

No. 760,125.

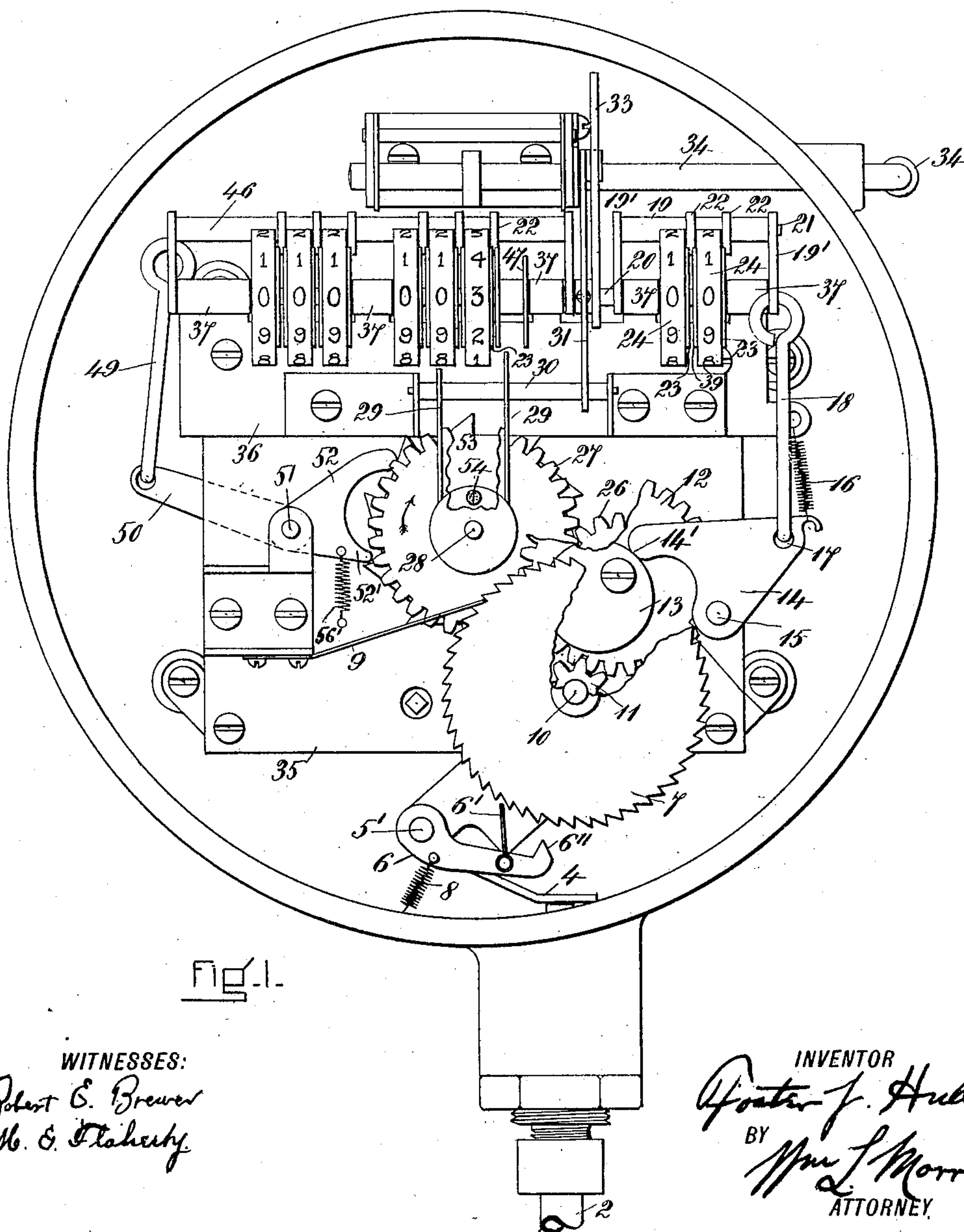
PATENTED MAY 17, 1904.

F. J. HULL.
FARE REGISTER.

APPLIOATION FILED FEB. 27, 1904.

NO MODEL.

6 SHEETS—SHEET 1.



WITNESSES:

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M. E. Flaherty.

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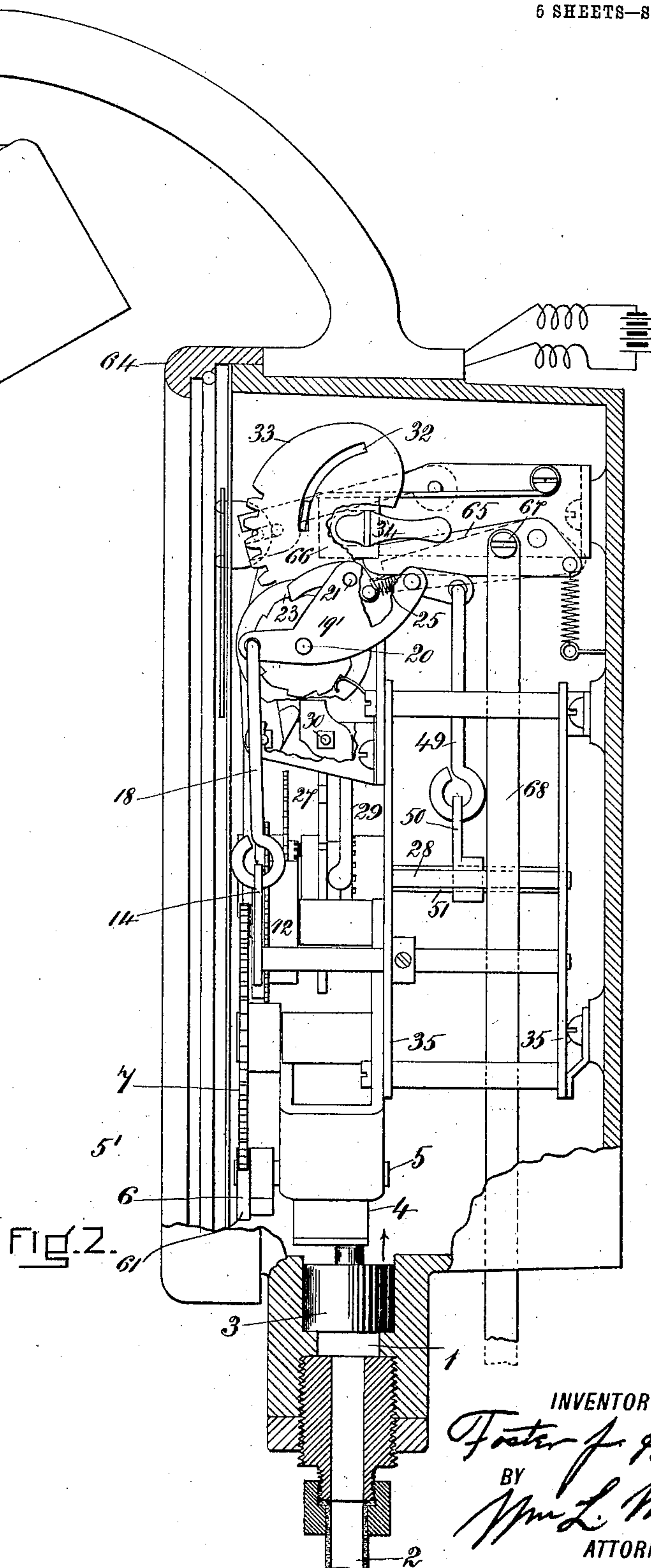
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5 SHEETS—SHEET 2.



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5 SHEETS—SHEET 3.

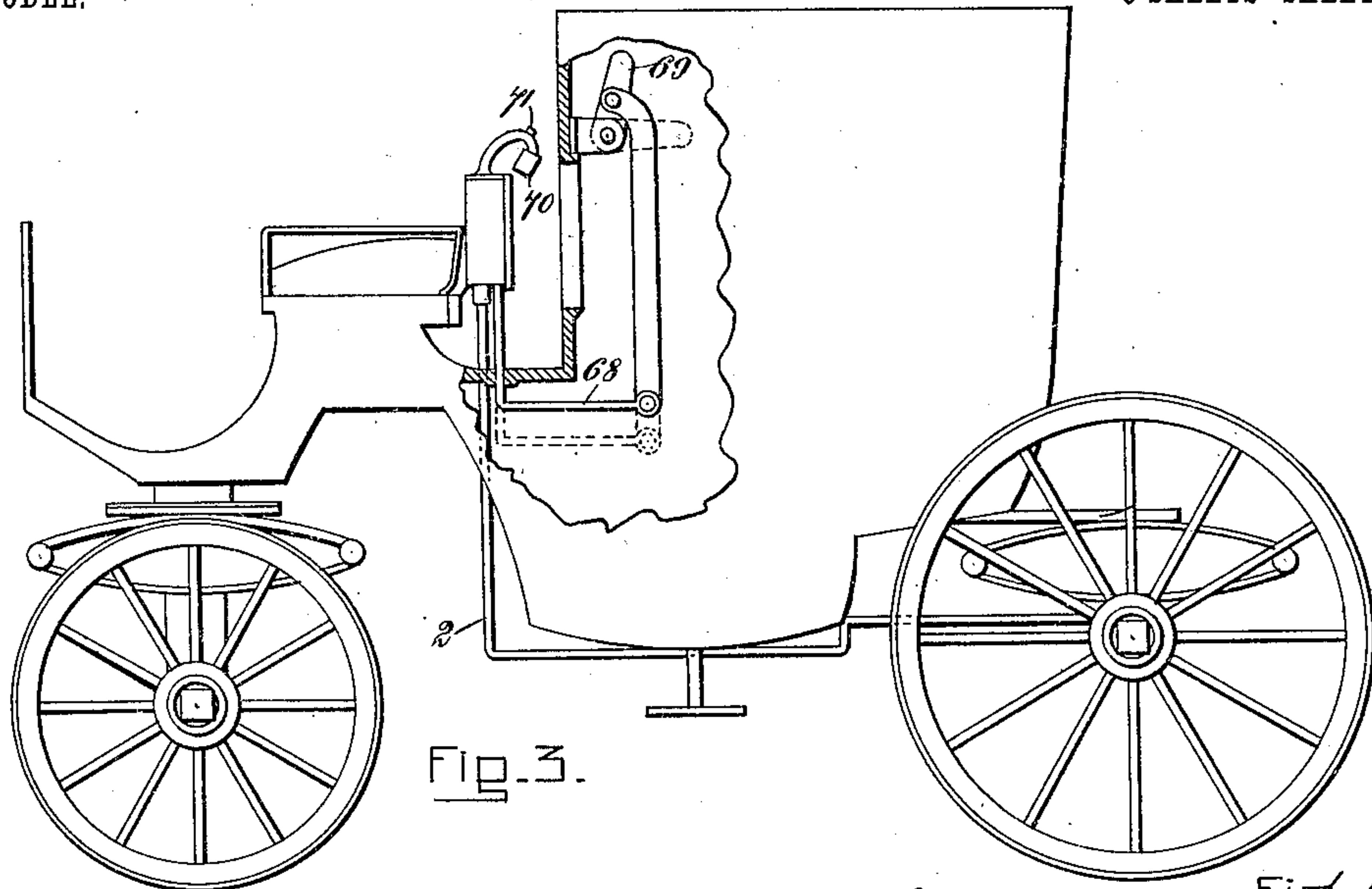


Fig. 3.

Fig. 5.

Fig. 4.

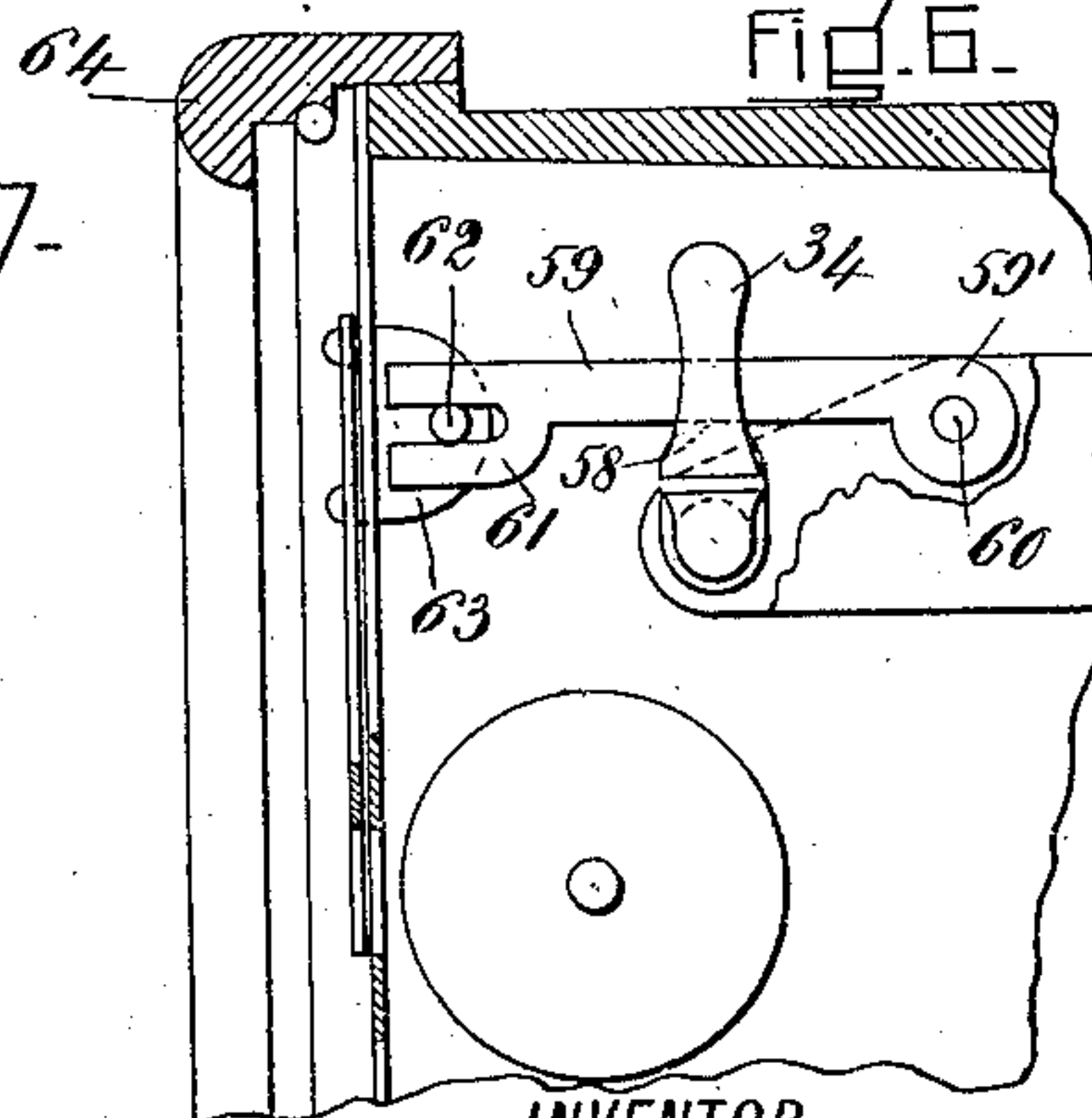
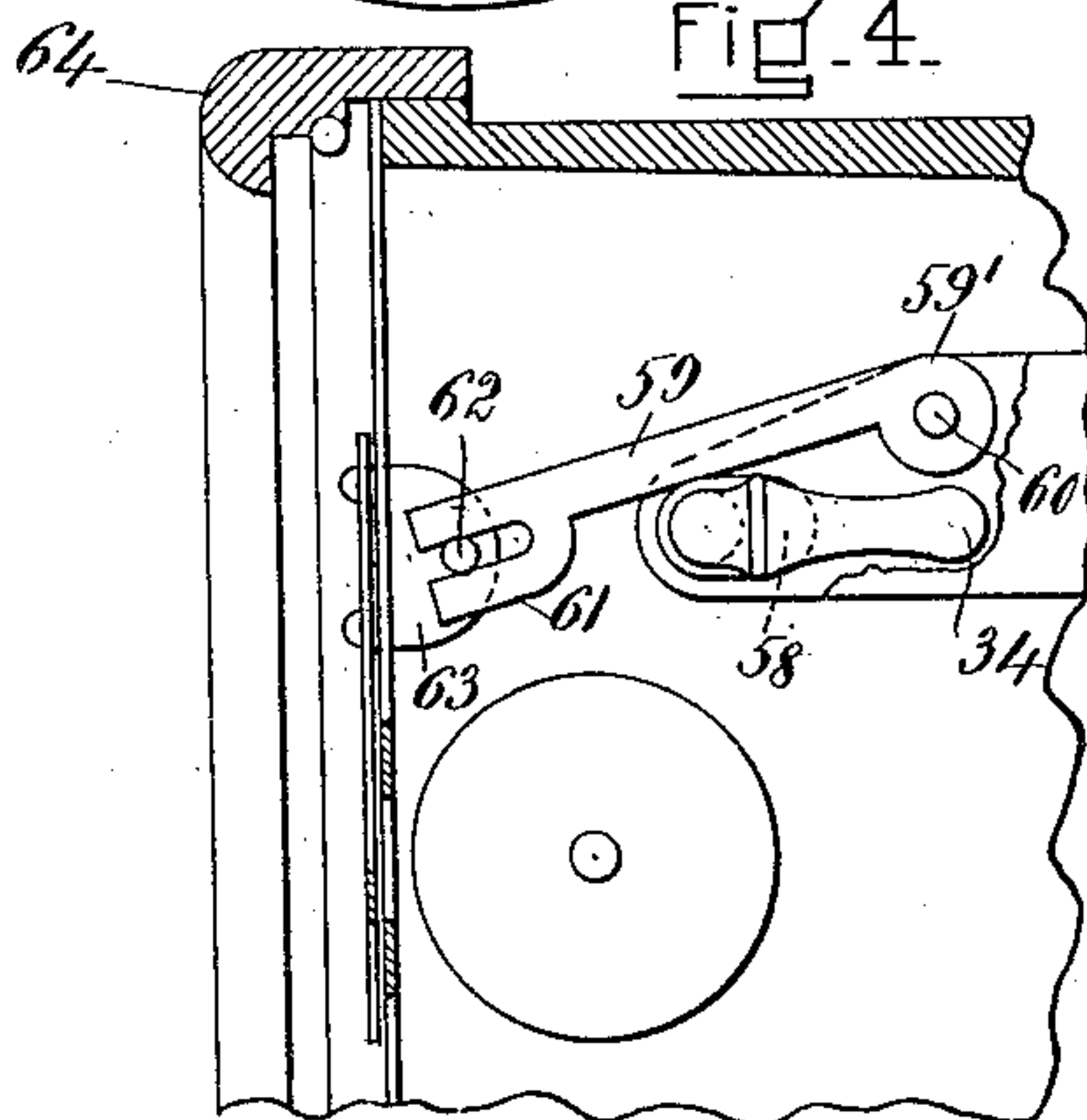
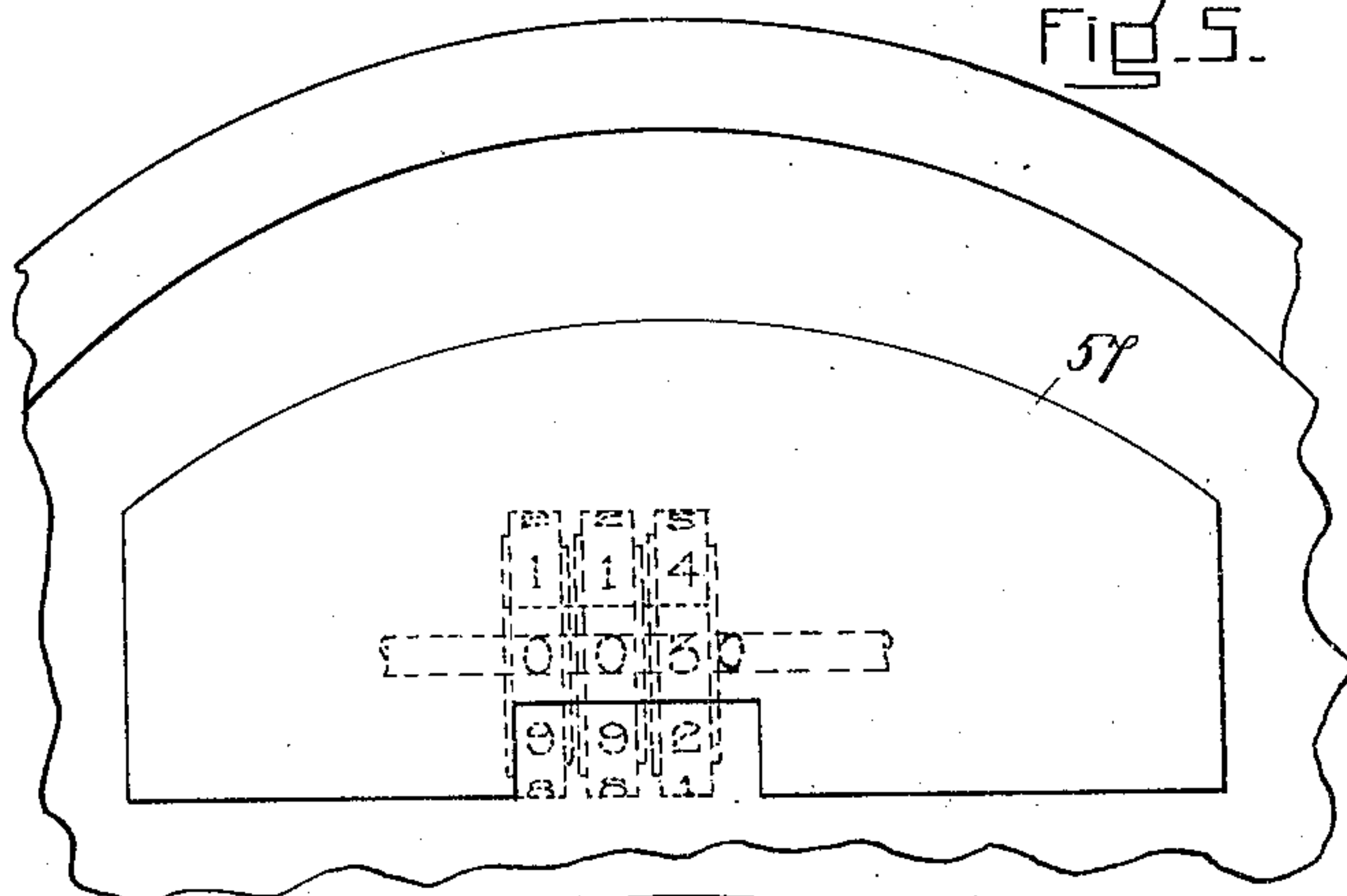
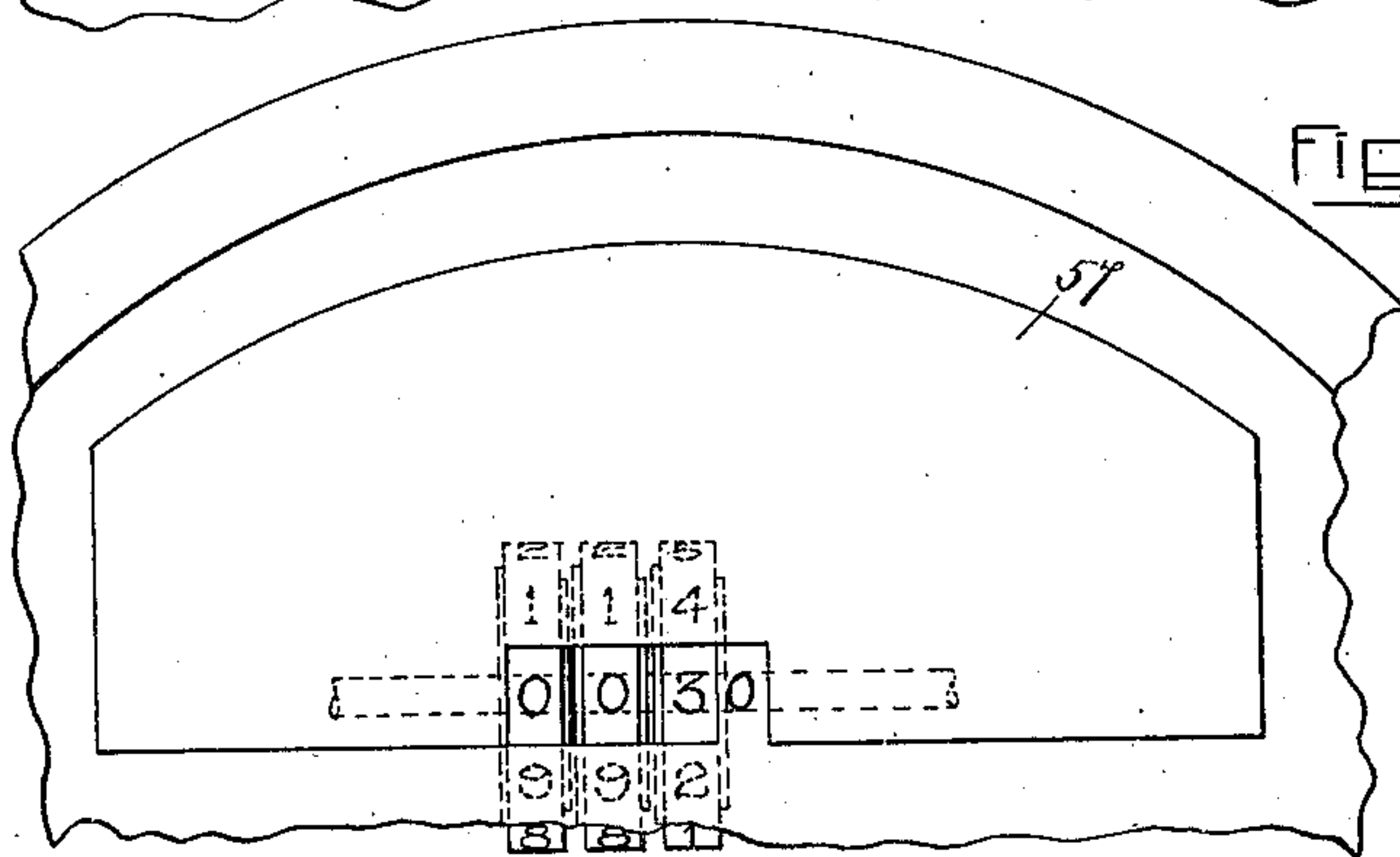


Fig. 7.



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5 SHEETS—SHEET 4.

Fig. 8.

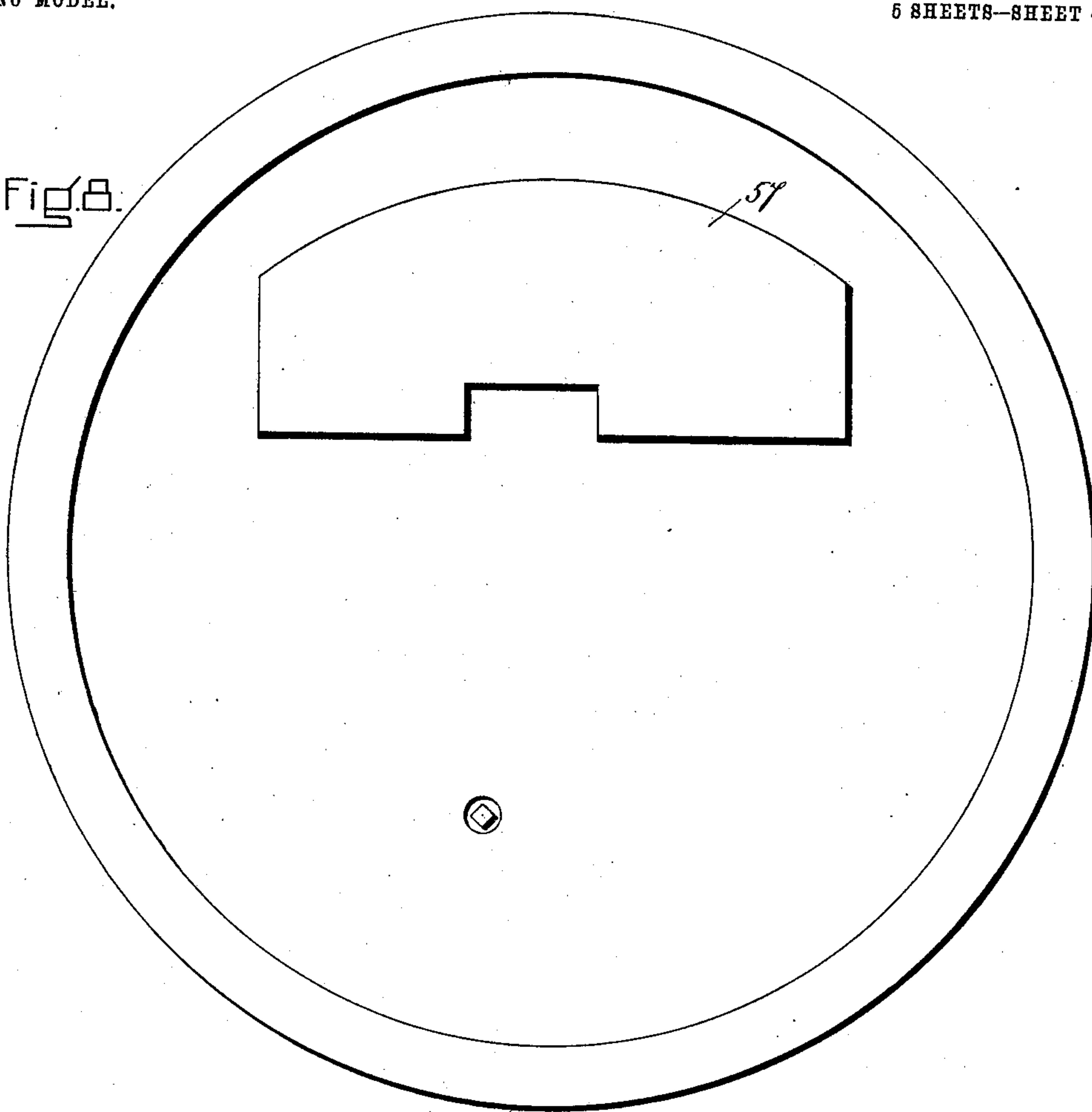
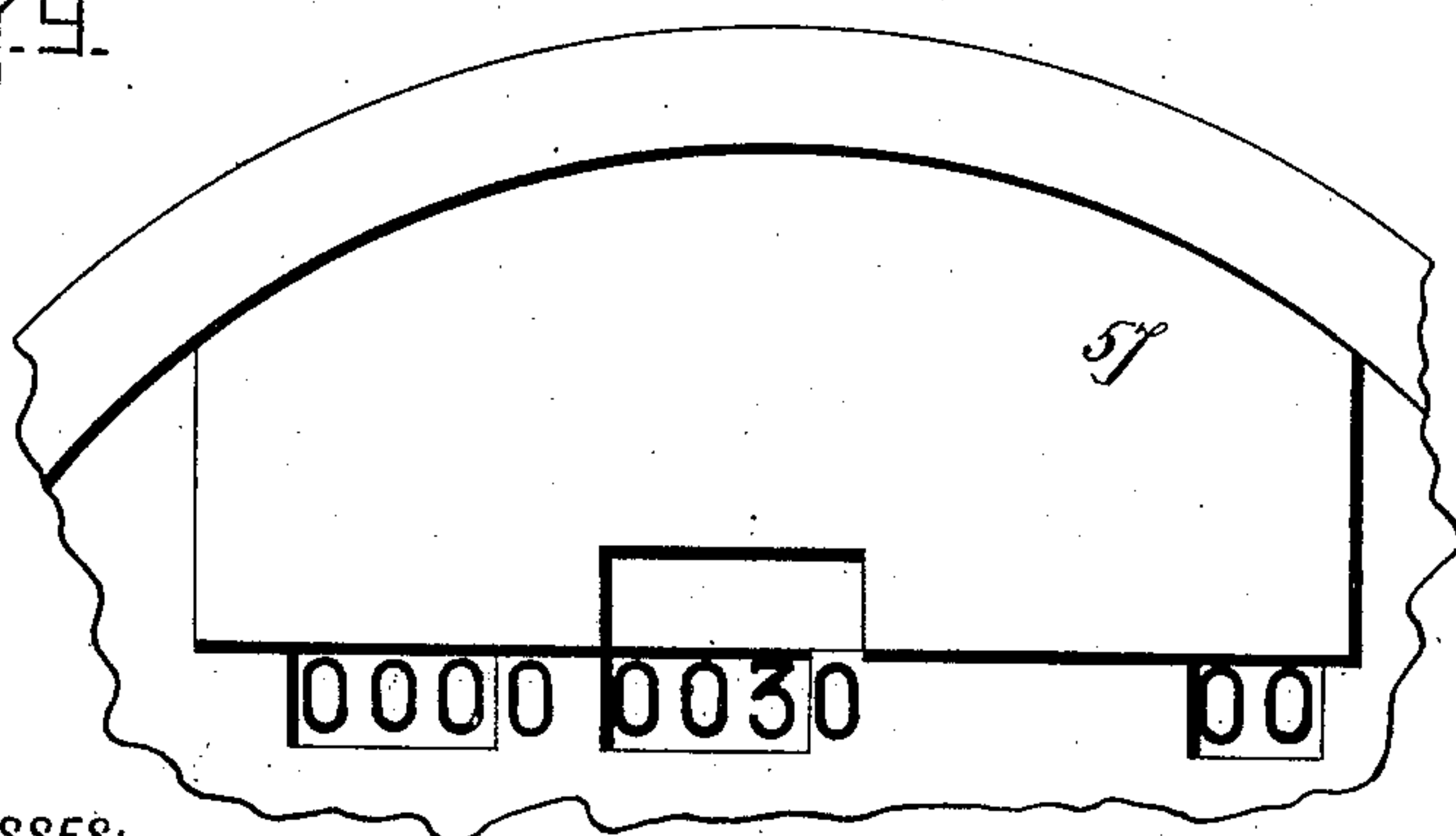


Fig. 9.



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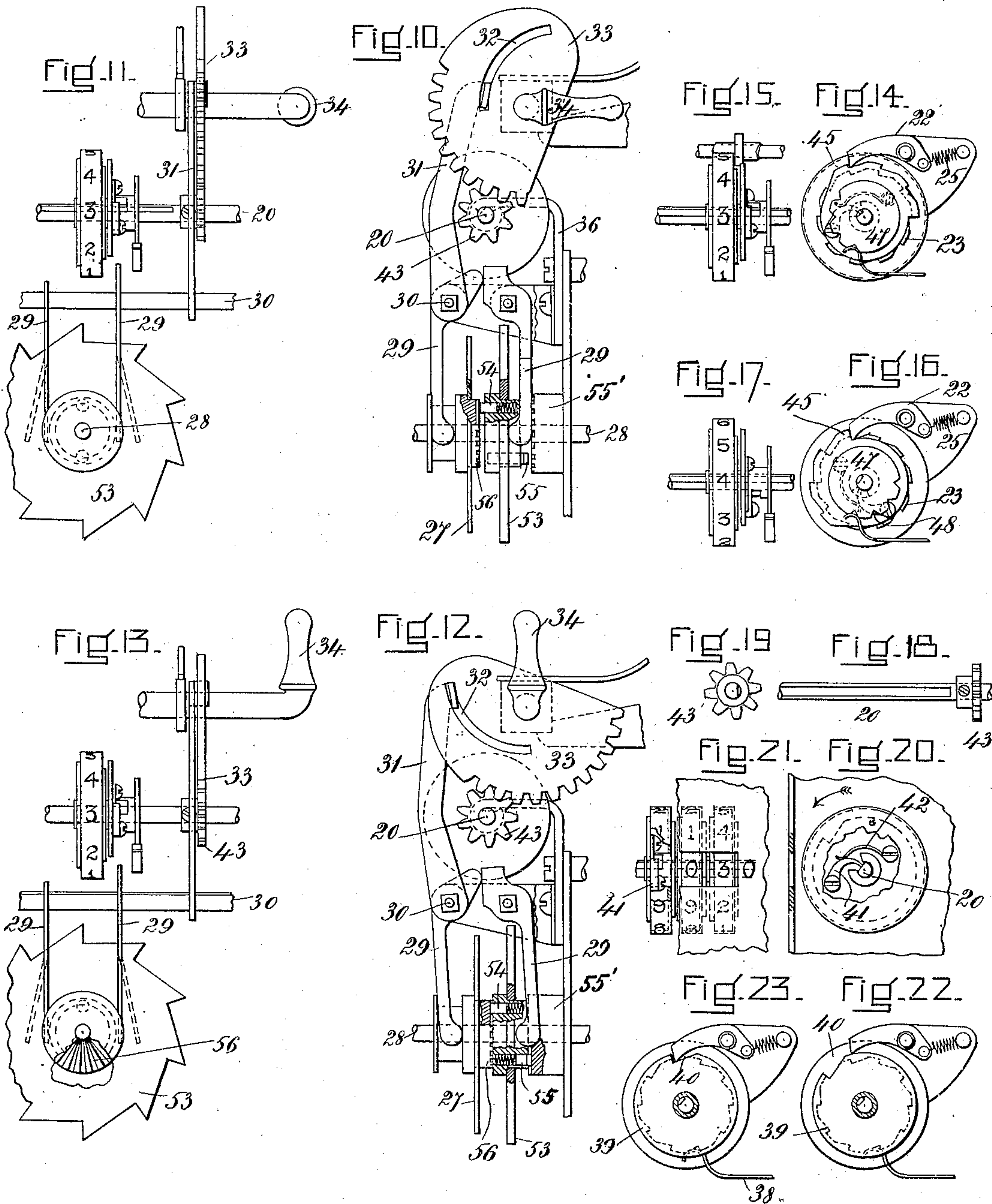
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APPLICATION FILED FEB. 27, 1904.

NO MODEL.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

FOSTER J. HULL, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES P. NORCROSS, OF NEW YORK, N. Y.

FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 760,125, dated May 17, 1904.

Application filed February 27, 1904. Serial No. 195,603. (No model.)

To all whom it may concern:

Be it known that I, FOSTER J. HULL, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fare-Registers, of which the following is a specification.

Cabs and other vehicles, as is well known, are subject to hire at rates supposedly governed by the class of service demanded. For example, a vehicle in active use and moving from one place to another at a rate of speed above a certain minimum is generally hired for an amount according to the distance traveled. Often, however, a vehicle, although hired for a considerable period of time, is actually traveling but a small portion of that time. In such instances and when it is moving below a certain minimum of speed the charge is usually commensurate to the time of service and is reckoned at a rate differing from and less than the rate for more active service. Almost always, however, the actual service is a combination of the two classes mentioned, and a charge for such service to be really equitable must therefore be based on both time and distance rates. Computation of charges, however, on such a compound basis is troublesome and complicated and is accordingly not favored, to the loss in each instance of either the owner or passenger. Another source of loss and dissatisfaction to which the passenger is subject and from which the cab owner seldom derives benefit is the lack of uniformity generally prevailing in cab rates. For the same service two drivers make a different charge or the same driver a variety of charges on different occasions. These variations in rates are most often overcharges by the driver for his personal use and are paid either because the passenger is ignorant of his rights or has more need for the service than for his money. Attempts have been made in some municipalities to adjust cab fares by ordinance relative to time and distance of service; but such ordinances have failed to be effective because of the absence of any practical means for enforcing them. The average passenger would rather pay an overcharge than compute the legal fare.

It is true that various automatic indicators or registers have been devised in the effort to produce an instrument for satisfactorily recording fares on a compounded time and distance basis. Such devices have, however, either been so heavy and complicated as to preclude their use on the standard vehicle structure or have signally failed to meet certain conditions peculiar to the cab service for which they were intended. Moreover, such devices, although ostensibly a protection to passenger or owner, have failed in this respect, for the reason that they were easily manipulated or tampered with by the driver or by the passenger or by driver and passenger together.

In all classes of vehicle service there is a minimum time or distance, for the whole or any fraction of which a certain fixed minimum fare is charged. As to distance, for instance, the charge may be twenty-five cents for a half mile and the same for any part thereof, and as to time the minimum charge may be fifty cents for any fraction of an hour. To meet this situation in a fare-register, it is necessary that the register indicate this minimum fare as soon as the service commences and that no additional fare be indicated until the minimum time or distance has been consumed, after which the register should display indications commensurate to the actual time and distance of service. Again, a vehicle is often hired many times before being returned to the stable, and a register to be of real value to the owner should record the total service to which the vehicle has been put during any length of time. It is necessary, however, that the instrument be reset before each service in order that it may subserve its purpose of indicating to driver and passenger the fare in each case. Any efficient register must therefore be adapted to be reset without destroying the record of previous fares. Since, however, the indicated fares are estimated on both time and distance bases, it is desirable to have an independent indication of mileage or total distance traveled.

The object of my invention is broadly a device for automatically registering the time and distance of vehicle hire and for automat-

ically computing and exhibiting a fare exactly commensurate with the actual service enjoyed.

More particularly, the object of my invention is a device of the character specified, the elements of which are simple, few in number, and compactly mounted, thereby rendering the device as a whole small, of light weight, and durable and adapting it to practical usage without any modification of standard vehicle structures.

Another object of my invention is a device of the character specified so constructed and controlled as to insure the interests of vehicle owner, driver, and passenger against the carelessness or dishonesty of each other.

Another object of my invention is trip-registering means adapted to be reset after each trip operating in conjunction with means for registering the total of several trips and with means for registering mileage alone.

A special feature of my invention is a means for exhibiting a minimum fare until a predetermined minimum service has been had and for then causing additional charges to be commensurate with actual service.

Another object of my invention is an efficient resetting mechanism for registers.

Other objects of my invention will more fully appear upon a description of my invention in connection with the drawings, in which—

Figure 1 is an elevation of the taxometer with the front of case, dial, and shutter removed and with parts of the mechanism broken away to more fully disclose the mechanism embodying my present improvements. Fig. 2 is a side elevation, with the case partly in section, showing the pneumatic plunger for operating the mechanism by the traverse of the vehicle. Fig. 3 shows the device and its connections as attached to the vehicle. Figs. 4 and 5 are respectively a side and front elevation showing the position of shutter and starting-lever when vehicle is not occupied. Figs. 6 and 7 are respectively a side and front elevation showing the position of shutter and starting-lever after the vehicle has been hired and disclosing the minimum fare. Fig. 8 is an elevation showing the position of shutter when the vehicle is not in use. Fig. 9 is an elevation showing the position of shutter raised by hand and disclosing the register on the left for the total amount of fares collected, the register in the center for the trip fares, and the register on the right for the mileage traveled. Fig. 10 is a detail of clutch and resetting mechanism before starting. Fig. 11 is a front elevation of Fig. 10. Figs. 12 and 13 are the same as Figs. 10 and 11 after starting. Figs. 14 and 15 are detail side and front elevations in normal position of mechanism relating to minimum fare. Figs. 16 and 17 are the same as Figs. 14 and 15 after the vehicle has been hired and three charging periods have been added to register. Figs. 18

and 19 are details of register-shafts. Figs. 20 and 21 are details of resetting-pawls. Figs. 22 and 23 are details of the pawls for moving the number-wheels and for adding one to the wheel of next higher denomination.

In all of the above views corresponding parts are represented by the same numerals of reference.

The register which I have illustrated is capable of being operated by either the clock mechanism or by the traverse of the vehicle to which it is attached and is so constructed that it will be operated by the one moving the faster, to wit: When the vehicle is standing or when moving at a speed less than two miles per hour, the clock will operate the register, and when the vehicle is moving at a speed greater than two miles per hour the vehicle will operate the register through the medium of a bellows, (not shown,) which receives its impulse from the wheel of the vehicle and is connected to the pneumatic plunger-cylinder 1 by means of the pipe 2 and is so constructed and adjusted to move the plunger 3 in the direction of the arrow once for each rotation of the vehicle-wheel. The plunger 3 impinges against lever 4 and in its upward movement causes lever 4 to partially rotate shaft 5, to which it is rigidly fixed. On the outer end of shaft 5, as at 5', is fixed the lever 6, having near its forward end a spring-pawl 6', adjusted to engage the teeth of the wheel 7 and to move it one tooth for each movement of plunger 3.

On the outer end of the lever 6 is a head 6'', adapted to engage the teeth of wheel 7, limiting the motion of plunger 3 and levers 4 and 6, thus preventing any excess movement of wheel 7 due to momentum. To lever 6 is attached one end of a spring 8, the other end of which is attached to the case to return levers 6 and 4 and the plunger 3 to the position shown in Figs. 1 and 2 after each impulse of the bellows. Suitably mounted on a stationary part of the mechanism is the spring-pawl 9, adapted to engage the teeth of the wheel 7 to prevent back rotation of the same. Affixed to the wheel 7 and journaled on shaft 10 is the pinion 11, the teeth of which mesh with the gear-wheel 12 for rotating wheel 12 once for each mile traveled by the vehicle. Fastened to the front side of wheel 12 is cam 13, the face of which is adapted to press against the end 14' of the bell-crank lever 14 to oscillate said lever on the stud 15 against the tension of the spring 16. Engaged in the hole 17 of lever 14 is the universal joint-hook 18, the other end of which is attached to the side plate 19' of swing-frame 19. Journaled on the shaft 20 swing-frame 19 carries between its side plates 19' a shaft 21, on which, freely supported, are the pawls 22, adapted to engage the ratchet-wheels 23 of the number-wheels 24 and to be held in engagement therewith by means of the springs 25.

It will readily be understood from the foregoing description that with the mechanism properly proportioned and adjusted for each mile traveled by the vehicle the right-hand number-wheel will be moved up one point. The method of carrying one to the wheel of next denomination will be hereinafter described.

Fastened to the back side of wheel 12 is the pinion 26, whose teeth mesh with the teeth of wheel 27 and are designed to turn wheel 27 once in every two miles of the vehicle travel. Wheel 27 is journaled freely on shaft 28 and is adapted to be moved backward and forward on said shaft by means of clutch-arm 29, fastened to rock-shaft 30, to which is also fastened the cam-arm 31, working in the cam-slot 32 in the segment-gear 33, affixed to the operator's handle-shaft 34.

The foregoing clearly describes the train of gears used in registering the mileage of the vehicle and the means for rotating wheel 27 for registering the trip fare and the total amount. For the registering of fare by time there is in a suitable case between plates 35 a clock movement (not shown) of any ordinary type operating a shaft 28, projecting outside and to the front of one of said plates 35. Shaft 28 is geared by the clock movement to make one rotation in an hour. Suitably fastened to plate 35 is the register-bracket 36, which is bent forward and terminates in the journals 37, through which journals extends the shaft 20, on which the number-wheels of the several registers rotate.

Mounted on shaft 20 and free to turn thereon are three sets of register-wheels. The three on the left are used for keeping the total amount of fare collected. The three in the center are for the trip fare, and the two on the right are for the mileage. The construction of the mileage and total-amount register and their operation being the same, a description of the operation of the mileage-register will be sufficient.

The left-hand number-wheel 24 is a drum of any suitable material and construction, being divided on its face into ten equal parts numbered from "0" to "9." Fastened to the side of this drum is the ten-toothed ratchet-wheel 23, above which rests the pawl 22. The wheel is detented in any suitable manner, as by the spring 38, to hold the numbers opposite the aperture in the dial. The right-hand wheel is of the same construction, with the addition of the single-toothed ratchet-wheel 39 fastened to its left-hand side. The periphery of wheel 39 is large enough in diameter to hold the pawl 22 when riding on its concentric part from engaging the teeth of wheel 23 of the left-hand number-wheel.

Journaled upon shaft 20 is the swing-frame 19, carrying the pawls 22 and having imparted to it by its mechanism a partial rotation of a little more than thirty-six degrees. It will

be readily seen that for each complete oscillation the pawl 22 will move the right-hand number-wheel one-tenth of a rotation, bringing the next higher number opposite the aperture. The left-hand number-wheel will not be moved by its pawl 22, owing to its being held from engaging the teeth of its ratchet 23 by the wheel 39 of the right-hand number-wheel until such time as notch 40 comes under pawl 22. This is so adjusted as to be coincident with the reading of "9" on the right-hand wheel through its aperture in dial when the swing-frame 19 is at the back of its stroke. It therefore follows that the right-hand wheel receives one movement for each vibration of swing-frame 19 and the left-hand wheel receives one movement for each ten vibrations of swing-frame 19.

The method of moving and carrying one to the next higher denomination is the same on the trip-register, and this register is capable of being set to its minimum reading after each use of the vehicle in the following manner: Attached to each number-wheel of the trip-register in any suitable manner, as at Fig. 20 and Fig. 21, is the pawl 41, the loose end of which is pressed by spring 42 into a keyway on shaft 20 and is so shaped and adjusted that when wheel 24 moves in direction of arrow it will slip easily out of keyway and around shaft; but when shaft is moved in direction of arrow it will pick up said wheels 24 through the medium of pawl 41 and carry them to their normal position. The movement of shaft 20 is controlled by the operator's handle 34 through the gear-segment 33 and the pinion 43, to which pinion is imparted not quite a full rotation.

As will be noticed by reference to the drawings, the right-hand number-wheel of the trip-register stands at "3," and the center and left-hand number-wheel at zero. This is accomplished by positioning the reset-pawl 41 at different positions relative to the zero position of its number-wheel and is for the purpose of having the register read the minimum fare at the start.

As the payment of the minimum fare entitles the occupant of the vehicle to the use of the vehicle for three of the ordinary spaces before any additional fare should be recorded it becomes necessary to prevent the right-hand number-wheel of the trip-fare register from moving until after the clock or the mileage-cyclometer of the vehicle has moved for three spaces. To accomplish this, there is at the right-hand side of right-hand number-wheel of the trip-register the four-toothed ratchet-wheel, (shown at 45, Fig. 14,) the notches of which wheel will hold pawl 22 from engagement with the ratchet-wheel 23 until the swing-frame 46 has had three complete oscillations, which will then bring the wheel 45 in the position shown in Fig. 16, allowing pawl 22 to drop into the notches of the right-

hand number-wheel of the trip-fare register and to move it one notch for each vibration of the swing-frame 46. The ratchet-wheel 45 has affixed to it a detent-wheel 47, which prevents it from movement under the friction of pawl 22. Ratchet-wheel 45 has affixed to it the reset-pawl 48, which operates in the same manner as the reset-pawls 41 of the register-wheels.

To impart motion to the swing-frame 46, it is connected to a universal link 49, the other end of which link is connected to the lever 50 52, pivoted on shaft 51. The arm 52 of the lever 50 52 is bifurcated, its point 52' being adapted to rest upon and to be moved by the teeth of the ratchet-wheel 53. Ratchet-wheel 53 is mounted loosely upon shaft 28 and has in its hub two spring-clutch pawls 54 and 55. Fast to shaft 28 is a hub 55', having a clutch-face, and on the hub of the wheel 27 is also a clutch-face 56. Normally these clutch-faces are so held as to be free from the clutch-pins 54 and 55 of the wheel 53, as shown in Fig. 10. In such position the rotation of shaft 28 and of wheel 27 will have no action upon wheel 53. When, however, the operator turns the handle 34 into the position shown in Fig. 12, the cam of groove 32 acts upon the end of the lever 31, rocking with it shaft 30 and the clutch-arms 29, forcing wheel 27, with its hub-clutch 56, against the hub of wheel 53 and carrying it down against hub 55' of the shaft 28, as shown in Fig. 12. In this position the rotation of shaft 28 or wheel 27 will cause wheel 53 to be rotated.

The wheel 53 will be carried by the wheel 27 or the shaft 28, receiving its motion from the one which is traveling at the highest speed. Pins 54 and 55 of wheel 53 are so constructed and adjusted that the back face being on an incline the clutch of either wheel 27 or hub 55' slides freely over the pin in the backward direction. The movement of the wheel 53 will act against the toe 52' of lever 52 in such a manner as to cause it to partially rotate shaft 51. After the teeth of wheel 53 have passed beyond the point 52' of the lever 52 lever 52 will be returned to its normal position by the spring 56'. As this action takes place it will give a vibrating motion to the swing-frame 46 and through its pawls 22 cause the number-wheels of the register for the total amount and the trip-register to move up one point for each complete vibration.

As it is desirable to disclose only the trip-fare register, and this only after vehicle has been hired, we arrange in front of the apertures of the dial a shutter 57. (Shown in Figs. 8, 9, 7, and 5.) Normally this shutter stands in the position as shown in Figs. 8 and 5. Upon the vehicle being hired the operator turns the operating-handle 34 to the position shown in Fig. 12 and Fig. 6. Upon shaft 34 is fastened a cam 58, which rides against the arm 59, one end of which, 59', is journaled on

shaft 60, the other end of which, 61, is bifurcated and spans pin 62, affixed to brackets 63 of shutter 57. The action of the cam through the movement of the lever 34 raises the shutter to the position shown in Fig. 7, disclosing the trip-fare register. As it is necessary that the inspector shall be able to read the three register-dials, there is enough movement in the slideway-shutter 57 to allow it to be raised by hand in the position shown in Fig. 9. This can only be performed after the front ring 64 of the case has been removed.

To prevent the driver of the vehicle starting the mechanism of the register in operation before the vehicle has been engaged, I place a pawl-arm 65 in the position shown in Fig. 2. This pawl abuts against the square cam 66 of the operating-handle 34 and prevents any movement of arm 34 until such time as the pawl-arm 65 has been moved to the position shown in the dotted lines in Fig. 2. This movement is accomplished by connecting to the pawl-arm 65 at the pin 67 a rod 68, extending through the case and inside of the vehicle, where it is attached to a lever 69 and is capable of being moved by swinging lever 69 into the position shown in dotted lines in Fig. 3.

To enable the occupant of the vehicle to read the register at night, there is provided an electrical search-light 70, which can be operated by pressing the push-button 71.

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

1. In a fare-register, counting or indicating mechanisms, chronometer and cyclometer mechanisms for separately actuating according to their relative speeds said indicating mechanism when said mechanisms are in operative relation to each other, means for so placing said mechanisms in operative relation to each other, and other releasable means for preventing the operation of said means for placing the mechanisms in operative relation to each other.

2. In a fare-register, counting or indicating mechanism, chronometer and cyclometer mechanisms, means for placing said mechanisms in operative relation to each other, consisting of a revoluble shaft in gear with said mechanisms, and means for turning said shaft, a stop on said shaft and means under control of the passenger, coacting with said stop, to prevent a premature operation of said shaft by the driver.

3. In a fare-register, chronometer and cyclometer mechanisms, registering mechanism operated by either one of said mechanisms according to the relative action of the two, a shaft driven by said chronometer mechanism, means loosely mounted on said shaft for driving the registering mechanism, means driven by the cyclometer mechanism also loosely mounted upon said shaft, clutching means provided be-

tween the shaft, the register driving means and the cyclometer driven means, whereby according to the speed of rotation the shaft or the cyclometer driven means will drive the recorder driving means.

4. In a fare - register, chronometer and cyclometer mechanisms, registering mechanism operated by either one of said mechanisms according to the relative action of the two, a shaft driven by said chronometer mechanism, means for driving the registering mechanism loosely mounted and free to be moved laterally on said shaft into a one-way-clutching engagement therewith, means driven by the cyclometer mechanism, also loosely mounted and free to be moved laterally on said shaft, with a one-way-clutching engagement with said register driving means.

5. In a fare - register, chronometer and cyclometer mechanisms, registering mechanism operated by either one of said mechanisms according to the relative action of the two, a shaft driven by said chronometer mechanism, means for driving the registering mechanism loosely mounted and free to be moved laterally on said shaft into a one-way-clutching engagement therewith, means driven by the cyclometer mechanism, also loosely mounted and free to be moved laterally on said shaft, with a one-way-clutching engagement with said register driving means, and setting means for throwing said register driving means into its engagement with the shaft, and said cyclometer driven means into its engagement with the register driving means, whereby the latter is driven by either the chronometer or cyclometer mechanisms.

6. In a fare-register, chronometer and cyclometer mechanisms, registering mechanism, arranged when set to be operated by either one of said mechanisms according to the relative action of the two, cam mechanism controlled by the operator for setting the registering mechanism into an operative relation to the chronometer and cyclometer mechanism, and for simultaneously resetting the register to efface the indication of the previous service.

7. In a fare-register, mechanism for displaying indications of service through an aperture in the casing of the register, a shutter movable across said aperture to conceal the indicator when not in use, a shaft, controlled by the operator, for both simultaneously resetting the indicating mechanism and moving the shutter to reveal the indicator.

8. In a fare - register, indicating means, means for intermittently operating the same

to increase its count, and means for resetting said indicating means to thereby automatically show a minimum-charge indication.

9. In a fare-register, indicating means adapted to increase its count, means for resetting said indicating means to show a minimum-charge indication, means for actuating said indicating means during service of the vehicle and means for placing said indicating and said actuating means in operative relation to each other after the indicating means has been reset to show the minimum-charge indication as set forth.

10. In a fare - register, indicating means adapted to increase its count, means for resetting said indicating means to show a minimum-charge indication, means for actuating said indicating means during service of the vehicle, means for placing said indicating and said actuating means in operative relation to each other after the indicating means has been reset to show the minimum-charge indication, and means to defer for a predetermined time the action of the actuating means upon the indicating means when said indicating and actuating means are so placed in operative relation to each other.

11. In a fare-register for vehicles, indicating mechanism, cyclometer and chronometer mechanism, means for driving said indicating mechanism, said driving means being arranged to be moved to be placed in operative relation to the cyclometer and chronometer mechanisms.

12. A fare-indicator comprising an indicating-register normally set to indicate a minimum fare, an actuator for said register, vehicle-operated mechanism, clock mechanism, and means for both simultaneously placing said mechanisms and actuator in operative relation and for displaying said minimum indication.

13. A fare - indicator comprising an indicator-register normally set to indicate a minimum fare, an actuator for said register, vehicle-operated mechanism, clock mechanism, and means for both simultaneously placing said mechanisms and actuator in operative relation and for displaying said minimum indication and means for deferring the action of the register until after a predetermined action of the actuator.

In testimony whereof I have affixed my signature in presence of two witnesses.

FOSTER J. HULL.

Witnesses:

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WILLIAM H. HARTLEY.