

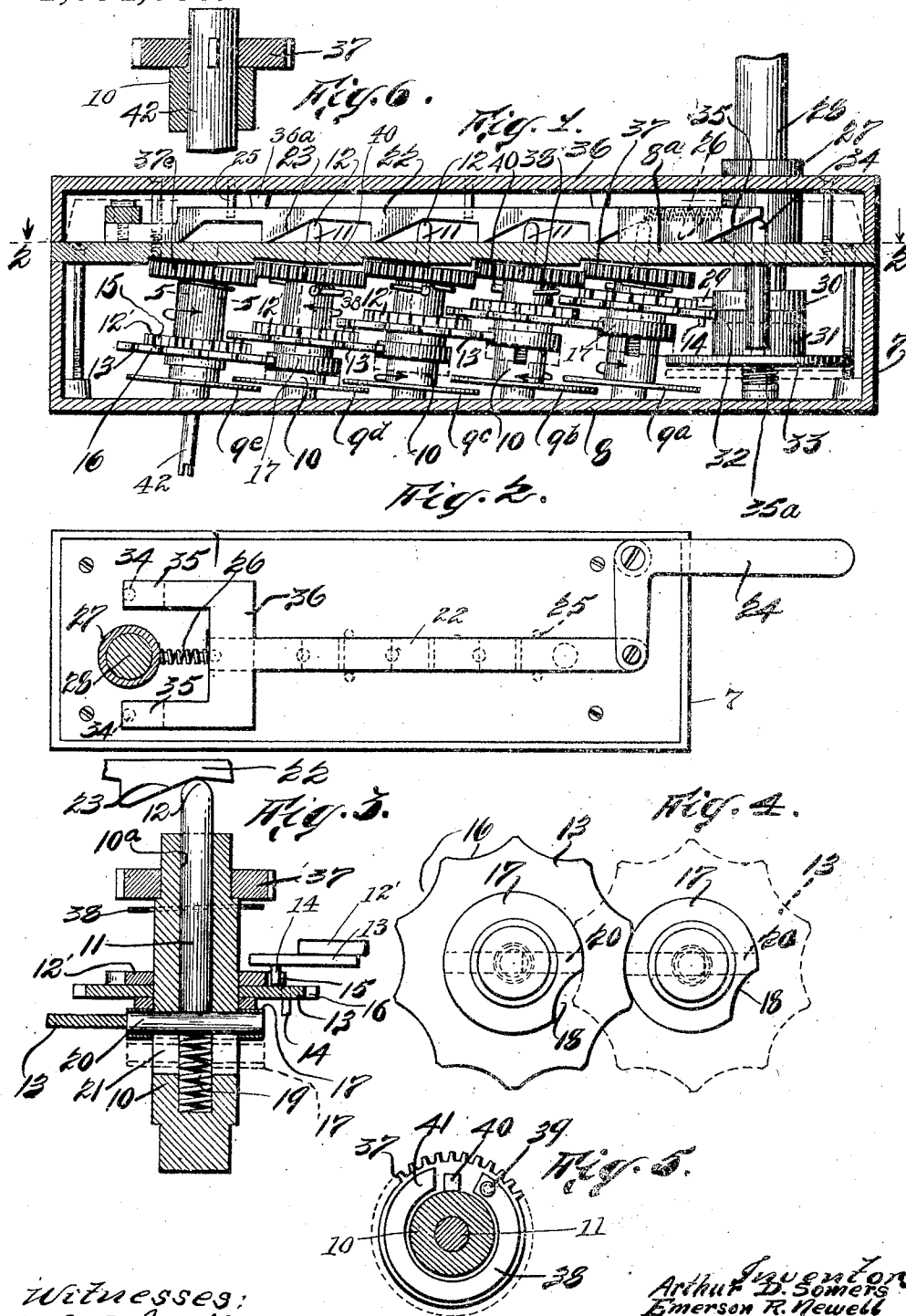
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RESETTING COUNTER.

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1,054,363.

Patented Feb. 25, 1913.



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# UNITED STATES PATENT OFFICE.

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## RESETTING COUNTER.

1,054,363.

Specification of Letters Patent.

Patented Feb. 25, 1913.

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*To all whom it may concern:*

Be it known that we, EMERSON R. NEWELL and ARTHUR D. SOMERS, citizens of the United States, residing at New York city, New York, and Bristol, Connecticut, respectively, have invented certain new and useful Improvements in Resetting Counters, of which the following is a clear, full, and exact description.

10 This invention relates to counters such as used for recording the number of revolutions of a shaft or the number of movements of a reciprocating part.

The invention is particularly applicable 15 to a counter having a number of dials of different denominations. These dials are generally held behind a case and as each counted movement occurs, the dials are sufficiently rotated or advanced to bring the 20 numbers of the dials successively before the sight openings or windows. To secure accuracy of indicated result by preventing undesired movement such as through an overthrow, counters of this type are usually 25 provided with means for holding the dials against rotation when they are not being advanced in a counted or added movement. While the invention is particularly useful in counters, the invention is appli- 30 cable to calculating machines of various constructions. It is necessary at times to reset the dials to zero.

An object of this invention is to provide a very simple mechanism for normally locking 35 the dials against rotation for the purpose stated above, and at the same time to provide improved means for resetting the dials to zero when desired.

A desired object of the invention is to 40 enable the accomplishment of the above results without in any way interfering with the transferring devices which transfer or "carry" from the dials of lower denomination to the dials of the next higher denomi- 45 nation.

Further objects of the invention will appear hereinafter.

In the drawing which illustrates the preferred embodiment of our invention Figure 50 1 is a horizontal section taken through a counter to which the invention has been applied; Fig. 2 is a rear elevation of the

counter taken along the line 2—2 of Fig. 1, looking in the direction of the arrows; Fig. 3 is a horizontal section taken through the 55 axis of one of the counter spindles and showing the relation of the adjacent parts; Fig. 4 is a view further illustrating the means for locking the dials against rotation; Fig. 5 is a cross section on the line 5—5 of Fig. 60 1 and illustrating the details of the resetting mechanism; and Fig. 6 is a longitudinal section at the inner end of the end spindle, that is the same spindle which is illustrated in Fig. 5.

Referring to the drawing, 7 represents a case of box-like form having a front wall 8 which is provided with sight openings or windows not illustrated, through which numbers upon the dials 9<sup>a</sup>, 9<sup>b</sup>, 9<sup>c</sup>, 9<sup>d</sup> and 9<sup>e</sup> 70 may be seen. These dials are preferably arranged in a slightly inclined position so that their edges overlap in order to save space, and the spindles 10 of the dials are correspondingly inclined and parallel with each 75 other. In the preferred embodiment of our invention these spindles 10 are of tubular form so that each spindle presents a bore 10<sup>a</sup> in which there is mounted a depressible pin 11, the outer end of which preferably pro- 80 jects and presents a rounded nose 12. The ends of the spindles 10 are rotatably mounted in the forward wall 8 of the case and in the back wall 8<sup>a</sup>. Each spindle is provided with a rigid pallet wheel 12' and also a 85 transfer wheel 13 which may be adjacent to the wheel 12'. Each transfer wheel is provided with a pin 14 which, once in every revolution, engages one of ten notches 15 in the pallet wheel of the next higher denomination 90 so as to transfer or carry when the number on the dial of the lower denomination passes 9, each wheel 13 cooperating with its corresponding pallet wheel 12' so as to constitute a transfer device or carrying device for 95 carrying to the higher denominations. The edge of each transfer wheel may be provided with 10 shallow concave notches 16. When the carrying or transfer movement is not taking place, a shiftable collar or wheel 100 17 on the spindle of the next lower denomination holds its corresponding transfer wheel against rotation as illustrated in Fig. 4. Each of the small wheels or collars 17

has a concave notch or recess 18 which will lie adjacent to the edge of the interlocking transfer wheel at the moment that the carrying movement takes place so as to permit the rotation of the transfer wheel 13 through one space. As the dials are rigid on the spindles 10, it is obvious that the dials are (except when carrying) locked against rotation. We provide means for enabling the wheels 13 and 17 to be disengaged when the dials are to be reset to zero. In order to accomplish this, we prefer to arrange the wheel 17 to slide on their spindles, and hold each wheel 17 in its normal position by means of a spring 19 within the tubular spindle and thrusting inwardly against a transverse pin 20 which passes diametrically across wheel 17 and through a slot 21. These wheels 17 may all be shifted simultaneously by means of a cam bar 22 arranged to slide longitudinally at the rear wall 8<sup>a</sup>, said cam bar being provided with inclined or cam faces 23 which engage the noses 12 of the pins 11, so as to depress the pins when the bar is shifted. This bar may be shifted in any suitable manner such as by means of a bell-crank lever 24, and the cam bar may be guided so as to slide longitudinally between pins 25.

In order to hold the cam bar 22 normally in the position shown in Fig. 1, we may provide a spring 26 arranged to thrust against a bearing for the shaft 28, the revolutions of which are to be counted. This shaft 28 may advance the units dial 9<sup>a</sup> by means of a radial pin 29 carried on a rigid collar 30. Below this collar 30 there is provided a longitudinal shiftable collar 31 to perform a function similar to the wheels 17, that is, it normally interlocks with the units transfer wheel but is provided with a notch 32 in its edge which is opposite to the pin 29 so that when the pin 29 engages the units pallet wheel the rotation of the units dial is permitted. The collar 31 has a rigid disk or flange 33 which enables the collar 31 to be depressed by means of two pins 34 similar to the pins 11, and actuated by cam toes 35 on a fork 36 formed on the end of the cam bar 22. A coaxial spring 35<sup>a</sup> holds the collar 31 in its normal position. It is understood that each wheel 13 coöperating with its interlocking mate constitutes a locking couple for normally locking all the dials against rotation, except in the carrying movement. The cam bar 22 is preferably held under a cover plate 36 fastened on the back of the case, sliding on lugs 36<sup>a</sup>.

When the cam bar 22 is shifted as suggested, all the pins 11 will be forced forwardly and their inner ends thrusting against the cross pins 20 will evidently shift all of the wheels 17 longitudinally on their spindles and disengage them from their

corresponding interlocking wheels 13. At the same time the pins 34 will thrust forwardly against the disk or flange 33 and disengage the collar 31. The dials may then be all reset simultaneously to zero provided the pin 29 is not in engagement with the units pallet wheel. In order to reset all the dials to zero, each spindle 10 is provided with a resetting driving member in the form of a gear wheel 37, and these gear wheels are all of equal diameter and may mesh with each other in succession so as to form a resetting gear train. All of the gear wheels except the one which corresponds to the dial 9<sup>a</sup> are loose on the spindles and each gear wheel is preferably provided on its side face with a circumferential bent spring pawl 38. One end of each of these spring pawls may be attached as at 39 in Fig. 5; and the other end project so as to lie in the path of pin 40 which is carried by each of the spindles. When the dials are being advanced in the counting movement, the pins 40 pass around in a direction so that they will slide along the face of each corresponding spring pawl and thrust it to the side without affecting the gears, but when the gears are rotated, the ends 41 of these spring pawls come against the pins 40 so as to "pick up" the spindles, which become driven members in the resetting mechanism, and these spindles are connected with the dials in some manner so as to rotate them; the dials may be rigid on the spindles if desired, but this is not essential so long as the rotation of the driven resetting member in the direction to reset will cause the rotation of the dial.

It will be seen that the driven connection between the driving-members and the driven members is a one-way drive connection, that is the rotary movement can be transmitted only in one direction. The gear wheel 37<sup>a</sup> which corresponds to the dial 9<sup>a</sup> of highest denomination is loose with respect to its spindle 10. It is fixed to an inner shaft 42 which extends through the forward end of the spindle of the dial 9<sup>a</sup> and which may be slotted to receive a removable key. The gear wheel 37<sup>a</sup> may be fixed to the inner shaft 42 as shown in Fig. 6. It will be evident that when the wheels 13 and 17 are released from each other, the dials may be rotated in unison by rotating the shaft 42, the direction of rotation of the dials being indicated by the arrows shown adjacent to their respective spindles. Each of the pins 40 is in a predetermined position with respect to the zero on the face of the corresponding dial, and the gears are arranged so that after the dials have been "picked up" when one indicates zero, they will all indicate zero.

While the invention as above described is the preferred embodiment thereof, it is un-

derstood that we do not restrict ourselves to the form of the invention described, nor consider ourselves limited to this construction in our claims.

5 What we claim as new is:

1. In a resetting counter having dials of different denominations, in combination, a rotatable dial, a locking wheel non-rotatable but slidable with respect to said dial, and connecting means by which said wheel locks an adjacent dial of another denomination against rotation, said locking wheel being arranged to slide longitudinally on its axis of rotation to release said adjacent dial.

15 2. In a resetting counter having dials of different denominations, in combination, a frame, a rotatable dial, a locking wheel arranged to rotate with said dial, connecting means by which said wheel locks an adjacent dial of another denomination against rotation, said locking wheel being arranged to slide longitudinally on its axis of rotation to release said adjacent dial, and means supported by said frame for shifting said locking-wheel.

3. A resetting counter having in combination, a plurality of rotatable dials of different denominations, a plurality of locking-wheels coaxial with and corresponding to said dials, arranged to rotate with said dials, and connecting means by which each locking-wheel locks an adjacent dial of a different denomination against rotation, said locking wheels being mounted to slide longitudinally upon their axes of rotation toward and away from their corresponding dials to release the dials when the same are to be reset.

4. In a resetting counter, in combination, a frame, a plurality of dials of different denominations, means for carrying from the dials of lower denomination to the dials of higher denomination, mechanisms respectively associated with said dials normally interlocking to prevent rotation of the dials except in the counting movement, means supported by said frame for unlocking said mechanisms, a resetting gear train constantly in mesh, and means associated with the dials and actuated through the said gear train to rotate said dials to reset the dials.

5. In a resetting counter having dials of different denominations, and carrying means for carrying from one to the next higher denomination, a locking device arranged between each dial and the next dial of higher denomination and consisting of two wheels corresponding to the two adjacent dials, and interlocking at their edges at every position of the dial of higher denomination and adapted to unlock at the carrying position, at least one of said wheels being slidable toward and from its corresponding dial but at all times rotatable therewith.

6. In a resetting counter having dials of different denominations, and carrying means for carrying from one to the next higher denomination, a locking device arranged between each dial and the next dial of higher denomination and consisting of two wheels corresponding to the two adjacent dials, and interlocking at their edges at every position of the dial of higher denomination and adapted to unlock at the carrying position, at least one of said wheels being slidable toward and from its corresponding dial but at all times rotatable therewith, and mechanism for rotating all the dials in unison to reset the same.

7. In a resetting counter having dials of different denominations, and carrying means for carrying from one to the next higher denomination, a locking device arranged between each dial and the next dial of higher denomination and consisting of two wheels corresponding to the two adjacent dials, and interlocking at their edges at every position of the dial of higher denomination and adapted to unlock at the carrying position, at least one of said wheels being slidable toward and from its corresponding dial but at all times rotatable therewith, a resetting gear train associated with the dials, and means for rotating said gear train.

8. In a resetting counter having dials of different denominations, and carrying means for carrying from one to the next higher denomination, a locking device arranged between each dial and the next dial of higher denomination and consisting of two wheels corresponding to the two adjacent dials, and interlocking at their edges at every position of the dial of higher denomination and adapted to unlock at the carrying position, at least one of said wheels being slidable toward and from its corresponding dial but at all times rotatable therewith, spindles carrying said wheels, pins in connection with said spindles for shifting said slidable wheels, and means for moving said pins longitudinally.

9. In a resetting counter, dials of different denominations, transfer couples for carrying from a dial of one denomination to a dial of next higher denomination, locking couples coöperating with said transfer couples for locking each dial of higher denomination against rotation except when being advanced by the transfer couple which drives the same, means for releasing said locking couples, and means for resetting said dials.

10. In a resetting counter, a plurality of dials of different denominations, transfer couples for carrying from a dial of one denomination to a dial of next higher denomination, locking couples coöperating with said transfer couples for locking each dial of higher denomination against rotation except when being advanced by the transfer

couple which drives the same, means for effecting the resetting of said dials and transfer couples comprising resetting driving members loosely mounted on the axes of said  
5 dials, means for rotating the same in unison, and resetting driven members arranged to rotate the dials, said driving members and said driven members being constructed with a one-way drive connection therebetween,  
10 permitting rotation of said dials by the resetting mechanism only in one direction with respect to said driving members.

Signed at New York, N. Y. by the said

EMERSON R. NEWELL, this 18th day of July 1912.

EMERSON R. NEWELL.

Witnesses:

FLORENCE JACKSON,  
ABRAM BERNSTEIN.

Signed at Bristol, Conn., by the said ARTHUR D. SOMERS, this 20 day of July, 1912.

ARTHUR D. SOMERS.

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