

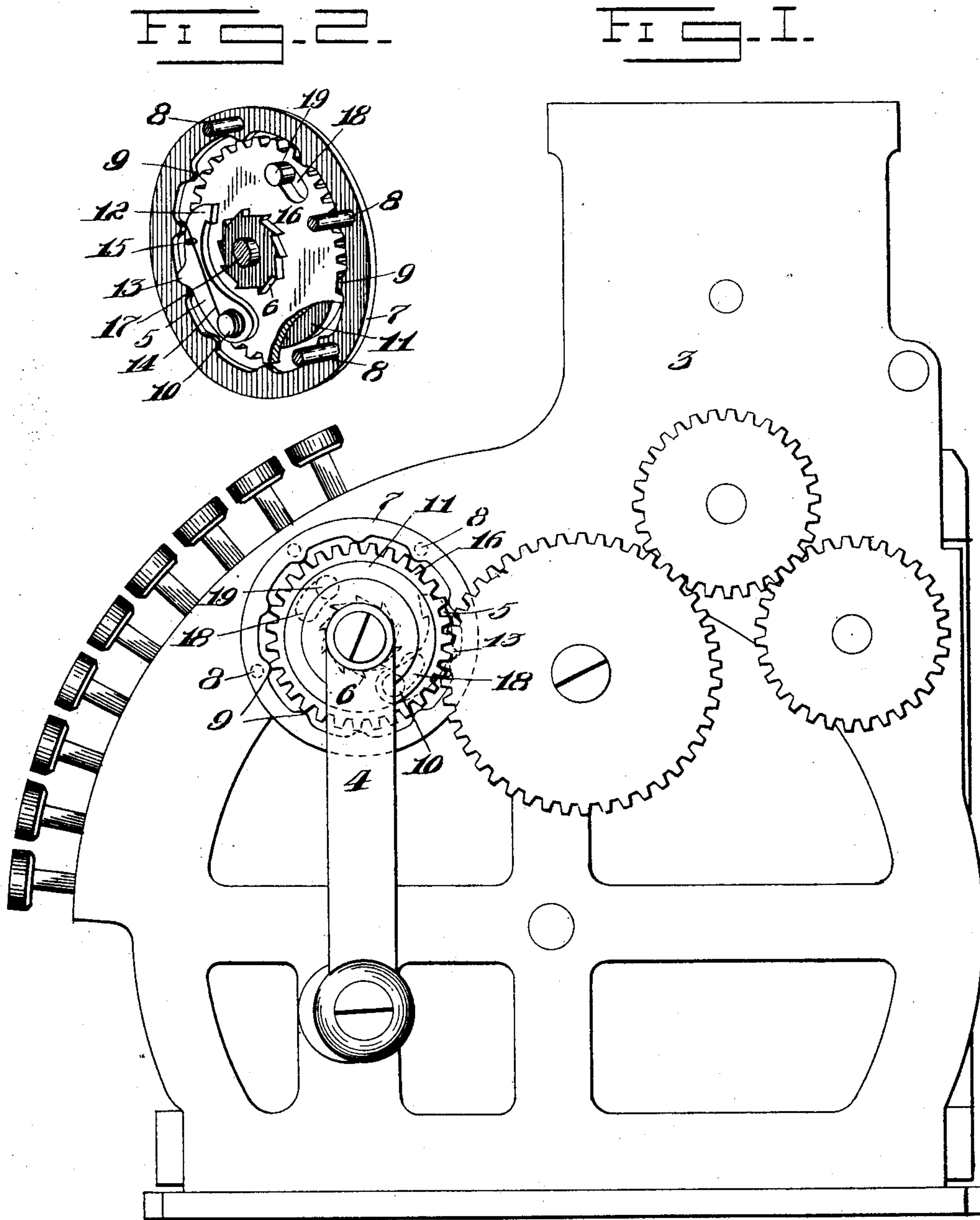
No. 688,444.

Patented Dec. 10, 1901.

I. W. SMITH.  
BRAKE MECHANISM.

(Application filed Mar. 31, 1900.)

(No Model.)



Witnesses

*Wm. W. McCarthy*  
*Wm. H. Muzzey*

*Irwin H. Smith* Inventor  
By *Alvan Macaulay*  
his Attorney.



# UNITED STATES PATENT OFFICE.

IRWIN W. SMITH, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## BRAKE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 688,444, dated December 10, 1901.

Application filed March 31, 1900. Serial No. 10,919. (No model.)

*To all whom it may concern:*

Be it known that I, IRWIN W. SMITH, 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 Brake Mechanisms, of which I declare the following to be a full, clear, and exact description.

This invention relates to improvements in cash-registers, and has more particular relation to improvements in operating devices for the same.

The object of the invention is to provide means for preventing an undue rapidity of operation, such as might be resorted to in an attempt to fraudulently operate or injure the machine.

In the accompanying drawings, forming part of this specification, Figure 1 represents an end elevation of the device embodying my invention applied to a machine of the crank-operated type patented to Messrs. Cleal and Reinhard, August 13, 1897, and numbered 580,378, the cabinet of the same being removed; and Fig. 2 represents a detail perspective view of the device detached from the machine, said view being taken from the rear side of the same.

In the aforesaid drawings, 3 represents the frame of the machine; 4, the operating-handle; 5, the stop-pawl; 6, the stop-ratchet, and 7 the pawl-operating cam-ring.

The invention is shown in connection with a crank-operated machine simply to illustrate one of its applications; but it is obvious that it may be applied with equal facility to any other form of register which includes a rotary member as one of its component elements.

In the application of my invention shown the pawl-operating cam-ring 7 is mounted rigidly upon the frame 3 by means of a series of short rods or bars 8, whereby it is brought into the same vertical plane with the stop-pawl 5. Said ring is formed upon its inner wall with a series of spaced projections or cam-lugs 9, the office of which is to throw the pawl into operative position. Said pawl 5 is pivotally mounted upon a stud 10, carried by a disk 11, which is fast to the crank-handle

4. The pawl is formed with a hook end 12 and an operating-lug 13 and is provided with a coil-spring 14, which normally holds it with the lug 13 in contact with the inner wall of the ring 7. The said spring is wound about the stud 10 and has one end secured thereto, while the other end of said spring bears against a pin 15, mounted upon the pawl.

The ratchet-wheel 6 is fast to a rigid shaft 17, upon which the crank-handle is journaled, and is so located as to lie within the ring 7 and in the same vertical plane with the pawl 5. When the handle 4 is operated with normal speed, the lug 13 simply rides over the cam-lugs 9 without the pawl engaging the ratchet-wheel 6; but should an attempt be made to turn the handle with abnormal speed the momentum imparted to the pawl 5 upon the rapid throwing contact of the cam-lugs 9 and 13 would be sufficient to overcome the tension of the spring 14 and cause the hook end 12 of said pawl to engage the ratchet 6 and arrest the handle. The hook end 12 and the teeth of the ratchet 6 are so shaped that after an arresting operation has taken place it is necessary to move the handle back slightly to disengage said hook from the ratchet.

In machines of the class to which this invention is adapted to be applied all retrograde movements of the handle or other operating member are usually prevented by suitable ratchet-and-pawl devices, and therefore to still allow the above-mentioned backward movement of the handle without destroying the effectiveness of said ratchet-and-pawl devices I provide the following construction: The power applied to the operating-handle is transmitted through the disk 11 to a gear-wheel 16, which is mounted loosely upon the short shaft 17. This gear meshes with a train of suitable gears for transmitting its movements to the operating parts of the machine and is formed with two segmental slots 18. The stud 10 projects through one of these slots, while a similar stud 19, also mounted on the disk 11, projects through the other, whereby sufficient free play is allowed between the disk 11 and gear 16 to permit of the slight retrograde movement of the operating-handle necessary to disengage the pawl 5 from



the ratchet-wheel 6. This free-play construction also prevents any shock to the operating mechanism of the register, as the gear 16 may have a slight forward movement after the movement of the handle 4 has been suddenly arrested by the pawl 5, as before described.

It will be observed from the foregoing description that should any attempt be made to injure or fraudulently manipulate the machine by jerking the operating-handle or moving the same with an abnormal speed all movement will be instantly, automatically, and positively arrested and the operator be forced to commence the movement anew.

I have shown my invention as applied to a cash-register, but it will be readily understood that it is equally applicable to any machine comprising a rotation-shaft in which it is desired to arrest the operation whenever an excessive speed is attained. It will be understood, also, that the form and arrangement of the parts as I have shown them may be modified without departing from the spirit of my invention. For example, the part that I have called a "ring" may not be a ring at all—that is, externally it may be any shape desired—and so, too, the particular form of the pawl may be altered. The essential feature of my invention comprises one member movable with the shaft and a fixed member and means by which an excessive speed of rotation automatically causes an interlocking of said movable member and the fixed member. It will also be readily understood that the relative arrangement of the fixed cam-ring and the ratchet might be reversed—in other words, to have the pawl normally bear against the periphery of what the drawings show to be the ratchet and arranged when an excessive speed is attained to be thrown outwardly into engagement with the ratchet-teeth, which would be upon the inner wall of the ring.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the class described the combination with a fixed ratchet-wheel, a fixed cam ring or member having a series of projections, and a pawl adapted to engage with the ratchet-wheel at any point thereon, but normally held out of engagement therewith and arranged to be thrown into engagement with said wheel by any one of said cam projections when an excessive speed of rotation is attained.

2. In a device of the class described the combination with a fixed ratchet-wheel, a pawl normally held out of engagement with and arranged to travel about said ratchet-wheel, and a fixed member having projections with which the pawl is arranged to contact during its travel around the ratchet-wheel and which are arranged to throw the pawl into engagement with the ratchet-wheel at any point thereon when an excessive speed is attained.

3. In a device of the class described the combination with a fixed ratchet-wheel, a pawl arranged to travel about said ratchet-wheel and adapted for engagement therewith at any point thereon, but normally held out of such engagement, a series of cam projections disposed in a circle described about the center of rotation of said pawl, the latter being arranged to engage said projections during its travel about the ratchet-wheel.

4. In a cash-register, the combination with an operating mechanism, of a spring-pressed stop-pawl connected thereto so as to move therewith, stationary lugs coöperating with said pawl to throw the same when an abnormal speed is attained and a stationary ratchet-wheel arranged to be engaged at any point thereon by said pawl to positively arrest the operating devices.

5. In a cash-register the combination with an operating mechanism, of a stationary ratchet-wheel, a stop-pawl moved by the operating mechanism, and a ring having projections any one of which is arranged to operate said pawl to cause it to engage the ratchet-wheel at any point thereon when an abnormal speed is attained.

6. In a cash-register, the combination with a rotation disk or member and a pin mounted on said disk, of an operating-gear having a slot arranged to receive said pin, and means for arresting the rotation member when an abnormal speed is attained.

7. In a cash-register, the combination with an operating-handle, of a disk carried by said handle, a pin mounted on said disk, an operating-gear having a slot arranged to receive said pin, a pawl carried by said disk and means for throwing said pawl into engagement with a stationary part of the machine when an abnormal speed is attained.

8. In a cash-register, the combination with an operating-handle, of a disk carried thereby, a pin mounted on said disk, an operating device having a slot arranged to receive said pin and means for automatically arresting the operating-handle when an abnormal speed is attained.

9. In a cash-register, the combination with an operating-handle, of a disk carried thereby, a pin mounted on said disk, an operating-gear having a slot arranged to receive said pin, a pawl carried by said disk and stationary cam projections arranged to be engaged by said pawl to force the latter into engagement with a stationary part of the machine whenever an abnormal speed is attained.

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

IRWIN W. SMITH.

Witnesses:

J. W. DONSON,  
IRA BERKSTRESSER.