

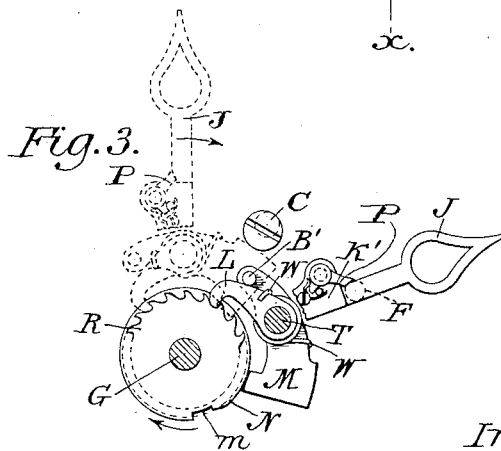
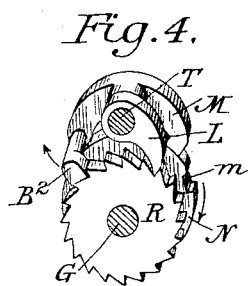
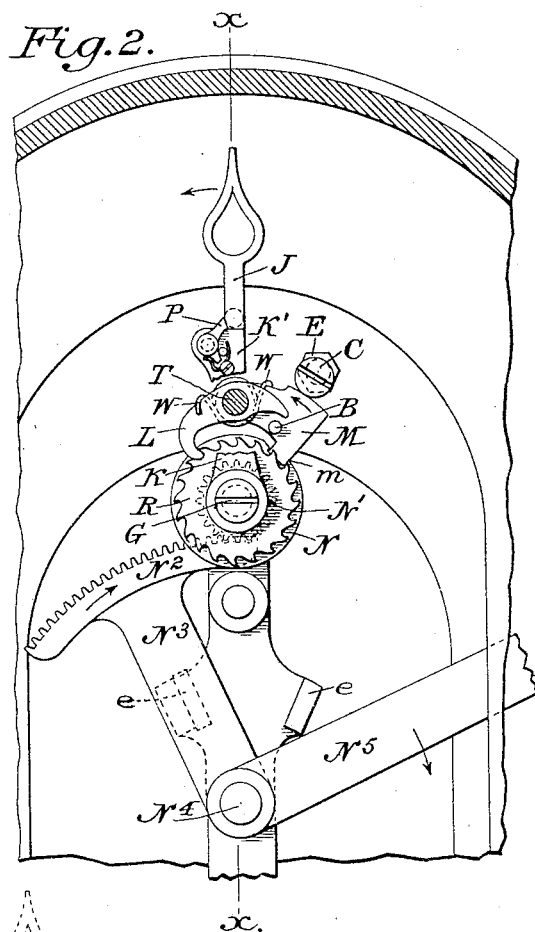
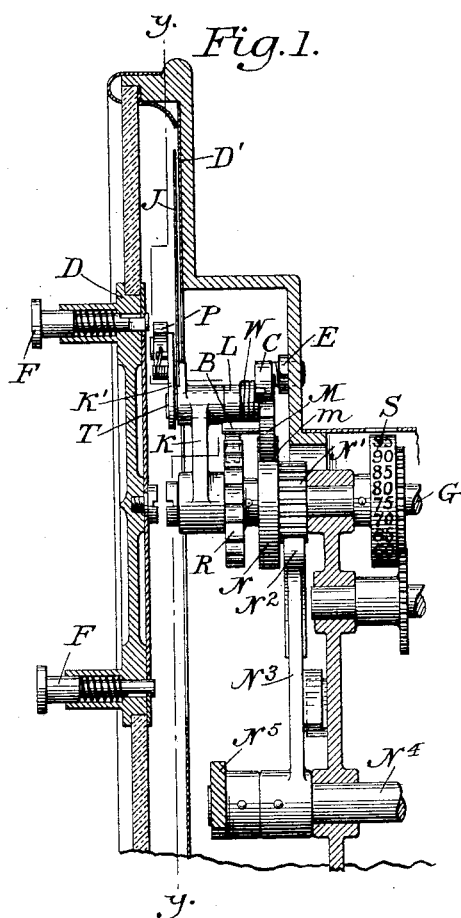
(No Model.)

C. W. WEISS.

LOCKING DEVICE FOR INDICATING, REGISTERING, AND ADDING
MECHANISMS.

No. 456,177.

Patented July 21, 1891.



Attest:

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UNITED STATES PATENT OFFICE.

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LOCKING DEVICE FOR INDICATING, REGISTERING, AND ADDING MECHANISMS.

SPECIFICATION forming part of Letters Patent No. 456,177, dated July 21, 1891.

Application filed January 21, 1891. Serial No. 378,535. (No model.)

To all whom it may concern:

Be it known that I, CARL W. WEISS, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Locking Devices for Indicating, Registering, and Adding Mechanism; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to an improved positive locking device for the adding or registering mechanism in a cash register and indicator, the same being applicable to all manner of adding, registering, or indicating wheels, and has for its object to prevent an overrunning of said wheels.

It consists in the combination of a stop with a ratchet-wheel actuating the registering mechanism, substantially as hereinafter described and claimed, whereby the registering mechanism is positively locked at the end of its movement in manner as set forth.

The accompanying drawings illustrate the application of my invention to the improved cash register and indicator for which Letters Patent of the United States were issued to me December 16, 1890, No. 443,024.

Figure 1 is a vertical section of a portion of the mechanism of the register and indicator, taken longitudinally through the shaft, of its adding mechanism, and indicating-pointer on line *x x* of Fig. 2. Fig. 2 is a partial front elevation of said pointer, illustrating the arrangement and combination of devices therewith by which the adding mechanism is actuated. Fig. 3 illustrates the movement of the pointer and the operation of the pawls, and also a modification in the arrangement of the stop-pin; and Fig. 4 illustrates another modification of the invention.

The same letters indicate the same or like parts in all of the figures.

In the indicating and registering machine shown in the drawings, G is the shaft which actuates an adding mechanism S, geared thereto in the customary manner. K is an arm fitted to revolve loosely upon the front end of this shaft G. To this arm an indicating-pointer J is secured.

A rotatory pin T is fitted parallel with the shaft G in a suitable bearing in the arm K, and a second arm K' is made to extend radially from the front end of said pin. This second arm K' is thus left free to vibrate independently of the arm K, while it revolves therewith about the shaft G as a center over an annular dial D'. Upon this dial are marked the numbers or characters which serve to indicate the amounts to be successively registered.

A series of stop-pins or keys F F, corresponding in number with the number of characters on the dial D', are mounted concentrically in a suitable circular face-plate D in position to admit of being pressed inward to intersect with their inner ends the path of travel of the pointer, and to contact, when pressed inward, with a tripping-latch P, carried by or with the pointer. This tripping-latch P is so adjusted that it will yield when brought into contact with the inwardly-projected end of either of the stop-pins or keys F as the pointer is making a forward revolution, but will lock with and arrest the pointer when the two are brought into engagement on the return or backward movement of the pointer.

A pawl L and a detent M are severally pivoted upon the rear end of the pin T. A ratchet-wheel R, having teeth corresponding in number with the keys F F, is secured upon the shaft G in position to be engaged by the pawl L, carried by or with the pointer, the ratchet-teeth being so inclined that the pawl in its revolution about the shaft G will move the wheel as the indicating-pointer J is moving forward only. A wheel or disk N is mounted to turn loosely on the same shaft G in position to allow the swinging detent M to rest upon its periphery, and a single notch *m*, Figs. 2, 3, and 4, is formed in the periphery of the disk to engage the detent M. (See Fig. 1 and dotted lines in Fig. 2.) This disk N is made fast to a pinion N', revolving loosely on the shaft G, and which meshes with a segmental rack N² on the end of an arm N³, projecting from a rock-shaft N⁴, mounted in the casing parallel with and beneath the shaft G, and which is actuated by means of a crank N⁵, fitted thereto to project out laterally from the casing through a vertical slot therein.

The rack N^2 and pinion N' are so proportioned as that one complete movement of the crank N^5 in either direction will produce a single complete revolution of the pinion, the movements of the rack-arm N^3 and rack being limited by means of suitable stops *e e*. (See Fig. 2.)

The engagement of the detent M with the notch *m* in the pinion-disk N is enforced by one end of a spring W , coiled upon the arm K , its opposite end operating to enforce the engagement of the pawl L with its ratchet-wheel R . The spring W serves to couple by a yielding connection the detent M with the arm K' , so that when the detent M is in engagement with the disk N the revolution of the disk will cause the arm K' to revolve in unison with it about the shaft G , the spring-actuated detent M operating as a clutch to couple said arm K' with the pinion and its operating-crank. When, however, the arm K' is arrested in its movement by the positive engagement of its trip-latch P with the projecting end of one of the keys F , the spring connecting the detent M with said arm will yield sufficiently under the continued strain upon the detent of the moving disk N to allow the detent to spring out of the notch *m*, and so permit said disk N and the crank N^5 operating it to continue their movement until the stroke of the crank is fully completed. Since the pawl L , which partakes of the movements of the indicating-pointer J , moves idly over the ratchet-wheel R upon said shaft while the pointer is making its first or forward revolution under the first or down stroke of the crank-arm N^5 , this forward movement does not affect the adding mechanism; but so soon as the pointer begins its return movement the pawl L , engaging the ratchet-wheel R , will cause the shaft G to revolve in unison with it, and thus bring the adding mechanism into play, and will actuate it until the movement of the pointer is arrested by contact with the particular key which has been pressed inward. Hence the distance between the point at which the forward movement of the indicator terminates and the key which serves to arrest it upon its return movement will determine the extent of the movement of the adding mechanism, and will be proportionate to the value of said key.

The object of my invention is to prevent positively either the indicating or the adding mechanism from overrunning at the moment their movement is arrested. To accomplish this end I extend the arm of the pawl L , which engages the ratchet-wheel R , by which the adding mechanism S is actuated, rearwardly beyond its pivot, so that it will overlap a pin B , made to project laterally from the detent M , in such position that when the detent is lifted out of the notch *m* to ride upon the periphery of the disk N , and thereby allow a free independent movement of said disk and its pinion N' , the pin B will bear against the

tail end of the pawl L , and thereby prevent it positively from turning upon its pivot so as to become disengaged from the ratchet-wheel R . The pawl is thus positively locked to the ratchet so soon as the detent is freed from the actuating-disk N .

In Fig. 3 a modification of this device is shown, in which the extension of the pawl L is avoided by placing the stop-pin B' upon a rearward extension of the detent M , beyond its pivot, in position to bear directly upon the pawl L when the detent is uncoupled from its actuating-disk N .

This locking device comes into action at the instant the movement of the adding mechanism is arrested by the engagement of the pointer J with an inwardly-projected key F .

In the operation of the machine the first or downward movement of the crank-arm N^5 operates to turn the pinion N' , together with the disk N , secured thereto, and the arm K and pointer J , which are coupled to said disk N by the engagement of the detent M with the peripheral notch *m* in the disk, forward until the pointer has made one complete revolution. At this point the further movement of the arm carrying the pointer J is arrested by the engagement of the rack-arm N^3 with the stop *e*. Upon its return-stroke to its first position the crank N^5 will carry the arm K and pointer J backward until the trip-latch P on the yielding arm K' , striking the end of the inwardly-projecting key F , (shown by dotted lines in Fig. 3,) stops the further movement of the pointer. When the pointer is thus arrested, the yielding arm K' will swing upon its pivot T , and thereby trip the detent M in manner as hereinbefore described, so as to lift its free end against the stress of the spring W out of the notch *m* on the periphery of the driving-disk N , and thus disengage it from the driving mechanism, leaving said disk and the crank N^5 with the intermediate connecting parts to move on independently of the pointer until the return-stroke of the crank is completed. During the forward stroke of the pointer the pawl L , carried thereby, will ride free over the ratchet-wheel R , controlling the adding mechanism; but upon its return or backward stroke the pawl falls into engagement with the ratchet, so as to carry the latter with it, and thereby move the adding mechanism. The tendency of the adding mechanism to overrun after the movement of the pointer is arrested, produced by reason of the momentum acquired by its moving parts, is prevented by the engagement of the pin B or B' with the pawl to lock it, which said engagement occurs in manner as described, the moment the detent M is lifted to uncouple the indicating from the driving mechanism. The detent M is locked when the indicating-pointer J is carried to the zero-point by means of a screw C , fitted in the casing-plate of the machine and having an eccentric head which is adjusted to project over and bear upon the

upper edge of the detent M when the pointer has completed a full revolution in either direction and to thereby prevent any independent movement of the detent. A lock-nut E under the head serves to fix the screw when it is adjusted.

A further modification may be made of my invention by extending the detent M rearwardly beyond its pivot to carry a stop-pin or dog B², which is made to project laterally from said rearward extension or tail of the detent over the periphery of the ratchet-wheel R, as shown in Fig. 4, so as to drop into engagement with the teeth of the ratchet whenever the detent M is lifted out of the notch *m* in the driving-disk N.

I claim as my invention—

1. The combination of a rotatory shaft, means for its rotation, a ratchet-wheel fixed thereon, a peripherally-notched driving disk or wheel and an arm revolving independently on said shaft, a pawl pivoted to the arm to engage and actuate the ratchet-wheel, and a detent oscillating upon the axis of the pawl, having its forward end riding upon the periphery of the driving-disk to engage its notch and its heel end operating as a lock upon the ratchet-wheel when said forward end is upheld out of the notch, substantially in the manner and for the purpose herein set forth.

2. The combination, with a ratchet-wheel, an arm revolving loosely upon the axis of

said wheel, and a pawl pivoted upon said arm to engage and actuate the ratchet-wheel, of a peripherally-notched driving disk or wheel revolving loosely on the axis of the latter, mechanism, substantially as described, for actuating said disk or wheel, and a detent swinging upon the axis of the pawl in position to ride free upon the periphery of the driving disk or wheel and be thereby carried into engagement with the ratchet-pawl to lock the same and prevent a movement thereof until freed by the dropping of the detent into engagement into the peripheral notch on said driving disk or wheel, substantially in the manner and for the purpose herein set forth.

3. The combination, in an indicating or adding mechanism, with a peripherally-notched wheel and a pivoted pawl swinging into engagement with said wheel, of a pin or screw revoluble upon its axis and having an eccentric head, said screw being fixed in position to allow its head to bear upon and lock the pawl when it is in engagement with the wheel, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL W. WEISS.

Witnesses:

A. N. JESBERA,
E. M. WATSON.