

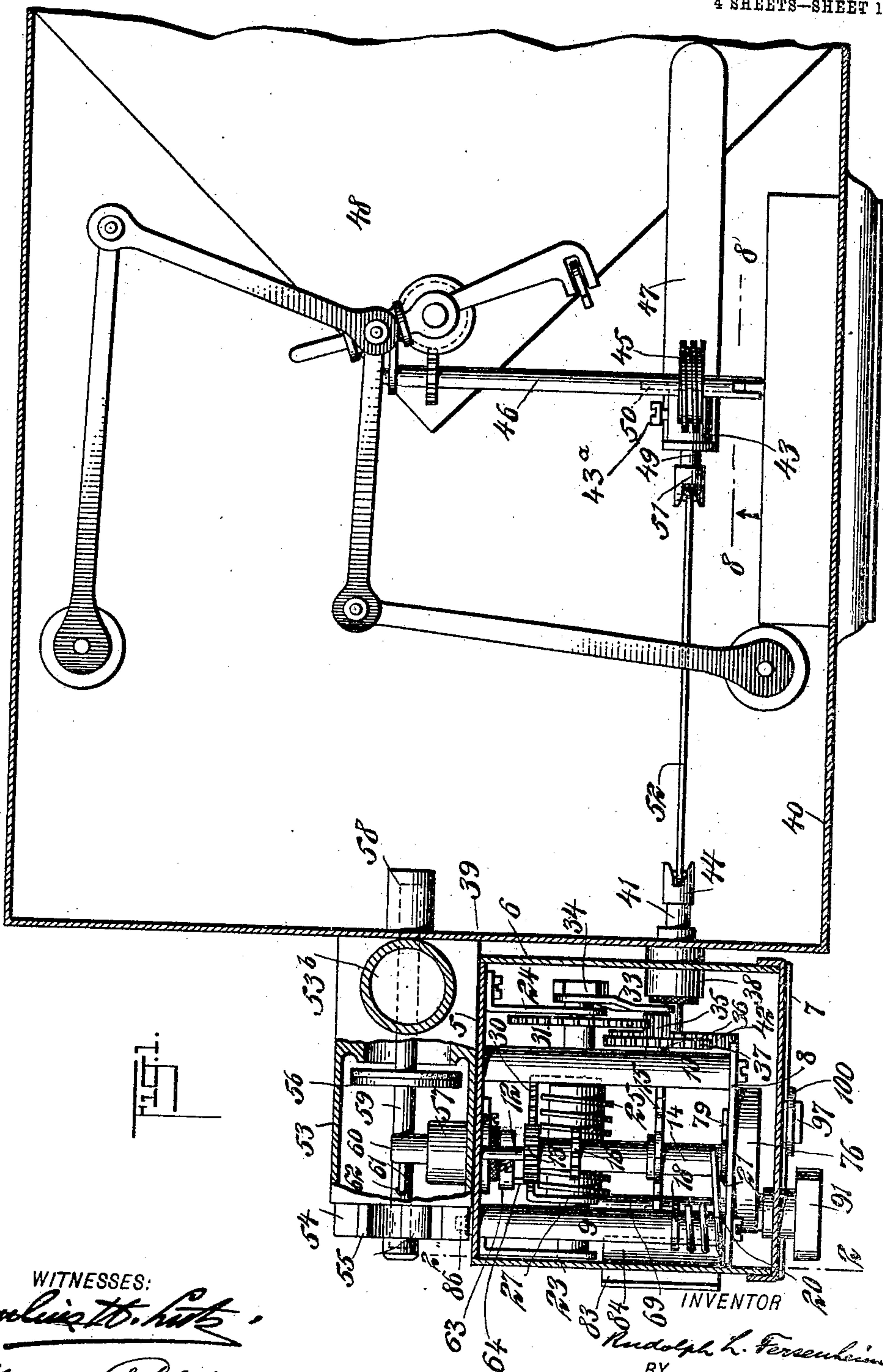
No. 824,419.

PATENTED JUNE 26, 1906.

R. L. FERSENHEIM.
PREPAYMENT ATTACHMENT FOR GAS METERS.

APPLICATION FILED OCT. 1, 1903.

4 SHEETS—SHEET 1.



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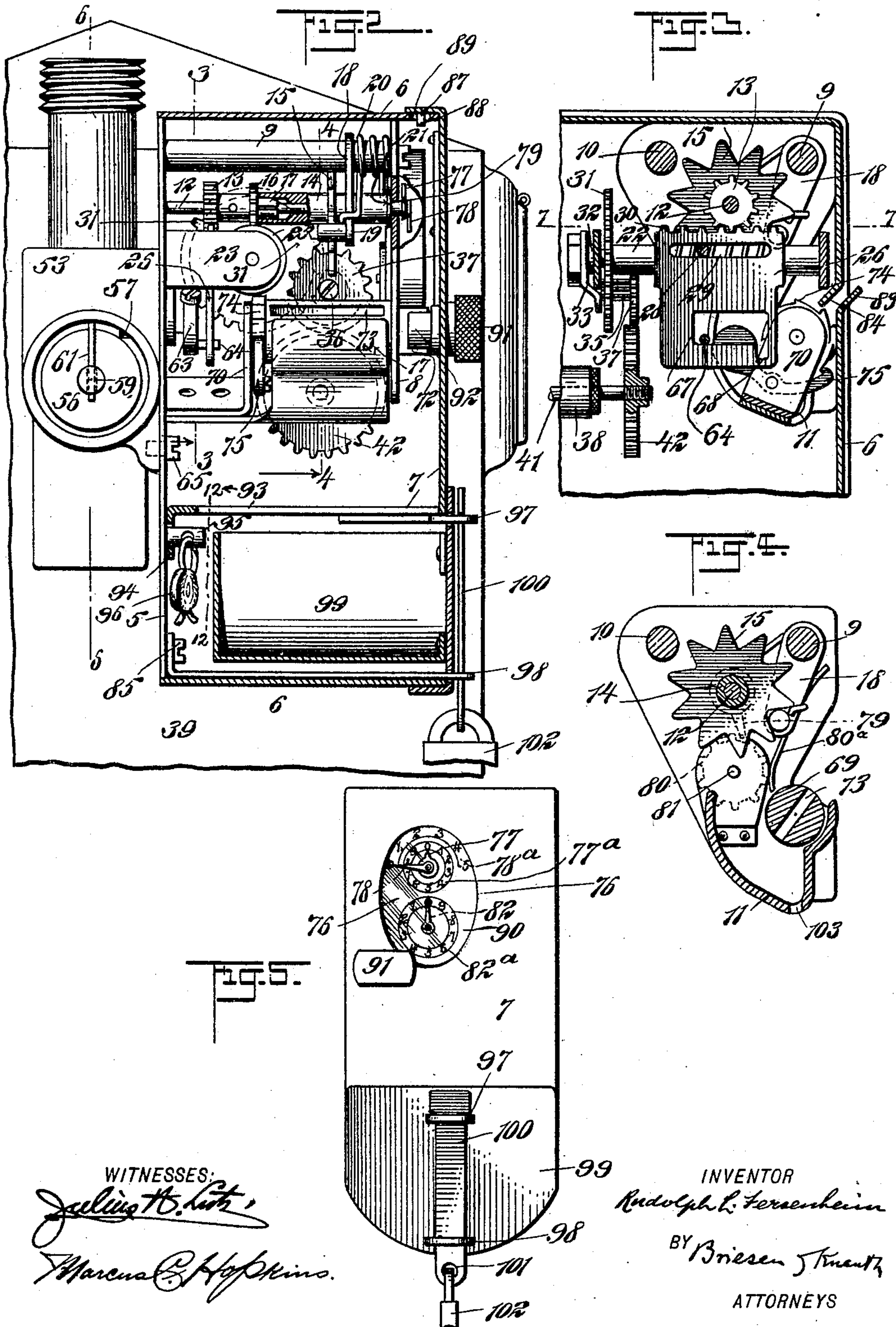
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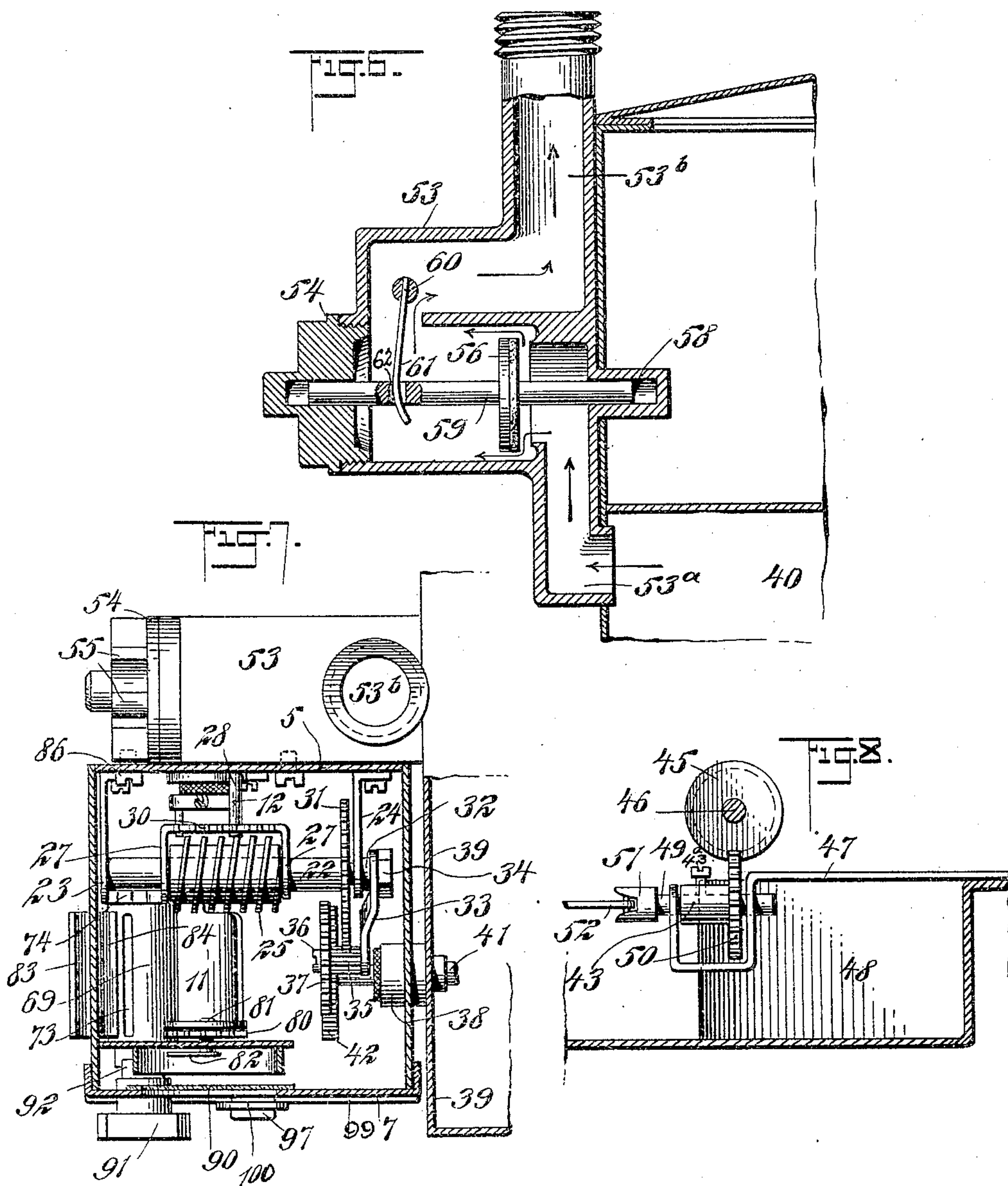
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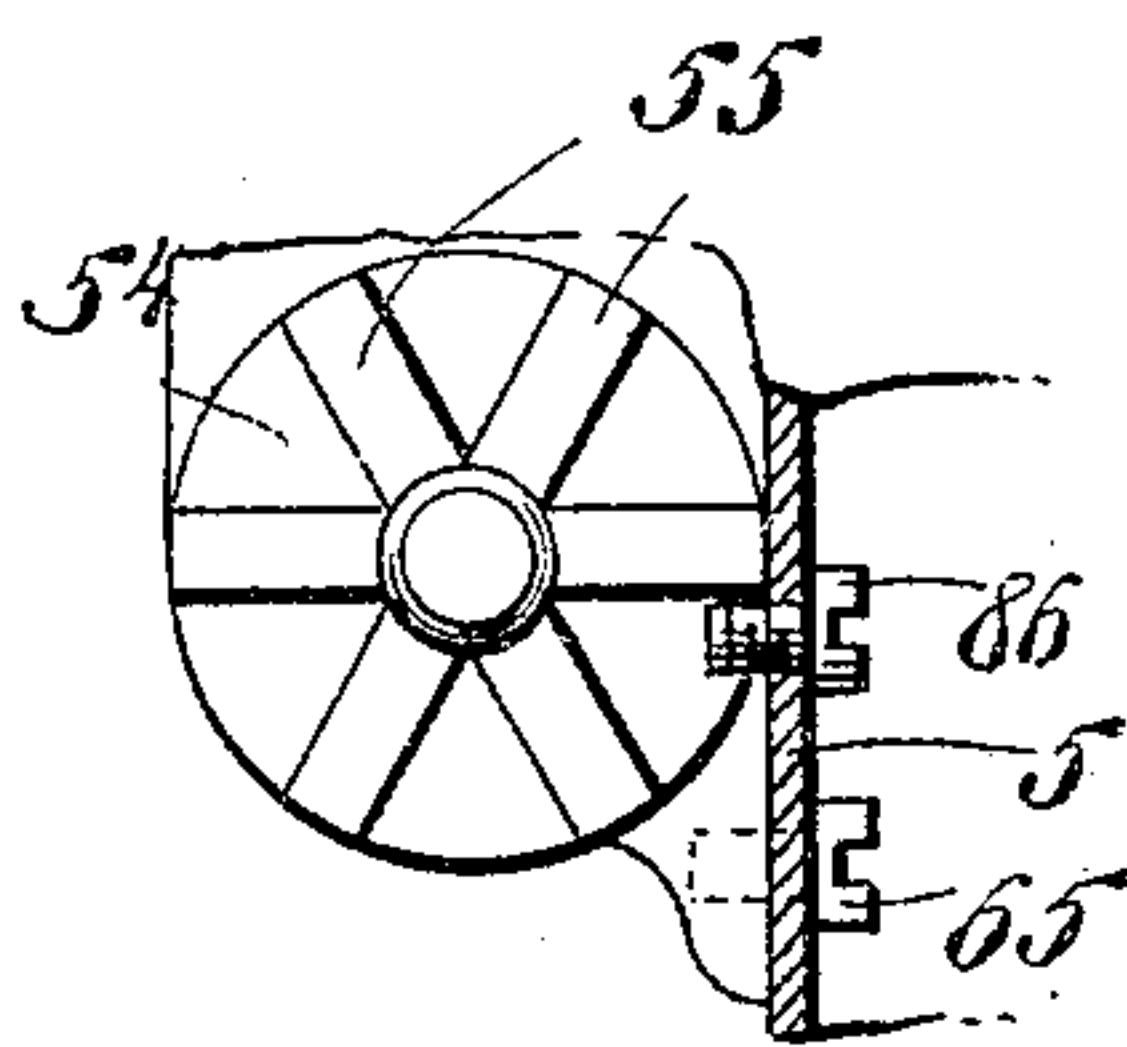
4 SHEETS—SHEET 3.



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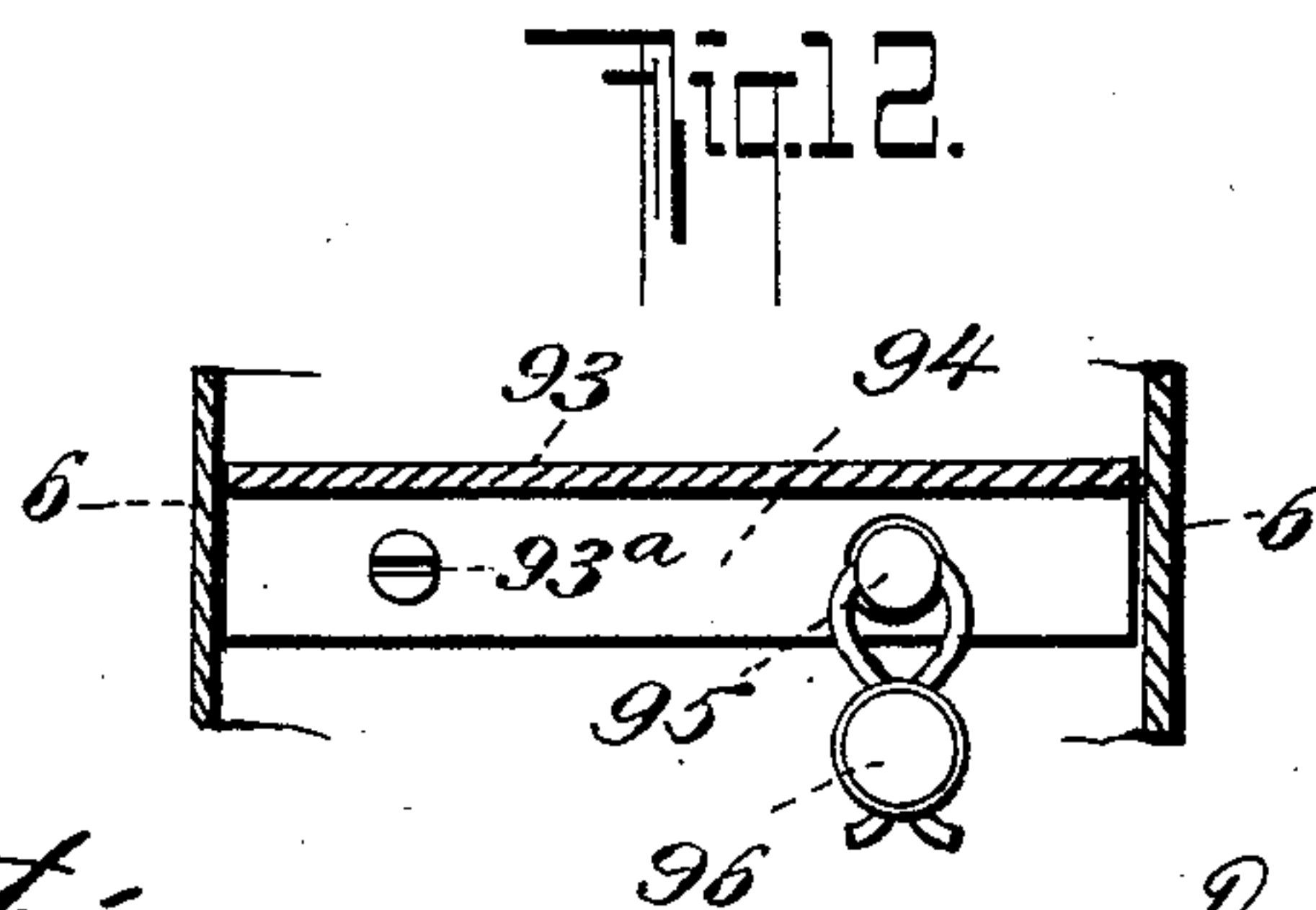
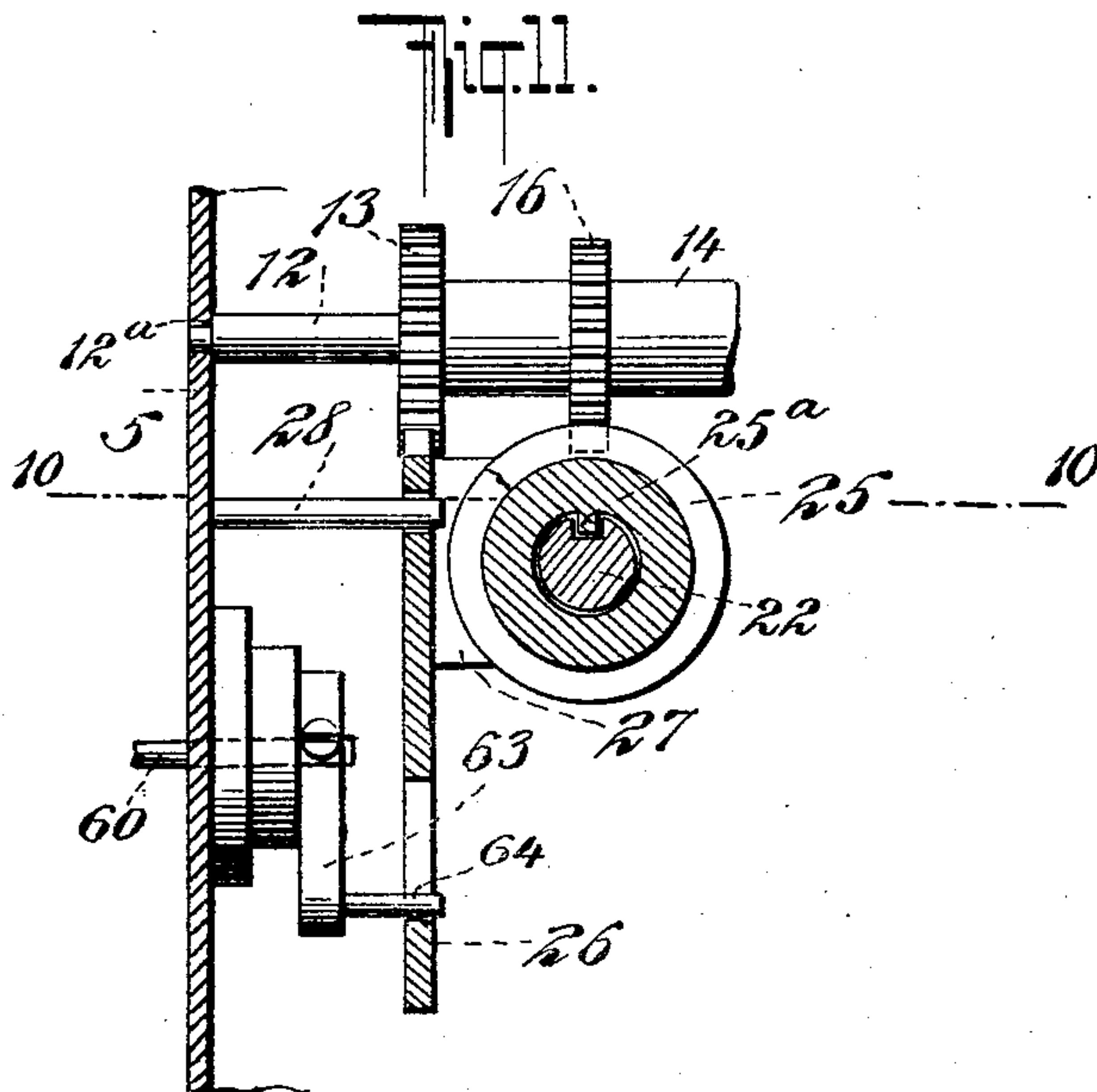
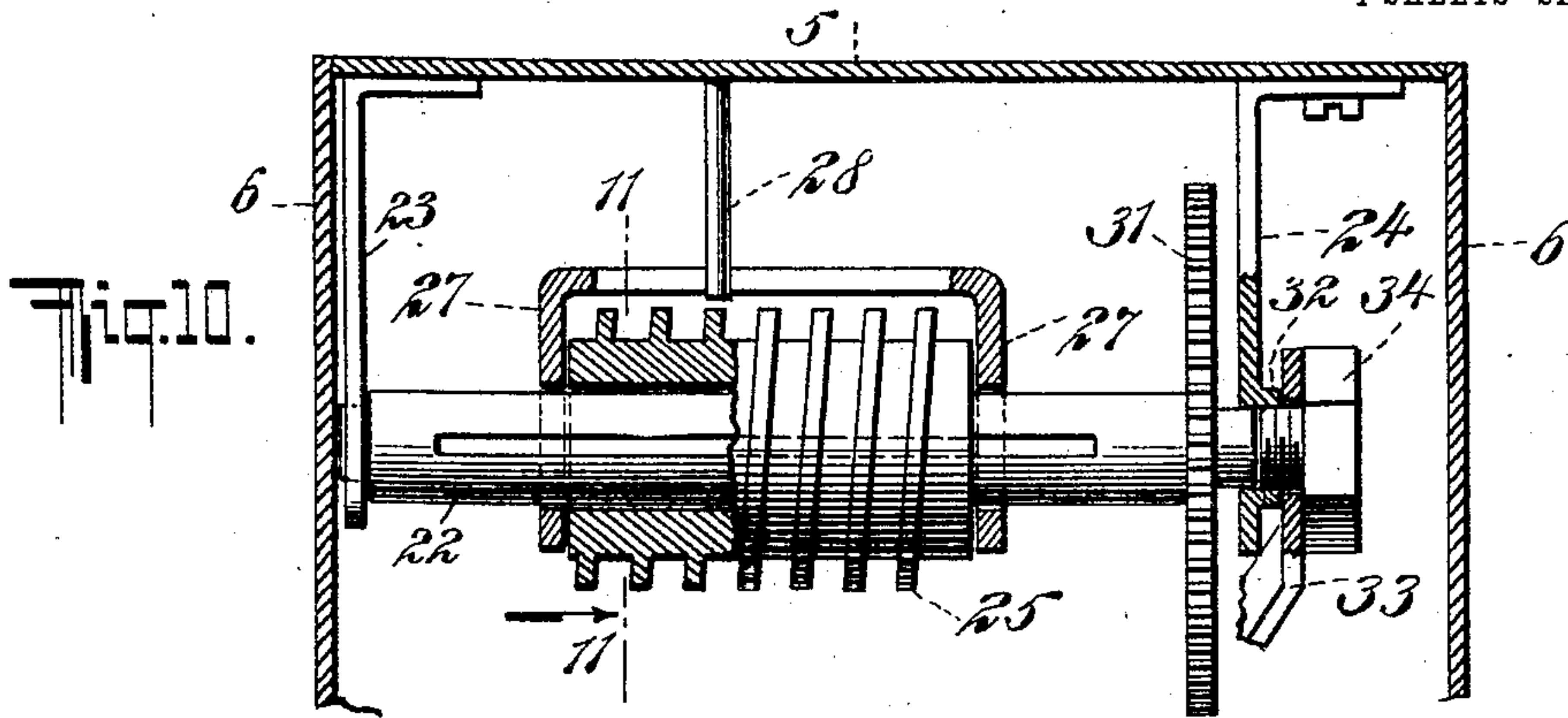
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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PREPAYMENT ATTACHMENT FOR GAS-METERS.

No. 824,419.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed October 1, 1903. Serial No. 175,254.

To all whom it may concern:

Be it known that I, RUDOLPH L. FERSENHEIM, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Prepayment Attachments for Gas-Meters, of which the following is a specification.

My present invention relates to improvements in coin-controlled gas-vending devices; and it consists in the improved constructions, arrangements, and combinations of parts hereinafter described, and particularly pointed out in the appended claims.

I have illustrated one embodiment of my invention in the accompanying drawings, in which—

Figure 1 is a plan of a dry meter with my prepayment device applied thereto, showing the tops of the casings cut away to expose the inclosed mechanisms. Fig. 2 is a vertical section of the prepayment device, taken on line 2 2 of Fig. 1. Fig. 3 is a detail in vertical section, taken on line 3 3 of Fig. 2 looking from the rear. Fig. 4 is a similar view taken on line 4 4 of Fig. 2. Fig. 5 is a front elevation of the prepayment device. Fig. 6 is a sectional elevation on line 6 6 of Fig. 2. Fig. 7 is a sectional plan on line 7 7 of Fig. 3. Fig. 8 is a detail sectional elevation on line 8 8 of Fig. 1. Fig. 9 is a face view of the cap 54 and the means for holding it. Fig. 10 is a sectional plan on line 10 10 of Fig. 11. Fig. 11 is a sectional elevation on line 11 11 of Fig. 10, and Fig. 12 is a detail sectional elevation on line 12 12 of Fig. 2.

Referring to the drawings, the operating mechanism is inclosed in a casing comprising a back plate 5, a wall-piece 6, preferably bent from sheet metal, and a front and partition piece 7. A front plate 8 is connected with and supported upon back plate 5 by posts 9 and 10 and coin-guide and barrel-support 11. A spindle 12 is journaled in the back plate 5 and projects forwardly of the front face of front plate 8. A spur-gear 13 is mounted fast upon the spindle 12. A sleeve 14 is mounted loosely on the spindle 12 forward of the spur-gear 13 and is journaled in the front plate 8, projecting therethrough a short distance, but not as far forwardly as the spindle 12 projects. A star-wheel 15 is mounted fast upon the sleeve 14. A spur-gear 16 is mounted loosely upon the spindle 12 between the spur-gear 13 and the sleeve 14 and has a split hub portion 17, (see Fig. 2,) which projects into

and frictionally engages the inner surface of the sleeve 14. An arm 18 is pivoted upon the post 9 and carries a pin 19, which is pressed into engagement with the star-wheel 15 by a coiled spring 20, acting upon the arm 18.

The rearward end of the sleeve 14 abuts against the spur-gear 16, which in turn abuts against the hub of spur-gear 13. A shoulder 12^a near the rear end of spindle 12 abuts against the forward face of back plate 5, and a shoulder 21 on sleeve 14 abuts against the rearward face of front plate 8. Thus a longitudinal movement of these parts is prevented.

A longitudinally-grooved shaft 22 is mounted for rotation in a bearing 23, rigidly connected with and projecting from the back plate 5, and a bearing 24, removably connected with and projecting from back plate 5. The grooved shaft 22 is mounted horizontally below and at right angles to the spindle 12. A worm 25, having a spline 25^a, is mounted upon the grooved shaft 22, restricted against rotation thereon, but capable of being moved longitudinally thereon. The lengths of the worm 25 and grooved shaft 22 are such as to maintain worm 25 in mesh with the spur-gear 16 at all times throughout its longitudinal movement on the grooved shaft 22.

A valve-operator 26 consists of a plate having ears 27 projecting forwardly at right angles to said plate, which ears 27 have circular apertures through which the grooved shaft 22 passes. The valve-operator is supported on the grooved shaft 22 by means of the ears 27, said ears abutting against the ends of the worm 25. The valve-operator 26 is prevented from rotating on the grooved shaft 22 by a pin 28, projecting from back plate 5 and engaging a horizontal slot 29 in the body-plate of the valve-operator. The slot 29 is of a length to permit of the longitudinal movement of the valve-operator 26 from end to end on grooved shaft 22. A rack 30 is provided upon the upper edge of the valve-operator 26, which rack 30 meshes with spur-gear 13 on the spindle 12 and turns said spindle 12 when the valve-operator is moved longitudinally on grooved shaft 22 from right to left in Fig. 3. A spur-gear 31 is mounted fast on the left-hand end of grooved shaft 22 to drive said shaft. The bearing 24 has a concentric threaded projection 32, upon which an arm 33 is pivoted and may be locked

in a stationary position by a lock-nut 34. The arm 33 carries a small spur-gear 35 always in mesh with the spur-gear 31 on grooved shaft 22, the gear 35 being mounted upon a removable pivot 36 on said arm 33. A larger spur-gear 37 is mounted fast with spur-gear 35 to turn on pivot 36.

A stuffing-box bearing 38 is mounted in the wall 39 of the upper chamber of a dry meter 40, in which stuffing-box bearing 38 a shaft 41 is journaled. The outwardly-projecting end of the shaft 41 is screw-threaded, and a spur-gear 42 is threaded thereon, which gear meshes with the spur-gear 37. Different sizes of gear 42 may be applied to change the running relation between the gas-meter and the prepayment device to suit the prices of gas in different localities, the arm 33 being adjusted to compensate for different diameters of said gear 42. Upon that end of the shaft 41 projecting within the chamber of the gas-meter a universal connection 44 is provided, which consists of a V-slotted piece having a bowed pin bridging its slot.

I place a worm 45 on the indicator-shaft 46 of the gas-meter. A bracket 47 is soldered upon the upper surface of the prow 48 of the gas-meter and is bent at its overhanging end into substantially a U shape, bearings being provided in the perpendicular members of the U to journal a horizontal shaft 49, which is mounted below and at right angles to the indicator-shaft 46. A spur-gear 50 is mounted fast on the shaft 49 within the U of the bracket 47, said gear and shaft being restricted in their longitudinal movement by a boss 43, abutting against the uprights of the U of bracket 47. That end of shaft 49 which is toward the prepayment device is provided with a V-slotted universal connection 51, similar to the universal connection 44 on shaft 41. A bar 52 has its ends projecting into the V-slots and pivoted on the bowed pins of the universal connections 44 and 51. This construction provides a very simple and cheap connection between the gas-meter and the prepayment device, which virtually embodies two universal joints, so that variations which are bound to occur from the alinement and planes of mounting of the shafts 49 and 41 are no hindrance to the perfect working of the device. The boss 43 is constructed as a sleeve, and the shaft 49 is held in said sleeve by a set-screw 43^a. It will be understood that after loosening the set-screw the shaft may be adjusted lengthwise, thus enabling the same device to be attached to gas-meters of different dimensions, inasmuch as the construction described provides an extensible connection between the gear 50 and the shaft 41.

A valve-chamber 53 is soldered or otherwise secured to the gas-meter ingoing pipe, and access is had to said chamber through its end, which is normally closed by a screw-cap 54,

having a plurality of outside wings 55. A valve 56 is mounted in said valve-chamber 53 and is removable therefrom through said end opening. A stuffing-box bearing 57 is provided in the front wall of said valve-chamber, and the valve 56 is mounted within said chamber, with its stem 59 supported in concentric apertures in the casing of said chamber and in the cap 54. The stem of the valve has an extension toward the meter, this extension being received and guided in a boss 58 of the meter. Thus the valve is properly supported and guided and the dimensions of the valve-chamber are reduced. The connection to the meter is made through a passage 53^a, and another passage 53^b leads to the chamber 53 from the supply. A short shaft 60 is mounted in the stuffing-box bearing 57 and has a rigid arm 61 upon its inner end, which engages an aperture 62 in the stem 59 of the valve 56. An arm 63 depends from the outer end of shaft 60 and carries a pin 64.

The back plate 5 is secured to and supported from valve-chamber 53 by screws 65. The arm 63 projects through an aperture in back plate 5, and pin 64 engages a bayonet-slot 67 in the body-plate of valve-operator 26. The bayonet-slot 67 has a downwardly-directed portion 68, which the pin 64 is forced into, owing to the length of the arm 63, when the valve-operator 26 is at the left-hand limit of its movement, Fig. 3, and said pin 64 has been engaged by the right-hand end wall of said bayonet-slot 67, which movement closes the valve 56 by means of the arm 61, which is rigidly connected, through the shaft 60, with the arm 63, carrying pin 64. When the valve-operator 26 begins its movement toward the right, the left-hand wall of the downwardly-directed portion 68 of the bayonet-slot 67 immediately engages the pin 64 and rocks the arm 63 until the pin 64 rides out of the portion 68 of bayonet-slot 67, which opens the valve 56. Any further movement of the valve-operator 26 to the right does not alter the position of the arm 63 or valve 56, as the horizontal portion of the bayonet-slot 67 is parallel with the direction of movement of the valve-operator. Thus it will be seen that the valve is only closed at the extreme left of the movement of the valve-operator, being open and unmoved with all other positions of said valve-operator. In the foregoing description the terms "right" and "left" are used with reference to the showing in Fig. 3.

A barrel 69 is mounted for rotation in a bearing 70, upstanding from the coin-guide and barrel-support 11, and a bearing in the front plate 8, through which latter bearing projects a reduced extension of the barrel 69, having a wing 72, which wing 72 projects forwardly of the front plate 8. The barrel 69 has a slot 73 passing entirely through it and designed to accommodate the coin—in this

case a twenty-five-cent piece. The barrel 69 is provided at its rear end with a ratchet 74, which is engaged by a counterbalanced pawl 75 to permit of the barrel being turned 5 to the left, but not to the right. A dial 76 is placed upon the front plate 8, through which the spindle 12 and sleeve 14 project. The sleeve 14 is provided with a pointer 77, and the spindle 12 is provided with a pointer 78. 10 The pointers 77 and 78 indicate upon scales 77^a and 78^a, respectively, of the dial 76; but the pointer 78 only registers up to five quarters (\$1.25) and always returns to its zero position during the closing movement of the 15 valve 56. The pointer 77, however, moves only in a forward direction and is so arranged that it will move one division of the scale 77^a when the pointer 78 has moved forward ten divisions of the scale 78^a.

20 An arm 79, mounted fast upon the sleeve 14 at the rear of the front plate 8, engages at every turn of said sleeve and turns a spur-gear 80 one tooth, the gear 80 being provided with a spring-brake 80^a. The spur-gear 80 25 is mounted upon a spindle 81, passing through the front plate 8, which spindle 81 carries on its front end a pointer 82, arranged in front of the dial 76 and indicating upon a set of numerals 82^a. The pointer 82 is arranged to 30 move one division of the scale 82^a for every complete revolution of the pointer 77.

The wall-piece 6 has a lip 83 struck out and a lip 84 struck inwardly, forming a slot which 35 coöperates with the slot in the barrel 69 and the coin-guide. The wall-piece 6 is provided with inturned ears 85, which serve as means of attachment with screws for said wall-piece 6 to the back plate 5 from the inside. A 40 screw 86 is screwed from the inner or front side of the back plate 5 and projects rearwardly between the wings 55 of the screw-cap 54, closing the valve-chamber, so that said screw-cap cannot be removed and the 45 valve tampered with unless access is had to the interior of the device to remove screw 86. The front and partition piece 7 is provided with a top ledge 87, from which project downwardly pins 88, which engage holes 89 50 in the top front portion of the wall-piece 6. An aperture 90 is provided in the front and partition piece 7, through which the dial may be viewed and is covered, by transparent celluloid or glass, secured to the inside surface 55 of said piece 7. A key 91 is mounted for rotation in the front and partition piece 7 and is provided upon its outer end with a thumb-piece and upon its inner end with a slotted member 92, adapted to engage the wing 72 upon the barrel 69 when the said piece 7 is in 60 place, affording means whereby the barrel 69 may be turned from the outside. The partition portion 93 of the piece 7 separates the working mechanisms described from the lower portion of the case, being cut away at 65 one side, however, to allow the coin upon

leaving the coin-guide to drop through into the lower compartment. A depending flange 94 upon the rear edge of the partition 93 is provided with a hole for a screw 93^a, which 70 secures it to the back plate 5, and also with a hole through which a stud 95, projecting from the back plate 5, extends when said partition is in place. The projecting end of stud 95 is provided with a transverse hole, through 75 which a wire or other seal 96 is passed when the mechanism has been adjusted and it is desired that the collector or others having access to the lower compartment may not reach said mechanism. When the pins 88 are first 80 inserted and the stud 95 caused to project through the flange and the seal applied, it is impossible to remove the front and partition piece or tamper with the mechanism or valve without breaking the seal or other part. 85 Apertured pieces 97 and 98 project forwardly from the central forward portions of the partition 93 and the bottom of the wall-piece 6, respectively. A money-tray 99 fits the 90 lower compartment, and its front is extended up and down, and the extended portions are provided with apertures through which the apertured pieces 97 and 98 will project when 95 the tray is in place. A key 100, having a head larger than the apertures in said apertured pieces 97 and 98, is passed there through to lie across the face of said tray. The small end of said key 100 projects beyond the second apertured piece and is provided in this projecting end with an aperture 100 101, through which a lock 102 or seal may be passed to insure against the removal of the tray 99 by any but authorized persons.

The operation is as follows: A coin is 105 dropped into the slot and engaged in the slot 73 of the barrel 69, resting upon the coin-guide 11. The operator then turns the key 91, which turns the barrel 69. The coin within the barrel 69 contacts with the star-wheel 15 and turns it until the pin 19 on arm 18 has ridden over the crest of one of its teeth, 110 when the spring 20, acting through arm 18 and pin 19, quickly completes the movement to the extent of one point at the star-wheel 15. The completion of the movement of star-wheel 15 by the arm 18 brings said wheel out 115 of contact with the coin, and the completion of the half-turn of the barrel 69 brings the coin to slot 103 in coin-guide 11, through which the coin drops into the tray 99. The barrel 69 is prevented from being turned 120 backwardly by ratchet 74 and pawl 75. The star-wheel 15 when turned turns the spur-gear 16 through the medium of the friction connection 17. The spur-gear 16, meshing with worm 25, moves said worm as if it were 125 a rack along the grooved shaft 22, carrying the valve-operator 26 along and opening the meter-valve 56. The further operation of the star-wheel by more coins moves the arm and valve operator farther along grooved 130

shaft 22. It will be seen that the movement of star-wheel 15 by the coins registers by pointers 77 and 82 the total number of coins inserted in the device. As the valve-operator 5 is moved the rack 30, turning spur-gear 13, indicates by pointer 78 the position of the valve-operator relatively to its initial position, in which it closes the valve. The meter connection, driving through spur-gear 31, 10 turns grooved shaft 22 and worm 25 thereon. The spur-gear 16 remaining stationary and worm 25 being rotated, said worm will work itself back toward the valve-closing position, upon reaching which it will shut off the gas. 15 When a sufficient number of coins have been put into the device to cause the valve-operator 26 to assume that position farthest from the valve-closing point and said valve-operator is abutting against the bearing 23, other 20 coins will operate the star-wheel and register upon the totalizers; but the friction connection 17 will slip and the pressure exerted on the key will not damage the valve-operator.

It is obvious that various changes may be 25 made in the disposition of parts and the details of construction without departing from the spirit of my invention.

What I claim as my invention is—

1. In a prepayment attachment for gas- 30 meters, the combination of a coin-operated member mounted to turn, means for preventing said member from turning in one direction, a valve-operating member arranged to be shifted by the turning of the coin-operated 35 member in one direction, and a friction connection between said members to cause the coin-operated member to turn idly after the valve-operating member has been shifted to the end of its travel.

40 2. In a prepayment attachment for gas-meters, the combination of a casing open at one side, a slotted partition-wall within said casing, forming two compartments and having a vertical extension to close one of said

compartments, an interlocking connection 45 between said extension and the adjoining wall of the casing, means to lock the opposite edge of said partition-wall to the casing, said means being accessible from the inside of the open compartment, a cover to close said open 50 compartment and means to lock said cover.

3. In a prepayment attachment for gas-meters, a casing containing the coin-operated mechanism, a valve-chamber adjacent to said casing, a winged screw-cap adjacent to the 55 wall of said casing for normally closing said valve-chamber, and a screw or pin extending from the inside of said casing and through the wall thereof, and projecting between two wings of said screw-cap. 60

4. In a prepayment attachment for gas-meters, the combination with coin-operated mechanism, of a casing containing the coin-operated mechanism, a valve connected with 65 said mechanism, a valve-chamber adjacent to said casing and inclosing said valve, a screw-cap adjacent to the wall of said casing, and formed with a guide for the stem of said valve, and arranged to close said valve-chamber, 70 and a screw or pin extending from the inside of said casing and through the wall thereof, and abutting against said cap to lock the same.

5. In a prepayment attachment for gas-meters, the combination of a valve, a coin- 75 operated star-wheel connected with said valve to open the same, means for holding said star-wheel in its normal position, an indicating-gear operated by said star-wheel, and a 80 brake engaging said indicating-gear.

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

RUDOLPH L. FERSENHEIM.

Witnesses:

EUGENE EBLE,
JOHN LOTKA.