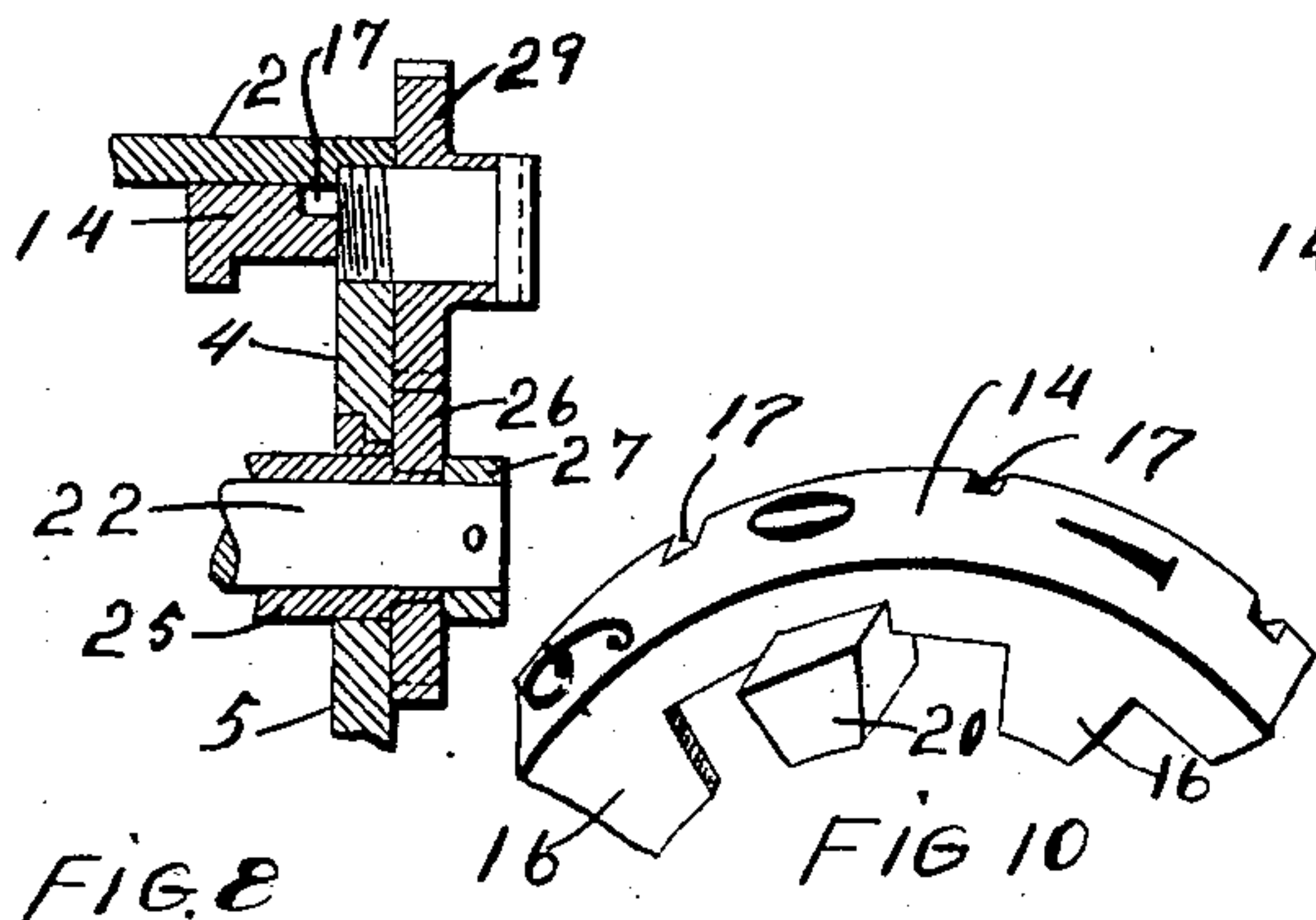
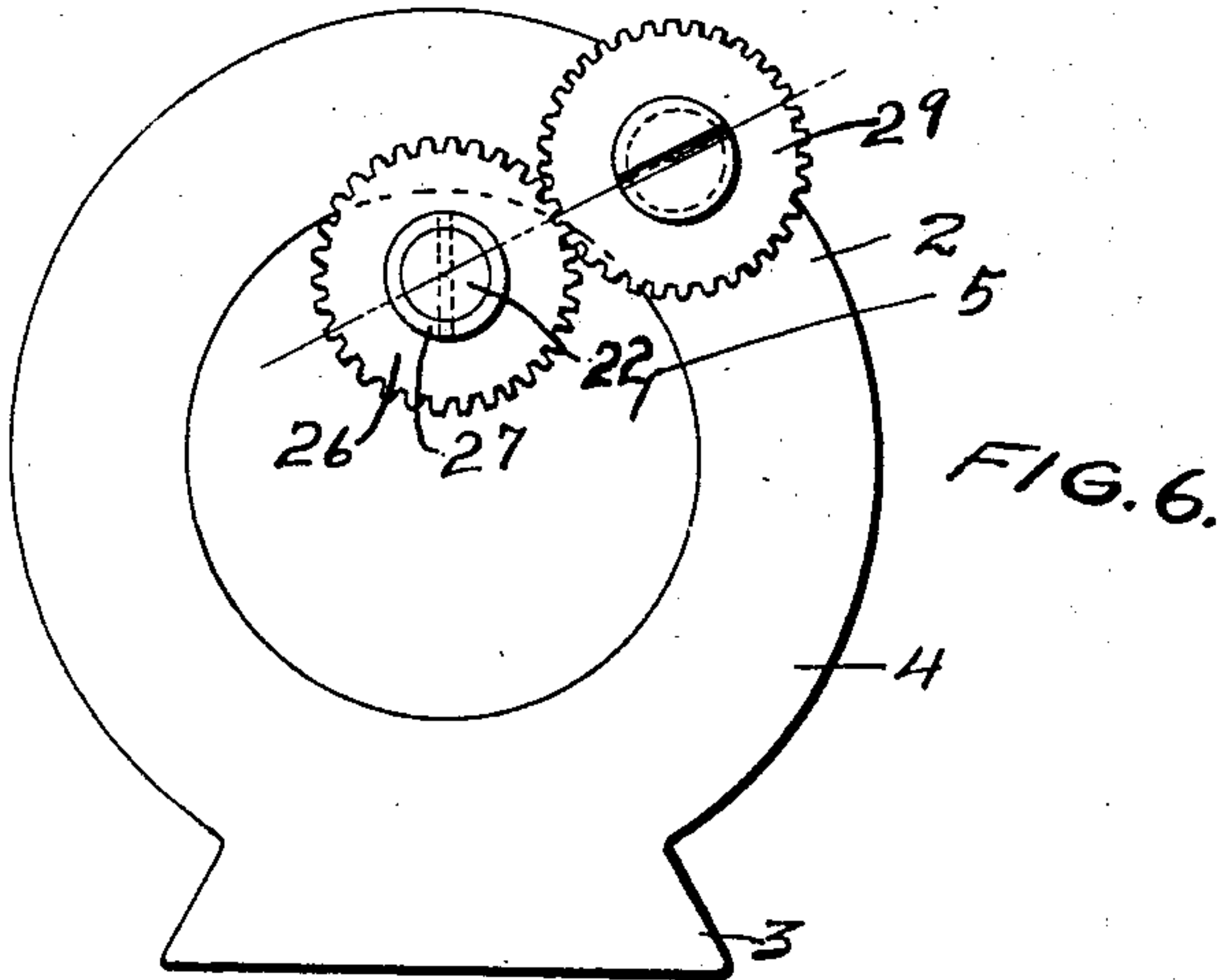
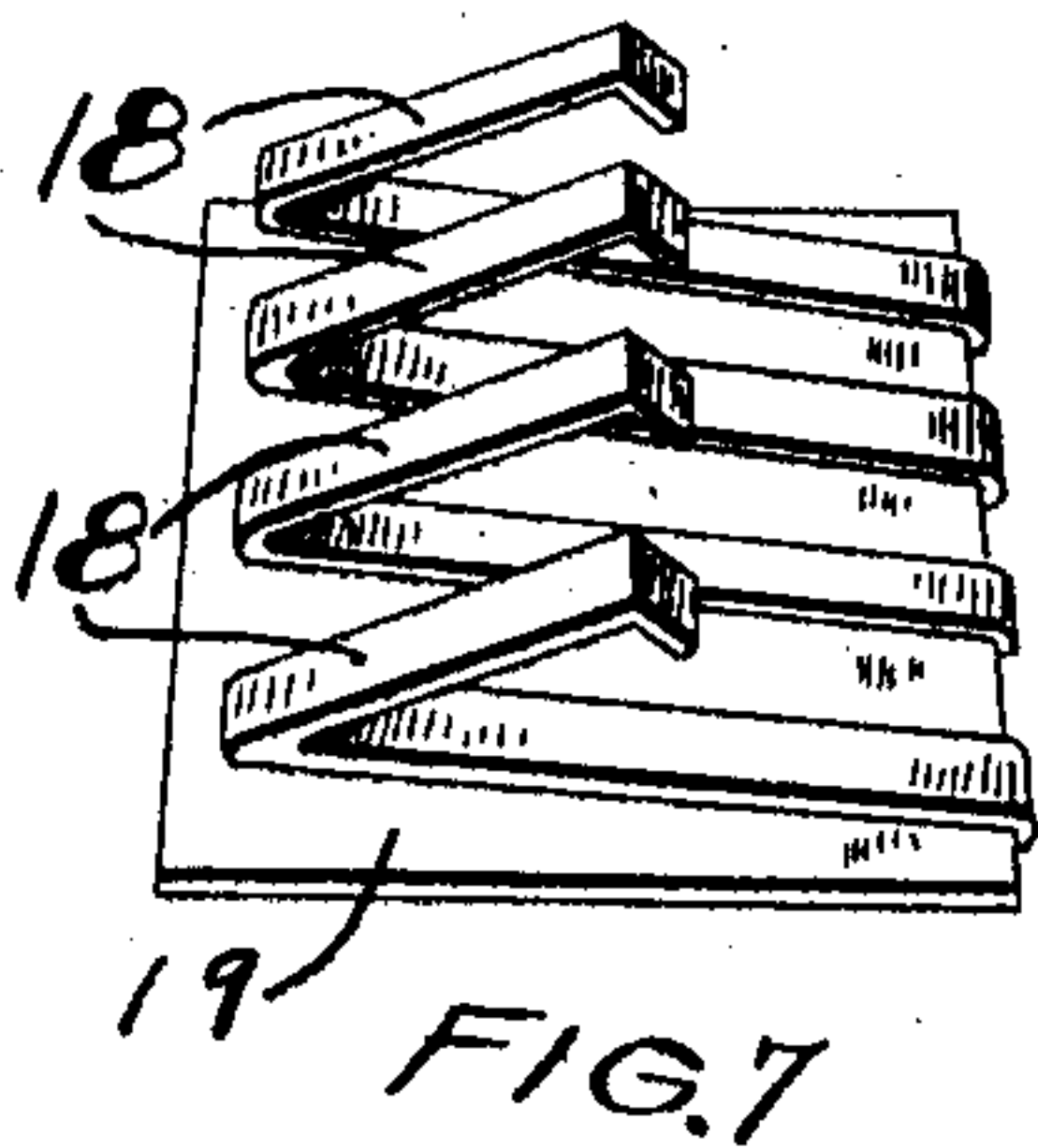
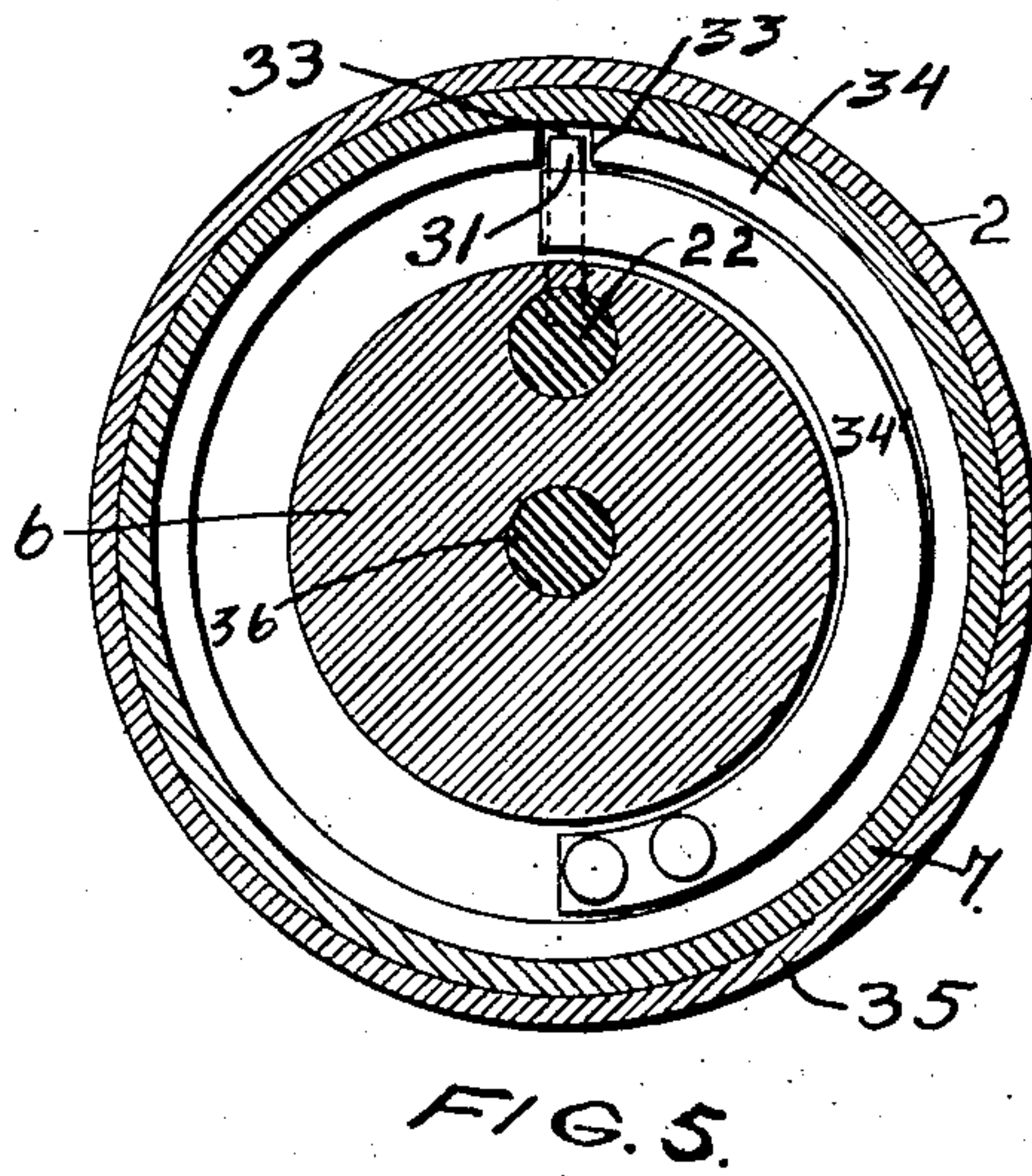
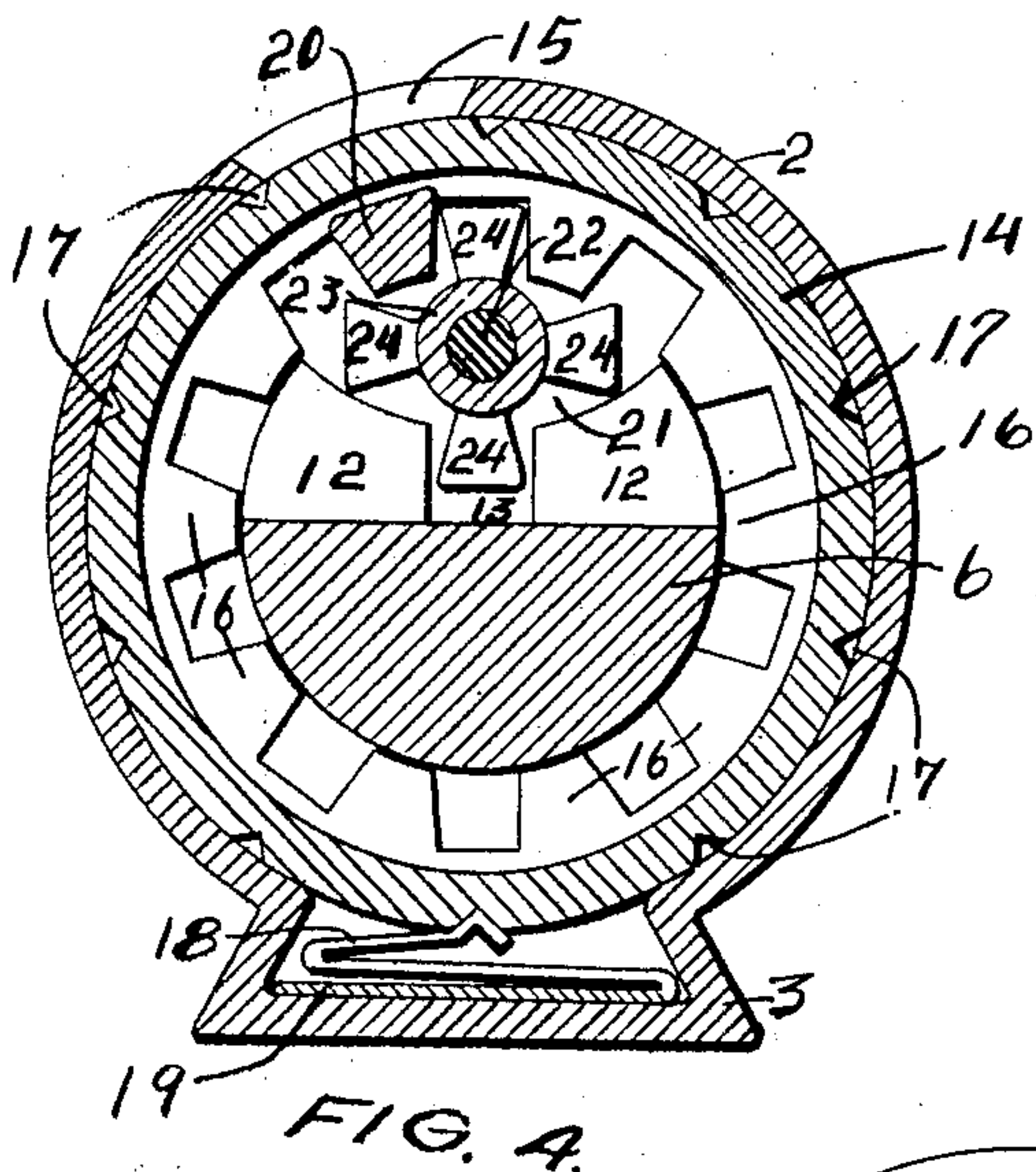
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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A CORPORATION OF CONNECTICUT.

COUNTER.

SPECIFICATION forming part of Letters Patent No. 764,778, dated July 12, 1904.

Application filed November 3, 1902. Serial No. 129,810. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. STAUDE, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Counters, of which the following is a specification.

This invention relates to counters or registers—such as cyclometers, revolution-counters, money-counters, and other machines of like general character—and more particularly to machines of this class in which the index or number wheels must be set back to zero from time to time.

The object of the invention is in general to improve the construction of the devices which are involved either directly or indirectly in the setting of the number-wheels to zero.

Other features of improvement and advantage will also appear hereinafter.

In the accompanying drawings, in which for purposes of explanation the invention is illustrated in a convenient and practical embodiment, Figure 1 is a plan view of a register embodying the invention. Fig. 2 is a longitudinal section of the same, the parts being in their normal position for moving the index-wheels forward. Fig. 3 is a similar view showing the mechanism in position for returning the counters to zero. Fig. 4 is a transverse section on the line *xx* of Fig. 2. Fig. 5 is a similar view on the line *yy* of Fig. 2. Fig. 6 is an end view of a register. Fig. 7 is a perspective of the spring click mechanism. Fig. 8 is a detail of the operating pinions, showing them in position to move the counters forward. Fig. 9 is a similar view showing the pinions out of mesh preparatory to returning the counters to zero. Fig. 10 is a perspective of a portion of one of the counters.

In the drawings, 2 represents a suitable barrel or casing wherein the operative mechanism of the register is inclosed and provided with a suitable base 3 for convenience in securing the casing to a support. A central opening is provided in the end wall 4 of said casing, the edge of said opening being shouldered or stepped to receive the correspond-

ing edge of a disk 5, that is secured on a shaft or carrier 6 or may be formed integrally therewith, if preferred. The edge of said disk forms a bearing for one end of the shaft or carrier in said casing, said carrier being rotatable for a purpose to be described. The opposite end of said shaft is supported in bearings in a ring 7, secured within the open end of said casing by screws 8 or by any other suitable means and provided with an annular rib 9, that coöperates with a similar rib 10 on said shaft and prevents the withdrawal of the shaft from the casing independently of said ring. In its upper side the shaft 6 is provided with a series of transverse notches 11, between which are webs 12, corresponding in number to the counters, and said shaft is also provided with a longitudinal centrally-arranged slot 13, dividing the webs 12 into two sections, as shown in Fig. 4. Within the casing upon said shaft I provide a series of circular wheels or counters 14, having marks or characters on their peripheries that are exposed through the sight-hole 15 in the top of the casing as the counters are revolved. Any suitable characters may be provided on the counters, preferably numerals from "0" to "10." Each counter has a series of internally-arranged teeth 16, whose inner ends conform to the periphery of the shaft 6 and travel thereover as the counters are moved. Each counter is preferably provided with a series of notches 17 to receive the correspondingly-shaped end of a spring 18, arranged upon a plate 19 within the base 3. These springs serve as clicks and also prevent the counters from overrunning during the operation of the register. Each counter is provided on one side with a laterally-projecting tooth or shoulder 20, arranged opposite the zero-mark on the periphery. I prefer to cut away the upper side of the shaft 6, forming a recess 21, extending longitudinally thereof through the tops of the webs 12, and arrange therein a longitudinally-movable shaft 22, having bearings in the shaft 6 at each end and projecting through the ends of the casing or barrel. Upon this shaft 22 I arrange a series of star-wheels

or transmitting pinions or devices 23, having their teeth normally in engagement with the teeth 16 of the counters and between the webs 12, and the intermediate star-wheels have teeth 5 24, that are of considerably greater thickness than the teeth 16, as shown in Fig. 2. The first star-wheel of the series is provided with a hub 25, that projects beyond the end of the casing and is provided with a gear 26, secured 10 thereon, said hub and those of the other star-wheels being held in place on said shaft between a collar 27 and a shoulder 28. The gear 26 normally meshes with a similar gear 29, mounted on the end of the casing and connected with the operating mechanism of a 15 cash-register or money-counter or having a suitable connection with the wheels of a vehicle. The opposite end of the shaft 22 projects beyond the shaft 6 and is provided with a knob 30 and a pin 31, that is movable within 20 a slot 32 in said shaft 6 and is normally held within a recess 33 in a ring 34 by a semicircular spring 34' and prevents revolution of the shaft 22 and the shaft 6 until such time as the 25 latter is moved longitudinally when it is desired to set the counters at zero. The ring 34 is secured within the open end of the ring 7 by any suitable means, and the end of the shaft 6 and the ring 7 is covered by a cap 35, 30 secured to the end of the shaft 6 by any suitable means, as a screw 36 and a dowel-pin 37. This cap is preferably provided with a roughened outer surface 38 for convenience in revolving the same.

35 The operation of the device is as follows: The gear 26 being rotated will operate the hub 25 and the star-wheel thereon, the teeth of which, meshing with the teeth of the first index-wheel, will advance the same one rotation, when the second star-wheel will be struck 40 by the tooth 20 and moved one step to impart a corresponding movement to the second counter. This operation will be repeated throughout the series. Whenever it is desired to set 45 the counters at zero, the operator will move the shaft 22 longitudinally, disengage the pin 31 from the notch 33, thereby unlocking the shaft 6 and allowing it to be turned, and moving the gear 26 out of engagement with the 50 gear 29. This movement of the shaft 22 will also disengage the star-wheels from the teeth 16 of the counters and cause them to assume a position over the webs 12, with a tooth projecting into the groove 13, as shown in Fig. 55 4. In this position the star-wheels will be locked against rotation on their shaft in either direction. The intermediate wheels, however, having teeth of greater thickness than those on the counters, will still be in the path of the 60 teeth 20, and consequently when the shaft 22 has been moved longitudinally and the star-wheels locked the operator grasping the cap 35 can revolve the shaft 6, and with it the shaft 22 and the star-wheels thereon, and as 65 said wheels are carried around by the rotation

of the shaft 6 their teeth will engage the teeth 20 on the counters wherever they may be set and rotate the counters back to zero. During the rotation of the shaft 6 the pin 31 will travel 70 along the ring 34 until it reaches the notch 33, into which it will drop, and the spring 34' by its tension will return the shaft 22 to its normal position, throw the pinion 26 again into engagement with the teeth of the pinion 29, and unlock the star-wheels and move them 75 again into mesh with the teeth of the counters. The device is then ready to be again used as a register, starting from zero, and upon a certain desired amount or the limit of the device being registered by the counters 80 the operation of resetting may be repeated.

I claim as my invention—

1. In a counter, the combination of a pair of number-wheels, a transmitting-pinion, one of said number-wheels having a projection for 85 engagement with said transmitting-pinion to advance the same, and the other of said number-wheels having gear-teeth for engagement with said transmitting-pinion to be advanced thereby, means to produce relative longitudinal 90 movement of said wheels and said transmitting-pinion to effect disengagement of said transmitting-pinion from said gear-teeth and to permit coöperation of said pinion with said projection for resetting, substantially as shown 95 and described.

2. In a counter, the combination of a pair of number-wheels, a transmitting-pinion having wide teeth, one of said number-wheels having a projection in the path of the teeth 100 of said pinion and the other of said number-wheels having gear-teeth for engagement with said transmitting-pinion to be advanced thereby, means to produce relative longitudinal 105 movement of said wheels and said transmitting-pinion to effect disengagement of said transmitting-pinion from said gear-teeth while the teeth of said pinion remain in the path of said projection, substantially as shown 110 and described.

3. In a counter, the combination of a pair of number-wheels, a transmitting-pinion, one of said number-wheels having a projection for engagement with said transmitting-pinion to advance the same, and the other of said number-wheels having gear-teeth for engagement 115 with said transmitting-pinion to be advanced thereby, means to produce relative longitudinal movement of said wheels and said transmitting-pinion to effect disengagement of said transmitting-pinion from said gear-teeth and to permit coöperation of said pinion with said projection for resetting, and a rotatable carrier 120 in which said transmitting-pinion is mounted, substantially as shown and described. 125

4. In a counter, the combination of a pair of number-wheels, a transmitting-pinion, one of said number-wheels having a projection for engagement with said transmitting-pinion to advance the same, and the other of said num- 130

ber-wheels having gear-teeth for engagement with said transmitting-pinion to be advanced thereby, means to produce relative longitudinal movement of said wheels and said transmitting-pinion to effect disengagement of said transmitting-pinion from said gear-teeth and to permit coöperation of said pinion with said projection for resetting, a rotatable carrier in which said transmitting-pinion is mounted, and a locking device on the carrier for engagement with the pinion when longitudinal movement is effected, substantially as shown and described.

5. In a counter, the combination of a pair of number-wheels, a transmitting-pinion, one of said number-wheels having a projection for engagement with said transmitting-pinion to advance the same, and the other of said number-wheels having gear-teeth for engagement with said transmitting-pinion to be advanced thereby, means to produce relative longitudinal movement of said wheels and said transmitting-pinion to effect disengagement of said transmitting-pinion from said gear-teeth and to permit coöperation of said pinion with said projection for resetting, a rotatable carrier in which said transmitting-pinion is mounted, a locking device on the carrier for engagement with the pinion when longitudinal movement is effected, and a locking device to hold the carrier from rotation, substantially as shown and described.

6. In a counter, the combination of a series of number-wheels having gear-teeth, a rotary carrier, transmitting devices mounted on said carrier and normally engaging said gear-teeth, means for producing relative longitudinal movement of said wheels and of the transmitting devices to effect disengagement of the transmitting devices from said gear-teeth, projections on said wheels to engage said transmitting devices, and means to lock said transmitting devices when such longitudinal movement has been effected, substantially as shown and described.

7. In a counter, the combination, with a casing, of a series of counters therein, a rotary part contained within said counters and normally locked against rotation, transmitting devices carried by said rotary part and normally movable independently of the same, means for locking said transmitting devices and releasing said rotary part, and projections provided on said counters in the path of said transmitting devices when said rotary part is operated.

8. In a counter, the combination, with the casing, of a series of counters therein provided with internal teeth, a shaft within said counters and normally locked against rotation, transmitting devices carried by said shaft and including a series of star-wheels having their teeth in engagement with the teeth of said counters and normally movable independently of said shaft, means for lock-

ing said star-wheels and releasing said shaft, and suitable projections provided on said counters in the path of said star-wheels when in their locked position, substantially as described.

9. In a counter, the combination, with a casing, of a series of counters or indicator-wheels provided with internal teeth, a shaft within said wheels and normally locked against rotation, a longitudinally-movable shaft having bearings in said first-named shaft, a series of star-wheels loosely mounted on said second shaft and having their teeth normally in engagement with the teeth of said wheels, means for locking said star-wheels when disengaged from the teeth of said indicating-wheels by the longitudinal movement of said second shaft, and projections provided on said indicating-wheels in the path of said star-wheels, whereby said indicating-wheels will be actuated when said first-named shaft is rotated.

10. In a counter, the combination, with a casing, of a series of indicator-wheels or counters having internal teeth provided therein, a shaft within said counters, a longitudinally-movable shaft mounted in bearings in said first-named shaft, means for locking both said shafts against rotation, a series of star-wheels loosely mounted on said second-named shaft having their teeth normally in engagement with the teeth of said counters, some of said star-wheel teeth being wider than the teeth of said counters, a driven gear connected with one of said star-wheels, means for locking said star-wheels against rotation when said second-named shaft is moved longitudinally, and lugs or projections provided on said counters in the path of the teeth of said star-wheels.

11. In a counter, the combination, with a casing, of indicator-wheels or counters provided therein and having internal gears, a shaft within said counters having transverse webs and grooves between them and a longitudinally-arranged slot intersecting said grooves and webs, a longitudinally-movable shaft mounted in said first-named shaft, means for locking both said shafts against rotation, a series of star-wheels loosely mounted on said second-named shaft and having their teeth in engagement with the teeth of said counters, a gear for driving said star-wheels, means for moving said star-wheels in the longitudinal slot in said first-named shaft and over the webs thereon to lock said wheels against rotation, and lugs provided on said counters in the path of said star-wheels, substantially as described.

12. In a counter, the combination, with a casing, of a series of counters therein having internal teeth, a rotary part contained within said counters, a longitudinally-movable shaft carried by said rotary part, means for normally locking said rotary part and said shaft against rotation, transmitting devices provided on said shaft and normally movable in-

dependently of said rotary part, a gear mounted on said casing, a second gear provided on said shaft and driven by said first-named gear, and connected with said transmitting devices, means for locking said transmitting devices when said shaft is moved longitudinally to release said rotary part and disengage said gears, and lugs or projections provided on said counters in position to be engaged by said transmitting devices in their locked position.

13. In a counter, the combination, with the revolving counters having suitable internal teeth, of a rotary part having a series of transverse webs and a longitudinal slot dividing said webs, a yieldingly-held longitudinally-movable shaft carried by said rotary part, means for locking said rotary part and said shaft against rotation, star-wheels loosely mounted on said shaft and having teeth to engage the teeth of said counters, a gear provided near said shaft, a second gear arranged on said shaft and connected with the first star-wheel of the series, and driven by said first-named gear, said second-named gear being moved out of engagement with said first-named gear and said star-wheels being moved over said webs with their teeth between them in said slot by the longitudinal movement of said shaft in one direction, and teeth or lugs provided on said counters in the path of said star-

wheels in their locked position, whereby the backward rotation of said rotary part will return said counters to zero.

14. In a counter, the combination, with a casing, of a series of counters therein having internal teeth, a rotary part contained within said counters, a longitudinally-movable shaft carried by said rotary part, a pin provided on said shaft and movable in a slot within said rotary part, a fixed ring having a notch to receive said pin and lock said shaft and rotary part against rotation, a spring normally holding said pin within said notch, transmitting devices provided on said shaft and normally movable independently of said rotary part, a gear mounted on said casing, a second gear provided on said shaft and connected with said transmitting devices, means for locking said transmitting devices when said shaft is moved longitudinally to release said rotary part, and suitable projections provided on said counters in position to be engaged by said transmitting devices in their locked position when said rotary part is operated.

In witness whereof I have hereunto set my hand this 31st day of October, 1902.

EDWIN G. STAUDE.

In presence of—

M. C. NOONAN,
C. G. HANSON.