No. 876,635. PATENTED JAN. 14, 1908.

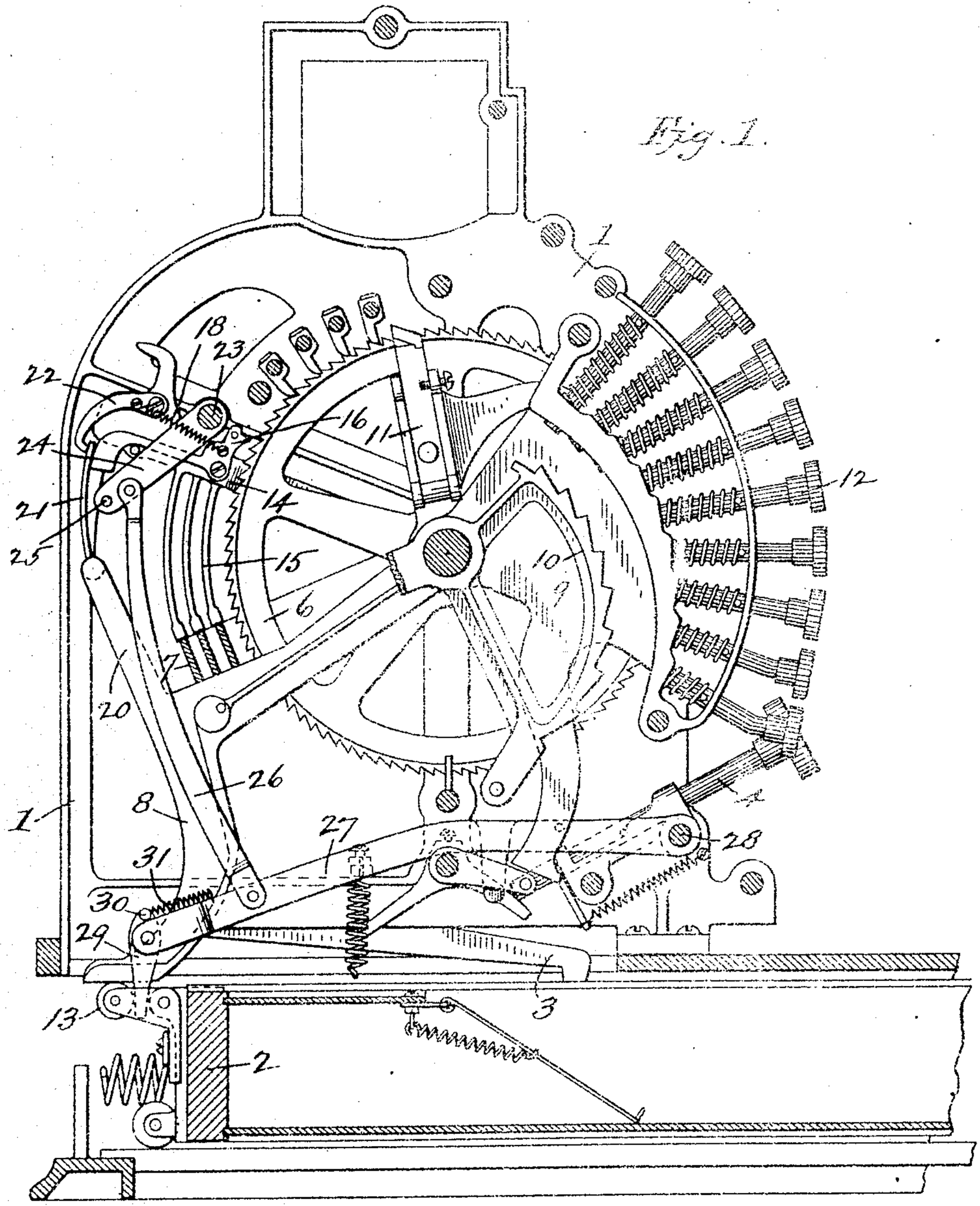
H. S. HALLWOOD.

CASH REGISTER.

APPLICATION FILED MAR. 9, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:-

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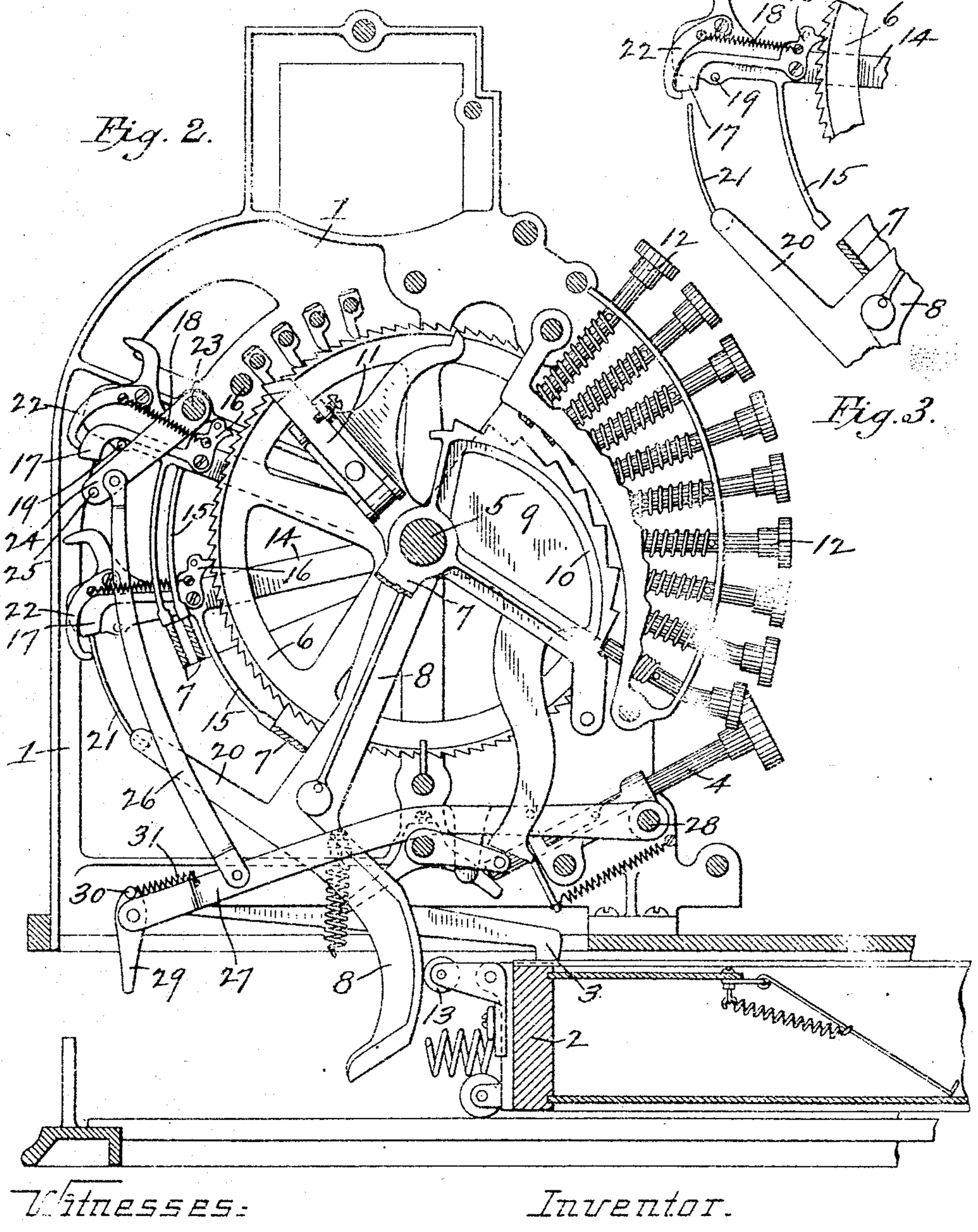
2 SHEETS—SHEET 2.

Fig. 2.



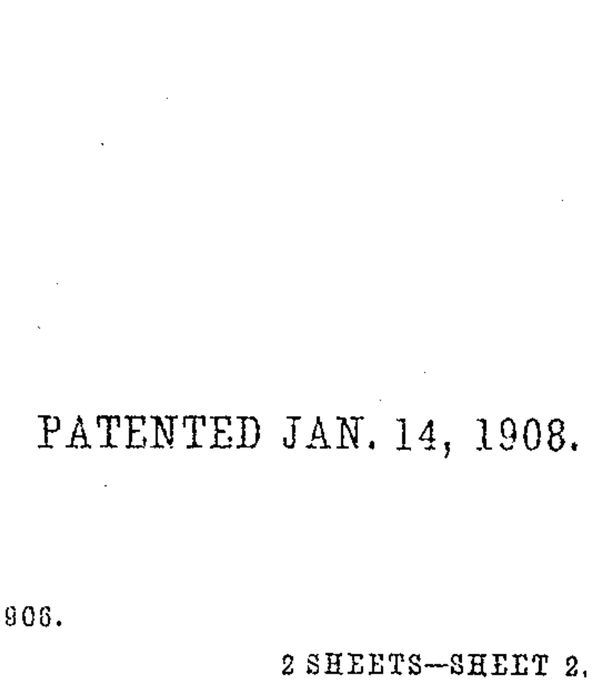


Fig. 3.

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UNITED STATES PATENT OFFICE.

HENRY S. HALLWOOD, OF COLUMBUS, OHIO, ASSIGNOR TO THE INTERNATIONAL REGISTER COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF OHIO.

CASH-REGISTER.

No. 876,635. Specification of Letters Patent. Patented Jan. 14, 1908.

Application filed March 9, 1906. Serial No. 305,036.

To all whom it may concern:

Be it known that I, HENRY S. HALLWOOD, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Cash-Registers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to cash registers, and it has for its objects the improvement of the constructions shown, for example, in the patent to Emary, No. 750,272 or in my application, Serial No. 711,329. In each of said constructions, the register operating pawls are maintained in locked engagement with the adding wheels during their advance movement, and are left locked to the said wheels when the drawer is closed. In my present invention, these pawls are unlocked from the adding wheels at this time, and are, in fact, locked into the wheels only in case an attempt is made to cause the said wheels to overthrow. The mechanism for accomplishing this result is illustrated in the accompanying drawing, in which

Figure 1 is a transverse sectional view through a cash register, such as is shown in the aforesaid patent and application, showing the cash drawer closed and the parts in their normal positions; Fig. 2 is a view similar to Fig. 1 except that the drawer is just starting on its closing movement, and one of the pawls has been moved into engagement with the corresponding adding wheel; and Fig. 3 shows the position the adding pawls assume in case it is attempted to cause the adding wheels to overthrow, the pawl then being locked to the wheel.

In some constructions of cash registers manufactured by me, difficulty was experienced in having the adding wheels overthrown by violently hammering on the cash drawer, in some instances when the drawer was opening, and, in others, when the drawer was closing. It was for the purpose of overcoming this difficulty that the forms of overthrow preventers shown in the said patent and application as well as in the present case were devised.

Referring now to the drawings, in which the same reference characters designate the same parts throughout the different views, 1 represents one of the side frames of the cash register, between which and its corresponding frame, not shown, the operating parts of the register are supported.

2 is the cash drawer, which is mounted to slide in the lower part of the frame, said drawer furnishing the primary means for operating the machine, as will hereinafter appear. The drawer is normally held in closed position by means of a latch 3, said latch being under control of the release key 4. As these parts are common in machines of this type, and are fully set forth in the patent and application above referred to, it is not deemed necessary to describe the same any more fully herein.

5 is the main shaft which passes centrally through the machine, and upon which are supported the registering wheels, the operating yokes 7, the main operating bar or lever 8, and the detent plates 9. The yokes 7 are each provided with eccentric stepped segments 10, and the main operating lever 8 is also provided with transfer operating mechanism 11. In the front of the machine are vertical rows of keys 12, there being a row of keys for each one of the stepped segments 10, said keys being adapted when depressed, to project within the plane of movement of their corresponding stepped segment, and to arrest the latter in the position corresponding to the value of the depressed key.

With the exception of the main operating lever, the parts above referred to are common in machines of this type, and reference may be made to the above named patent and application for a more specific disclosure thereof. In said patent and application, the main operating lever 8 is shown as being connected with a main yoke which extends round about the yokes 7. In my present invention, no main yoke is employed, but the lever proper is journaled at one end upon the central shaft 5, and rests with its opposite end upon a roller 13 that is carried by the drawer 2. The main lever forms a support for the yokes 7 when the drawer is in closed position, and it also forms a means for returning these yokes to normal position while the drawer is closing. Also pivoted upon the main shaft 5, and alternating with the registering wheels 6, are pawl-carrying

arms 14, said arms projecting rearwardly for some distance beyond the peripheries of the adding wheels. The yokes 7 are nested one within the other, and the pawl carrying levers are each provided with stems 15 which are adapted to rest upon these yokes, whereby the movement of the pawl carrying levers is controlled by the yokes.

Pivoted to the levers 14 directly back of the registering wheels are operating or actuating pawls 16, said pawls being adapted to engage with the teeth of the registering wheels, whereby the latter are turned as the pawl carrying arms are lifted during the closing movement of the drawer. As is shown in the patent to Emary, above referred to, these operating pawls are each provided with weighted extensions 17, whereby the pawls are normally held out of engagement with the registering wheels, springs 18, one for each pawl, assisting in disengaging the pawls from the wheels. In order to prevent the pawls from swinging too far in their movement away from the wheels, the pawl carrying arms 14 are each provided with a pin 19 that projects into the plane of the weighted arm 17 of the corresponding pawl and forms a stop therefor.

As will be understood, when the main operating lever 8 is swung upwardly, it picks up the yokes 7 and carries them back to normal position, said yokes lifting the pawl carrying arms by means of the stems 15. Means must be provided for causing the operating pawls to be thrown into engagement with their corresponding registering wheels before the pawl carrying arms start on their upward movements. For accomplishing this result, I connect with the main operating lever 8 an extension 20 which carries an upwardly projecting spring plate 21, said plate being adapted to engage with the rearward ends of the weighted arms 17 on the operating pawls, and to swing said pawls into engagement with the adding wheels prior to the beginning of the movement of the pawl carrying levers. Fig. 2 shows one pawl carrying lever being returned to normal position, and also shows the manner in which the operating pawls are thrown into engagement with the registering wheels by the plate 21. If, with the parts in the position thus shown, the drawer 2 should be struck a violent blow, the main lever, the yokes 7, the pawl carrying arms and the adding wheels would be given such a shock that the latter would be liable to be overthrown, unless some means were provided to prevent such operation. With this end in view, I pivot to each of the pawl carrying arms 14 at the rear of and above the operating pawls, a detent pawl 22, said detent pawl being connected with its corresponding operating pawl by the spring 18, heretofore referred to, said spring tending to throw the lower end of the detent pawl forwardly. Fig. 1 shows these detent and operating pawls in their normal positions from which it will be seen that they are normally separated by the upper edge of the spring plate 21.

When the drawer is opened and the main operating lever descends, the plate 21 is drawn away from between the pawls, and the hook on the detent pawl rests against the rear edge of the weighted arms 17, as shown in the upper part of Fig. 2. As the main lever returns, the plate 21 engages with the rear end of the weighted arm and lifts the same into the position shown in the lower part of Fig. 2, where the lower edge of the weight is substantially in line with the lower surface of its pawl carrying arm. When thus lifted, the detent pawl 22 snaps forwardly, bringing its hooked end in such position that, when the parts are overthrown, as shown in Fig. 3, the detent pawl will catch the weighted arm of the operating pawl and prevent the latter pawl from disengaging fully from the registering wheel. It will thus be seen that the detent pawl has no effect upon the operating pawl unless the parts are overthrown, as hereinbefore stated.

When the parts are returned to normal position, as is shown in Fig. 1, I desire to unlock the operating pawls from the registering wheel. In order to do this, the spring plate 21 must be thrown backwardly away from the actuating pawls, and the detent pawls 22 must also be thrown out of operative relation with the actuating pawls. Just prior to the end of the closing movement of the cash drawer, the relative positions of the spring plate 21, the operating pawls and the detent pawls are shown in the lower part of Fig. 2. In order to push the said plate 21 rearwardly so as to unlock the registering wheels, I pivot upon a rod 23, an arm 24, said arm extending downwardly and rearwardly, and carrying at its free end a pin 25 that projects in front of the plate 21, when the drawer is substantially closed. The arm 24 is lifted at the end of the closing movement of the drawer through the medium of a link 26 that is connected at its upper end to the arm 24 and at its lower end to a lever 27. This lever is pivoted to a cross rod 28 in the front part of the machine, and extends rearwardly to a point just in front of and above the roller 13 on the cash drawer, when the latter is closed. At its rear end the lever is provided with a pivoted by-pass pawl 29, said pawl extending downwardly so as to normally project in front of the roller 13, as shown in Fig. 1. The upper end of the pawl 29 is provided with a pin 30 that projects over the upper edge of the lever 27, and a spring 31 draws the end of the pawl forwardly so as to normally maintain contact between the pin 30 and the lever. From this description, it will be understood that when the drawer is open,

the pawl 29 will simply rock upon its pivot as the roller passes under the same, which will not lift the lever 27; but when the drawer is returned, the roller will push against the forward edge of the pawl 29, which will cause the lever to rock upon its pivot 28 and thrust upwardly on the link 26, thereby rocking the arm 24 and causing the pin 25 to push the plate 21 rearwardly until the parts assume the position shown in Fig. 1. As soon as the roller 13 has passed beyond the pawl 29, the latter will drop in front of the roller, which will permit the arm 24 to assume its original position, with the pin 25 out of contact with the plate 21.

While I have necessarily shown a specific mechanism for accomplishing the results herein set forth, I desire it to be understood that I do not intend to limit my claims to such mechanism any further than is made necessary by the specific terms employed therein or by the prior state of the art.

I claim:

1. In a register, an adding member, a pawl for moving said member to cause the same to add, mechanism for moving said pawl, and means for preventing the overthrow of said member, said means becoming operative only when an attempt is made to produce overthrow of the member and before the pawl has come to rest at the end of its operative stroke.

2. In a register, an adding wheel, a pawl for turning said wheel, mechanism for moving said pawl, and means for preventing the overthrow of said wheel, said means become operative only when an attempt is made to produce overthrow of the wheel and before the pawl has come to rest at the end of its operative stroke.

3. In a register, an adding wheel, a member engaging and turning said wheel, and means for preventing the overthrow of said wheel, said means being adapted to engage said member and lock the same to the wheel only when attempt is made to produce overthrow and before the member has come to rest at the end of its operative stroke.

4. In a register, an adding wheel, a pawl engaging and turning said wheel, mechanism for moving said pawl, and means for preventing the overthrow of said wheel, said means being adapted to engage said pawl and lock the same to the wheel only when attempt is made to produce overthrow and before the pawl has come to rest at the end of its operative stroke.

5. In a register, a toothed adding wheel, a pawl for engaging the teeth of said wheel, mechanism for moving said pawl, and means for locking the pawl to said wheel, said means becoming effective only when an attempt is made to produce overthrow of the wheel and before the pawl has come to rest at the end of its operative stroke.

6. In a register, a toothed adding wheel, a pawl for engaging the teeth of said wheel, mechanism for moving said pawl, and a detent for locking the pawl to said wheel, said detent becoming effective only when an attempt is made to produce overthrow of the wheel and before the pawl has come to rest at the end of its operative stroke.

7. In a register, a toothed adding wheel, a pawl-carrying arm, a pawl on said arm for engaging the teeth of the adding wheel, and a detent for said pawl carried by the said arm adapted to engage the pawl and lock it into engagement with the adding wheel, said detent becoming operative only when attempt is made to produce overthrow of the adding wheel and before the pawl has come to rest at the end of its operative stroke.

8. In a register, a toothed adding wheel, a pawl-carrying arm, a pawl on said arm for engaging the teeth of the adding wheel, and a detent for said pawl carried by the said arm, said detent having a hooked end that is adapted to engage the pawl and lock it into engagement with the adding wheel, said detent becoming operative only when attempt is made to produce overthrow of the adding wheel.

9. In a register, a toothed adding wheel, a main operating member, a pawl-carrying lever that is moved in one direction by the said main operating member, a pawl on the pawl-carrying lever for engaging with and turning the adding wheel, means on the main operating member for engaging with the pawl and throwing the same into engagement with the wheel, and a detent carried by the pawl-carrying lever and adapted to engage the pawl and lock the same into the teeth of the wheel only when attempt is made to overthrow the adding wheel.

10. In a register, a toothed adding wheel, a main operating lever, a pawl-carrying lever that is moved in one direction by the said main operating member, a pawl on the pawl-carrying lever for engaging with and turning the adding wheel, said pawl having a rearward extension, means on the main operating member for engaging with the extension on the pawl whereby the pawl is locked into engagement with the wheel, and a detent carried by the pawl-carrying lever and adapted to engage the extension on the pawl only when attempt is made to overthrow the adding wheel.

11. In a register, an adding wheel, a pawl-carrying arm pivoted co-axially with the said wheel, a pawl on said arm adapted to engage and turn the wheel, a detent mounted on the arm and extending rearwardly of the pawl, said detent being adapted to engage the pawl to lock it to the wheel only when an attempt is made to produce overthrow of the wheel and before the pawl has come to rest at the end of its operative stroke.

12. In a register, an adding wheel, a pawl-carrying arm pivoted co-axially with the said wheel, a pawl on said arm adapted to engage and turn the wheel, said pawl having a rearward extension, a detent mounted on the arm and extending rearwardly of the pawl, said detent being adapted to engage the extension on the pawl to lock the latter to the wheel only when an attempt is made to produce overthrow of the wheel.

13. In a cash register, an adding wheel, a pawl-carrying arm pivoted co-axially therewith, a pawl mounted on said arm and adapted to engage and turn said wheel during the advance movement thereof, a detent mounted on said pawl-carrying arm and adapted to engage and hold the pawl into engagement with the wheel only when an attempt is made to overthrow the wheel, and means for moving the detent out of operative relation with respect to the pawl at the end of the advance movement of the latter.

14. In a cash register, an adding wheel, a pawl-carrying arm pivoted co-axially therewith, a pawl mounted on said arm and adapted to engage and turn said wheel during the advance movement thereof, said pawl having a weighted extension, a detent mounted on said pawl-carrying arm and adapted to engage the said extension and hold the pawl into engagement with the wheel only when an attempt is made to overthrow the wheel, and means for moving the detent out of operative relation with respect to the pawl at the end of the advance movement of the latter.

15. In a cash register, an adding wheel, a main operating lever and a pawl-carrying arm journaled co-axially with said wheel, a pawl carried by said arm, a resilient member carried by the main operating lever and adapted to engage the pawl during the advance movement thereof to cause the pawl to engage with the wheel, and means for throwing the resilient member out of engagement with the pawl so that the latter may disengage the wheel at the end of the advance movement of the pawl.

16. In a cash register, an adding wheel, a main operating lever and a pawl-carrying arm journaled co-axially with said wheel, a pawl carried by said arm, said pawl having a weighted extension, a resilient member carried by the main operating lever and adapted to engage the extension on the pawl during the advance movement of the latter to cause the pawl to engage with the wheel, and means for throwing the resilient member out of engagement with the pawl extension so that the latter may disengage the wheel at the end of the advance movement of the pawl.

17. In a cash register, an adding wheel, a main operating lever and a pawl-carrying arm pivoted co-axially with the adding wheel, a pawl carried by said arm for engaging and turning the said wheel, a spring plate carried by the main operating lever for engaging with the pawl and holding it in engagement with the wheel during the advance movement thereof, a detent carried by the pawl-carrying arm and adapted to extend below the pawl while the spring plate is in engagement therewith, whereby when an attempt is made to produce overthrow of the adding wheel, the detent will engage the pawl and hold it into engagement with the wheel, and means for disengaging the plate from the pawl at the end of the advance movement thereof.

18. In a cash register, an adding wheel, a main operating lever and a pawl-carrying arm pivoted co-axially with said wheel, a pawl carried on said arm for turning the wheel, said pawl having a rearward extension, a spring plate carried by the main operating lever adapted to engage the extension on the pawl to rock the same into engagement with the wheel during the advance movement thereof, and means for disengaging the spring plate from the pawl extension at the end of the advance movement thereof so that the pawl is released from the wheel.

19. In a cash register, an adding wheel, a main operating lever and a pawl-carrying arm pivoted co-axially with the adding wheel, a pawl carried by said arm for engaging and turning the said wheel, said pawl having a weighted extension, a spring plate carried by the main operating lever for engaging with the pawl extension whereby the pawl is held in engagement with the wheel during the advance movement thereof, a detent carried by the pawl-carrying arm and adapted to extend below the pawl extension while the spring plate is in engagement therewith, whereby when an attempt is made to produce overthrow of the adding wheel, the detent will engage the pawl extension and hold the pawl into engagement with the wheel, and means for disengaging the plate from the pawl extension at the end of the advance movement thereof.

20. In a cash register, an adding wheel, a main operating lever and a pawl-carrying arm pivoted co-axially with said wheel, a pawl carried on said arm for turning the wheel, said pawl having a rearward extension, a spring plate carried by the main operating lever adapted to engage the extension on the pawl to rock the same into engagement with the wheel during the advance movement thereof, means for disengaging the spring plate from the pawl extension at the end of the advance movement thereof so that the pawl is released from the wheel, and a drawer for moving the operating lever.

21. In a cash register, an adding wheel, a main operating lever and a pawl-carrying arm pivoted co-axially with said wheel, a

pawl carried by said arm for turning the wheel, said pawl having a rearward extension, a plate carried by the main operating lever and adapted to engage the said extension to throw the pawl into engagement with the wheel during the advance movement of the latter, a detent carried by the pawl-carrying arm, said detent having a hook that is adapted to project under the extension on the pawl during the advance movement to prevent disengagement of the pawl from the wheel, and means for removing the spring plate and the detent from operative relation with the pawl at the end of the advance movement of the latter.

22. In a cash register, an adding wheel, a main operating lever and a pawl-carrying arm pivoted co-axially with said wheel, a pawl carried by said arm for turning the wheel, said arm having a rearward extension, a plate carried by the main operating lever and adapted to engage the said extension to throw the pawl into engagement with the wheel during the advance movement of the latter, a detent carried by the pawl-carrying arm, said detent having a hook that is adapted to project under the extension on the pawl during the advance movement to prevent disengagement of the pawl from the wheel, a cash drawer, and means for removing the spring plate and the detent from operative relation with the pawl at the end of the closing movement of the drawer.

23. In a cash register, a cash drawer, an adding member, means for moving said member from said drawer, mechanism to prevent the overthrow of said member during the advance movement thereof, said mechanism becoming operative only in case an attempt is made to overthrow the adding member, and means operated by the drawer for throwing the said mechanism out of operative relation with respect to the said member at the end of the advance movement of the latter.

24. In a cash register, a cash drawer, an adding wheel, a pawl for turning said wheel, means operated by the drawer for advancing the pawl, mechanism moving with the pawl and adapted to engage the latter to lock it to the wheel only when an attempt is made to overthrow the wheel, and means operated by the drawer at the end of the advance movement of the pawl to throw the said mechanism out of operative relation with respect to the pawl.

25. In a cash register, a cash drawer, an adding wheel, a pawl for turning said wheel, means operated by the drawer for advancing the pawl, mechanism moving with the pawl and adapted to engage the latter to lock it to the wheel only when an attempt is made to overthrow the latter, a lever, a by-pass pawl carried by said lever, means on the drawer for lifting the pawl and lever at the end of the closing movement of the drawer, and connections between the lever and the said mechanism for throwing the latter out of operative relation with respect to the pawl.

26. In a cash register, an adding wheel, a drawer, a main operating lever and a pawl-carrying arm journaled co-axially with said wheel, a pawl carried by said arm, a resilient member carried by the main operating lever and adapted to engage the pawl during the advance movement thereof to cause the pawl to engage with the wheel, and means operated by the drawer for throwing the resilient member out of engagement with the pawl so that the latter may disengage the wheel at the end of the advance movement of the pawl.

27. In a cash register, an adding wheel, a drawer, a main operating lever and a pawl-carrying arm journaled co-axially with said wheel, a pawl carried by said arm, a spring plate carried by the main operating lever and adapted to engage the pawl during the advance movement thereof to cause the pawl to engage with the wheel, a detent carried on the pawl-carrying arm and adapted to engage with the pawl only when an attempt is made to overthrow the adding wheel, and means operated by the drawer for throwing the spring plate and the detent out of operative relation with the pawl so that the latter may disengage the wheel at the end of the advance movement of the pawl.

28. In a cash register, an adding wheel, a drawer, a main operating lever and a pawl-carrying arm journaled co-axially with said wheel, a pawl carried by said arm, said pawl having a rearward extension, a spring plate carried by the main operating lever and adapted to engage the extension on the pawl during the advance movement thereof to rock the pawl into engagement with the wheel, a detent carried on the pawl-carrying arm and adapted to engage with the extension on the pawl only when an attempt is made to overthrow the adding wheel, and means operated by the drawer for turning the spring plate and the detent out of operative relation with the pawl so that the latter may disengage the wheel at the end of the advance movement of the pawl.

29. In a cash register, an adding wheel, a drawer, a main operating lever and a pawl-carrying arm journaled co-axially with the said wheel, a pawl carried by said arm, a spring plate carried by the main operating lever and adapted to engage the pawl during the advance movement thereof to cause the pawl to engage with the wheel, a detent carried by the pawl-carrying arm and adapted to engage the pawl when an attempt is made to overthrow the adding wheel, a lever that is operated by the drawer at the end of its closing movement, and connections between

the lever and the spring plate for throwing the said plate and the detent out of operative relation with the pawl.

30. In a cash register, an adding wheel, a drawer, a main operating lever and a pawl-carrying arm journaled co-axially with the said wheel, a pawl carried by said arm, said pawl having a rearward extension, a spring plate carried by the main operating lever and adapted to engage the extension on the pawl during the advance movement thereof to cause the pawl to engage with the wheel, a detent carried by the pawl-carrying arm and adapted to engage the pawl when an attempt is made to overthrow the adding wheel, a lever that is operated by the drawer at the end of its closing movement, a by-pass pawl on said lever that is engaged by the drawer, and connections between the latter lever and the spring plate for throwing the said plate and the detent out of operative relation with the pawl.

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

HENRY S. HALLWOOD.

Witnesses:

S. E. FOUTS,

H. P. MILLER.