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C. D. LAKE

RESETTING DEVICE FOR COUNTERS, ACCUMULATORS, AND THE LIKE

Filed Dec. 13, 1924

Fig. 1.

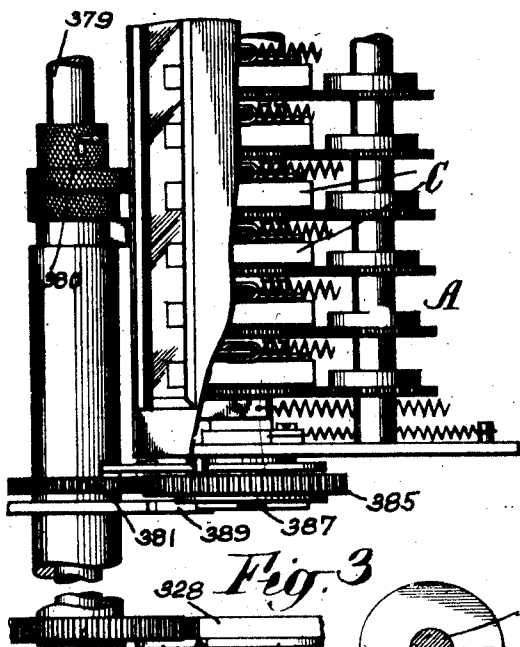


Fig. 2.

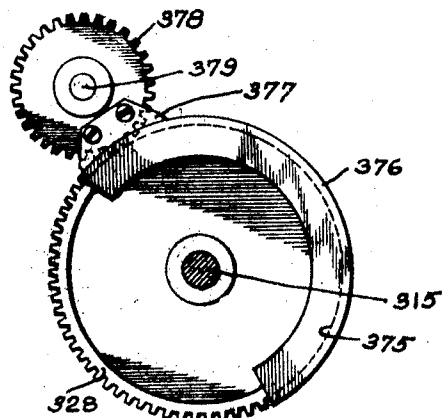


Fig. 4.

Fig. 5.

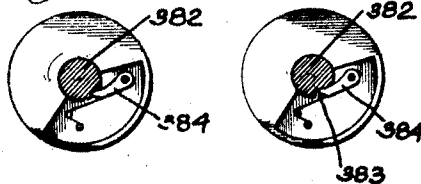


Fig. 3.

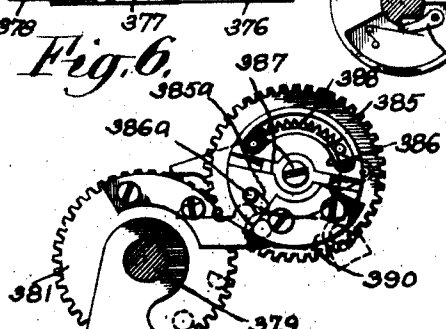


Fig. 8.

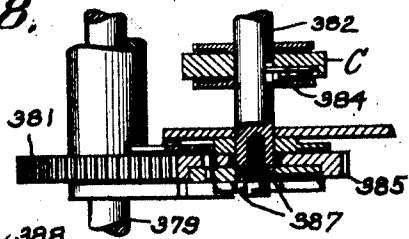
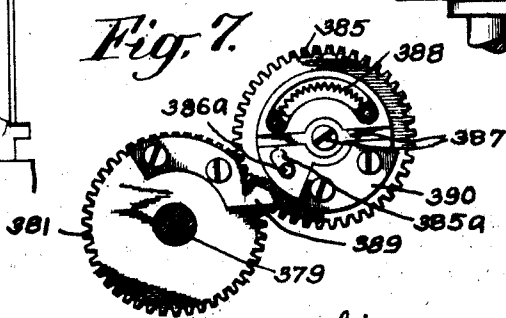


Fig. 7.



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RESETTING DEVICE FOR COUNTERS, ACCUMULATORS, AND THE LIKE.

Original application filed May 15, 1923, Serial No. 639,153. Divided and this application filed December 13, 1924. Serial No. 755,621.

The present invention relates to improvements in resetting devices for accounting machines which may be of the type shown in my copending application, Serial No. 639,153, filed May 15, 1923, of which the present application is a division.

The present invention is directed to improvements in the driving mechanism for the resetting shaft or shafts of the machine. One object of the present invention resides in the provision of a novel gearing drive to the resetting devices which is adapted to permit a main actuating shaft and its appurtenant parts to make an initial movement without imparting movement to the resetting devices. During such initial movement of the main driving or actuating shaft the resetting devices are locked against movement. In the following part of the cycle the resetting devices are unlocked and are driven by and from the main actuating shaft.

A further object of the present invention resides in the provision of means for imparting to the counter wheel supporting shaft a slight extent of over rotation during the resetting cycle in order to permit the unengaged or advanced reset pawls to drop into the notches upon the shaft. Subsequently provision is made for imparting a relative rearward rotation to the shaft which had previously been over rotated in order to provide clearance to permit the reset pawls of the counter or accumulator to engage with the notched shaft.

Further objects and advantages of the present invention will be hereinafter pointed out in the accompanying specification and claims and shown in the drawings which by way of illustration show a preferred embodiment of the invention.

In the drawings,

Fig. 1 is a top plan view of one of the accumulators of the tabulating machine showing the correlation of the resetting shaft, reset clutch, etc.

Fig. 2 is a side view of the driving devices for the main reset shaft.

Figs. 3, 4 and 5 are detail views which show different conditions of the reset pawl with respect to the accumulator wheel reset shaft.

Fig. 6 is an enlarged detail view of certain of the reset actuating devices.

Fig. 7 shows the same parts in a moved position.

Fig. 8 is a detail sectional view of these same parts, the section being taken on line 8—8 of Fig. 6.

Referring to the drawings, Fig. 1 shows an accumulator such as used in tabulating machines, the accumulator being generally designated A. Each accumulator is provided with a number of individual accumulator or counter wheels designated C. It will be understood that in an actual machine there are a number of these accumulators disposed side by side and that for resetting these various accumulators there is provided a shaft 379. This shaft is well known as the tabulator reset shaft and includes reset clutches 380 which are adapted to selectively clutch gears 381 to the shaft 379. In machines of this sort the machine cycle is such that printing of the accumulated amounts takes place in the first half of the resetting and total printing cycle and resetting of the accumulators takes place in the second half of the cycle.

Referring to Fig. 2 of the drawings, shaft 315 is the main actuating shaft for the printing and resetting devices. This shaft makes a complete revolution to effect total printing and carry out a resetting operation. Fixed upon this shaft is a gear 328, which gear has no teeth for half its periphery as shown at 375. Gear 328 is further provided with a semi-circular plate 376 which cooperates with a Geneva stop arcuate shaped element 377 fixed to a gear on the tabulator reset shaft 379. Upon the counter-clockwise rotation of gear 328 the parts 376 and 377 prevent the turning of the gear 378 until the blank section of the gear 328 is passed. Thereafter the second half revolution of gear 328 effects one complete revolution of gear 378 and its shaft 379. The devices just described and adapted to impart one revolution of movement to the tabulator reset shaft 379 after the initial printing cycle is completed and during the printing cycle of the main actuating shaft these devices are adapted to lock the tabulator reset shaft and prevent its turning.

As stated above 379 is provided with reset clutches which are adapted to selectively clutch gears 381 to the shaft 379. One gear 381 is provided for each counter or accumu-

lator A and it is the rotation of this gear which resets the accumulator to zero. The resetting mechanism for the accumulator wheel C is of the type commonly employed in which the accumulator or counter wheel shaft 382 is notched as shown at 383 to permit the reset pawl 384 to engage the same (see Figs. 3 to 5). By turning shaft 382 through a complete counterclockwise revolution one or more of the counter wheels are picked up when pawl 384 engages notch 383 and thereafter rotate until the counter wheels are zeroized. With resetting devices of this character it is found that there is a possibility that the counter wheel or wheels will not stand exactly at the zero position so that the pawl will not engage the notch in the shaft but will remain on the top of a shoulder. This condition of parts is indicated in Fig. 3 of the drawings. Fig. 5 shows the proper condition of parts.

In order to prevent the objectionable condition of Fig. 3 arising, I provide means for imparting to the shaft 382 an amount of rotation which is slightly over one complete revolution. This permits the pawls 384 which have been previously moved slightly ahead of zero position to properly clear and drop into the notches 383 as indicated in Fig. 4 of the drawings. Subsequently the shaft 382 is permitted to rock backward or clockwise until the parts assume the position of Fig. 5.

Referring now to Figs. 6, 7 and 8, and also 3 to 5 inclusive, the gear 381 meshes with the gear 385 which is hollowed out to receive the annular block 386, which block is securely fastened to the shaft 382 by the key and screw devices 387. The annular block 386 and gear 385 are spring-connected together by a spring 388, but are normally rotated in unison by means of the pin 386^a carried in block 386 and in the slot 385^a in gear 385 so that the rotation of gear 381 will drive shaft 382 in unison therewith. Just before the rotation of gear 381 is completed, a pointed member 389 carried by this gear, engages a cam plate 390 carried by the annular block 386 and advances the same forwardly relative to gear 385 (see Fig. 7). This operation turns shaft 382 to a slightly additional extent or anticlockwise, then after 389 drops off 390 the spring 388 will cause the parts to realign, as in Fig. 6, or expressed otherwise, the annular block 386 will move clockwise relative to the gear 385. This movement will cause the shaft 382 to move from the position shown in Fig. 4 to the position shown in Fig. 5 and insure all resetting pawls dropping into the notches in the shaft.

The foregoing described arrangements of resetting devices obviates the necessity of careful adjustment and extreme accurate machining of the resetting notches to insure

accuracy in resetting operations. Unless such accuracy is secured at the time of resetting the counter or accumulator wheels there is a possibility of amounts still standing on the counter or accumulator wheels at the time of completion of zeroizing thus introducing errors in subsequent additions.

What I claim is—

1. In combination with an accumulating device, a reset element adapted to engage said device to reset the same, means for moving said element for a resetting operation, a supplemental positively actuated means for moving said element to a slightly additional extent, and means for causing a retracted movement of the element after a reset operation.

2. In combination with an accumulating device, a reset element adapted to engage said device to reset the same, means comprising a shaft receiving a predetermined extent of angular rotation for actuating the aforesaid element, and means intermediate said shaft and element for actuating said element to an extent slightly in excess of the movement derived from the aforesaid shaft when effecting a reset operation and means for causing a retracted movement of said element after a reset operation.

3. In combination with an accumulating device, a reset element adapted to engage said device to reset the same, means for actuating said element, and means having provisions to receive at each resetting operation a predetermined amount of movement from the aforesaid means and to impart first a concurrent movement of the element and then a supplemental movement greater than that of the actuating means, said last mentioned means also having provisions for subsequently automatically effecting a retrograde movement of the reset element for the purpose described.

4. In combination with an accumulating device, a reset element adapted to move said device to zero position, means comprising a mechanical movement increasing device for actuating said element slightly past normal zero position when performing a reset operation, and means for causing a retracted movement of said element after a reset operation.

5. In combination with an accumulating device, a reset element adapted to move said device to zero position, means for actuating said reset element, means operating independently of excessive extents of operation of the aforesaid means for actuating said element to and slightly past zero position when performing a reset operation, and resilient means for retracting said element from said advanced position to zero position after a resetting operation.

6. In a resetting device for an accumulator, in combination with an accumulator

wheel resetting shaft having reset notches therein and accumulator wheels with zeroizing pawls cooperating with said notches, means for rotating said shaft to effect resetting of the accumulator wheel, said means having mechanical provisions acting to supplement the received rotational movement from the rotating means for imparting a slightly excessive rotational movement to said shaft during the resetting operation and for subsequently rearwardly retracting said shaft to permit the engaging of the resetting pawls with the notches therein.

7. In an accounting machine having an accumulator provided with an accumulator reset shaft, a main reset shaft, means for driving said accumulator reset shaft from said main reset shaft, said means including a pair of intermeshing gears, one of which is fixed to the main reset shaft, an actuating element carried by the accumulator reset shaft and having a lost motion yielding connection with the other of said gears, and means op-

erable by the gear upon the main reset shaft for imparting an additional increment of movement to said actuating element upon a resetting operation for the purpose described.

8. In a resetting device having a notched resetting shaft and wheels with pawls engaged by the notched shaft to be reset thereby, in combination with a resetting actuating means having a mechanically fixed invariable angular movement at each resetting operation, an intermediate connection intermediate said last named means and the resetting shaft with provisions for imparting to the reset shaft additional angular movement as compared to the amount of movement received from the actuating means, and means for subsequently imparting to the reset shaft a retrograde movement for the purpose described.

In testimony whereof I hereto affix my signature.

CLAIR D. LAKE.