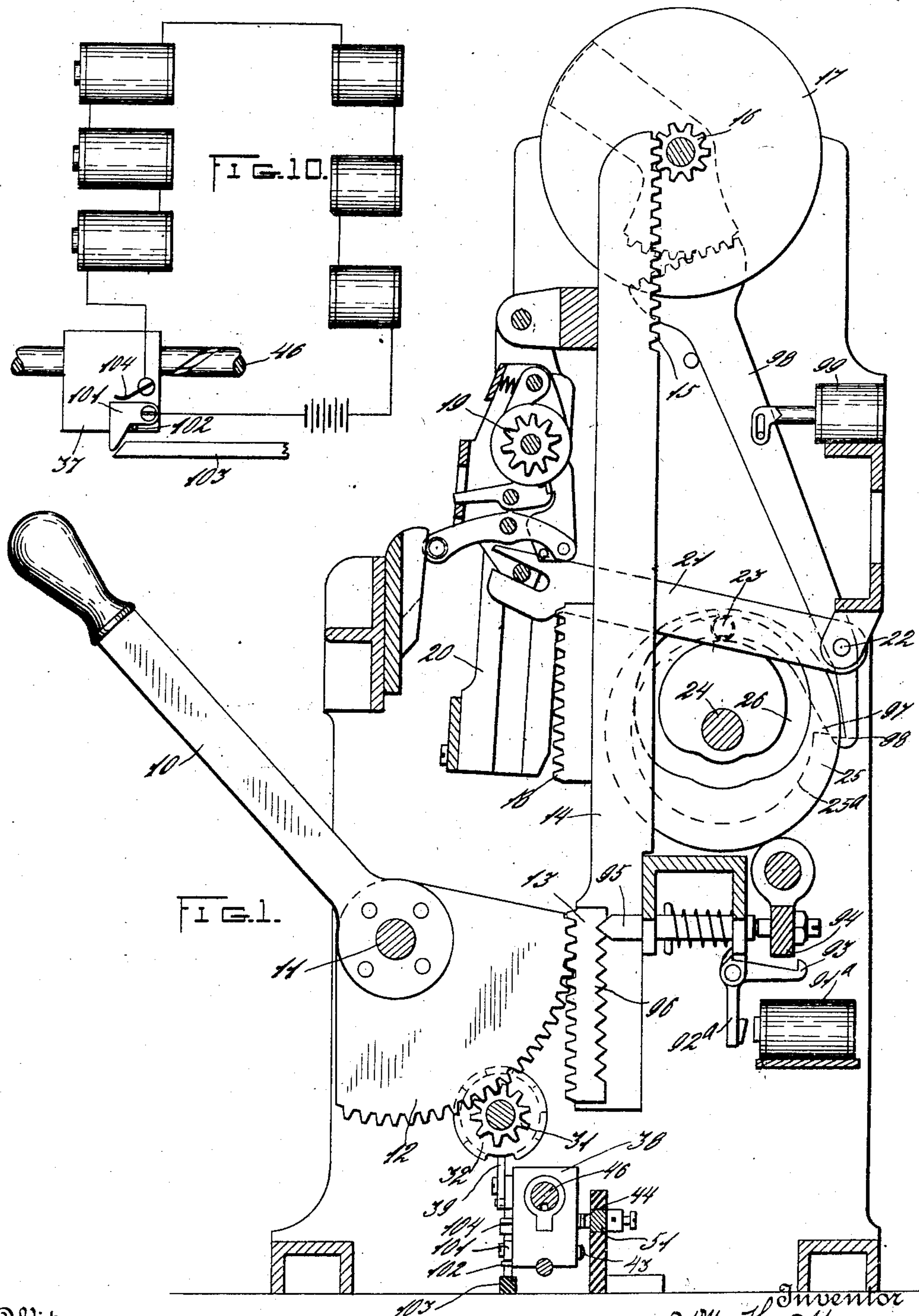


928,268.

W. H. MUZZY.
DISTANT REGISTER.
APPLICATION FILED OCT. 18, 1906.

Patented July 20, 1909.
4 SHEETS—SHEET 1.



Witnesses

W. H. Muzzy

Carl W. Bunt

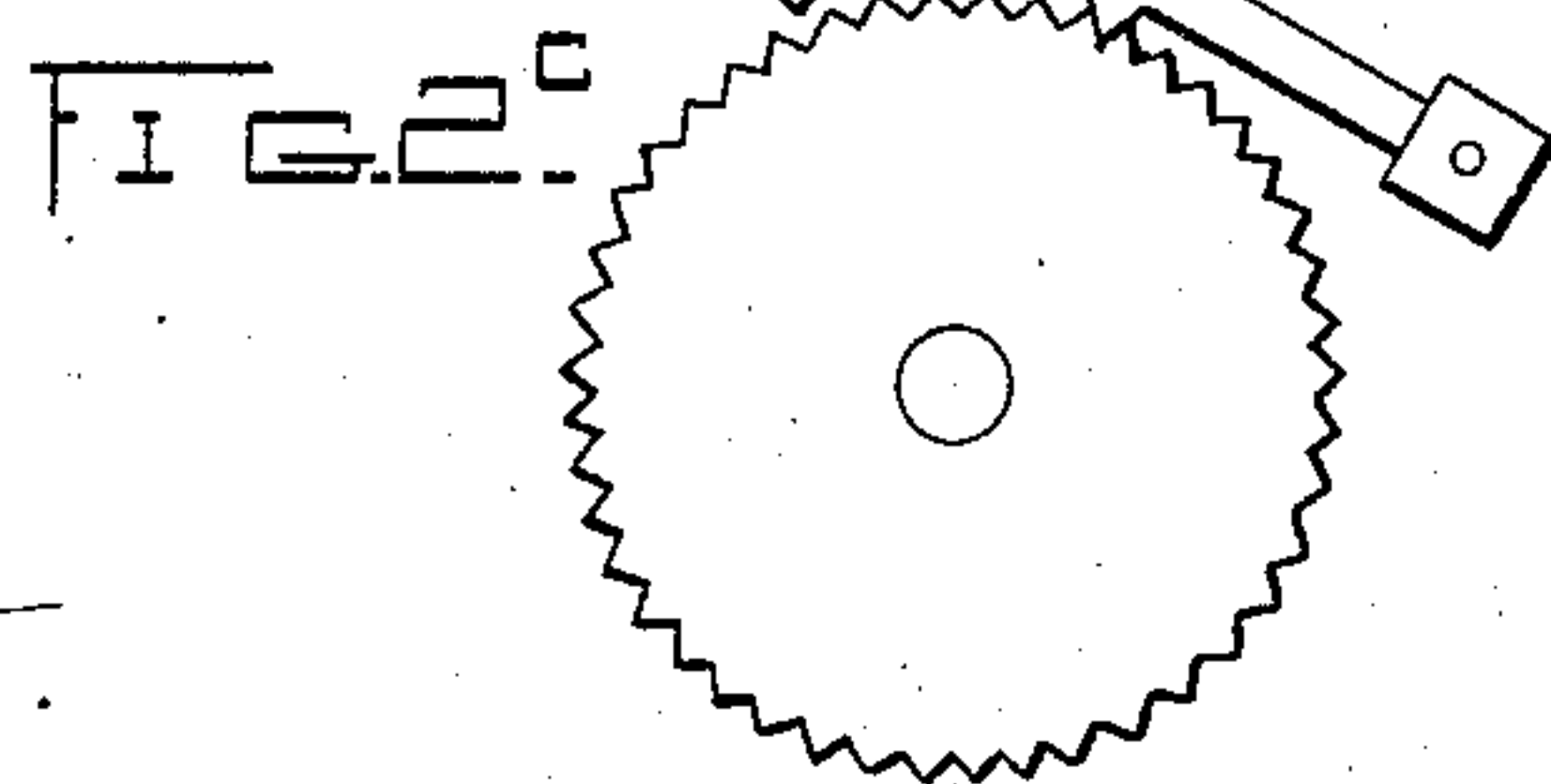
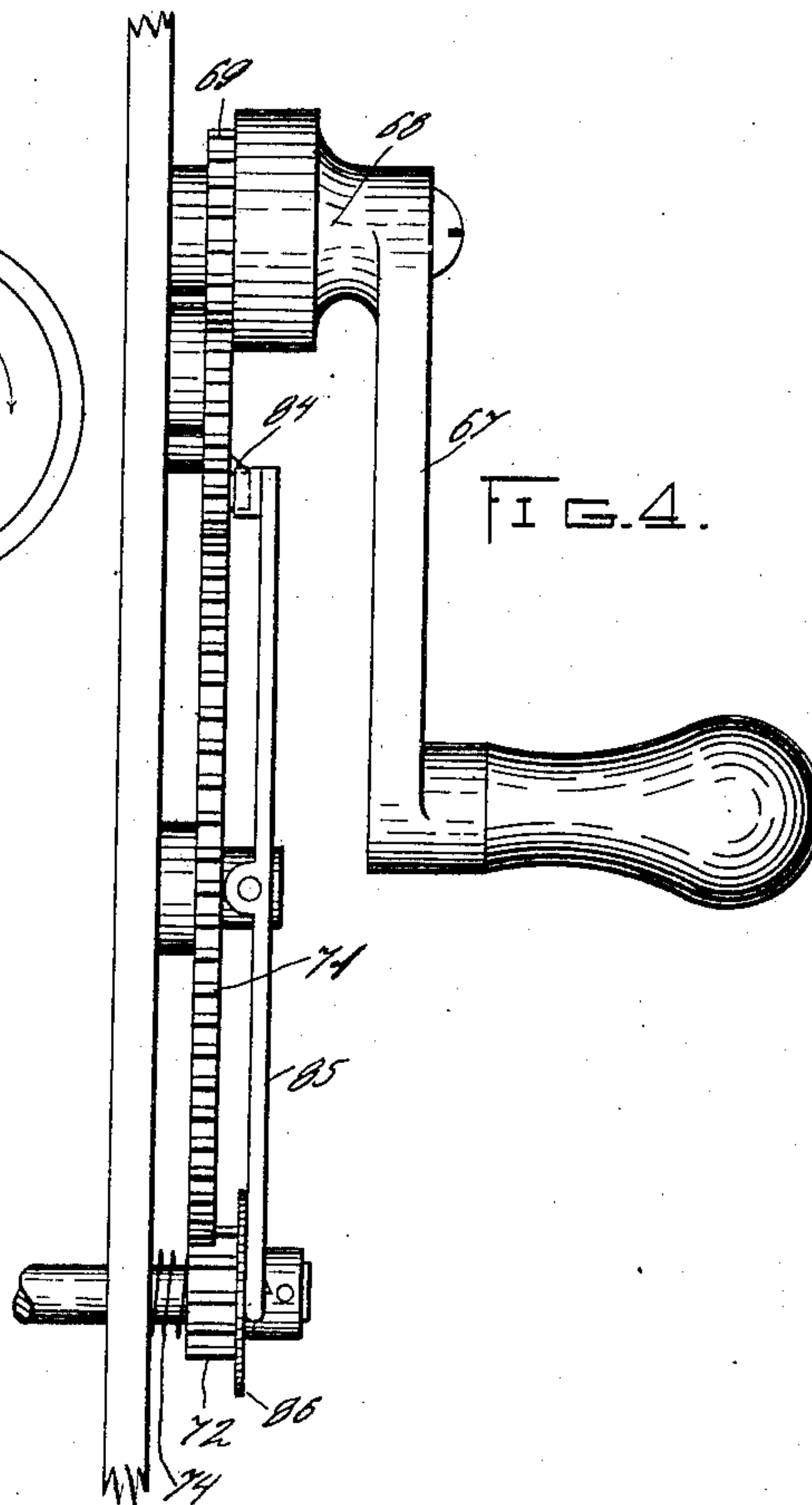
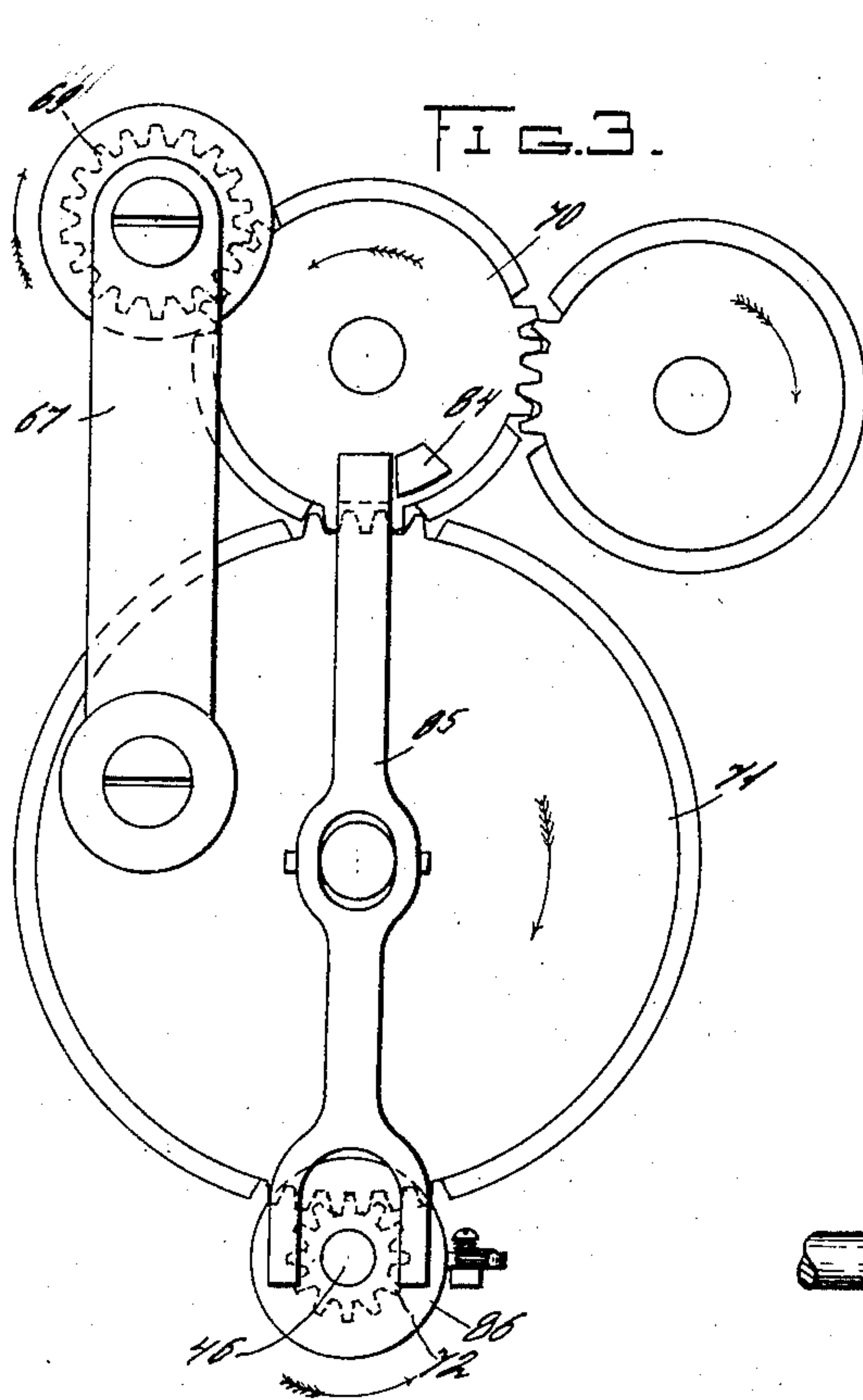
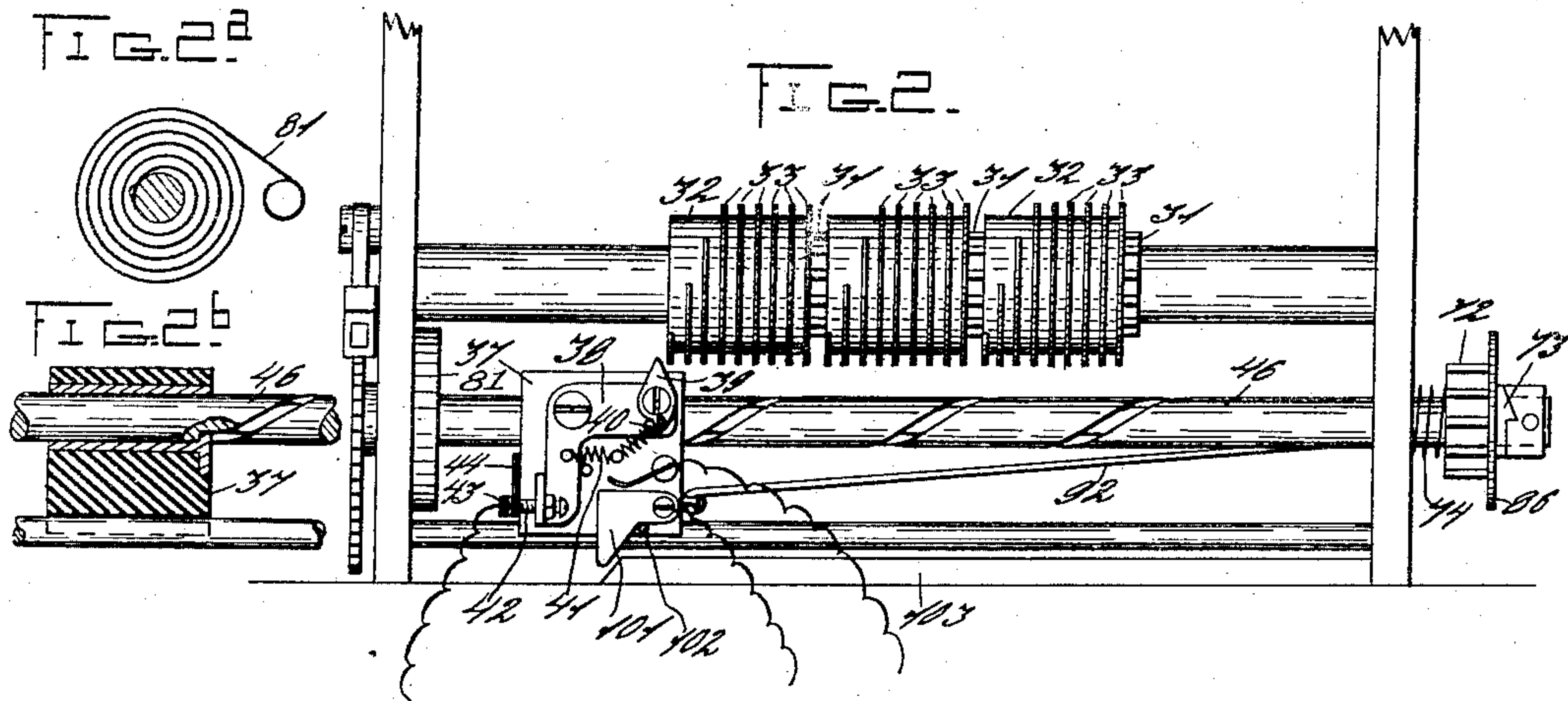
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4 SHEETS—SHEET 2.



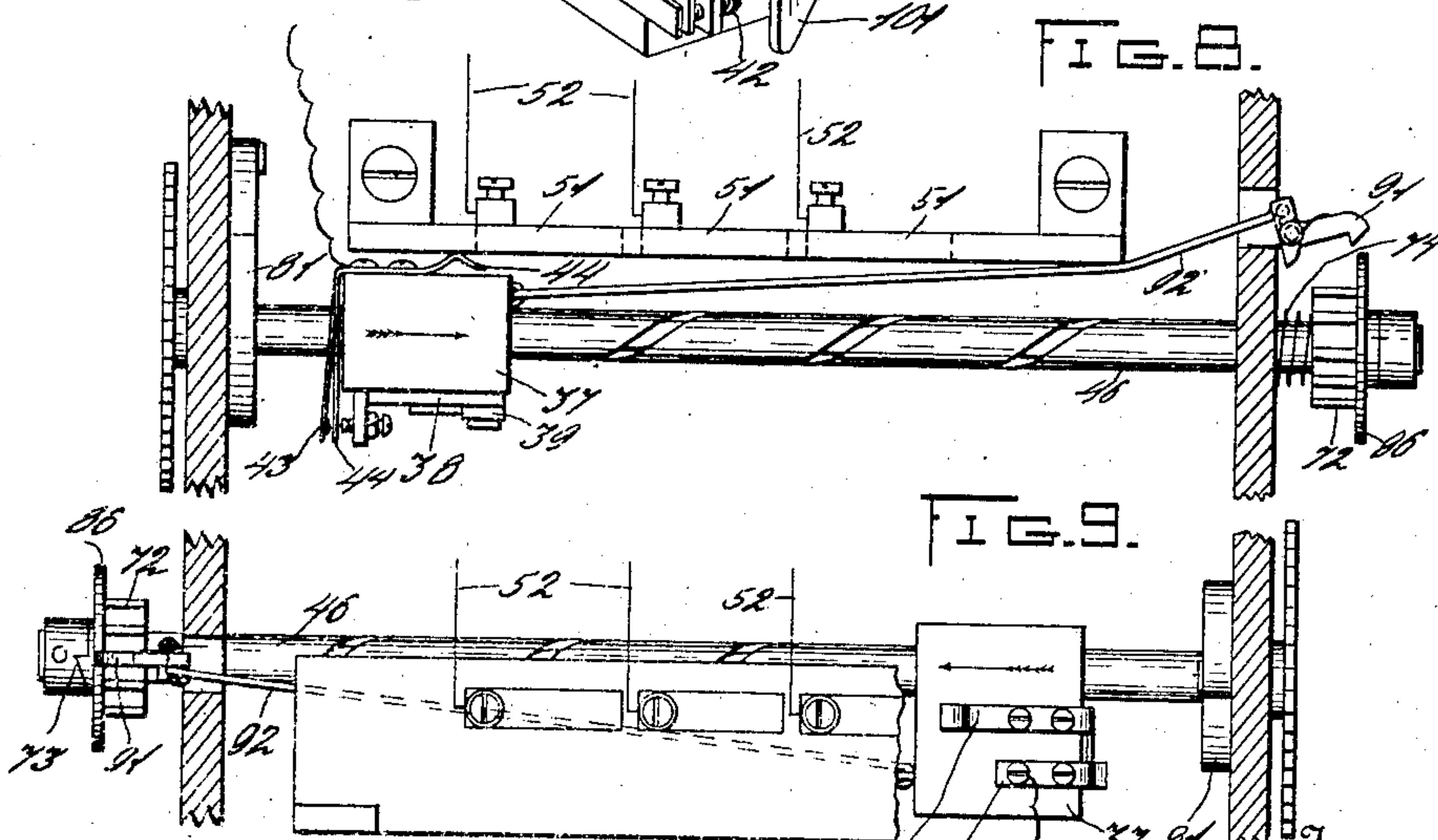
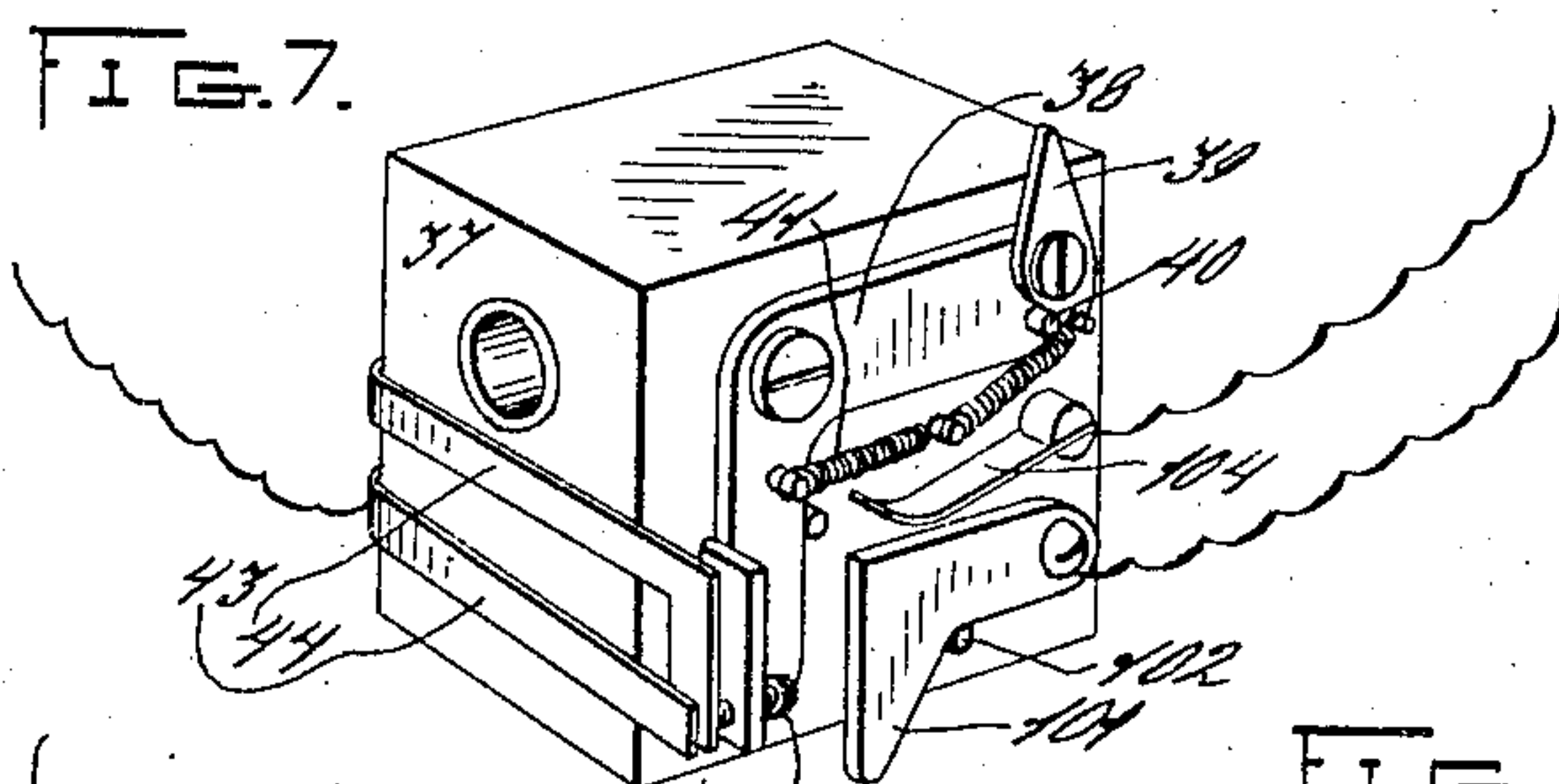
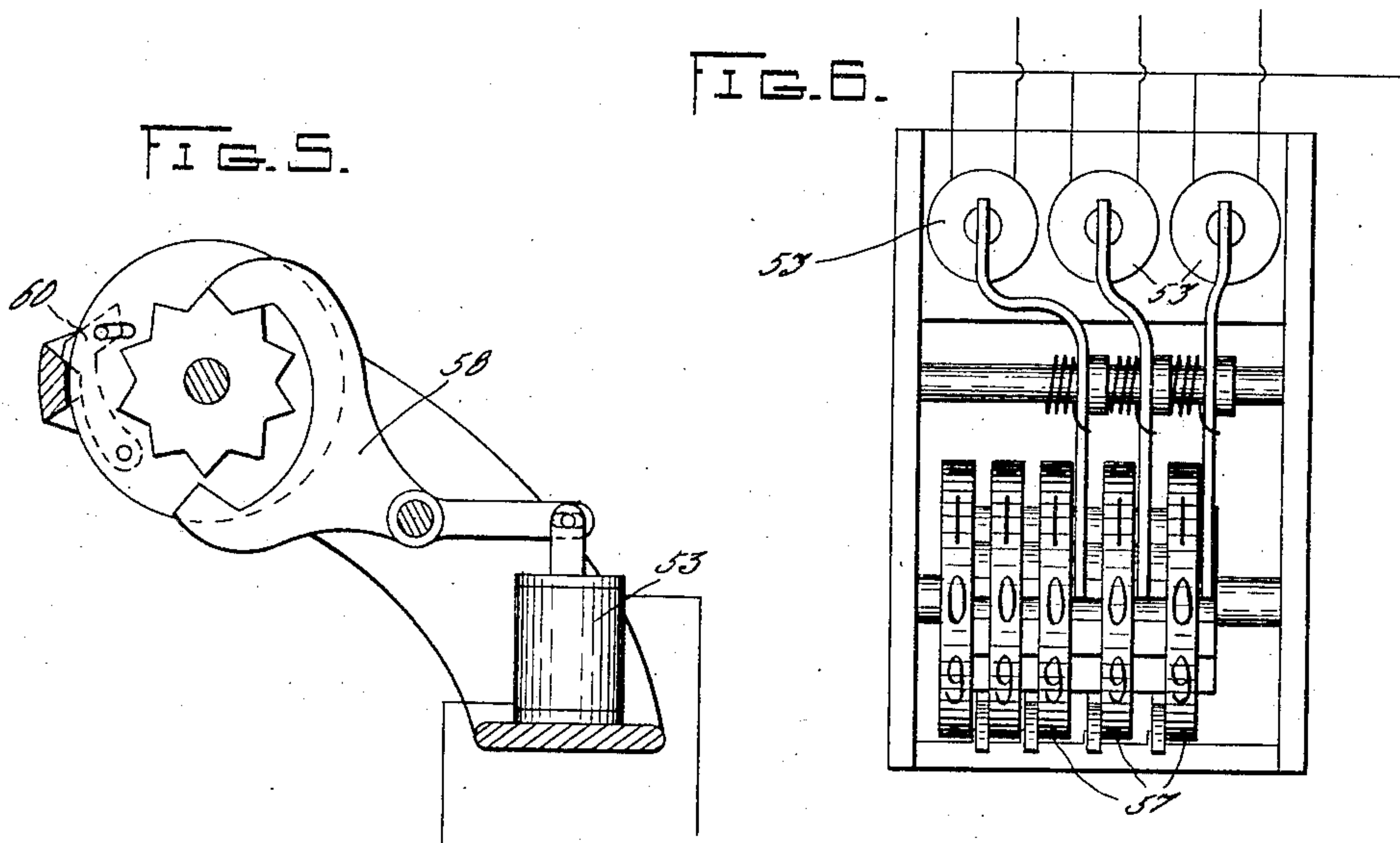
Witnesses
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4 SHEETS—SHEET 3.



Witnesses
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Carl Mewt.

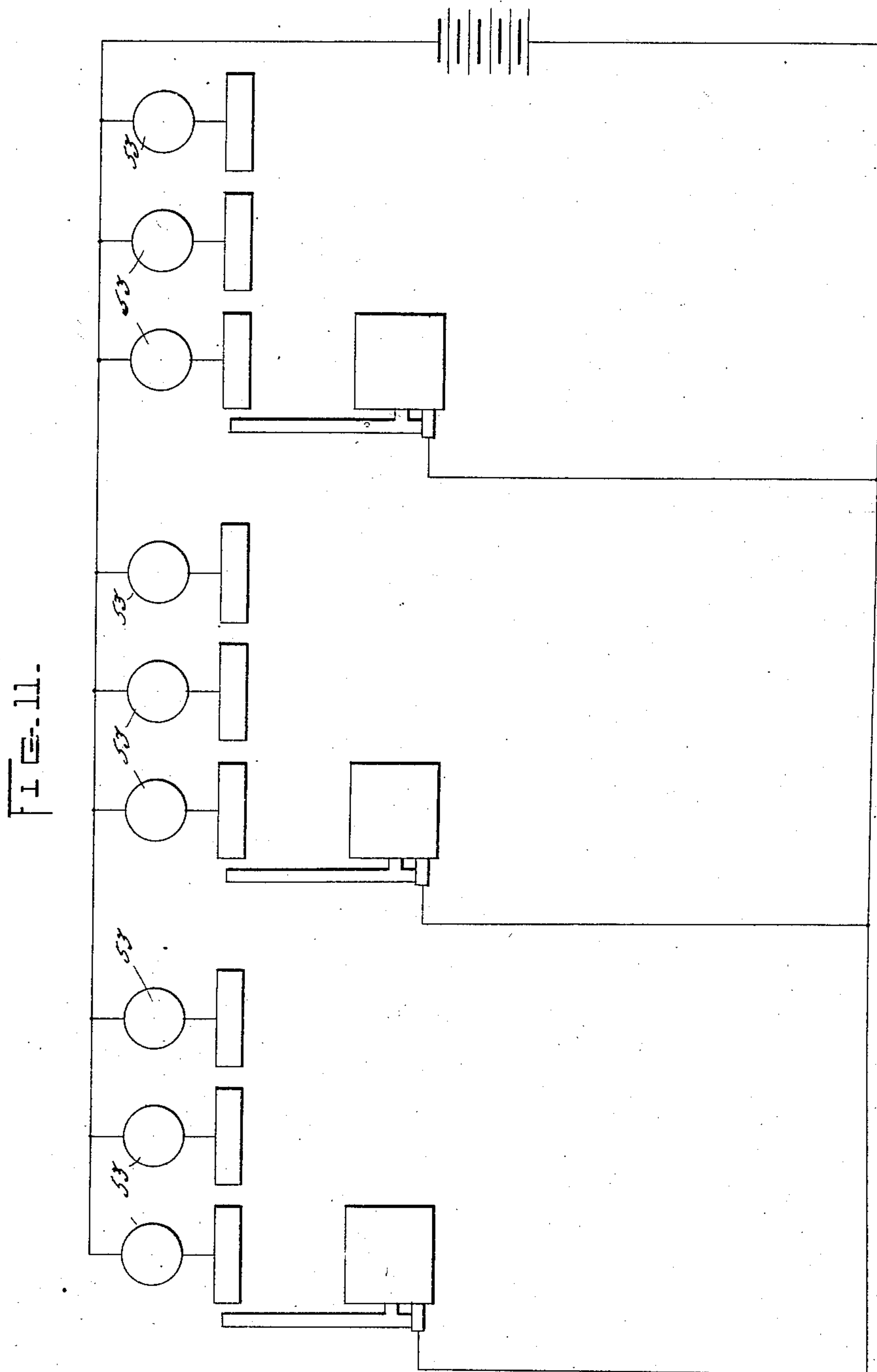
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DISTANT REGISTER.

Patented July 20, 1909.

4 SHEETS—SHEET 4.

928,268.



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UNITED STATES PATENT OFFICE.

WILLIAM H. MUZZY, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

DISTANT REGISTER.

No. 928,268.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed October 18, 1906. Serial No. 339,541.

To all whom it may concern:

Be it known that I, WILLIAM H. MUZZY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Distant Registers, of which I declare the following to be a full, clear, and exact description.

This invention relates to cash registers and has as its main object to provide a register totalizer which may be operated from a distance.

In many establishments it is desired to provide the sales person with a machine on which the characteristics of a transaction may be entered and having some connection, usually electrical, with a machine at a distance so constructed that the various amounts entered on the first machine may also be entered without further care on the part of the operator on the distant machine.

My invention also aims to provide a register which is in the nature of an attachment to machines already on the market. I have provided connections such that the attachment may be added with very little change in the prior machine and which may be placed at any desired distance.

With these and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, the essential elements of which are set forth in appended claims and a preferred form of embodiment of which is hereinafter specifically described with reference to the drawings which accompany and form part of this specification.

Of said drawings: Figure 1 is a transverse section through a well known type of machine showing my invention applied thereto. Fig. 2 is a vertical section of the machine showing the graduated controlling devices for the distant register. Figs. 2^a, 2^b, and 2^c are details of parts shown in Fig. 2. Figs. 3 and 4 are respectively a side elevation and a front view of the main driving devices for the machine. Figs. 5 and 6 are respectively a side elevation and a plan view of the distant register. Fig. 7 is a perspective of the traversing circuit closer. Figs. 8 and 9 are respectively side and top views of the mechanism for successively bringing the denominational elements of the distant register under the control of the circuit closer. Fig. 10 is a diagram of the operating mechanism for

certain locking devices. Fig. 11 is a diagram showing three machines connected to be energized from a common source.

I have shown my invention as applied to the well known machine now on the market which is disclosed in patent to Thomas Carroll 751,611 Feb. 9, 1904, but it will be evident from the description that my invention is not limited to use with this machine. It may be applied to almost any type of register on the market. I have added to the machine a series of graduated controlling devices here shown as cylinders with a plurality of ribs on their lateral surface, which cylinders are adapted to be adjusted to a desired position by denominational setting devices of the machine. In the drawings the setting devices are shown as differentially movable levers but it will be easily understood that a series of keys may be used instead. These controlling devices when adjusted are arranged to be traversed in succession by a circuit closing device and to have one contact made as the device passes under each rib of the controlling device. The circuit closer is connected to a distant register through the medium of three line wires and a common return. Contact plates are provided for three line wires and a circuit closing device carries a contact adapted to engage successively with the plates and thereby transfer the control of the circuit closer from one denomination to another.

The machine to which I have shown my invention as applied is fully described in the above mentioned patent and need only be generally described herein. It comprises a plurality of setting levers 10 journaled on a shaft or rod 11 and each carrying a rack segment 12. These rack segments mesh with vertical racks 13 carried by bars 14 which are adapted to determine the movement of the indicators and the register. To this end each bar 14 is provided with an additional rack 15 meshing with a pinion 16 of an indicator 17 and also with a rack 18 over which a counter 19 is adapted to be moved. The counter 19 is mounted on a vertical frame 20 and is adapted to be reciprocated downwardly and then upwardly through the agency of an arm 21 journaled on a pin 22 and carrying an anti-friction roller 23. The main operating shaft of the machine is indicated by the numeral 24 and this carries a disk 25 having a cam groove 26 in which the

anti-friction-roller 23 is adapted to ride. It will be clear from the shape of the cam groove 26 that the arm 21 will be oscillated around its pivot 22 to carry the counter 19 over the 5 operating racks 18.

The rack segments 12 are in mesh with pinions 31 one of which is shown in Fig. 1 and all of which are shown in Fig. 2. These pinions 31 serve to control the motion of graduated 10 controlling cylinders 32 which have on their lateral surface nine ribs 33, these ribs being all of gradually increasing length. It will be clear that the cylinders may be rotated to bring any number of ribs in the path of a de- 15 vice moving parallel to the rod which supports the cylinders. The device applied in this invention is a circuit closer which is shown separately in Fig. 7 and may also be seen in Figs. 1, 2, 8 and 9. The circuit closer 20 comprises a block 37 on which is carried a bell crank lever 38 having a wiper pawl 39. This pawl 39 is spring drawn in one direction against the pin 40, and the arm 38 as a whole is also drawn by a spring 41. A set screw 42 25 is provided on arm 38 and this is adapted when the arm is rocked to engage contacts 43 and 44. The block 37 is mounted on a shaft 46 which has a screw thread cut therein, the block 37 having a complementary thread cut 30 in it. It will be seen that the rotation of shaft 46 will cause the block 37 to move parallel to the cylinders 32 and that the wiper pawl 39 is in position to engage the ribs 33 on the said cylinder. The contact 44 is as shown in 35 Fig. 8 adapted to engage with a plurality of contact plates 51 which have wires 52 connected to magnets 53 of the distant register. It will be clear that as the block 37 moves past the controlling cylinders the contact 44 40 will first connect the magnet for the highest denomination of the distant register for operation by the circuit closer. When the arm 38 is rocked, contacts 43 and 44 will be closed in every case but the member of the distant 45 register which is operated will depend on the plate 51 with which the contact 44 is at the time connected.

The distant register or totalizer is shown in Figs. 5 and 6 and comprises a plurality of 50 adding wheels 57 some of which are adapted to be directly operated by escapements 58 controlled by the magnets 53. The transfer devices 60 are adapted to carry from one wheel to the wheel of higher denomination as 55 is usual.

The driving devices of the machine which are shown in Figs. 3 and 4 comprise a main handle 67 journaled on a stub shaft 68, this handle is arranged to be given two complete 60 rotations at each operation of the machine and to thereby give two rotations to a gear wheel 69. This gear 69 is connected through a gear 70 and a large gear 71 to a pinion 72 carried on the circuit closer shaft 46. The 65 ratio of gearing is such that two rotations of

gear 69 will give slightly more than three rotations of pinion 72. This pinion 72 is not mounted rigidly on shaft 46 but is arranged to be connected thereto by a one way acting clutch or ratchet 73 and to be normally 70 forced to clutching position by a spring 74. It is desirable to retard the movement of the circuit closer to prevent the misoperation of the distant register and for this purpose I have provided a spring to cause the traverse of the 75 circuit closer. This spring is indicated by numeral 81 on Fig. 2 and is shown separately in Fig. 2^a being connected at one end to shaft 46 and at the other end to a stationary pin. When the main handle 67 is rotated the 80 rotation is in a direction to cause pinion 72 to drive shaft 46 through the clutch 73 and this causes the circuit closer to move under the controlling cylinders 32. At this time however the contacts 43 and 44 are not 85 closed in as much as the pawl 39 wipes idly past ribs 33. When however the handle 69 completes its operation the cam 84 on gear 70 is arranged to strike a vertical bar 85 and cam the same. The lower end of this bar 85 90 is bifurcated and adapted to straddle shaft 46 resting against a disk 86 carried by the pinion 72. It will be clear that such rocking of bar 85 will slide the pinion 72 laterally on shaft 46 and thereby withdraw it from 95 clutching position. In as much however as cam 84 is arranged to position arm 85 slightly before the mechanism reaches normal position it is necessary to provide other means for retaining the pinion 72 in position to dis- 100 engage the clutch 73. This means is shown in Fig. 8 and includes a locking arm 91 connected through a flexible connection 92 to the block 37. The connection 92 is of such length that when the block 37 is in normal 105 position the said connection 92 is tightly drawn and serves to elevate the arm 91, this position being shown in Fig. 8. When however the block 37 is moved from normal po- 110 sition by the rotation of pinion 72 and shaft 46 the arm 91 will drop until it touches the disk 86. At the end of the operation of the handle 67 the pinion 72 is slid laterally as before stated and the arm 91 then drops over 115 the disk 86 and serves to hold it in position until the block 37 again reaches normal position when the connection 92 is tightened and again raises the arm 91.

From the above description it will be clear that the block 37 carrying a circuit clos- 120 ing device is moved from its position in Figs. 2 and 8 past all the controlling cylinders 32 under the influence of the main handle 67. When the handle reaches its home position the clutch 73 is displaced and the spring 81 125 which has been wound up by the operation serves to return the circuit closer to its normal position and at this time the pin 40 will prevent the pawl 39 from rocking so that the bell crank 38 does rock and does close the 130

contacts 43 and 44 for each rib passed under.

A series of impulses is therefore sent from the circuit to the distant register serving to operate the denominational members thereof one step for each rib which is in position to actuate the arm 38. As before stated the controlling plates 51 are connected to the magnets 53 by wires 52 and serve to determine on which of the denominational counters the impulse shall be registered. It will be clear that these plates 51 are situated in such position that while the pawl 39 passes under the ribs of any particular cylinder 32 the contact 44 is then touching the plate 51 corresponding to the register wheel of the same denomination as the controlling cylinder.

It is desirable to lock the setting levers of the machine until the distant register finishes its operation as otherwise a possible manipulation of the machine might occur if for example the setting levers could be moved while the circuit closer was performing its rearward traverse the result would be that one amount would have been previously registered on the counter 19 and a different amount registered on the distant register. To prevent this I provide a magnet 91^a as shown in Fig. 1 arranged when energized to attract an armature 92^a. This armature carries a locking arm 93 which when raised is adapted to engage and lock a frame comprising a bar 94. This bar 94 is directly in the rear of a plurality of spring plungers 95 one for each setting lever. As shown in this figure the vertical racks 13 have also notched racks 96 into any of the notches of which the pointed end of the plungers 95 are adapted to move. It will be clear that when armature 92^a is attracted and arm 93 rises in rear of the bar 94 that all the setting levers will be locked in as much as the motion of the setting levers would necessarily move the plungers 95 rearwardly. To provide means for locking the driving handle 67 until the distant register finishes the operation, I provide a cam disk 25^a with a projection 97. This projection is adapted to be engaged by an arm 98 which is operated by a solenoid 99. It will be clear that when the solenoid is energized its core will be attracted and serve to project the arm 98 under the cam 97 so that when the handle has completed its motion the whole machine is locked until the solenoid is deenergized.

For operating the magnets 91^a and the solenoid 99 I provide a circuit shown diagrammatically in Fig. 10. The block 37 carrying the circuit closer has also mounted thereon a contact arm 101. In the normal position of the block 37, this arm 101 rests on the pin 102 but as soon as the block 37 moves from normal position the arm 101 strikes the stationary plate 103 which serves to raise the arm and cause it to touch a contact 104.

From Fig. 10 will be easily understood that the circuit will be made during all of the time that block 37 is away from normal position. This mechanism serves to lock the operating mechanism and the setting levers until the distant register finishes its operation.

The distant totalizer is, of course, capable of receiving a plurality of items one after another and accumulating them into a total, and is thereby distinguished from various prior devices for reading a register from a distance. The present device is operated at each operation of the cash register and serves to transmit differential amounts to the totalizer. In the prior devices one amount only is transmitted, and this amount when entered in the distant recording device cannot be added to, nor in fact, would such addition if possible, be of utility, inasmuch as the transmitted amount is not set up by manipulative means at one operation, but is a total which is to be read, and not one item of a series.

In Fig. 11 I have shown a diagram indicating the method of wiring a plurality of registers to be energized from a common source. The diagram shows three distant registers each having three magnets 53 and a battery or other generator common to all of the machines.

The operation of the device will be as follows; and I will suppose that it is desired to register 74 on the machine. Setting levers 10 are first set, the tens levers being moved seven spaces and the units lever four spaces. The rotation of levers 10 serves to move the rack segments 12 thereby elevating rack bars 14 and rotating the controlling cylinders 32 to an amount equal to the motion of the setting levers 10. The handle 67 is then given two complete rotations. As the handle starts to move the cam groove 26 in disk 25 will depress the counter 19 and cause the tens and units wheels thereof to engage the racks 18 which have been raised. The rotation of the handle serves also to rotate shaft 46 through the clutch 73 and this serves to move block 37 under the cylinders 32 without however causing the contacts 43 and 44 to touch, this being due to the fact that pawl 39 may wipe idly past the ribs 33. As the block 37 leaves its normal position the locking arm 91 drops on the periphery of disk 86 and arm 101 is raised by plate 103 to energize magnets 91^a and solenoid 99. The energizing of magnets 91^a serves to lock all the setting levers 10 and the energizing of solenoid 99 serves to project the arm 98 in the path of cam 97. When the handle completes its second rotation the block 37 has been moved completely past all the cylinders 32 and the cam 84 then strikes and oscillates bar 85 serving to disconnect clutch 73. The arm 91 immediately drops in front of disk 86 thereby main-

taining the clutch 73 disconnected mean while the register 19 has again been raised to normal position. When the clutch 73 is disengaged spring 81 immediately starts to return block 37 to its normal position, this motion being retarded as by a pallet shown in Fig. 2°. During the backward movement of the block 37 the pawl 39 is prevented from yielding and contacts 43 and 44 are thereby closed a number of times equal to the number of ribs passed under. In this case the upper denomination has not been set for any number and there will therefore be no ribs 33 of the right hand cylinder 32 in Fig. 2 of the path of the pawl. The tens cylinder 32 will have all but two of its ribs in the path of pawl 39 and will therefore cause the contacts 43 and 44 to be closed seven times and this time the contact 44 will be touching the center plate 51 so that the center magnet 53 will be energized seven times and serve through its escapement to rotate the tens wheel seven steps. The units cylinder 32 at the left in Fig. 2 will have only four of its ribs in position to be engaged by pawl 39 and as at this time the contact 44 is touching the left hand plate 51 in Fig. 8 four impulses will be sent to the units magnet 53 and the units wheel therefore moving four steps. At the end of the operation the arm 101 rides off plate 103 thereby deenergizing magnets 91^a and solenoid 99 when the setting levers and the main handle may again be operated as the prior operation is then complete.

It will be clear that my invention is adapted to be used with many other types of machine than the one to which I have shown it as connected. The setting levers 10 may be replaced by a series of keys which serve to either directly move the controlling cylinders or to merely determine their motion. The driving power for the machine may evidently be furnished by a handle as shown or by any other well known driving device such as a cash drawer.

While the form of mechanism here shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is as follows.

1. A registering mechanism, having in combination a cash register, ribbed devices differentially set by the movable elements of the register, a contact maker adapted to traverse the ribbed devices and thereby make and break a circuit, and a totalizer at a distance operated by said making and breaking of the circuit.

2. A registering mechanism having in combination a cash register, ribbed devices

differentially set in accordance with the transaction entered in the totalizer, a distant register including a plurality of denominational members, circuits including said distant totalizer and a contact device having its movement controlled by said ribbed devices.

3. A registering mechanism, having in combination an accounting device, circuit controllers adjusted in correspondence with the movable elements of the accounting device, a circuit closer adapted to traverse said circuit controllers in succession and make and break circuits, and a distant totalizing device having denominational elements successively controlled by the circuit closer.

4. A registering mechanism including an accounting device having differentially movable elements, a plurality of ribbed devices adjusted thereby, a circuit closer adapted to traverse said ribbed devices successively, a distant totalizing device having denominational elements, a circuit for each element, and means for including the circuit closer successively in each circuit.

5. In a registering mechanism, having in combination an accounting device, a plurality of graduated controlling devices adjusted thereby, a circuit closer adapted to traverse said controlling devices successively, a plurality of stationary contacts with which said circuit closer is connected successively, a totalizing device and operating magnets therefor, and circuits including said stationary contacts and operating magnets, and including said circuit closer in a common return.

6. In a registering mechanism including a plurality of graduated contact devices adapted to be independently and differentially adjusted, a circuit closer traversing said contact devices, and a distant electrically connected totalizer having denominational elements each of which is governed by a corresponding contact device and adapted to be actuated when its contact device is traversed by the circuit closer.

7. A registering mechanism, including a plurality of ribbed devices, means for independently adjusting them differentially, a circuit closer adapted to traverse said devices successively and to make contact according to the ribs in its path, a distant totalizing device, circuits including magnets for the elements of the totalizing device and stationary contacts, and means for causing the circuit closer to be in electrical connection with said stationary contacts in succession.

8. A registering mechanism including a series of setting levers, a series of graduated controlling devices adjusted thereby, a circuit closer adapted to traverse said controlling devices and close the circuit according to the graduations, a totalizer including

denominational members and independent connections whereby the circuit closer transfers the control successively from one denominational member to another.

5 9. A registering mechanism including an amount determining means, a graduated circuit controller adjusted therefrom, a circuit closer arranged to traverse the graduations of the controller, a register operated by the
10 circuit closer and means for locking the amount determining means while the circuit closer is away from normal position.

10 10. A registering mechanism comprising a cash register having amount determining devices, circuit controllers having graduations and adjusted by said devices, a circuit closer adapted to traverse the graduations in succession, and means for locking the machine while the circuit closer is away from normal
20 position.

25 11. A registering mechanism, comprising a cash register having amount determining means and a main operating mechanism, graduated controlling devices adjusted by the amount determining means, a circuit closer, a distant register, means controlled by the operating mechanism for adjusting the circuit closer to traverse the controlling devices, means for causing the traverse of the
30 controlling devices to enter the amount on the register, and means for locking the operating mechanism until the traverse is completed.

35 12. The combination of setting elements including contact devices for the different denominations, of a distant register having elements for the different denominations, electrical connections, and a single circuit closer for bringing the corresponding denominations of contact devices and registering elements successively into electrical relation.

40 13. A registering mechanism including graduated controlling devices with means for adjusting them independently to differential extents, a distant register having denomina-

tional elements, a plurality of circuits including said elements, a circuit closer adapted to traverse the controlling devices successively and be actuated thereby, means for causing
50 such traverse, and means for introducing the circuit closer into the said circuits in succession.

14. A registering mechanism comprising a main operating mechanism, amount deter- 55 mining elements, graduated controlling devices adjusted thereby, a circuit closer, means connected to the operating mechanism for adjusting the circuit closer and for releasing it from the operating mechanism when ad- 60 justed, a register and means for restoring the circuit closer to normal past the graduations and thereby actuating the register.

15. In a machine of the class described the combination with a setting mechanism, 65 of contact devices controlled thereby, an automatic contact maker cooperating with the contact devices, and means for preventing movement of the contact devices during the operation of the contact maker. 70

16. In a machine of the class described the combination with a setting mechanism, of contact devices controlled thereby, a spring operated contact maker, an operating mechanism for moving the contact maker away 75 from normal position, and means for locking the operating mechanism controlled by the contact maker.

17. The combination with setting elements including denominational contact de- 80 vices, of a circuit closer adapted to traverse said devices successively, a distant registering device having denominational elements, circuit connections for each element, and means whereby the circuit closer is included 85 successively in each circuit.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM H. MUZZY.

Witnesses:

H. D. JAMESON,
A. NUTTING.

Corrections in Letters Patent No. 928,268.

It is hereby certified that in Letters Patent No. 928,268, granted July 20, 1909, upon the application of William H. Muzzy, of Dayton, Ohio, for an improvement in "Distant Registers," errors appear in the printed specification requiring correction, as follows: On page 4, line 68, page 5, lines 46 and 61, the word "register" should read *totalizer*, and page 5, lines 40-41 and lines 82-83, the word "registering" should read *totalizing*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of August, A. D., 1909.

[SEAL.]

F. A. TENNANT,
Acting Commissioner of Patents.