Dec. 13, 1949 F. J. ROUAN ET AL 2,491,214

REGISTER WHEEL SETTING MEANS

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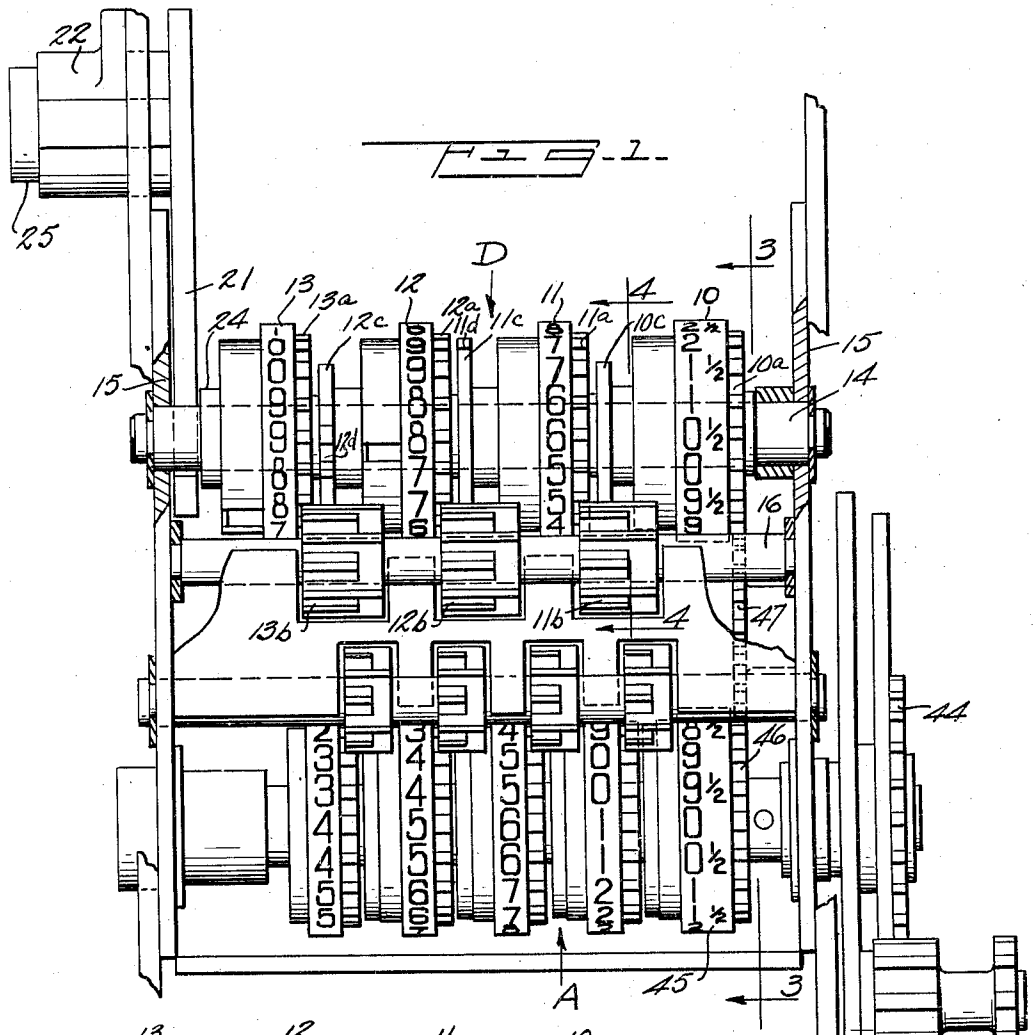


FIG. 1.

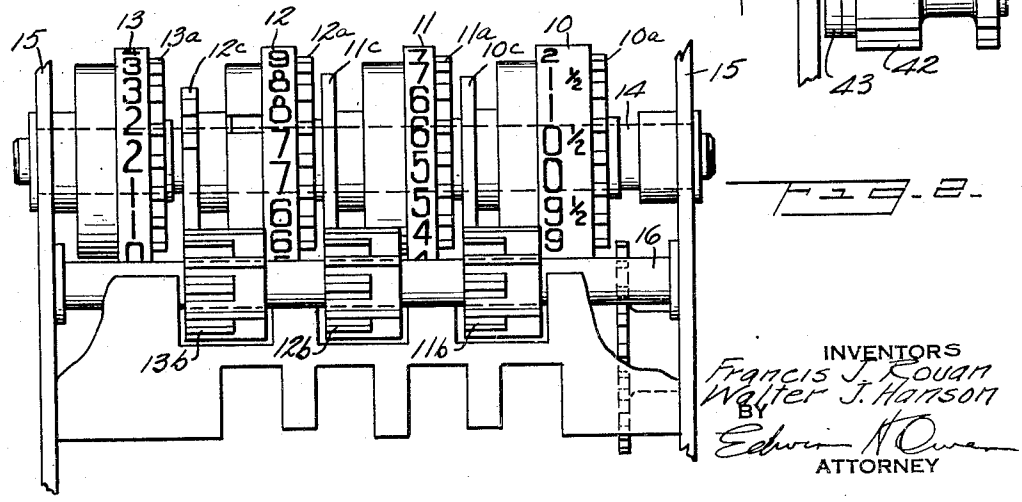


FIG. 2.

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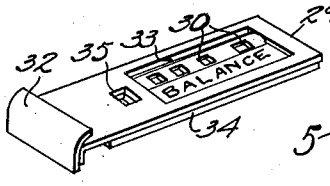


FIG. 6.

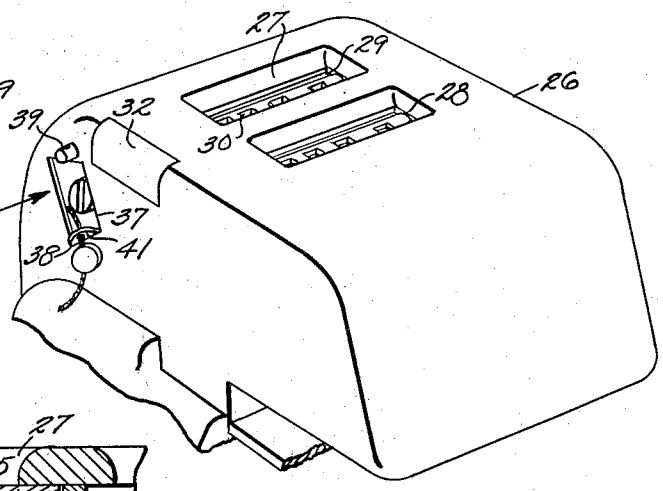


FIG. 7.

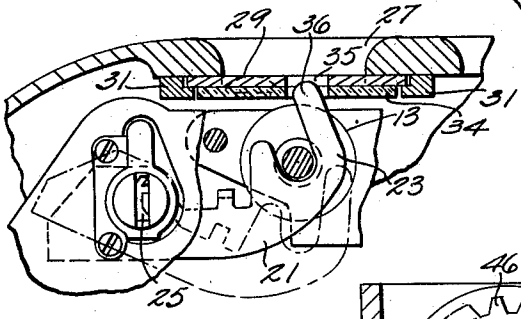


FIG. 5.

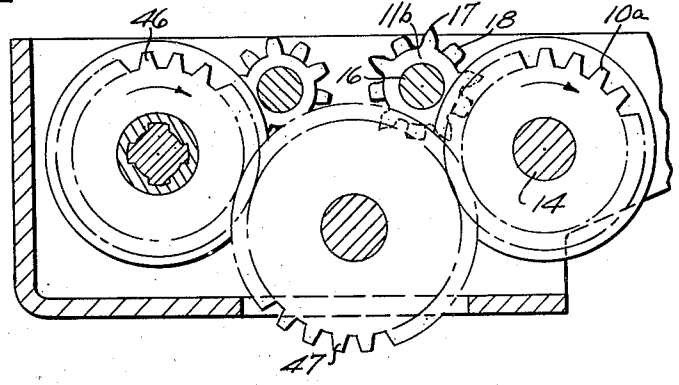


FIG. 3.

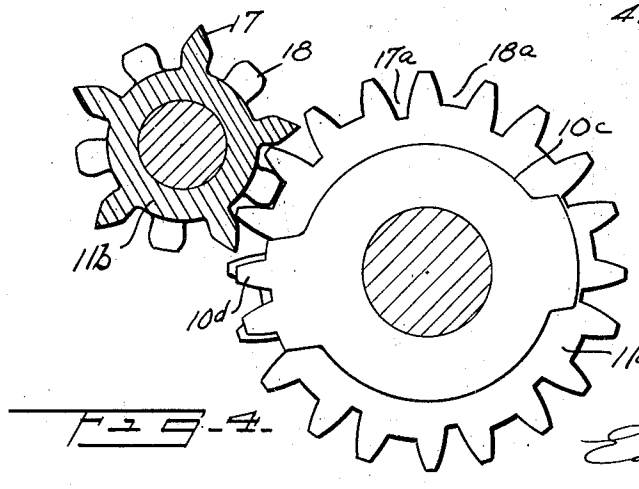


FIG. 4.

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REGISTER WHEEL SETTING MEANS

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Application June 27, 1946, Serial No. 679,846

5 Claims. (Cl. 235—101)

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This invention relates to control means to provide for the correct setting of the figure wheels of the registering mechanism of a postage meter unit.

After a prepaid value in a postage meter has become exhausted, the device automatically locks out and the postage printing mechanism cannot function until a new credit is set in the registering mechanism. Access to the registering mechanism is restricted to only authorized postal authorities who enter the meter by first breaking a seal.

In accordance with certain features of this invention, the breaking of the seal permits access to a key controlled lock, the unlocking of which permits the opening of a window normally covering the figure wheels of a descending register. Setting is adapted to be effected through the opened window by rotating the figure wheels and adding thereto a value agreeing with the payment made. Before rotating the wheels however, they are released from operative relation with cooperating transfer members to permit free rotation thereof without affecting any other register wheel.

The units figure wheel has both half and full unit values engraved thereon in the order of 1–1½, 2–2½, 3–3½, etc., and each of the figure wheels of higher order provides for the half unit positions by repeating each full value, such as 1–1, 2–2, 3–3, etc. This provides for the direct reading of the half cent values, and in consequence thereof, the repeat value positions on the wheels of higher order, which represent the half unit positions, must be consistent throughout each figure wheel to provide for proper timing relation.

Therefore, to assure the proper setting of the wheels of higher order so that the full value and half value positions will be consistent in all of the figure wheels, means has been provided to prevent the return of each figure wheel of higher order to an operative position until the said value positions are consistent.

The principal object of the invention therefore, is to provide an arrangement, whereby, after the figure wheels of the descending register of a postage meter are released from operative relation with cooperating transfer members, and a new value has been set therein, the return of the figure wheels to operative relation with the transfer members is prevented until the unit or half unit value positions agree throughout all of the figure wheels.

It is a further object to provide means whereby the figure wheels are retained in their operative

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positions, and to include therewith, means whereby the figure wheel reading opening is locked to prevent access to the figure wheels.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

A preferred embodiment of the invention is illustrated in the accompanying drawings, wherein;

Fig. 1 is a plan view showing the registering mechanism of a postage meter and includes both an ascending and descending register;

Fig. 2 is a view showing the descending register portion of Fig. 1 with figure wheels of the descending register removed from operative relation with their transfer members and arranged in their setting positions;

Fig. 3 is a vertical sectional view taken along lines 3—3 of Fig. 1;

Fig. 4 is an enlarged vertical sectional view taken along the lines 4—4 of Fig. 1 and showing the variable shaped gear and pinion teeth;

Fig. 5 is a part elevational and part sectional view taken in the direction of the arrow 5 of Fig. 7 and showing the window locking and figure wheel retainer mechanism;

Fig. 6 is a perspective detail view of a slide which is used to close the figure wheel reading opening in the casing over the descending register, and

Fig. 7 is a perspective view of the casing covering the upper portion of a postage meter and shows the location of the windows through which the descending and ascending registers are read, also the position of the key actuated lock.

Referring to the drawings in detail, the descending register D comprises a units wheel 10 and three figure wheels of higher order, including a tens wheel 11, a hundreds wheel 12, and thousands wheel 13, which wheels are rotatively supported on a shaft 14. Said shaft 14 is carried in a frame comprising walls 15—15, forming a part of the postage meter supporting structure. Each figure wheel 10, 11, 12 and 13 has a gear attached thereto, as indicated at 10*a*, 11*a*, 12*a* and 13*a* respectively.

A shaft 16, also supported within the walls 15—15, has three transfer pinions 11*b*, 12*b* and 13*b* mounted thereon, which pinions are associ-

ated with the gears 11a, 12a and 13a respectively. Said pinions provide for the tens transfer operation from one figure wheel to the figure wheel of next higher order, and are actuated by teeth on flanged portions 10c, 11c and 12c, formed as a part of the figure wheels 10, 11 and 12 respectively. Said tens transfer toothed portions are indicated at 11d and 12d on the flanges 11c and 12c in Fig. 1, and at 10d on the flange 10c, Fig. 4. The mechanism as thus far described is the well known Geneva transfer type of register unit, wherein a transfer is effected when a toothed portion 10d, 11d or 12d of any of the flanged members 10c, 11c or 12c effects the movement of one of the pinion bulbs 11b, 12b and 13b respectively, which in turn effect operation of a succeeding wheel of higher order through the rotation of a gear 11a, 12a or 13a respectively.

As clearly shown in Fig. 1, it will be noted that the units wheel 10 has both full and half unit values thereon. It will be further noted that each of the figure wheels of higher order, starting with the tens wheel 11, duplicate the figures of each of the full unit values. The second or duplicate figure in each instance corresponds with the half unit value position of the units figure wheel.

When setting a prepaid amount of postage in the figure wheels of the descending counter "D," each of the figure wheels is moved axially along the shaft 14 to the positions indicated in Fig. 2, to thereby disconnect the gears 11a, 12a and 13a from their meshed relation with the transfer pinions 11b, 12b and 13b respectively. When in said latter position, the figure wheels may be rotated independently to effect setting of the value of the prepaid postage. In view of there being both the full value and half value positions designated on each figure wheel, it is necessary to have all wheels agree with the value of the units wheel, at the reading position. That is, if the units wheel should have any one of the half cent values remaining in the units wheel, when the meter is being set, the wheels of higher order will be set in their half unit positions, and if the units wheel has a full value remaining, each of the wheels of higher order will be set with the full value figure appearing at the reading position.

As a result of this invention, means is provided whereby the setting of either the half or full unit value in the wheels of higher order requires no special effort on the part of the person making the setting because the figure wheel gears can be remeshed with their associated pinions only when the half or full unit positions agree in all of the figure wheels. This is accomplished by varying the shape of the alternate teeth of both the figure wheel gears and transfer pinions in such manner that they will mesh only when in their correct half or full unit relation.

Referring to Fig. 4, the pinion is provided with alternate long teeth 17 and short teeth 18, and the tooth spaces of the gear provide for alternate long and short tooth depths 17a and 18a respectively. The teeth 18 of the pinion may also be made wider and the tooth spaces 18a may be increased in width to accommodate same, as indicated. Although the tooth structure is changed, free running action of the gears and pinions is maintained. It will be seen therefore, that the meshing of the pinion teeth with the gear teeth can be accomplished only when the teeth and their associated tooth spaces match, and this occurs only when the half or full unit values are in agreement throughout each of the figure wheels.

When the figure wheels have been properly adjusted to their correct operative relation with the pinions, they are retained in their set positions by means of a retainer member 21, which member has one end pivotally mounted within a bearing 22 and is adapted to have its free end 23 moved to a position directly in the path of the face of a hub portion 24 of the figure wheel 13, the wheel of highest order. Said retainer member also has associated therewith a key actuated lock, as indicated at 25, which lock is suitably supported by the bearing 22, and is adapted to be operated only when the proper key is produced by the postal authority, thus making it impossible to remove the retainer member from its retaining position by any other means than with the required key.

A suitable casing 26 covers the meter unit and the operating mechanism of the postage printing device. In Fig. 7, the upper portion of said casing 26 is indicated. To permit the reading of the figure wheels, windows are provided as indicated at 27, for the descending register unit and at 28 for the ascending register unit. The window 27 is covered by means of a slide 29, Figs. 5, 6 and 7, which slide is adapted to be supported on gibs 31, and has a pull portion 32 at the outer end thereof. An opening 33 in said slide is covered from below by a transparent portion 34 and is arranged to provide figure wheel reading spaces 30.

An opening 35 is cut through the slide 29 and transparent portion 34, which openings is adapted to be engaged by a prong 36 projecting upwardly from the free end 23 of the retainer member 21 when said member is in a retaining position.

After the slide 29 is locked, and the key is removed from the lock 25, means is provided for the sealing of an opening 37 in the casing, through which access to the lock is approached. The latter is accomplished by moving a sliding door 38 upward to close the opening 37, then applying a lead seal to the ends of a wire after the wire has been passed through suitable apertures in both a lug 39, projecting from the casing, and an ear 41, projecting from the door 38. In Fig. 7 the lead seal and wire are indicated, the wire having been cut and left hanging, with the seal thereon, from the ear 41.

A portion of the drive means is shown, which comprises a driven pinion 42 supported by a bracket 43, which pinion meshes with a gear 44, also supported by said bracket 43. The gear 44 drives the units wheel 45 of the ascending register unit A, and through a gear 46, fixed to said units wheel, and an intermediate gear 47, a drive is provided to the units wheel 10a of the descending register unit.

Having described the invention, what is claimed is:

1. In a device for setting a prepayment value in the descending register of a postage meter unit; the combination with figure wheels including a gear fixed thereto, and transfer pinions to effect a transfer from a figure wheel of lower order to a wheel of higher order; of means to effect the correct alignment of specific figures of the figure wheels when setting a prepayment value in the figure wheels and comprising variable shaped teeth on the figure wheel gears and transfer pinions arranged to provide operative engagement of the figure wheel gears and transfer pinions only when said specific figures are in alignment throughout the several figure wheels, and relative axial adjustment provided between each figure wheel gear and associated transfer

pinion, whereby the meshed relation of said figure wheel gears and transfer pinions may be broken to permit the setting of the figure wheel to a desired prepayment value.

2. In a device for setting a prepayment value in the descending register of a postage meter unit; the combination with figure wheels including a gear fixed thereto, and transfer pinions to effect a transfer from a figure wheel of lower order to a wheel of higher order; of means to effect the correct alignment of specific figures of the figure wheels when setting a prepayment value in the figure wheels and comprising variable shaped teeth on the figure wheel gears and transfer pinions arranged to provide operative engagement of the figure wheel gears and transfer pinions only when said specific figures are in alignment throughout the several figure wheels, relative axial adjustment provided between each figure wheel gear and associated transfer pinion, whereby the meshed relation of said figure wheel gears and transfer pinions may be broken to permit the setting of the figure wheel to a desired prepayment value, and means to retain the figure wheel gears in meshed relation with the transfer pinions after setting.

3. In a device for setting a prepayment value in the descending register of a postage meter unit; the combination with figure wheels having unit and half unit value positions thereon, a gear carried by each figure wheel, and transfer pinions to effect a transfer from a figure wheel of lower order to a wheel of higher order; of means to effect the correct alignment of each of the figure wheels of higher order to agree with either a full or half unit position of the units wheel and comprising variable shaped teeth on the figure wheel gears and transfer pinions arranged to provide operative engagement of the figure wheel gears and transfer pinions only when the full or half unit value positions agree throughout the several figure wheels, axial adjustment provided for each figure wheel and associated gear, whereby said figure wheel gears may be removed from mesh with associated transfer pinions to permit the setting thereof to a desired prepayment value and the return thereof to operative positions when the teeth of the gears mesh with the pinions, and means to retain the figure wheel gears in meshed relation with the transfer pinions after setting.

4. In a device for setting a prepayment value in the descending register of a postage meter unit; the combination with figure wheels having unit and half unit value positions thereon, a gear carried by each figure wheel, and transfer pinions to effect a transfer from a figure wheel of lower order to a wheel of higher order; of means to effect the correct alignment of each of the figure wheels of higher order to agree with either a full or a half unit position of the units wheel and comprising variable shaped teeth on the register wheel gears and transfer pinions

arranged to provide operative engagement of the figure wheel gears and transfer pinions only when the full or half unit positions agree throughout the several figure wheels, axial adjustment provided for each figure wheel and associated gear, whereby said figure wheels may be removed from mesh with associated pinions to permit the setting thereof to a desired prepayment value and the return thereof to operative positions when the teeth of the gears mesh with the pinions, and means to retain the figure wheel gears in meshed relation with the transfer pinions after setting including an adjustable member movable to a blocking position relative to the figure wheel of highest order when the said figure wheels are correctly set.

5. In a device for setting a prepayment value in the descending register of a postage meter unit, in combination, figure wheels having unit and half unit value positions thereon, a casing covering the figure wheels and having a window through which the figures may be read, a movable transparent member normally covering the window to prevent access to the figure wheels through said window, a gear carried by each figure wheel, transfer pinions connecting a figure wheel gear of lower order with a wheel of higher order, means to effect the correct alignment of each of the figure wheels to agree with a full or half unit value on the units wheel which is in a reading position and comprising variable shaped teeth on the figure wheel gears and pinions arranged to provide operative engagement of the figure wheel gears and transfer pinions only when the full or half unit value positions agree throughout the several figure wheels, axial adjustment provided for each figure wheel and associated gear, whereby said figure wheel gears may be removed from mesh with associated pinions to permit the setting thereof to a desired prepayment value and the return thereof to operative positions when the teeth of the gears mesh with the pinions, and means to retain the figure wheel gears in meshed relation with the transfer pinions after setting including a key actuated locking member movable to a blocking position relative to the figure wheel of highest order after correct setting thereof, said locking member also having a portion thereof engageable with the movable window covering member to prevent removal thereof when the device is in operative condition.

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