T. CARROLL.

CASH REGISTER.

APPLICATION FILED JUNE 8, 1905.

951,302. **Patented Mar. 8, 1910.**

2 SHEETS—SHEET 1.

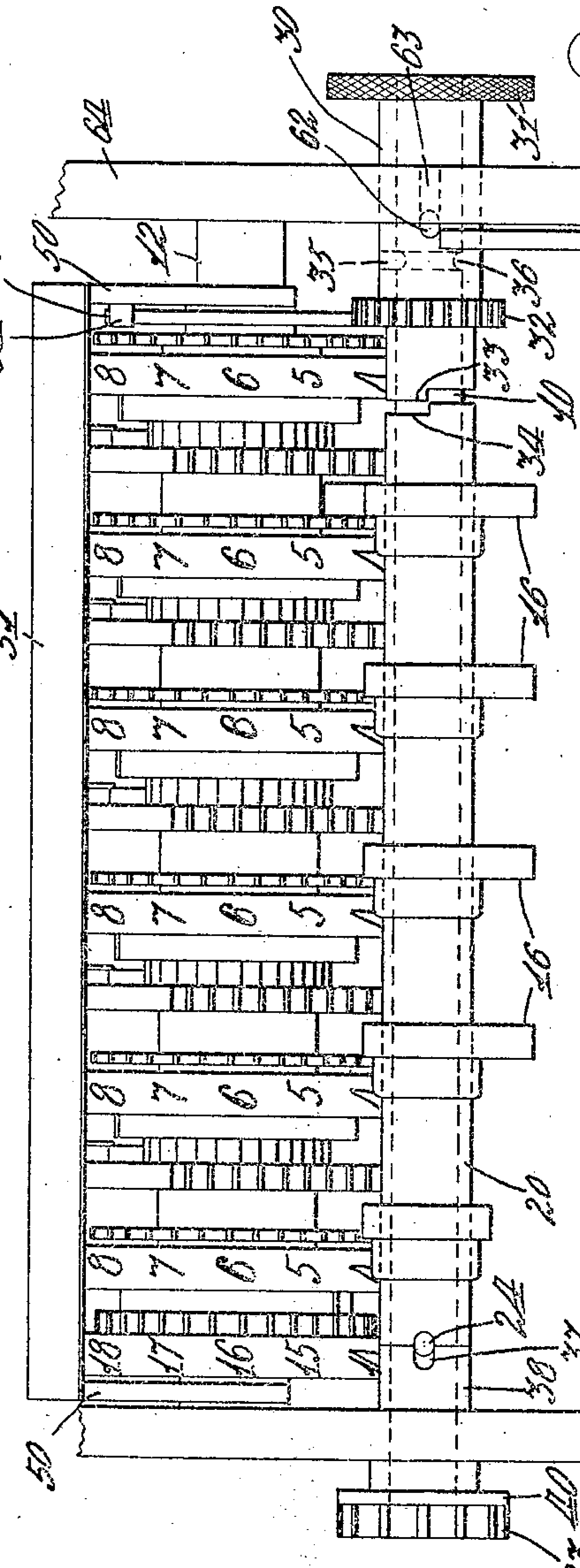

Fig. 1.

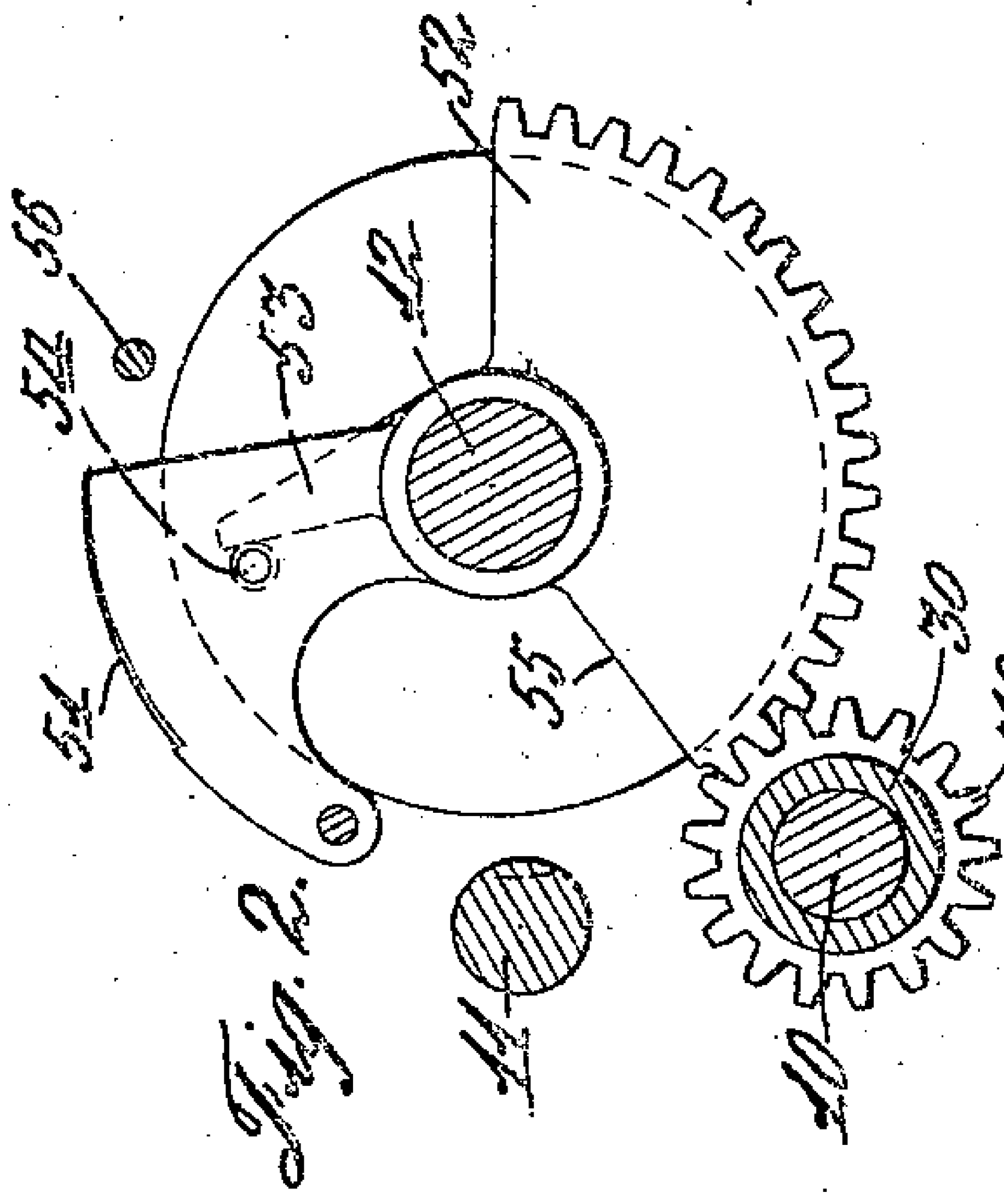

Fig. 2.

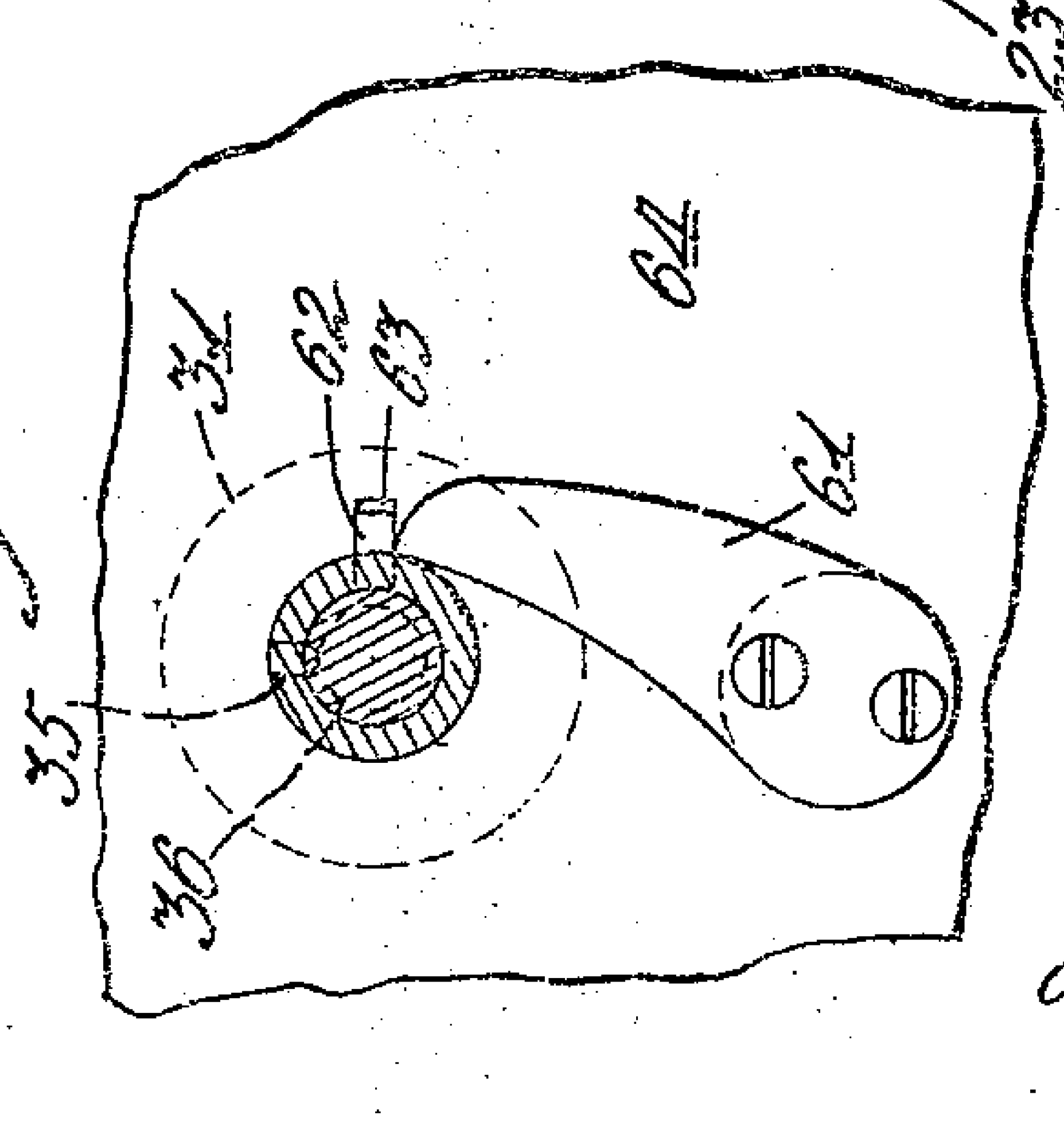

Fig. 3.

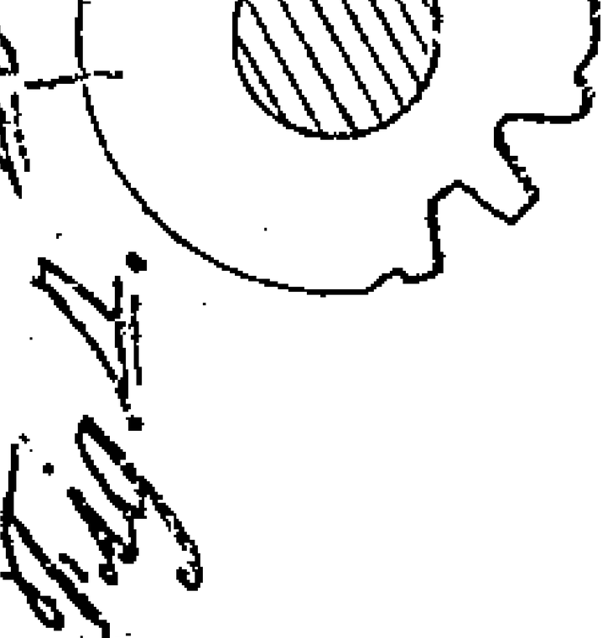

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 5.

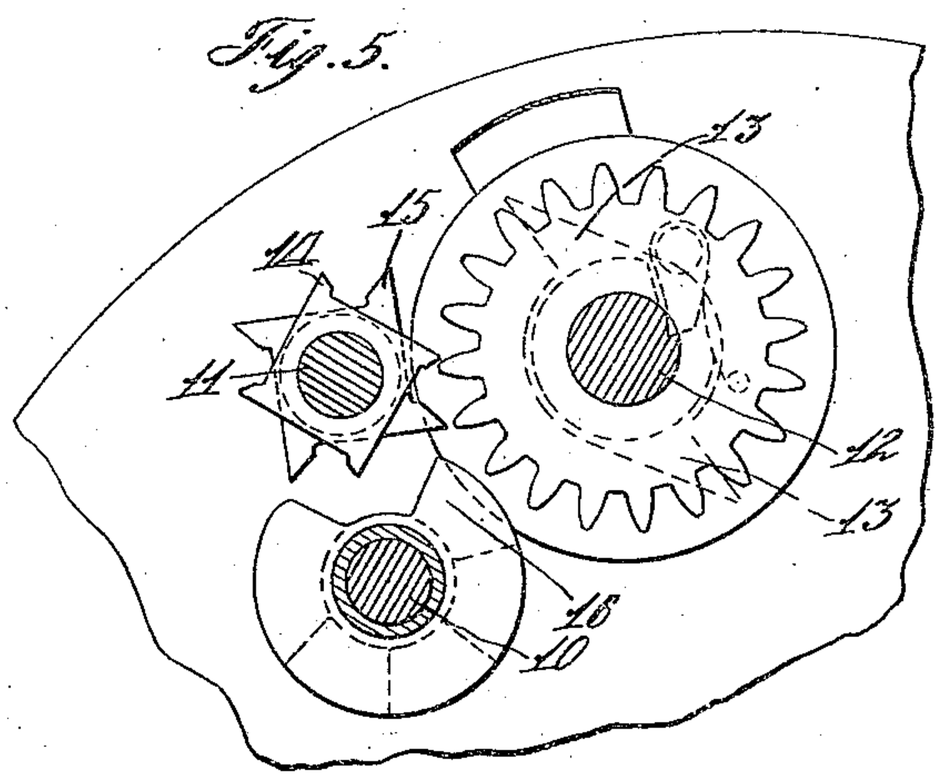
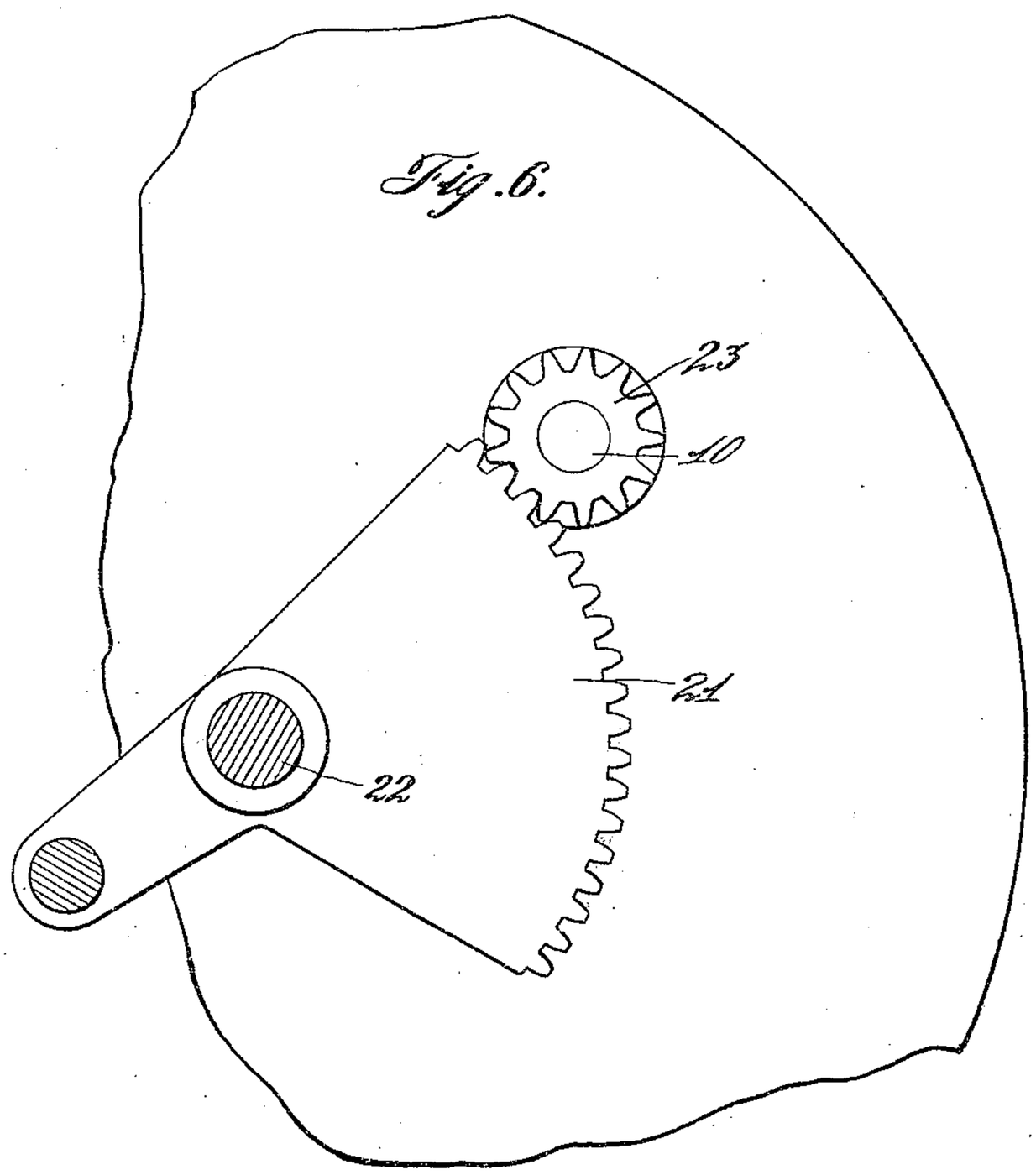


Fig. 6.



Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS CARROLL, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

CASH-REGISTER.

951,302. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed June 8, 1905. Serial No. 264,229.

To all whom it may concern:

Be it known that I, THOMAS CARROLL, 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 Cash-Registers, of which I declare the following to be a full, clear, and exact description.

The present inventions relate more particularly to that portion of the mechanism of cash registers known as the transfer mechanism for the counters and has among its objects to provide improved devices for insuring the accumulations upon the counter of all of the amounts which have previously been entered upon the machine, before the proprietor of the machine may take a reading from the counter. Such a device is particularly applicable to that class of machine wherein the transfers are one operation behind, that is, the transfers which have been tripped in the last transaction are not turned in until the first part of the next operation of the machine, so that if the proprietor should forget to give the machine an extra operation at the end of the day when he desires to take the final reading from the counter, he might thereby secure an erroneous reading from the fact that some of the transfers have not been turned in as above described; and it is the purpose of the present improvements to prevent any such reading of the counter until all the transfers have been turned in.

More specifically stated, the present invention embodies a revoluble transfer controlling member for the registering wheels and means for preventing the counter wheels from being read until this transfer member has been operated to turn in the transfers, and in another aspect, comprises a hand operated means for operating the transfer mechanism which hand operated means also may operate a shutter to expose the registering wheels, these parts being combined with mechanism to compel operation of the transfer devices as an accompaniment to the operation of the shutter.

The present application embodies certain subject matter which is common to two other and co-pending applications filed by the same applicant, of which applications Serial No. 264,411, filed June 9, 1905, will be designated as Case "B", and application Serial No. 264,592, filed June 10, 1905, will be designated as Case "C", and in both of said cases the present application will be referred to as Case "A"; it being intended to claim broadly in this present Case "A" the subject matter which is common to these cases and is claimed specifically in the other two, all three of these cases relating to the same general objects set forth above, but comprising different means for accomplishing the general broad result.

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 preferred forms of embodiment of which are hereinafter specifically described with reference to the drawings which accompany and form part of this specification.

Of said drawings: Figure 1 represents a top plan view of the counter of the machine to which these improvements are applied. Fig. 2 represents a detail view of the counter shutter and gearing for operating the same. Fig. 3 represents a detail view of a part of the locking mechanism. Fig. 4 represents a detail view of a single tooth locking disk. Fig. 5 represents a detail view of one of the counter wheels and its transfer elements, and Fig. 6 represents the gearing for operating the transfer shaft.

These particular improvements are shown as applied more specifically to the counter of a cash register set forth in English Letters Patent issued to Frederick L. Fuller, No. 22535 and bearing application date of October 19, 1904, and reference may be had to said patent for a complete and detailed description of the general construction of the cash register. In this patent an operating lever is first given a complete oscillation back and forth to release any previously depressed keys and store up power in the spring motor and then the desired keys are depressed according to the amount to be registered and finally a special key depressed which effects the release of certain operating segments which move to differential positions determined by the keys and these differential movements are transmitted to the counter. This operation of the machine merely effects the tripping of certain transfer elements and the actual turning in of

these transfers does not take place until the next operation of the operating lever. This being the general operation of the machine as disclosed in the aforesaid patent the particular operation of the parts involving the transfer mechanism and forming part of the present improvements will now be described.

In Fig. 1 the various counter wheels are shown having numerals on their periphery in the ordinary manner, and in front of said counter are two horizontally extending shafts (see Fig. 5) which may be called the transfer operating shaft 10 and a transfer star-wheel shaft 11, the counter wheels themselves being mounted upon the transverse shaft 12. Each counter wheel has fast to it duplicate tripping teeth 13, (there being two of these teeth since the counter wheels bear a double series of numbers and of course two transfers take place at each revolution of the wheel). The tripping tooth 13 of a wheel of lower order strikes the star-wheel 14 when a transfer is to occur, and this star-wheel 14 is by a sleeve connected to a similar star-wheel 15 which when the star-wheel 14 is rocked by the tripping tooth 13 is so rotated as to bring one of its projecting points into the path of its corresponding transfer operating cam 16, so that upon the revolution of such cam it will engage the star-wheel 15 and by revolving the same when it comes in contact therewith will cause this star-wheel to give a unitary transfer movement to the next higher wheel, all as set forth in said patent. These transfer cams 16, are as shown in Fig. 1, spaced along upon a sleeve 20 which is mounted loosely upon the aforesaid shaft 10, there being one transfer cam for each wheel. The normal operation of this transfer shaft 10 is effected by means of a segment gear 21, (see Fig. 6) fast to the driving shaft 22 to which is attached the oscillating operating lever as described in the aforesaid patent, and this segment gear 21 meshes with a pinion 23 fast upon the end of the aforesaid shaft 10. A pin 24 (see Fig. 1) extending upward from the shaft 10 projects into a notch formed on the left hand end of the aforesaid sleeve 20. Thus upon the oscillation of the driving shaft 22 by the oscillating lever, the segment gear 21 rotates the pinion 23 (in this case through nine-tenths of one complete revolution), and this rotates the shaft 10 to a corresponding extent, and also through the pin 24 rotates the sleeve 20 carrying all of the transfer cams so as to turn in the transfers in a manner similar to that described in said patent. A separate hand means however is provided for operating this transfer cam sleeve 20 as will now be described.

Upon the right hand end of the shaft 10 (see Fig. 1) is loosely mounted a sleeve 30 upon one end of which is a knurled knob 31 and near the other end of which is a gear wheel 32 and the extreme end of which sleeve 30 is formed with a projecting portion 33 which is adapted to engage a corresponding cut away portion 34 formed in the right hand end of the sleeve 20 so that when the sleeve 30 is forced to the left these two parts 33 and 34 will couple together so that the rotation of the sleeve 30 by hand will also rotate the sleeve 20 to turn in the transfers in the manner above described. The sleeve 30 also has projecting inwardly from it a pin 35 which engages an annular groove 36 formed in the shaft 10 so that when said sleeve 30 is forced to the left the shaft 10 will also be forced to the left, although of course the shaft 10 may rotate independently of the sleeve 30. This same lateral shifting movement of the shaft 10 will carry the pin 24 (located at the other end of the shaft 10) into the recess 37 formed in a collar 38 mounted loosely upon the shaft 10, so as to permit the turning of the sleeve 20 independently of the shaft 10. Upon the other end of the shaft 10 and adjacent to the aforesaid pinion 23 is a single-toothed locking disk 40 shown in detail in Fig. 4. The pinion 23 is wide enough so as always to remain in mesh with its gear 21 during the lateral shifting movement of the shaft 10 by hand for the purpose of operating the transfer cams by hand as just described, and in such case the single tooth disk 40 is now shifted so far to the left that it engages between the teeth of the gear 21 and thus firmly locks said gear from movement so that the oscillating lever cannot now be moved to return the shaft 10 while the shaft is in this shifted position. The purpose of this lateral shifting of the shaft and the turning of the transfer cams by hand is to raise the counter shutter which normally conceals the counter from being read, and this shutter mechanism and its coöperation with the parts already described will now be set forth.

The shutter comprises two supporting arms 50 which are pivoted upon the aforesaid shaft 12 which carries the counter wheels and these arms have extending between them a bar 51 which acts as a concealing flash or shutter for the counter wheels to prevent their being read. Such a shutter is also shown in the aforesaid Fuller patent but the present improvements relate to controlling means for the shutter connected with the transfer mechanism so as to insure the transfers being turned in before the shutter can be raised to expose the counter wheels. Mounted loosely on the shaft 12 by the side of the right hand arm 50 is a segment gear 52 which meshes with the previously described pinion 32, and extending upwardly from this gear 52 is a shutter restoring arm 53 which engages a

pin 54 projecting from the side of the right hand shutter arm 50. When the knurled knob 31 is turned as previously described, after having been shifted laterally to the left, the consequent turning of the pinion 32 will turn the gear segment 52 and will rotate the same so that its upper edge 55 strikes the said pin 54 and in the continued movement of the gear 52 thereby rocks the shutter arm and entire shutter backward about its pivot thereby raising the shutter to expose the counter wheels, the shutter being normally held in lower and concealing position either by its own weight or by a suitable spring, and being limited in its backward movement by striking against a suitable stop pin 56. On the reverse rotation of the knob 31 and pinion 32, the gear segment 52 returns to normal position and its arm 53 strikes the pin 64 and positively returns the shutter to normal concealing position. Thus it will be seen that the real purpose of the knob 31 is to lift the shutter to permit the counter wheels to be read, and the very turning of the knob to effect this purpose gives sufficient rotation to the transfer cam shaft to turn in all the transfers which had previously been tripped, and during this time the main operating lever is locked from movement.

In order to place the controlling of the knurled knob 31 under the care of the proprietor alone, a lock is provided therefor so that when the key 60 is inserted into this lock and is turned, this will effect the turning of an arm 61 (see Figs. 1 and 3) sufficiently to withdraw said arm from the path of a pin 62 which is fast upon the upper side of the aforesaid sleeve 30, so that thereby the sleeve 30 may be rotated by the knurled knob in the manner described. However in order to compel the lateral shifting of the knurled knob and the consequent shifting of the shaft 10 the pin 62 normally stands within a recess 63 formed in the side frame 64 of the machine so that the knob cannot be turned until the sleeve has been forced to the left far enough to carry the pin 62 out of its recess 63, and thereafter upon turning the knob, the pin moves around upon the inside surface of said frame 64 and of course holds the sleeve 30 in its shifted position, and since this knob and sleeve can have only nine-tenths of a revolution, the knob 31 cannot again be withdrawn to the right to effect the release of the operating lever until it is completely rotated reversely so as to again bring the pin 62 to register with its recess 63, at which time the sleeve 30 will again recede to its normal right hand position either by reason of suitable spring tension or by being laterally shifted by hand, so that the machine then stands in normal condition with the operating lever and driving shaft 22 unlocked.

While the form of mechanism here shown and described is admirably adapted to fulfil 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.

Having thus described my invention what I claim is:

1. In a registering machine, the combination with a series of registering wheels, and a transfer mechanism comprising transfer tripping elements, transfer actuating devices tripped by said elements, and a revoluble transfer operating member for engaging said transfer actuators and turning in the transfers by the revoluble movement of said member; a shutter for concealing said registering wheels; and means for controlling the operation of said shutter by said revoluble transfer operating member.

2. In a registering machine, the combination with a series of registering wheels, of a transfer operating mechanism therefor; a main operating element for the machine with connections for operating said transfer mechanism; hand operated means for operating said transfer mechanism independently of said main operating element; a shutter for said registering wheels; and means connected with said hand operated means for controlling said shutter.

3. In a registering machine, the combination with a series of registering wheels, of a transfer operating mechanism therefor; a main operating element for the machine with connections for operating said transfer mechanism; hand operated means for operating said transfer mechanism independently of said main operating element; a shutter for said registering wheels; and operating connections between said hand operated means and said shutter and also between said hand means and said transfer mechanism, said connections being so constructed that the hand means cannot be operated to raise the shutter to expose said registering wheels without the attendant operation of said transfer mechanism.

4. In a registering machine, the combination with a series of registering wheels, of a transfer operating mechanism therefor; a main operating element for the machine with connections for operating said transfer mechanism; hand operated means for operating said transfer mechanism independently of said main operating element; a shutter for said registering wheels; means connected with said hand operated means for controlling said shutter; and means for locking the main operating element while the hand operated means is being utilized to operate the transfer mechanism.

5. In a registering machine, the combina-

tion with a series of registering wheels, of a transfer operating mechanism therefor; a main operating element for the machine with connections for operating said transfer mechanism; hand operated means for operating said transfer mechanism independently of said main operating element; a shutter for said registering wheels; operating connections between the said operating means and said shutter and also between said hand means and said transfer mechanism, said connections being so constructed that the hand means cannot be operated to expose said registering wheels without an attendant operation of said transfer mechanism; and means for locking the main operating element when the hand operated means is utilized to raise the shutter.

6. In a registering machine, the combination with a series of registering wheels, of a shutter therefor; means for operating said shutter to expose the registering wheels; and an adjustable device for establishing and disestablishing the connection between said shutter and its operating means.

7. In a registering machine, the combination with a series of registering wheels, of a transfer operating mechanism therefor; a shutter for said registering wheels; and an adjustable device for controlling the connection between said shutter and said transfer operating mechanism.

8. In a registering machine, the combination with a series of registering wheels, of a shutter therefor; a gearing having provisions for raising and lowering said shutter; and a pinion adjustable at will for engaging said shutter operating gear to permit the shutter to be operated when desired.

9. In a registering machine, the combination with a series of registering wheels, of a transfer operating mechanism therefor; a shutter for said wheels; a gear for operating said shutter; an adjustable pinion engaging said shutter operating gear; and provisions connected with said pinion to connect the latter with the transfer operating mechanism.

10. In a registering machine, the combination with a series of registering wheels, of a transfer operating mechanism therefor; a shutter for said wheels; a shiftable hand operated means for establishing the connections with said shutter and also with said transfer operating means; and locking means for preventing the operation of said hand operated means until the same has been shifted to establish such connections.

11. In a registering machine, the combination with a series of registering wheels, of a transfer operating shaft therefor; a main operating element for the machine with connections for operating said shaft; a transfer operating collar surrounding said shaft; means for connecting said shaft and said collar; a shutter for said registering wheels; and hand means for operating said collar independently of said shaft and likewise operating said shutter to expose said registering wheels.

12. In a registering machine, the combination with a series of registering wheels, of a shiftable operating shaft therefor; a main operating element for the machine with connections for operating said transfer shaft; a transfer operating collar surrounding said shaft; means for locking said collar to said shaft when the shaft is in one of its shifted positions, whereby to operate the transfer collar by said shaft; a shutter for said wheels; and hand operating means for shifting said transfer shaft to disengage the latter from the transfer collar, and at the same time effect an independent engagement between the said hand operated means and said transfer collar and also between said hand means and said shutter.

13. In a registering machine, the combination with a series of registering wheels, of a shiftable operating shaft therefor; a main operating element for the machine with connections for operating said transfer shaft; a transfer operating collar surrounding said shaft; means for locking said collar to said shaft when the shaft is in one of its shifted positions, whereby to operate the transfer collar by said shaft; a shutter for said wheels; hand operating means for shifting said transfer shaft to disengage the latter from the transfer collar, and at the same time effect an independent engagement between said hand operated means and said transfer collar and also between said hand means and said shutter, and a locking disk intervening between said transfer shaft and said main operating element for locking the shaft when it is shifted.

14. In a registering machine, the combination with a series of registering wheels, of a shiftable transfer operating shaft therefor; a main operating element for the machine with connections for operating said transfer shaft; a transfer operating collar surrounding said shaft; means for connecting and disconnecting said collar and said shaft by the shifting movement of the latter; a shiftable hand operated collar surrounding said shaft and carrying an operating pinion; a shutter for said registering wheels; gearing for operating said shutter; and means for shifting said transfer shaft to break its connection with said transfer collar and at the same time establish a connection between said hand operated collar and said transfer collar when said hand operated collar is shifted to bring its pinion into engagement with the shutter operating gear.

15. In a registering mechanism, the com-

bination with a series of registering wheels, of a rotatable transfer controlling member therefor, manipulative means for operating said transfer member, means for normally concealing said wheels, and connections whereby a manual operation of said manipulative means may withdraw said concealing means and operate said transfer member.

16. In a registering mechanism, the combination with registering wheels, of a rotatable transfer controlling member therefor, a shutter for concealing said registering wheels, means for manually operating said shutter, and devices for connecting said transfer member to said means when said means is to be operated.

17. In a registering machine, the combination with a counter including transfer devices, of a main operating device for same, a shutter for concealing said counter and a manipulative device for operating said transfer devices and moving said shutter.

18. In a registering machine, the combination with a plurality of registering wheels with transfer and operating devices for same, of a shutter for concealing said wheels and means for locking the operating devices and operating the transfer when the shutter is withdrawn from concealing position.

19. In a registering mechanism, the combination with registering wheels, of a rotatable transfer controlling member therefor, means normally preventing said wheels from being read, and manipulative devices for connecting said preventing means and said transfer member when desired, and for operating both said means and said member.

20. In a registering machine, the combination with a series of registering wheels, of a rotatable transfer controlling member therefor, a shutter normally concealing said registering wheels between successive operations of the machine, and means for controlling the operation of said shutter by said rotatable transfer controlling member.

21. In a registering mechanism, the combination with a series of registering wheels, of a revoluble transfer controlling member therefor, means preventing said registering wheels from being read, and devices for connecting said preventing means to said transfer controlling means so that said latter means will operate with said former means.

22. In a registering mechanism, the combination with a series of registering wheels, of a revoluble transfer controlling member therefor, a shutter concealing said wheels, and manipulative means for connecting said shutter to said transfer controlling means so that the operation of said manipulative means will withdraw said shutter and operate said transfer member.

23. In a registering machine, the combination with a series of registering wheels, and a transfer mechanism comprising transfer tripping elements, transfer actuating devices tripped by said elements, and a revoluble transfer operating member for engaging said transfer actuators and turning in the transfers by the revoluble movement of said member; of a shutter for concealing said registering wheels, the concealing position of said shutter being independent of the operation of said transfer actuating devices; and means for controlling the operation of said shutter by said revoluble transfer operating member.

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

THOMAS CARROLL.

Witnesses:
WM. O. HENDERSON,
CARL W. BENST.