

T. I. POTTER.
TURNSTILE MECHANISM.
APPLICATION FILED AUG. 30, 1916.

1,298,388.

Patented Mar. 25, 1919.
3 SHEETS—SHEET 1.

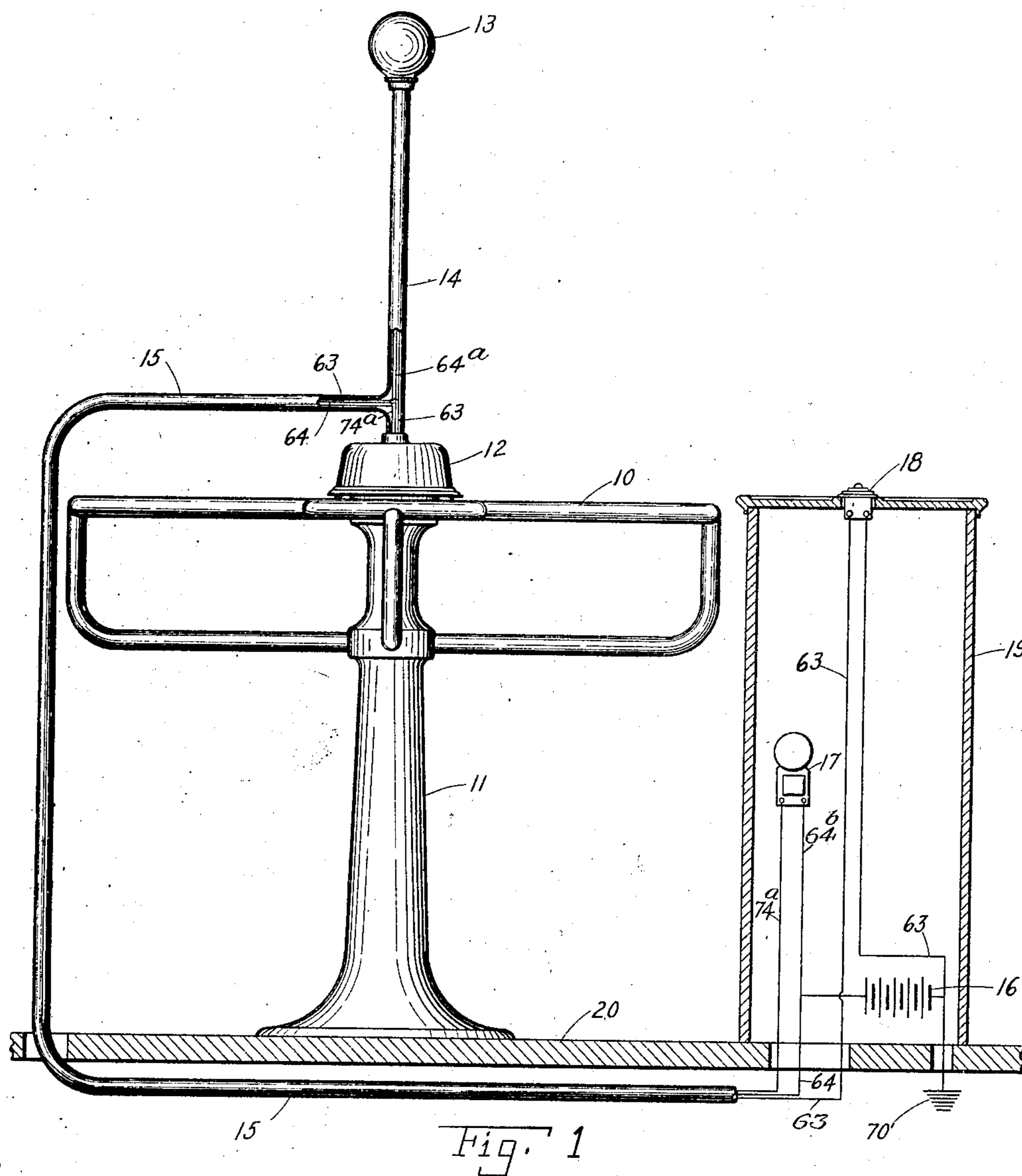


Fig. 1

Witnesses
Fred Sparrow
D. P. Winston

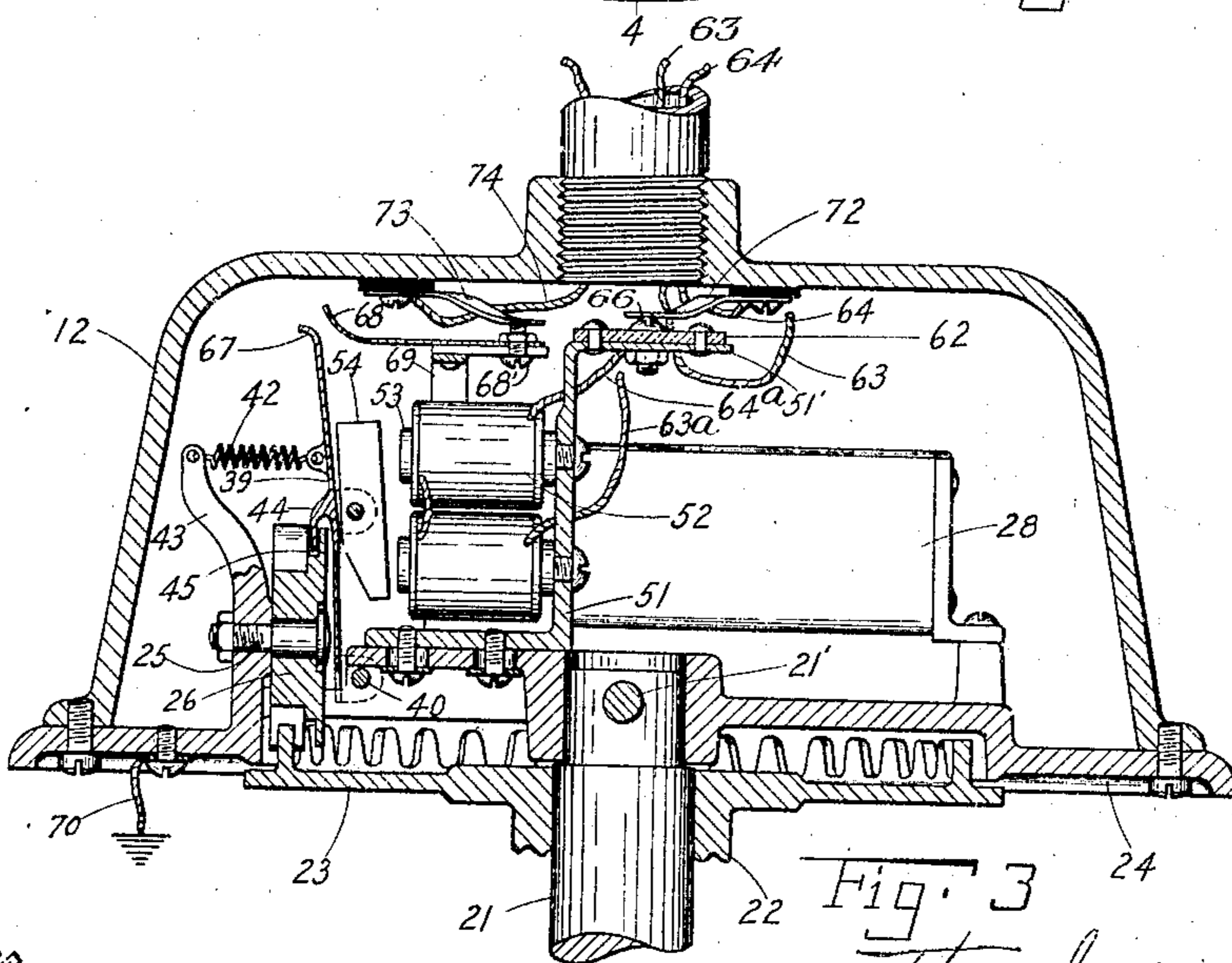
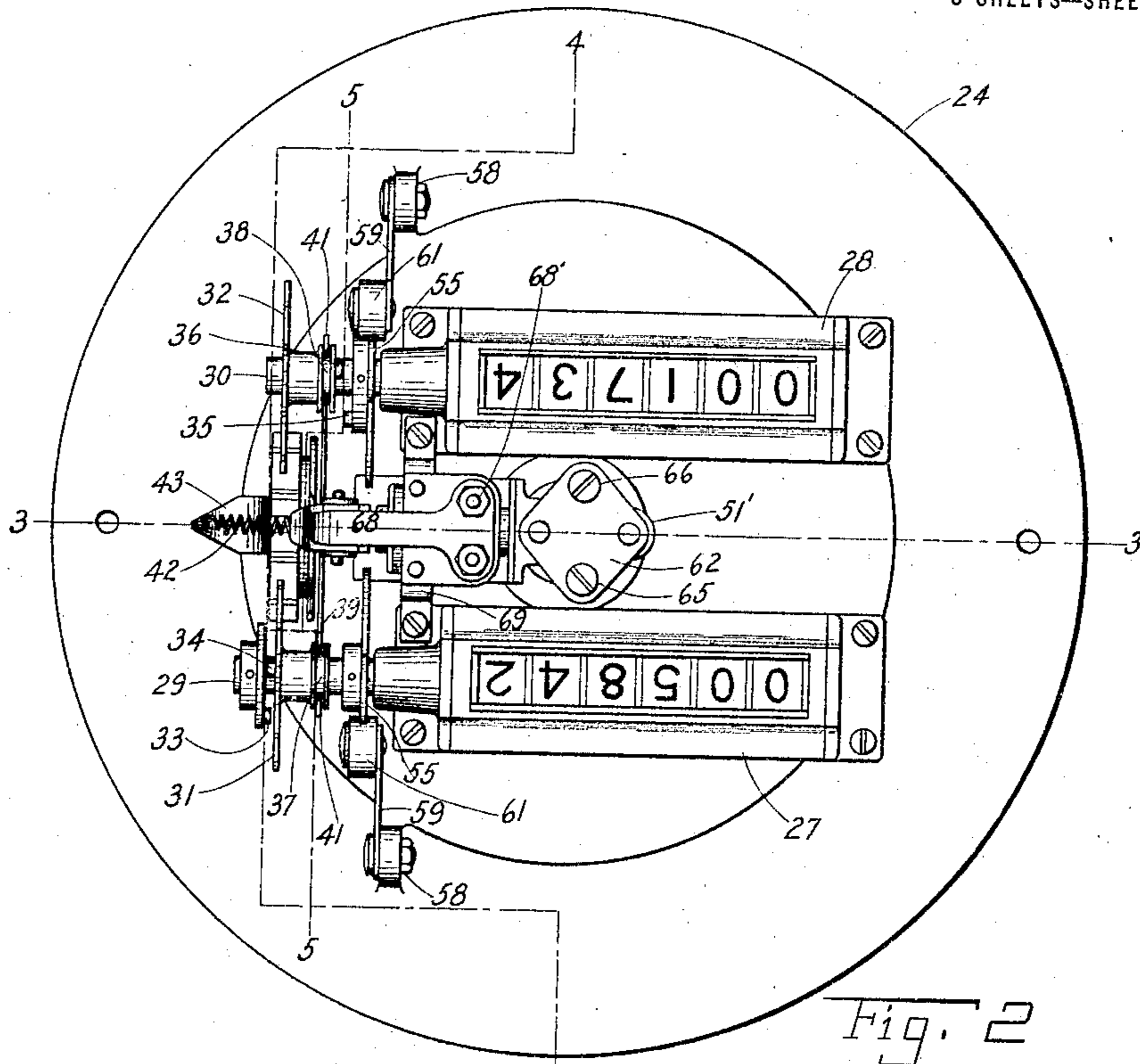
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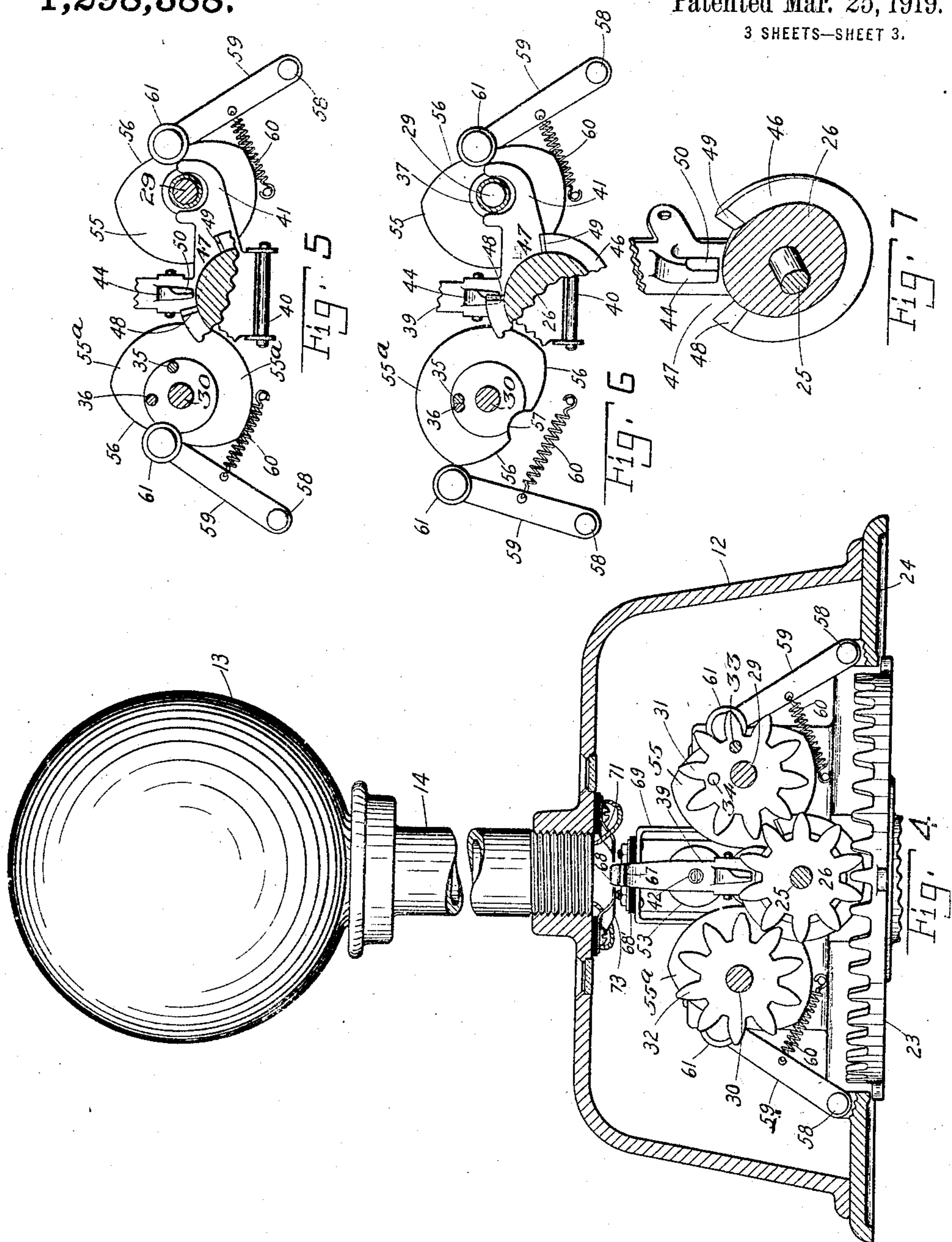
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Fig. 3
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UNITED STATES PATENT OFFICE.

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TURNSTILE MECHANISM.

1,298,388.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS IRVING POTTER, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Turnstile Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to turnstile mechanism; the primary object of the invention is the provision of a turnstile combined with a plurality of registering mechanisms each one of which is adapted to be actuated by an operative stroke of the turnstile, and means for connecting one of said registering mechanisms for operation by the turnstile, and concurrently rendering inoperative another registering mechanism or the remainder of the registering mechanisms.

A more detailed object is the provision of signaling mechanism adapted to be actuated at the same time a registering mechanism connected for operation by the turnstile is actuated, thereby permitting an observer to distinguish between the different characters of registrations made by the turnstile.

With the above and other objects in view, all of which will appear from the ensuing detailed description the invention consists in certain novel combinations, constructions and arrangements of parts pointed out in the claims at the end of the specification.

Reference is now made to the accompanying drawings which illustrate a structural embodiment of the invention in a preferred form, and in which:—

Figure 1 is a side elevation partly in section, illustrating the general arrangement of the turnstile, signaling mechanism and control box.

Fig. 2 is a top plan view of the registering mechanism and other parts.

Fig. 3 is a vertical section taken in a plane indicated by the line 3—3 of Fig. 2.

Fig. 4 is a vertical section taken in planes indicated by the line 4—4 of Fig. 2.

Fig. 5 is a detailed vertical sectional elevation taken in a plane indicated by the line 5—5 of Fig. 2, showing the parts in their normal position.

Fig. 6 is a view similar to Fig. 5, but showing the parts in the position they as-

sume toward the end of the operation of one of the registering mechanisms.

Fig. 7 is a fragmentary detailed perspective view of certain of the operating parts.

Like characters of reference in the several figures indicate the same parts.

The turnstile mechanism and other parts of the present invention are illustrated in side elevation in Fig. 1 of the drawings, showing the turnstile 10 supported by the usual pedestal 11 and adapted to turn on a vertical axis to permit the passage of persons past the turnstile. A control box 19 is positioned to one side of the turnstile 10 and both the turnstile and the control box are preferably mounted on a base plate 20. The turnstile 10 is provided with a plurality of arms, preferably four in number, and hence the movement imparted to one of said arms by a person effecting a passage past the turnstile will rotate the latter approximately one-fourth of a revolution on its vertical axis. This movement or partial rotation of the turnstile is utilized by the present invention to actuate one of the registering mechanisms, which has been previously connected for operation by the turnstile, in a manner to be presently described.

The turnstile 10 rotates on a stationary shaft 21 which is axially located in and extends upwardly from the pedestal 11 (Fig. 3). At its upper end above the turnstile, the said stationary shaft 21 is connected by means of a pin 21' to a fixed supporting plate 24 on which the several parts of the registering mechanisms are mounted. Secured to the supporting plate 24 is a cover 12 for inclosing the registers and their operating parts. This cover supports a hollow post 14 at the upper end of which is mounted a lamp 13 utilized for signaling purposes in the manner to be described hereinafter. A tubing 15 connects post 14 with the interior of the control box 19 and forms a conduit through which the line wires of the controlling and signaling circuits are conducted to the battery. A collar 22, journaled on the stationary shaft 21 and rotatable in unison with the turnstile 10, carries at its upper end a crown gear 23 for transmitting the rotary movement of the turnstile to a connected registering mechanism. Journaled on a fixed stub shaft 25, supported by a vertical bracket 43 upreaching from the plate 24 is a spur pinion 26 in mesh with the

crown gear 23 and driven thereby. For a four-armed turnstile wherein the operating stroke of the turnstile is approximately one-fourth of a revolution, as in the present embodiment of the invention, the pinion 26 is provided with one-fourth the number of teeth of the crown gear 23. As a result each one-fourth revolution of the turnstile 10 will impart a complete revolution to pinion 26 on its fixed stub shaft.

The simple form of the invention illustrated is provided with two registering mechanisms, although it will be readily understood that the invention is not necessarily limited in scope to any particular number of registering mechanisms, as the exact number provided will be determined by the most advantageous practice and the particular use to which the invention is to be applied. The registers 27 and 28, which may be of any preferred type, are mounted on the supporting plate 24 and are adapted to be actuated by a complete revolution of their respective rotary stems 29 and 30, shown in Fig. 2. The figures of the registers may be viewed through suitable windows provided in the cover 12 (Fig. 4). These registers are intended for the registration of different classes of admission or entrance tariffs paid at the turnstile, and, for convenience, it will be assumed that register 27 is actuated every time a full-fare is paid, and register 28 every time a half-fare is paid. Register 27 will be hereinafter termed the full-fare register, and register 28 the half-fare register. Journaled and slidable axially on the respective stems 29 and 30 are spur pinions 31 and 32, both of which are constantly in mesh with the pinion 26 driven by the crown gear 23, and are disposed on opposite sides of the pinion 26, as shown more particularly in Fig. 4. These pinions 31 and 32 are preferably the same size and have the same number of teeth as the central pinion 26; they transmit the motion of pinion 26 to their respective stems when connected thereto by appropriate clutch mechanism. As stated before, in the present embodiment, the pinion 26 is rotated a complete revolution by each operative stroke of the turnstile. Consequently the pinions 31 and 32 will be likewise rotated a complete revolution.

The clutch mechanism for connecting and disconnecting the pinions 31 and 32 to and from their respective stems, is double acting, *i. e.*, in operation, the clutch mechanism throws one pinion into clutching position relatively to its stem and concurrently moves the other pinion out of clutching position relatively to its stem. Projecting from the front face of pinion 31 is a clutch pin 34 adapted to effect a clutching engagement with a co-acting clutch pin 33

when pinion 31 is shifted axially forwardly to position the pin 34 so as to engage pin 33. Pin 33 projects from the inner face of a disk fixedly mounted on the stem 29. A clutch pin 36 projects from the rear face of the hub of pinion 32, and is adapted by a rearward movement of pinion 32 to similarly effect a clutching engagement with a clutch pin 35 projecting from the front face of a disk fixedly mounted on stem 30. The central pinion 26 is made sufficiently thick in cross section to permit the above set forth forward and rearward axial movements of the pinions 31 and 32, without throwing either of said last named pinions out of mesh with the central pinion.

A rocking actuating arm 39 is pivoted at 40 to a fixed part of the stationary supporting plate 24; each end of the arm 39 is formed with a yoke 41, the yokes 41 being adapted to engage in grooves 37 and 38 formed respectively in the hubs of the pinions 31 and 32 and to effect axial shifting of said pinions when the arm 39 is rocked about its axis 40. The actuating arm 39 is connected by means of a tension spring 42 with the vertical bracket 43, which is positioned forwardly of the actuating arm 39, as shown in Fig. 2; the spring 42 therefore acts to normally hold the arm 39 in forward position and also to return said arm to forward position when released in the manner which will presently appear. When the arm 39 is in forward position, clutch pin 34 of pinion 31 is in clutching position relatively to its co-acting clutch pin 33, which is fixedly mounted on the stem 29, and, consequently, a rotary movement imparted to the pinion 31 will bring the two pins together and rotate the stem 29 of the full-fare register 27. With the parts in this position, however, the clutch pin 36 is out of engaging position relatively to its co-acting clutch pin 35 and, upon rotation of pinion 26, pinion 32 will rotate idly on stem 30 and the half-fare register 28 will not be affected by the movement of the turnstile. It will be noted that, in either case, the co-acting clutch pins of the respective pinions and disks on the stems 29, 30, are not actually thrown into clutching engagement by the shifting of the lever arm 39, but the clutching engagement is established during the first portion of a complete revolution of a pinion, for, example, the pinion 31. Thus the movement of the register stem does not start until its pinion has first been given a partial turn. This lost motion permits a shifting operation of the arm 39 at any time before clutching engagement between two properly positioned clutch pins has taken place, and hence, one register may be disconnected from the turnstile and another register connected to the turnstile, even after the operative stroke of the latter

is under way. The movement of the stem of a register connected after a part of an operative stroke has been imparted to the turnstile is completed in a manner which will hereinafter appear.

The above described rearward shifting of the arm 39 to throw pinion 32 into clutching position relatively to stem 30 of the half-fare counter and concurrently to disconnect the full-fare counter from the turnstile is preferably effected by means of electrically-operated manually-controlled mechanism. Mounted on a fixed bracket arm 51 are electro-magnetic coils 52 having cores 53, which are adapted to attract an armature 54, when the cores are energized by a current passing through the coils. Armature 54 is secured to the rear face of actuating arm 39 and, consequently, attraction of the armature will shift arm 39 to move pinion 31 out of clutching position relatively to stem 29 and concurrently move pinion 32 into clutching position relatively to stem 30. The vertical bracket arm 51 is provided with a lateral supporting plate 51' on which is an insulated plate 62 having binding screws 65 and 66 (Fig. 2). The terminals of the coils 52 are respectively connected with the binding screws 65 and 66 by short wires 63^a and 64^a (Fig. 3). Contact members 71 and 72 supported by and suitably insulated from the top of cover 12, engage the respective binding screws 65 and 66, and the line wires 63 and 64 are electrically connected to the respective contact members. Both line wires 63 and 64 are conducted through the conduit 15 to the control box 19, as shown in Fig. 1. Line wire 63 leads through a push button switch 18 mounted in the top of the control box to one pole of the battery 16; the other line wire 64 is connected directly to the other pole of the battery. With the above described arrangement, proper manipulation of the switch 18 will connect the coils 52 with the battery circuit, thereby producing a magnetic condition in the cores 53, which attracts the armature 54. This effects shifting of the actuating arm to disconnect register 27 from the turnstile 10 and concurrently to connect register 28 for operation by the turnstile.

Provision is made for preventing shifting of the actuating arm 39 either by the spring 42 or the electrically operated mechanism, after the turnstile 10 has been moved through a sufficient portion of its operating stroke to bring a pair of clutch pins 33—34 or 35—36 into clutching engagement and the operation of the connected registering mechanism is under way. Projecting from the outer face of actuating arm 39 is a depending lip 44. A disk 46 is made rigid with the central pinion 26 and spaced apart from the teeth of the latter by a groove 45 (Figs. 3 and 7). The lip 44 of actuating arm 39 en-

ters this groove 45, when said actuating arm is in the position illustrated in Fig. 3, *i. e.*, with full-fare register 27 connected for operation by the turnstile and half-fare register 28 disconnected. The peripheral portion of the disk 46 is cut away, as shown in Figs. 5, 6 and 7, to provide a gap 47 through which the lip 44 may clear the disk 46, when actuating arm 39 is being shifted to move lip 44 into and out of the groove 45, in the manner hereinbefore described. This gap 47 is so located in the peripheral portion of disk 46 that it will be moved across the path of movement of lip 44, during the first portion of a revolution of the pinion 26, and coincidentally during the first portion of an operating stroke of the turnstile 10. Referring to Fig. 7, one radial edge of disk 46 at the gap 47 is single beveled, as indicated by the numeral 48 and the other radial edge at the gap is double beveled as at 49; one vertical edge of lip 44 is single beveled as at 50. The purpose of said beveled edges 50, 48 and 49 is to provide a slight clearance between the disk 46 and lip 44, preventing breaking or other injury to the parts by a slight to and fro rocking of the turnstile arms.

From the foregoing description, it will appear that shifting of the actuating arm 39 to position one set of clutch pins for engagement and concurrently move the other set of clutch pins out of the position in which engagement can be effected, is permitted so long as the gap 47 is positioned across the path of movement of the lip 44 of said actuating arm.

Movement of the pinion 26 will, however, ultimately move the peripheral portion of the disk 46 across the path of finger 44. If movement of the actuating arm is attempted at this time the finger will catch against the peripheral portion of said disk and prevent movement of the actuating arm from initial position. Thus no change between the relations of the registering mechanisms and the turnstile can be effected, after the turnstile has been moved through a portion of its operating stroke sufficient to lock the actuating or shifting arm 39. It will be noted that normally, *i. e.*, when the turnstile is at rest the gap 47 is in position to permit movement of arm 39, and also that a complete operating stroke of the turnstile will move said gap back into this position. The parts are illustrated in their normal position in Fig. 5.

The invention provides means for completing the movement of the register stems 29, 30 to effect a complete cycle of movement of a register connected for operation by the turnstile. In the present embodiment, this is desirable for the reason that a pair of clutch pins 33—34 or 35—36 are brought into clutching engagement by the movement of the pinion 26 and the turnstile, and this

clutching engagement is effected after a partial operating stroke of the turnstile has taken place. Fixed respectively to the register stems 29 and 30 are segments 55 and 55^a (Figs. 5 and 6). Each segment 55—55^a is provided with a concentric peripheral portion and an eccentric peripheral portion 56, as shown in said figures. The eccentric peripheral portions 56 of said segments are provided with notches 57 adapted respectively for the reception of rollers 61, when the segments 55, 55^a and the stems 29, 30, of the respective registers are in their normal positions. The rollers 61 are mounted on the upper free ends of arms 59 pivoted by pins 58 to the fixed plate 24 (Fig. 4). Springs 60 force the rollers 61 of the said arms into contact with the peripheries of their respective segments 55, 55^a. These spring-actuated arms serve to rotate the segments to positions in which the rollers 61 engage the notches 57 whenever a segment has been rotated to a position in which a roller 61 is in engagement with any part of the eccentric peripheral portion 56 of its respective segment.

The operation of this arrangement will be readily understood by reference to Fig. 6. As shown therein, the stem 30 of the half-fare register has been connected for operation by the turnstile and the stem 29 disconnected by the operation of the mechanism above described. After a partial rotation of the turnstile a pair of clutch pins, in the present instance, the clutch pins 35, 36, are moved into engagement by pinion 32. This transmits the motion of said pinion and the turnstile to the stem 30 causing it to rotate and change the number on the register 28. Rotation is also imparted to segment 55^a and the parts are so proportioned that when the motion of the pinion 32 and the turnstile has ceased, the roller 61 is in engagement with the eccentric portion 56 of the segment 55^a. Therefore, the spring-actuated arm 59 corresponding to this segment rotates the latter until the roller 61 engages in the notch 57, thereby moving the segment into its normal position and effecting a completion of the movement of the register 28. A complete operating cycle of the register 27 is effected in exactly the same manner. It will be noted that the spring-actuated arms 59 coact with the eccentric portions 56 of the segments to automatically return the latter to their normal positions, should the register stems be accidentally moved for any cause whatever.

Signaling mechanism is provided which is actuated when one of the registers is actuated by an operative stroke of the turnstile, whereby an observer may readily distinguish between the different characters of registrations made by the turnstile. In the present embodiment the signaling mechanism is actu-

ated concurrently with the half-fare register 28, and is inoperative when the full-fare register 27 is operated, so that an observer will be informed whenever a half-fare admission is paid by a person entering past the turnstile. Obviously, signaling mechanism may also be operated with the full-fare register 27, and in this case the signaling mechanism of the full-fare register would preferably be visually or audibly distinguished from the signaling mechanism of the half-fare register. It is also quite within the scope of the invention to provide a greater number of registering mechanisms than in the illustrated embodiment and operate signaling mechanisms concurrently with each register, each one of said signaling mechanisms being distinguished either visually or audibly, or both, from the other signaling mechanisms. Other arrangements may also be made within the scope of the invention.

Supported by and suitably insulated from a post 69 up-reaching from the stationary plate 24 is a contact plate 68 (Fig. 3). The actuating arm 39 is provided with a contact finger 67 adapted to make contact with plate 68 when said actuating arm 39 is shifted in the manner hereinbefore described to connect register 28 for operation by the turnstile 10. Contact finger 67 is grounded at 70 through the spring 42 and bracket 43. A contact finger 73 supported by the cover 12 and suitably insulated therefrom bears on the binding screw 68' of contact plate 68. Electrically connected to finger 73 is a line wire 74 which leads to the lamp 13 and is provided with a branch 74^a leading to the bell 17. In the present embodiment the bell is stationed within the control box 19, but obviously the bell may be stationed at any other convenient point, for example, in the office of a place of amusement before which the turnstile is placed. Line wire 64 is provided with a branch 64^c connected with the other terminal of the lamp 13 and also with a branch 64^b connected with the other terminal of the bell 17. The battery 16 is grounded at 70'.

With the above arrangement, manipulation of the push button 18 will close the battery circuit through line wire 63, 64, energize the cores 53 and attract the armature 54. Attraction of the armature 54 moves actuating arm 39 to connect the half-fare register for operation by the turnstile and also causes finger 67 to contact with plate 68. This contact establishes the following closed lamp and bell circuits: ground 70, finger 67, plate 68, finger 73, wire 74, lamp 13, wire 64^c, wire 64, battery 16 and ground 70'; ground 70, finger 67, plate 68, finger 73, wire 74, wire 74^a, bell 17, wire 64^b, battery 16, and ground 70'. Accordingly, whenever the half-fare register 28 is set for operation by the turnstile, indication will be given by the lamp

and the bell which are simultaneously actuated. Release of push button 18 will open the battery circuit through wires 63 and 64 and permit the spring 42 to return actuating arm 39, disconnect the half-fare register and connect the full-fare register. When the half-fare register is disconnected in this manner, the contact is broken at the points 67, 68, thereby opening the bell and lamp circuits.

What is claimed is:—

1. In turnstile mechanism, the combination with a turnstile, of a registering mechanism adapted to be actuated by an operative stroke of the turnstile, another registering mechanism adapted to be similarly actuated, clutch mechanism movable in opposite directions for connecting a registering mechanism for operation by the turnstile and concurrently disconnecting the other registering mechanism from the turnstile, spring means for moving said clutch mechanism in one direction, and manually controlled connections for moving said clutch mechanism in the opposite direction.

2. In turnstile mechanism, the combination with a turnstile, of a registering mechanism adapted to be actuated by an operative stroke of the turnstile, another registering mechanism adapted to be similarly actuated, clutch mechanism movable in opposite directions for connecting a registering mechanism for operation by the turnstile and concurrently disconnecting the other registering mechanism from the turnstile, spring means for moving said clutch mechanism in one direction, and electrically operated manually-controlled connections for moving said clutch mechanism in the opposite direction.

3. The combination with a turnstile, of a registering mechanism, a pair of clutch members for connecting said registering mechanism for operation by the turnstile, means for positioning said clutch members to permit clutching engagement, and means for effecting such clutching engagement of said members by the movement of the turnstile.

4. The combination with a turnstile, of a registering mechanism, a pair of clutch members for connecting said registering mechanism for operation by the turnstile, a spring adapted to position said clutch members to permit clutching engagement, and means for effecting such clutching engagement of the members by the movement of the turnstile.

5. The combination with a turnstile, of a registering mechanism adapted to be actuated by an operative stroke of the turnstile, another registering mechanism adapted to be similarly actuated, a pair of clutch members for each registering mechanism adapted to connect the latter for operation by the

turnstile, means for manually positioning one pair of clutch members to effect subsequent clutching engagement, spring means for so positioning the other pair of clutch members, and means operated by the movement of the turnstile for effecting clutching engagement of the pair of clutch members previously positioned to effect such clutching engagement.

6. The combination with a turnstile, of a registering mechanism, a pair of clutch members for connecting said registering mechanism for operation by the turnstile, means for positioning said clutch members to permit subsequent clutching engagement of the latter, means for effecting such clutching engagement when the turnstile has accomplished a part of its operative stroke, and means for completing an operating cycle of the registering mechanism independently of the turnstile.

7. The combination with a turnstile, of a registering mechanism, a pair of clutch members for connecting said registering mechanism for operation by the turnstile, means for positioning said clutch members to permit subsequent clutching engagement of the latter, means for effecting such clutching engagement when the turnstile has accomplished a part of its operative stroke, and spring-actuated operating means for completing an operating cycle of the registering mechanism.

8. The combination with a turnstile, of a registering mechanism, a pair of clutch members for connecting said registering mechanism for operation by the turnstile, means for manually positioning said clutch members to permit subsequent clutching engagement of the latter, means for effecting such clutching engagement when the turnstile has accomplished a part of its operative stroke, and means for completing an operating cycle of the registering mechanism independently of the turnstile.

9. The combination with a turnstile, of a registering mechanism, a pair of clutch members for connecting said registering mechanism for operation by the turnstile, means for manually positioning said clutch members to permit subsequent clutching engagement of the latter, means for effecting such clutching engagement when the turnstile has accomplished a part of its operative stroke, and a spring-actuated operating means for completing an operating cycle of the registering mechanism.

10. The combination with a turnstile, of a registering mechanism, a pair of clutch members for connecting said registering mechanism for operation by the turnstile, means for manually positioning said clutch members to permit subsequent clutching engagement of the latter, means for effecting such clutching engagement when the turn-

stile has accomplished a part of its operative stroke, and means releasable when said clutch members are out of clutching engagement with each other for automatically moving said registering mechanism into registration indicating position.

11. The combination with a turnstile, of a registering mechanism, a pair of clutch members for connecting said registering mechanism for operation by the turnstile, means for manually positioning said clutch members to permit subsequent clutching engagement of the latter, means for effecting such clutching engagement when the turnstile has accomplished a part of its operative stroke, and spring-actuated means releasable when said clutch members are out of clutching engagement with each other for automatically moving said registering mechanism into registration indicating position.

12. The combination with a turnstile, of registering mechanism adapted to be actuated by an operative stroke of the turnstile, another registering mechanism adapted to be similarly actuated, a pair of clutch members for each registering mechanism adapted to connect the latter for operation by the turnstile, manually controlled means for positioning one pair of clutch members to effect subsequent clutching engagement and concurrently moving another pair out of such position, means for effecting clutching engagement of a pair of clutch members when the turnstile has accomplished a part of its operative stroke, and means releasable when said clutch members are out of clutching engagement with each other for automatically moving said registering mechanism into registration indicating position.

13. The combination with a turnstile, of registering mechanism adapted to be actuated by an operative stroke of the turnstile, another registering mechanism adapted to be similarly actuated, a pair of clutch members for each registering mechanism adapted to connect the latter for operation by the turnstile, manually controlled means for positioning one pair of clutch members to effect subsequent clutching engagement and concurrently moving another pair out of such position, means for effecting clutching engagement of a pair of clutch members when the turnstile has accomplished a part of its operative stroke, and spring actuated means releasable when said clutch members are out of clutching engagement with each other for automatically moving said registering mechanism into registration indicating position.

14. In turnstile mechanism, the combination with a turnstile, of a main registering mechanism, a second registering mechanism registering lesser values, each registering

mechanism being adapted to be actuated by an operative stroke of the turnstile, signaling mechanism, and electrically operated manually controlled means for connecting said second registering mechanisms for operation by the turnstile, actuating said signaling mechanism, and concurrently rendering inoperative said main registering mechanism.

15. In turnstile mechanism, the combination with a turnstile, of a main registering mechanism, a second registering mechanism registering lesser values, each registering mechanism being adapted to be actuated by an operative stroke of the turnstile, signaling mechanism, electric circuit connections for operating the same, and means for connecting said second registering mechanisms for operation by the turnstile, closing the electric circuit of said signaling mechanism, and concurrently rendering inoperative said main registering mechanism.

16. In turnstile mechanism, the combination with a main registering mechanism, a second registering mechanism registering lesser values, each registering mechanism being adapted to be actuated by an operative stroke of the turnstile, clutch mechanism movable in opposite directions for connecting a registering mechanism for operation by the turnstile, and concurrently disconnecting the other registering mechanisms from the turnstile, spring means for moving said clutch mechanism in one direction to connect the main registering mechanism, signaling mechanism adapted to be actuated with said second registering mechanisms, and manually controlled connections for moving said clutch mechanism in the opposite direction and also actuating said signaling mechanism.

17. In turnstile mechanism, the combination with a main registering mechanism, a second registering mechanism registering lesser values, each registering mechanism being adapted to be actuated by an operative stroke of the turnstile, clutch mechanism movable in opposite directions for connecting a registering mechanism for operation by the turnstile and concurrently disconnecting the other registering mechanism from the turnstile, spring means for moving said clutch mechanism in one direction to connect the main registering mechanism, signaling mechanism adapted to be actuated with said second registering mechanisms, electric circuit connections for operating the signaling mechanism, and manually controlled connections for moving said clutch mechanism in the opposite direction and also closing the circuit of said signaling mechanism.

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