

(No Model.)

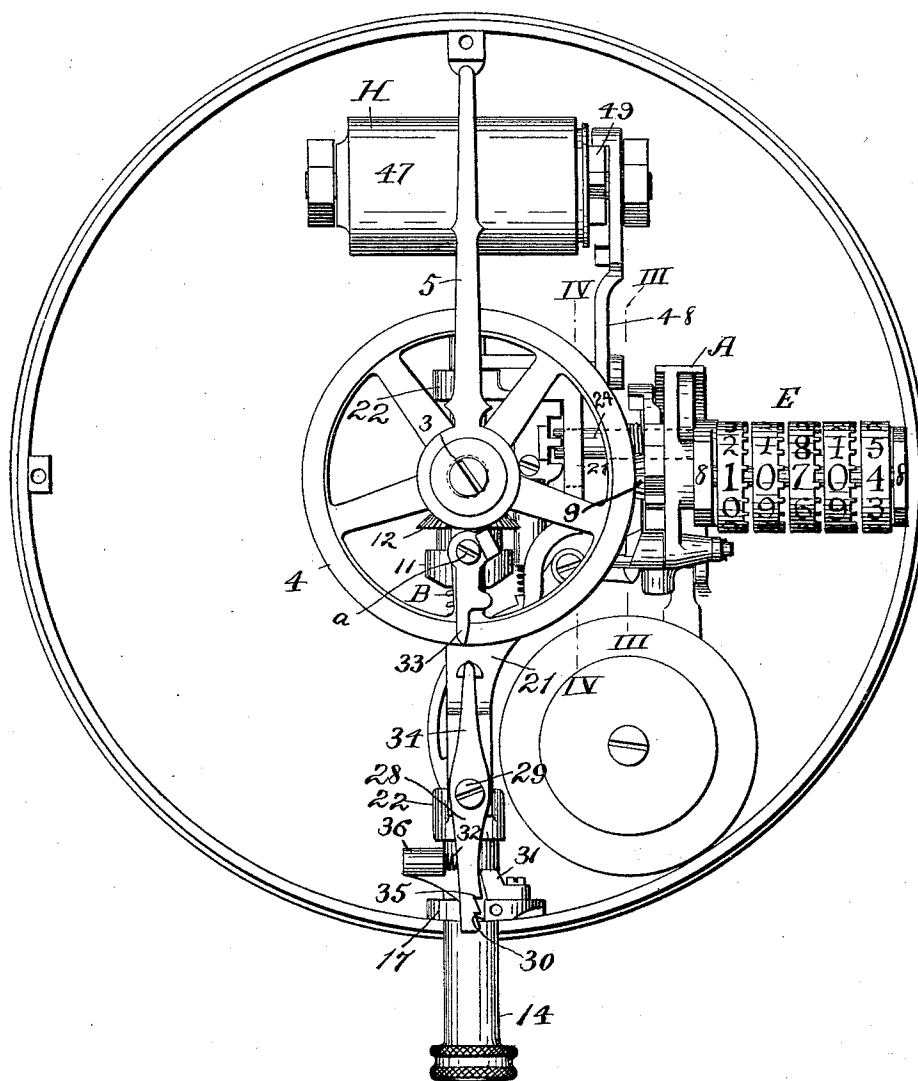
4 Sheets—Sheet 1.

E. CATLIN & G. REIN.
STREET CAR REGISTER.

No. 530,067.

Patented Nov. 27, 1894.

Fig. 1.



WITNESSES:

H. Graham
E. L. Todd

INVENTORS.

Ephron Catlin
Gustavus Rein

BY

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ATTORNEY

(No Model.)

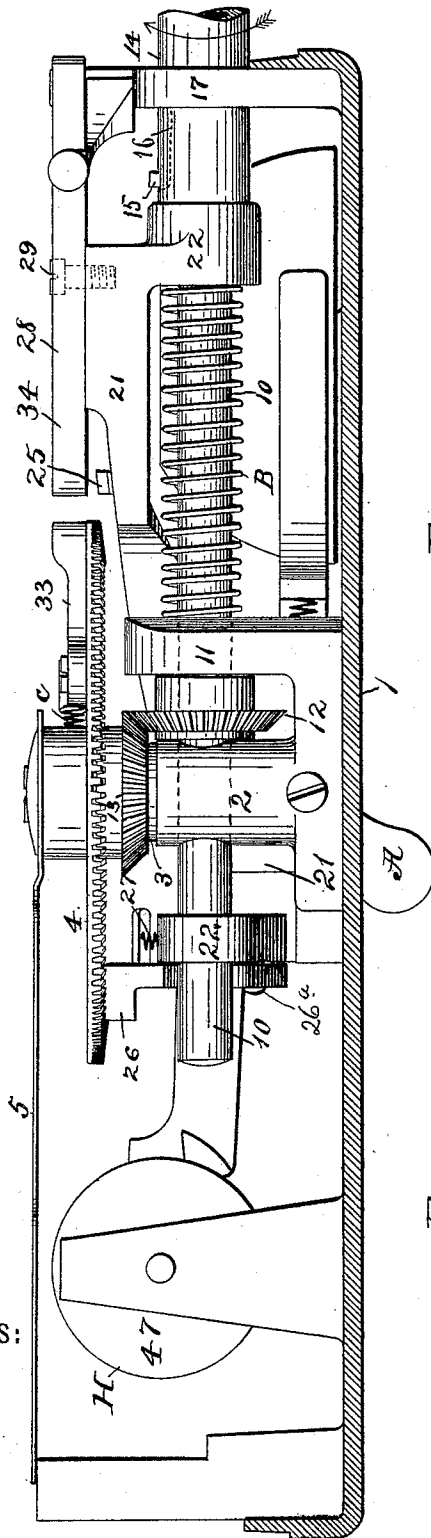
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Fig. 2.



WITNESSES:

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Fig. 4.

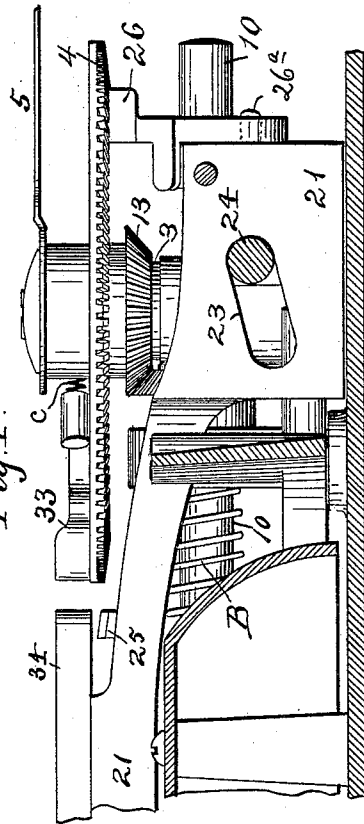
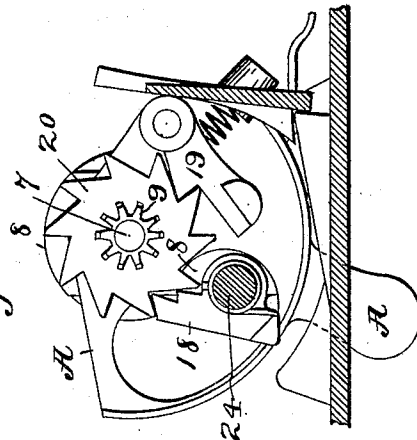


Fig. 3.



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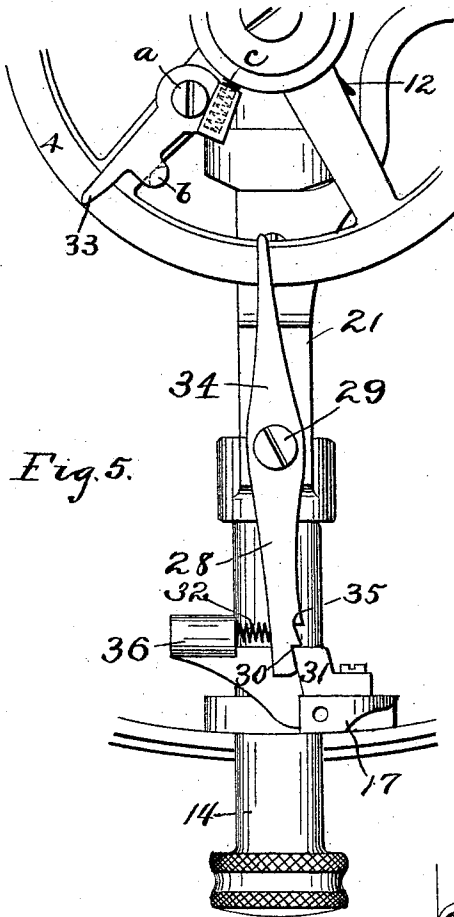


Fig. 5.

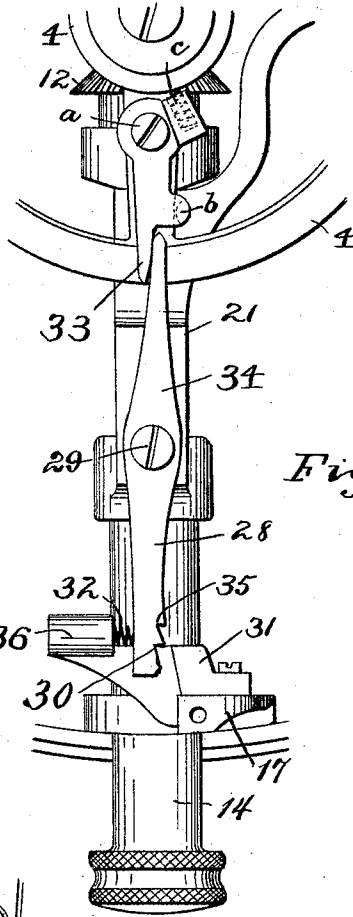


Fig. 6.

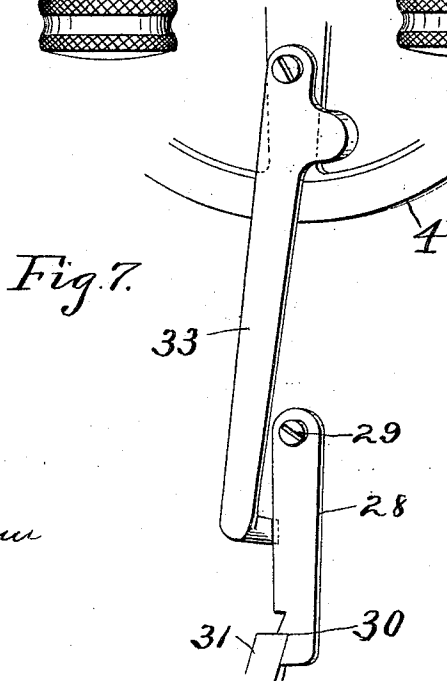


Fig. 7.

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(No Model.)

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E. CATLIN & G. REIN.
STREET CAR REGISTER.

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Fig. 8.

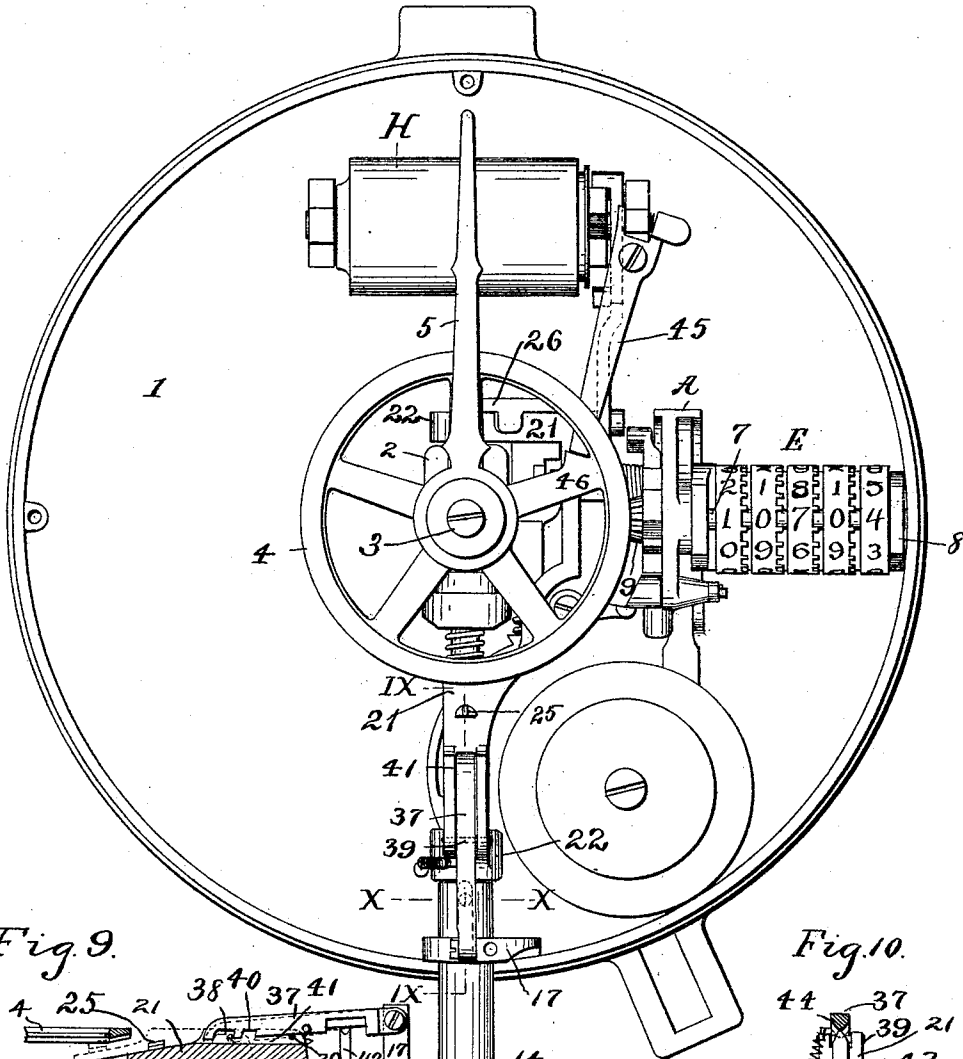
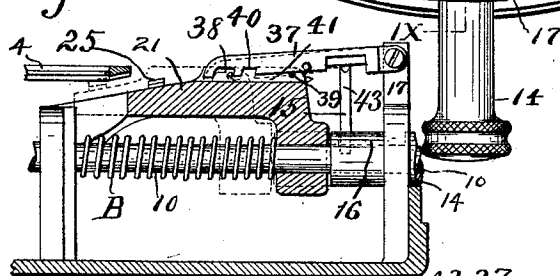


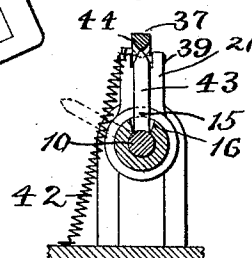
Fig. 9.



WITNESSES:

W. H. Graham.
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Fig. 10.



INVENTORS

Fig. 11. Ephron Catlin
and Gustavus Rein

by Erik Graham
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UNITED STATES PATENT OFFICE.

EPHRON CATLIN AND GUSTAVUS REIN, OF ST. LOUIS, MISSOURI, ASSIGNORS
TO THE ST. LOUIS REGISTER COMPANY, OF SAME PLACE.

STREET-CAR REGISTER.

SPECIFICATION forming part of Letters Patent No. 530,067, dated November 27, 1894.

Application filed December 14, 1893. Serial No. 493,653. (No model.)

To all whom it may concern:

Be it known that we, EPHRON CATLIN, a citizen of the United States, and GUSTAVUS REIN, a subject of the Emperor of Germany, residing at St. Louis, in the State of Missouri, have invented an Improvement in Street-Car Registers, of which the following is a specification.

This invention relates to that class of registers and indicators commonly called street car or fare registers, wherein is employed a trip register formed by a step-by-step rotatable index moving over a fixed dial, and a permanent register formed by a set of adding wheels that are moved in unison with the index of the trip register to preserve the sum of the operations of the register while the trip register including its index may be returned and reset at zero.

The present invention is more particularly directed to improved means for securely holding in place, or at least preventing any improper movement of the parts of the trip register during the resetting operation, which operation comprises a disengagement of the trip register from the permanent register, which would, without suitable precautionary means, permit a tampering with the trip register and an improper setting of it. Such improper setting could be made the means of fraud on the part of the person or persons whose actions the register is intended to guard.

This invention is, in some respects, an improvement upon the register described in Letters Patent to Leo Ehrlich, dated January 24, 1893, No. 490,342, and the register described in the application of Leo Ehrlich, Ephron Catlin, and Gustavus Rein, filed November 5, 1892, Serial No. 451,109.

In order to make our improvements more clearly understood, we have shown in the accompanying drawings means for carrying the same into effect, without limiting our invention in its useful application to the particular construction, which, for the sake of illustration, we have delineated.

In said drawings:—Figure 1 is a front elevation of a fare register and indicator embodying our improvements, the casing and dial of the device being removed. Fig. 2 is a side view on a larger scale, of the same, the

back or base plate being shown in section. Fig. 3 is a sectional view on line III—III, Fig. 1, showing in end elevation the permanent register. Fig. 4 is a sectional view on line IV—IV, Fig. 1, showing the trip register wheel and index and the slide by which the permanent register is disengaged from the trip register. Fig. 5 is a front elevation showing a portion of the register wheel and of the means for resetting and securing the same, the resetting handle being thrust in to its fullest extent. Fig. 6 is a similar view, the parts being in the position which they occupy when such handle has been turned to bring the trip register to its zero point, and to release and permit the outward movement of the handle. Fig. 7 is a diagram illustrating a slight modification of the catch shown in Figs. 1, 5, and 6. Fig. 8 is a front elevation of a register showing a form of mechanism different in some respects from that illustrated in Figs. 1 to 6, or in Fig. 7, but also embodying our invention. Fig. 9 is a sectional view of a portion of the same on line IX—IX, Fig. 8. Fig. 10 is a sectional view on line X—X, Fig. 8. Fig. 11 is a sectional view similar in location to Fig. 9, illustrating another embodiment of a portion of our invention which may take the place of the construction shown in Fig. 9.

Referring to the drawings, 1 is a back or base plate adapted to be secured to any suitable support, and carrying the registering mechanism. The latter will be inclosed by a case of any usual or desired character, secured to the base plate, to protect the register from injury or from being tampered with. This case will also have a dial for indicating, in connection with an index hand or pointer hereinafter described, the number of fares taken during a trip or the number of other acts for the registering of which the device is to be employed, thus constituting what may be termed a trip register; but for the better showing and understanding of our invention such case and dial have been omitted from the drawings.

Mounted centrally upon the plate 1, in a bracket or bearing 2, is a shaft 3, firmly secured to which is a beveled or other form of gear wheel 4. An index or pointer 5 is secured to said shaft or wheel and rotates there-

with, in its motion passing over the face of the dial above referred to.

The permanent register is indicated at E and may be of any suitable character, consisting, for instance, of a series of adding wheels on a shaft 7, which latter is mounted in a bearing bracket 8 carried by the plate 1. The shaft 7 is furnished with a pinion 9 arranged to mesh with the register wheel 4.

10 Suitable means are provided for temporarily rendering the trip and permanent registers independent of each other, as, for instance, by making the bracket 8 movable so that the pinion 9 may be disengaged from the register wheel, permitting the trip register to be reset at zero without disturbing the permanent register. This mode of disconnecting the registers is fully described in the patent and application above referred to and need not be here set forth at length.

The register may be operated upon the collection of each fare, one step at a time, by any usual mechanism, for instance, by an oscillating arm A mounted upon the shaft 7 of the permanent register and having its free end extending through the casing or base plate. This arm (Fig. 3), carries a spring-controlled pawl 19, which engages the ratchet wheel 20, the latter being secured to the shaft 7. The units wheel of the register E is secured to the shaft 7. A detent pawl 18 mounted on the bracket 8 and also engaging the ratchet wheel, holds the latter in place while the pawl 19 is being moved to take a new tooth. The permanent register, being controlled by said pawls, can only be moved in a forward direction and constitutes a check upon any tampering with the trip register while the two registers are connected, but upon the disconnection of such devices for the purpose of resetting the trip register, which disconnection is necessarily or ordinarily performed by the person whose acts are guarded by the apparatus, effective provision must be made for holding or locking the trip register in such manner that it cannot be improperly operated, (for instance, the index advanced to show a number of fares which, as a matter of fact, have not been collected and which will not be registered upon the permanent register,) so as to enable a fraud to be perpetrated. For such purpose we have provided the improved securing means for the trip register, which, in connection with the resetting devices, we will proceed to describe.

10 is a rotary shaft situated at right angles to the shaft 3 passing through the bracket 2, mounted in a bearing 11 and having secured to its inner end a bevel gear 12 which meshes with a similar gear 13 secured to the shaft 3 (Fig. 2). The resetting handle is shown at 14 and may be hollow and mounted so as to be longitudinally movable upon the shaft 10, such movement being permitted, and the handle being also adapted to rotate the shaft, by a pin and slot connection between the parts, the pin 15 being secured in the shaft 10 and

fitting in a slot 16 formed in the handle Figs. 9 and 10. The outer end of the shaft 10 and the handle are supported by a bearing bracket 17 fixed to the base plate. When the mechanism is not locked the register wheel and the index may be readily turned by turning the handle 14.

The register wheel, when not at the zero point, is held from being turned backward, (provided the trip and permanent registers are in their normal position, connected with each other,) by the pinion 9, the shaft 7 of the latter being in turn controlled by pawls 18 and 19 (Fig. 3), as already described; and any forward turning of the register wheel would be accompanied by a movement of the permanent register and, therefore, could not be made the means of fraud.

The first step in resetting the trip register to zero consists in forcing inward the handle 14 which bears at its inner end against a slide 21, the inner and outer portions of which are formed with bearings 22 surrounding and moving upon the shaft 10. The slide is pressed outward by a spring B, which may be conveniently mounted on the shaft 10. The inner end of said slide is provided with an inclined slot 23 (Figs. 3 and 4), which receives the end of a pin 24 connected with the movable bracket 8 of the permanent register. The inward movement of the slide 21, therefore, causes the depression of the inner end of the permanent register, disconnecting the latter from the register wheel as already described. It is at this time that the movement of the register wheel must be controlled otherwise than by the permanent register. To this end the slide is provided with a tooth or stop 25 which at or before the moment of the depression of the pinion 9 engages the teeth of the register wheel 4 and prevents movement of it in either direction. The further inward movement of the handle 14 and slide 21 will carry the stop 25 within the circle of the teeth of the wheel 4, but before the wheel is thus released a dog 26 pivotally mounted at 26^a on the inner end of the slide will have its operative edge carried in between the teeth of the wheel so as to hold the latter from forward movement. The wheel and index may now be reset to zero by turning the handle 14 in the direction of the arrow in Fig. 2, the dog 26 yielding for the purpose, and being returned to its normal position, as each tooth of the wheel passes, by its spring 27. When the trip register index reaches its zero point the resetting mechanism is arrested by a suitable stop hereinafter described. As soon as the slide 21 has reached the inner limit of its movement it is arrested by the end of the slot 23 coming against the pin 24, and the retraction or outward movement of the slide is prevented by a movable pawl or catch which is spring-controlled or otherwise caused to act automatically, and the holding action of which is independent of the register wheel and, therefore, offers no resistance

to its rotation while being reset, and causes no friction or binding of the parts. The engagement of this pawl or catch continues until the trip register has been reset to the zero point, whereupon said catch will be operated by the resetting mechanism to release the slide and permit the return of the latter to its outer and normal position. It will, therefore, be seen that the handle 14 having been once thrust inward to its full extent, in an attempt to tamper with the register or for other purpose, the resetting operation must be concluded before the register will again become operative. Such catch or pawl may assume various forms of construction and arrangement, several of which we have illustrated in the drawings, and our invention may be embodied in other constructions and arrangements of the parts.

Referring first to the construction illustrated in Figs. 1 to 6, the catch is shown at 28 in the form of a pawl pivotally mounted at 29 upon the slide 21 and adapted to engage by its outer end, or by a shoulder, projection, or notch 30 near its outer end, with a stop 31 attached to the base 1 or to some fixed part connected therewith, for instance, to the bracket 17. The engaging surfaces of the catch and stop are so related that their engagement will take place when the resetting handle and slide have been thrust inward, (Fig. 5,) the catch being pressed toward the stop for this purpose by a spring 32, and will prevent the retraction or outward movement of the resetting devices. Said devices will remain thus locked until the catch is disengaged from the stop.

The means for disengaging our improved catch or locking device must be such that it can be operated by the person whose actions are guarded by the register, but not until the resetting operation has been completed. To this end we provide one of the parts which move with or constitute a part of the resetting mechanism, with a tripping device such as a projection, stop, cam, or equivalent means adapted to engage, immediately or mediately, with the said catch and separate it from its stop at the moment when the index 5 has reached the zero point. In the construction illustrated in Figs. 1 to 6, this projection is shown at 33 as attached to and moving with the wheel 4. In order to effect an engagement at the desired time between the catch and movable stop these parts are properly shaped. The stop 33 may be extended toward the catch to a point between the pivot 29 and the notch 30 as seen in Fig. 7, (in which case the notch would be upon the opposite side of the catch from that which it occupies in Figs. 5 and 6,) or the catch may be extended as by an arm 34, toward the wheel 4 and into the path of the movable stop 33, as best shown in said Figs. 5 and 6. The tripping device is thus enabled to release the catch from the fixed stop 31, and is illustrated

in the act of effecting this release in the last mentioned figure. The stop 33 is pivoted to the wheel 4 at *a*, but as it encounters the arm 34 it is held positively from backward movement by a lug *b* which is formed by the stop and is adapted to engage a spoke of the wheel. The stop is normally held in this position by a spring *c* interposed between the stop and a portion of the wheel. The stop may thus yield slightly in one direction if necessary, so as not to obstruct the upward movement of the catch-arm 34 or the engagement of the notch 30 or 35 with the stop 31.

It is desirable that the resetting mechanism shall be locked against retraction, so that the completion of the resetting operation shall be in a manner compelled, immediately after the inward movement of the resetting devices shall have been begun. For this purpose we provide a supplemental locking means adapted to operate at an earlier period of the inward movement than does the lock formed by the notch 30 and stop 31. This supplemental locking means may be most conveniently provided by forming the catch with an additional notch or shoulder 35 adapted to engage with a fixed stop, such as the part 31. The notch 35 may be situated so as to be only a very short distance below the stop 31 when the parts are in the normal position shown in Fig. 1, in which case the handle 14 and the resetting mechanism will become locked against retraction in the earliest part of their inward movement.

The stop hereinbefore mentioned for arresting the backward turning of the index 5 when the latter is at the zero point may consist of the catch arm 34, the further movement of the latter being arrested in turn, as by a stop 36 with which the catch 28 will make contact at such time; or the increasing resistance of the spring 32 may serve to arrest the catch and in turn the wheel 4 at the zero point. If the resetting mechanism be thrust inward while the trip register is at zero the arm 34 will be deflected by the stop 33 into the position shown in Fig. 6, thereby preventing any locking of the resetting mechanism. Such deflection is insured by making the stop 33 or arm 34, or both, with beveled, inclined, or sharpened ends as illustrated. The movable catch may, however, be arranged on the base 1 and the fixed stop therefor on the slide or other part of the resetting mechanism, and one form of such arrangement is shown in Figs. 8, 9, and 10. The catch is there indicated at 37 consisting of a pawl pivotally mounted on the base 1 or on some part or bracket fixed thereto, such as the bracket 17. This pawl is formed on its inner or under face with a locking notch 38 adapted in conjunction with a stop 39 on the slide 21 to hold the resetting mechanism from retraction when in its innermost position. A supplemental notch is also provided as shown at 40 for the purpose already described in connection with the notch 35. In

order to better maintain the proper relations of the parts the slide is formed with a groove 41 in which rests the free end of the catch 37 and in which is situated the stop 39. A
 5 spring 42 (Fig. 10), tends to draw the catch into place against said stop. The tripping device for this form of catch is also operated from the handle 14 when the trip register is at zero, in this instance consisting of an arm
 10 or cam 43 which may conveniently be a continuation of the pin 15 carried by the shaft 10 and adapted to engage and lift the catch 37, as seen in Fig. 10. To obtain a shorter and quicker action of the tripping device we
 15 bevel the under face of the catch as shown at 44 in said figure. In this construction the stop to arrest backward movement of the index 5 at the zero point, is formed by an arm 45 mounted on the base 1, or on some fixed
 20 part attached thereto, and situated in the path of a projection 46 carried by the wheel 4. This arm is made slightly movable in a forward direction to permit the continued forward movement of the trip register in case
 25 the latter should make more than a complete rotation, during a trip or otherwise, without being reset.

The form of catch shown in Figs. 8, 9, and 10, may be inverted, that is to say, as shown
 30 in Fig. 11, the catch or pawl 37 may be pivotally mounted on the slide 21, and controlled by a spring 50, while the stop 39 is fixed on the bracket 17, the pawl being arranged to be disengaged from the stop by the arm 43 as
 35 already described.

At H is shown a direction indicator, comprising a rotatable roll 47 bearing indications, such as "East," "West" or the like, said indications being duplicated one or more times
 40 around the roll. This roll may be operated in a well known manner by an anchor lever 48 engaging a ratchet wheel 49 on the roll shaft and connected with and actuated by the slide 21.

While we have shown the resetting mechanism with the catch or pawl, stop and tripping mechanism operating in connection with a trip register, it is obvious that such parts may be employed with any form of register requiring a resetting of the same to an
 50 initial or other position.

What is claimed is—

1. The combination with the trip register, and a resetting mechanism comprising rotary
 55 devices for turning the trip register, of a catch independent of said rotary devices, and acting to lock said mechanism against retraction, substantially as described.

2. The combination with the trip register,
 60 the permanent register, and means for disengaging them from each other, of a resetting mechanism comprising rotary devices for turning the trip register, and a catch independent of the said rotary devices, and acting

to lock the said mechanism against retraction, substantially as described. 65

3. The combination with the trip register, and a resetting mechanism comprising rotary devices for turning the trip register, of a
 70 catch independent of said rotary devices, and acting to lock the said mechanism against retraction, and a tripping projection operated by the resetting mechanism for moving and releasing said catch, substantially as described. 75

4. The combination with the trip register, and a resetting mechanism, of a catch consisting of a pivoted pawl having a shoulder or notch, and a stop adapted to co-operate
 80 with said pawl to lock the resetting mechanism, said pawl and stop being independent of the rotary parts of the trip register, substantially as described.

5. The combination with a trip register comprising a rotary register wheel, and a resetting mechanism, of a pawl and stop both
 85 independent of the said wheel and acting to lock the resetting mechanism against retraction, substantially as described.

6. The combination with a trip register, 90 and a resetting mechanism, of a catch independent of the rotary parts of the trip register and acting to lock the said mechanism against retraction, and a rotary tripping device operated by the resetting mechanism 95 for releasing said catch, substantially as described.

7. The combination with the trip register and a reciprocating resetting mechanism comprising rotary devices for turning the trip
 100 register, of a catch independent of said rotary devices and acting between said resetting mechanism and a fixed stop or point such as a portion of the register case or frame to lock said mechanism against retraction, 105 substantially as described.

8. The combination with a trip register, and a resetting mechanism, of a catch independent of the rotary parts of the trip register and acting to lock the said mechanism against
 110 retraction, and a tripping projection or stop on the register wheel for releasing said catch, substantially as described.

9. The combination with a trip register, and a resetting mechanism, of a catch independent 115 of the rotary parts of the trip register and acting to lock the said mechanism against retraction, and a rotary tripping and deflecting projection or stop operated by the resetting mechanism for releasing and deflecting said 120 catch, as described.

In witness whereof we have hereunto signed our names in the presence of two witnesses.

EPHRON CATLIN.
 GUSTAVUS REIN.

Witnesses:

E. M. TRACY,
 CLIFTON W. ABLE.