M. H. MANN.

REGISTERING MACHINE.

APPLICATION FILED MAY 20, 1915.

1,311,173.

Patented July 29, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

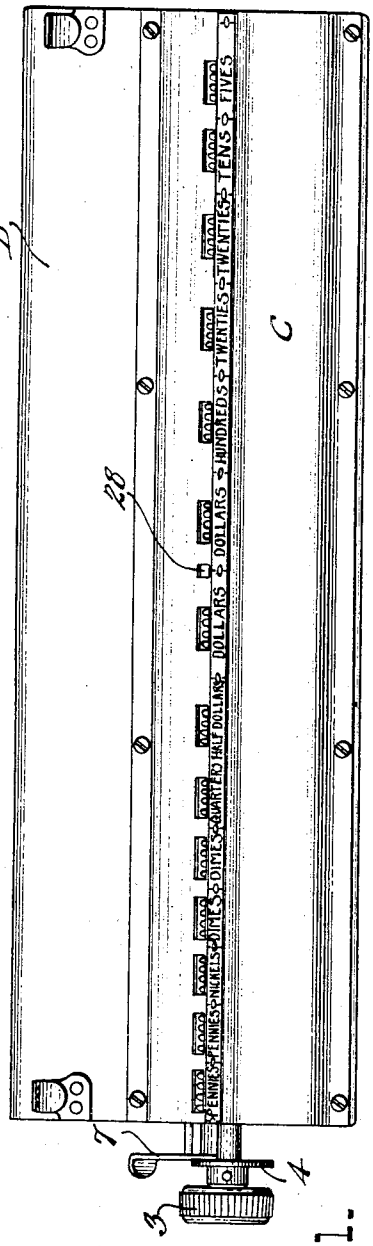


Fig. 2.

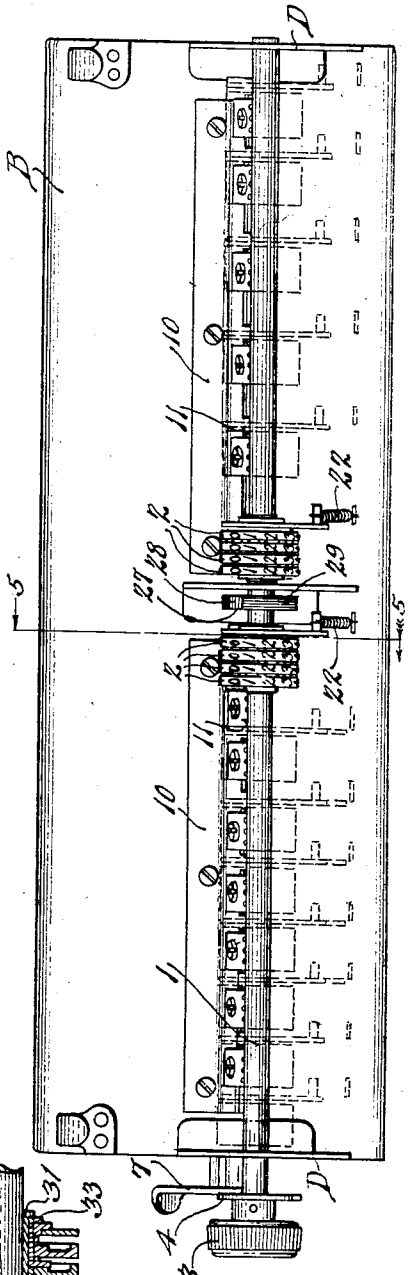
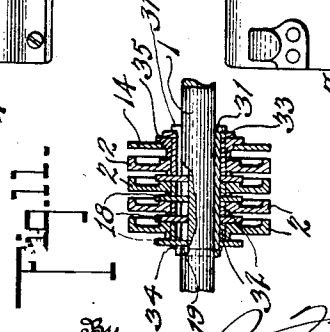


Fig. 11.



Witness

C. H. Wagner.

Inventor

M. H. Mann

By

Attorney

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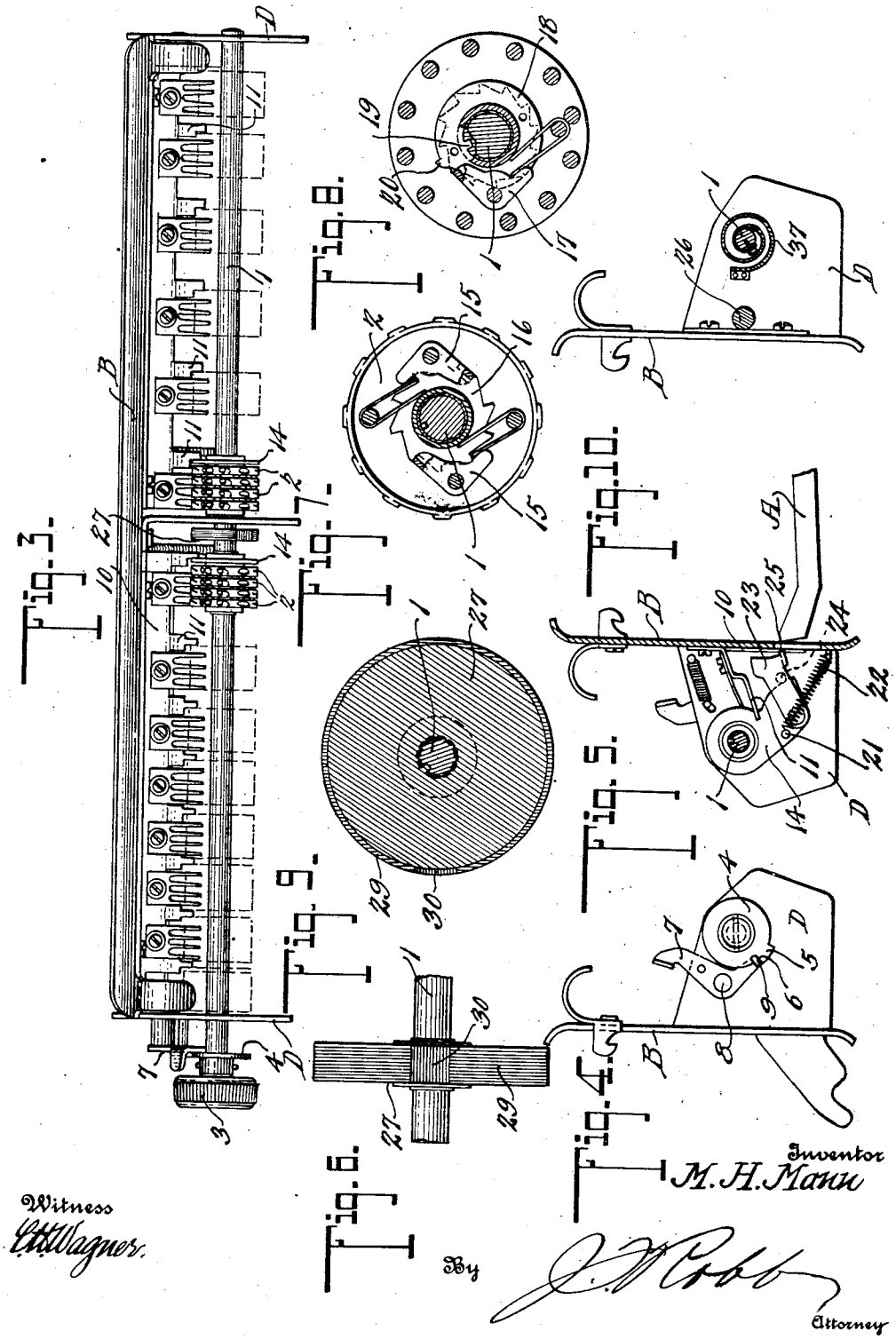


Fig. 3.

Fig. 8.

Fig. 7.

Fig. 10.

Fig. 5.

Fig. 9.

Fig. 4.

Fig. 6.

Witness
C. H. Wagner.

Inventor
M. H. Mann

By

Attorney

UNITED STATES PATENT OFFICE.

MILES H. MANN, OF TERRE HAUTE, INDIANA, ASSIGNOR TO INTERNATIONAL MONEY MACHINE COMPANY, OF TERRE HAUTE, INDIANA.

REGISTERING-MACHINE.

1,311,173. Specification of Letters Patent. Patented July 29, 1919.

Application filed May 20, 1915. Serial No. 29,355.

To all whom it may concern:

Be it known that I, MILES H. MANN, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Registering-Machines, of which the following is a specification.

This invention has relation particularly to that type of registering machines wherein a number of separate and independently operable registers are coaxially mounted, the axis of the registers being preferably a shaft capable of being turned in such a manner as to facilitate the zeroizing of the various registers at will.

One of the primary objects of the invention has been to provide a special form of indicator for advising the operator when the various wheels of the register have been zeroized and the zeroizing shaft returned to its normal position, in which position it must be in order to insure a proper operation of the registers.

The registering mechanism of the invention is also organized with a special view to facilitating the assemblage of the different registers upon the common shaft supporting the same. In effectuating this particular result the individual registers are constructed in units such that they may be readily placed each as a unit upon the zeroizing and supporting shaft, as well as displaced in like manner therefrom should occasion require.

The invention includes other details of construction in respect to the provision of means to prevent overrunning of the registering wheels and similar structural features, all with a view to rendering the whole mechanism very effective and reliable in operation.

In the accompanying drawings:—

Figure 1 is a front view of a register embodying the invention.

Fig. 2 is a similar view, the front plate of the register being removed so as to show several of the individual registering units, others being omitted to avoid unnecessary repetition.

Fig. 3 is a view similar to Fig. 2 looking downward upon the registering devices.

Fig. 4 is an end view of the mechanism showing the zeroizing shaft lock and stop, the handle being removed.

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 2.

Fig. 6 is an enlarged view showing more clearly the zero indicator.

Figs. 7 and 8 are detail views showing respectively the actuating devices intermediate each register operating lever member and the transfer and zeroizing means intermediate the registering wheels.

Fig. 9 is a detail sectional view of the indicator wheel on its shaft.

Fig. 10 is a view showing more particularly the spring means employed to normalize the shaft 1.

Fig. 11 is a detail sectional view of one of the register units.

The registering mechanism of the invention is preferably designed to be associated with money paying machines and is therefore shown in the form of an attachment capable of being mounted in a suitable manner upon a money paying machine wherein ejectors A are utilized to eject coins from the machine. An ejector A is adapted to constitute an actuator, associated with each of the registers forming a part of the registering mechanism. Since, however, the invention is not restricted to the above special use and can be used in many of the ordinary ways in which similar mechanisms are employed, the particular actuating means utilized for the various registers is immaterial within the purview of the invention.

B designates a supporting or back plate of the register casing C and said plate is provided with suitable openings through which the ejectors A may operate. In the ends D of the casing C are provided suitable bearing openings supporting the main shaft 1 on which the various registers are mounted. The registers may be of any conventional type and each register comprises registering wheels, preferably four in number and consisting of the usual units, tens, hundreds and thousands wheels. The number of the wheels 2 is immaterial and they may be varied according to the desired capacity of the mechanism. On one end the shaft 1 carries a handle 3 to be grasped and turned for zeroizing purposes and adjacent to the handle is a locking and stop disk 4 having a stop 5 and a notch 6. A locking lever 7 is pivoted on a stud 8 and is provided with a finger piece at one end and a lug 9 at its other

end, said lug 9 being engageable with the stop 5 and adapted to enter the notch 6 when the parts are at normal. Secured to the plate D are the angle plates 10 having the offstanding arms 11. Attached to the angle plates 10 are comb-like detents 12 comprising offstanding curved spring fingers the outer portions of which are adapted to engage projections on the registering wheels with a light detaining contact, and to thereby prevent overrunning of the registering wheels in a manner obvious to those skilled in this particular art. Associated with each register on the shaft 1 is an actuating device in the form of a lever member 14. Said lever member is pivoted to the shaft 1 and is provided on one side thereof with spring actuated pawls 15 engaging a ratchet 16 formed on the adjacent side of the units registering wheel 2 in a depression in said side of the wheel. Thus it is that each time a circumscribed pivotal movement is imparted to the lever 14 one increment of movement at least will be imparted to the units registering wheel 2 associated therewith. The movement of the units registering wheel 2 of each register is adapted to be transmitted to the tens wheel by suitable carry-over devices and while those illustrated need not be employed, the same comprise a pawl 17 on the side of the units wheel opposite the ratchet 16, the nose of said pawl operating on a cam 18 at the adjacent side of the tens wheel, which cam is locked to the shaft 1 by the projection 19 thereof entering a groove in the shaft. The cam 18 normally holds the nose of the pawl 17 out of engagement with a suitable ratchet 16 with which the tens wheel is provided but the periphery of the cam 18 is flattened at a certain point, namely at the point where it is desired that the carry-over from the units wheel 2 to the tens wheel 2, take place. The flattened portion of the cam permits the nose of the pawl 17 to engage the ratchet 16 and for the space of one-tenth of a revolution the tens wheel will be compelled to rotate with the units wheel, this representing the process of transferring from one to the other, and all of which is a conventional and well known expedient in this art.

The same means is employed to effect transfer intermediate the registering wheels of higher orders than those mentioned. The cam 18 is furthermore provided on its periphery with a lug 20 adapted by rotation of the shaft 1 to engage the pawl 17 carried by each registering wheel, so that the movement of the shaft 1 may result under proper actuation in the restoring of the various registering wheels to zero. Each of the lever members 14 has a pin 21 with which a spring 22 is connected, said spring being attached also to the back plate B and the action of the spring being to hold the lever member in its normal position ready to be moved to complete an increment of movement of the units registering wheel with which it is in direct coöperation. Pivoted to the lever member 14 is an actuating plate 23 formed with a lateral stud 24 engaging the lower innermost edge of the member 14 to limit the downward movement of the plate. At its inner end each plate 23 has a projection 25 adapted to be engaged by its ejector A, or whatever other operating device may be employed to act upon each plate 23 for performing registering operations. The point of pivotal connection intermediate the parts 14 and 23 is such that comparatively little power is acquired to swing the lever member 14 outward and cause the accumulating action of the registering wheels thereby. Preferably the said point of pivotal connection is located as far away from the axis of the lever member as is practicable in the limited compasse of space. Some of the lever members 14 may have two projections 25 located different distances from the operating members A, under which conditions the latter may be controlled to cause the lever member equipped with such projections to impart one increment of movement to the registering wheels or two increments as conditions may require. It is to be noted that the ends D of the casing C support a rod just beneath the angle plates 10 and the upper rear ends of the actuating plates 23 are normally seated against said rod which forms a stop therefor. Furthermore the arms 11 of the angle plates form guides or riding surfaces with which the plates 23 contact as they are shifted back and forth to impart movement to the lever members 14.

Having in view the foregoing it is to be understood that when it is desired to zeroize the various registers after the use of the registering mechanism to accumulate upon the registers according to various transactions of said mechanism, the locking lever 7 will be depressed to disengage the same from the notch 6. This done the handle 3 will be given a nine-tenths of a revolution in a contra-clockwise direction. Under ordinary conditions the various registering wheels 2 will be restored to zero by such operation but the cams 18 will be improperly positioned to enable the registers to start their registering operations and therefore the shaft 1 must be returned said nine-tenths of a revolution to its normal position to normalize the cams 18 in respect to the carry-over pawls 17 and this done the locking lever 7 will reëngage with the notch 6 and lock the shaft 1 at normal. It has been found that through inadvertence or oversight an operator will occasionally forget to return the shaft 1 to its normal position, he being misled by the fact that the preliminary movement of the shaft zeroizes the various

registers bringing the ciphers on the registering wheels to the vision points of the casing C. To provide against oversight in this connection and therefore improper operation of the mechanism it is contemplated to pin or otherwise secure upon the shaft 1 an indicating disk or wheel 27. The periphery of this wheel is characterized by the provision thereon of indicia adapted to show at a vision opening 28 of casing C and indicating when the shaft 1 is at normal with the registers zeroized, or in an abnormal position with the wheels 2 not ready for operation after the zeroizing has been performed. For the above purpose the indicating wheel 27 is provided as shown in Fig. 6 with a sign 29, preferably a surface portion of red color adapted to assume a position in front of the vision opening 28 when the shaft 1 has been turned by the handle 1 to any position other than normal during the nine-tenths of a revolution in a contra-clockwise direction to zeroize the various registers. This will indicate to the operator that the shaft 1 has not been set at normal and is practically a danger signal. On the other hand, the wheel 27 will be provided with a safety sign 30, as for instance a block of blue or other color that may be determined as most preferable and which will assume a position in front of the vision opening 28 when the registers have been zeroized and the shaft 1 restored to its normal locked position in which it is held by the locking lever 7. Of course when the shaft is at normal or locked position the operator is assured that there is no liability of accidental rotation of the same by movement of the handle 3 or of sticking of any individual registering wheel to the shaft, which sticking might cause rotation of the shaft and all the registering wheels if the restoring of the shaft to its locked position is overlooked.

Under these conditions about nine-tenths of the periphery of the indicating wheel 27 will bear the surface color red while one-tenth, brought to view at the normal position of the shaft 1, will have the safety sign color block blue. It will be clear that different signs may be employed for the purpose in view and to illustrate such an expedient nine signs "X" may be provided on the periphery of the wheel and the safety designation "S", the latter appearing at the safety position of the shaft 1. It is not desired, therefore, to be limited to any special signaling or indicating means in connection with this feature of the invention.

It is to be noted by reference to Fig. 11 that each of the registers on the shaft 1 is a unit to the extent that its registering wheels are all supported by a split sleeve 31 on which said wheels are loosely disposed. The cams 18 for the wheels are likewise carried by the sleeve 31 and have their projections 19 extending through the split portion of the sleeve to engage with the groove of shaft 1. On the sleeve 31 is a bushing 32 also, and a locking spring 34 is seated in a groove surrounding one end of the sleeve 31 and prevents displacement of the various parts mounted thereon, the same being held between the spring and the flange 31′ of the sleeve. The lever member 14 is directly mounted thereon by being riveted to the hub 35 rotatable on the bushing 33, the latter carrying the lever member 14 and the units wheel 2 as well. The outer end of the bushing 33 is upset or flanged. Spacers 32 are located on the sleeve 31 between the cams 18 of the tens, hundreds and thousands wheels 2, and said wheels are loosely mounted thereon. It will be apparent from the foregoing that each registering device comprising the several registering wheels 2, lever member 14, sleeve and bushing parts 31 and 32 may be removed bodily or applied bodily to the shaft 1 as a unit.

It is contemplated also that the shaft 1 may be provided with an automatic means to normalize the same, in the form of a helical spring 37 attached at one end to the shaft and at the other end to the casing. By the use of said spring 37 after the operator has turned the shaft 1 in the clearing or zeroizing operation the shaft will automatically return to normal.

Having thus described the invention, what is claimed is:—

1. In registering mechanism of the class described, the combination of a shaft, registering means controlled by said shaft, means for effecting registering action of the registering means by movement thereof relatively to the shaft, a locking device for the shaft, means to turn the shaft when unlocked for clearing the registering means, a casing inclosing said parts and having a vision opening, and an indicating member operative by said shaft incident only to its movement for clearing the registering means and when being restored, said member being provided with indicia normally visible opposite said vision opening and indicating that the shaft is in its normal locked position, and also having indicia different from that above referred to adapted to be seen through the vision opening whereby to advise an operator when said shaft is not in its restored normal or locked position, as when moved for clearing the registering means.

2. In registering mechanism of the class described, the combination of a casing, a shaft mounted thereon, a lock holding the shaft in a normal position, registering means on said shaft, means other than the shaft to operate the registering means in one direction, means to turn the shaft to clear the registering means by movement in an opposite direction, means intermediate the shaft

and the wheels of the registering means to cause clearing of the registering means incident to turning the shaft, and an indicating wheel mounted on the shaft for movement therewith and having means whereby to indicate when the shaft is in its locked normal and unlocked abnormal positions.

3. Registering means of the class described comprising a shaft, registering wheels, transfer mechanism intermediate said wheels, a lever mounted on the shaft and adapted to operate one of said registering wheels, an actuating plate pivoted to the lever, and an operating device adapted to engage said actuating plate to impart relative oscillatory movement to the lever and plate and to thereby cause registering action of the lever.

4. Registering means of the class described comprising a registering wheel, a lever mounted on the shaft and adapted to operate said registering wheel, a spring connected with said lever for holding the same in a predetermined position, an actuating plate pivoted to the lever, a stud projecting from said actuating plate and engageable with the free end portion of the lever whereby to limit certain relative movement of the lever and actuating plate, and an operating device associated with the registering mechanism and comprising a part adapted to engage and move the actuating plate whereby to impart rocking movement to said lever.

5. Registering means of the class described comprising a shaft, registering wheels, transfer mechanism intermediate said wheels, a lever mounted on the shaft and adapted to operate one of said registering wheels, an actuating plate pivoted to the lever, an operating device adapted to engage said actuating plate to impart relative oscillatory movement to the lever and plate and to thereby cause registering action of the lever, and means normally holding the plate relatively to the lever such that the effective lever arm of the latter remains substantially constant.

6. Registering means of the class described comprising a shaft, registering wheels, transfer mechanism intermediate said wheels, a lever mounted on the shaft and adapted to operate one of said registering wheels, an actuating plate pivoted to the lever, an operating device adapted to engage said actuating plate to impart relative oscillatory movement to the lever and plate and to thereby cause registering action of the lever, and means intermediate the plate and lever for normally holding the plate relatively to the lever such that the effective lever arm of the latter remains substantially constant.

7. Registering means of the class described comprising a shaft, registering wheels, transfer mechanism intermediate said wheels, a lever mounted on the shaft and adapted to operate one of said registering wheels, an actuating plate pivoted to the lever, an operating device adapted to engage said actuating plate to impart relative oscillatory movement to the lever and plate and to thereby cause registering action of the lever, means intermediate the plate and lever for normally holding the plate relatively to the lever, such that the effective lever arm of the latter remains substantially constant and limiting the movement of the plate in one direction, and separate means to limit the movement of the plate in an opposite direction when relative movement of the lever and plate takes place.

8. In a registering mechanism of the class described the combination of a shaft, a register thereon, operating means for the register including a lever pivoted to said shaft, means located close to the axis of said lever coöperative with the register for the operation of the latter from the lever, an actuating plate pivotally connected with the free or outer end of the lever, means to maintain said plate in a position free to oscillate with and relatively to the lever, and an operating device capable of impinging said plate to impart to the lever its register actuating movement.

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

MILES H. MANN.

Witnesses:
RUTH TURSCHER,
MABEL BEAVER.