June 12, 1934. E. W. ANDREWS 1,962,729

POSTAGE STAMPING AND REGISTERING DEVICE

Filed Jan. 19, 1931

Fig. 1.

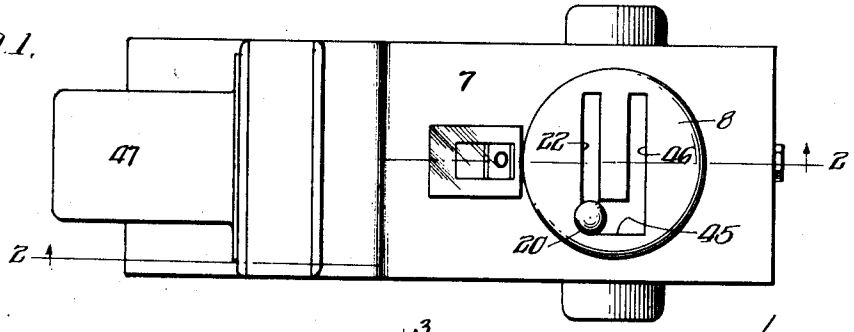


Fig. 2.

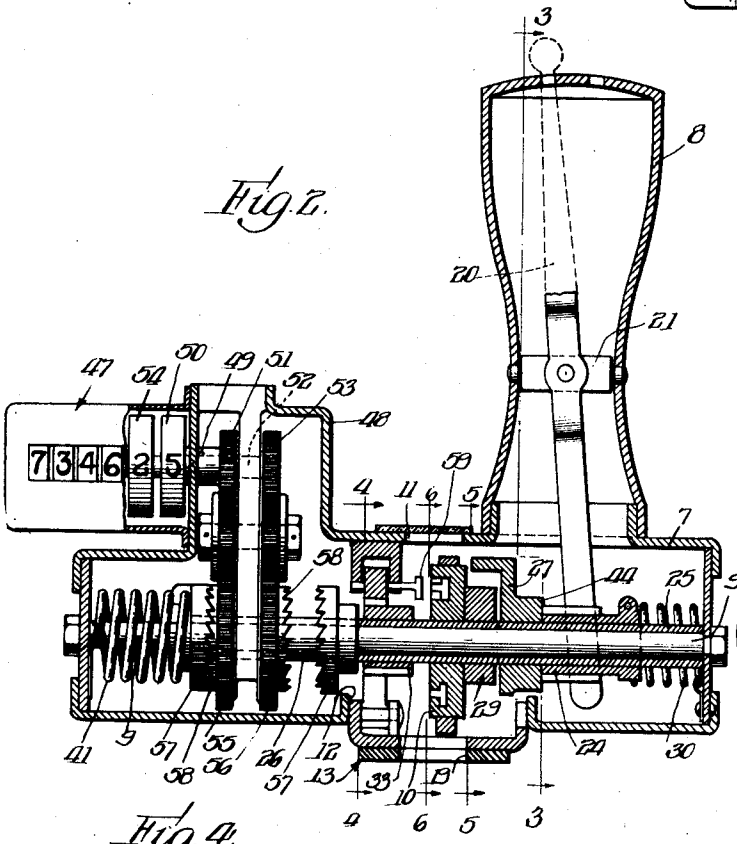


Fig. 3.

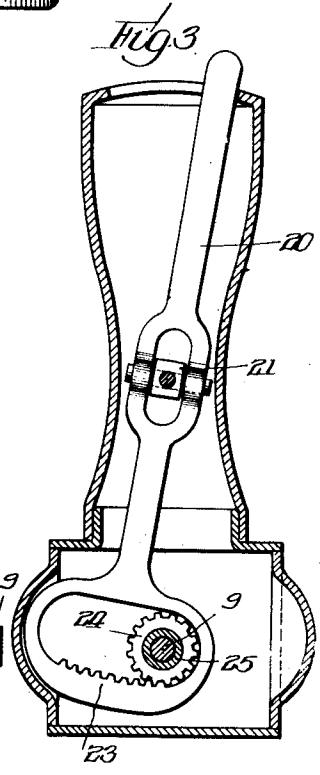


Fig. 4.

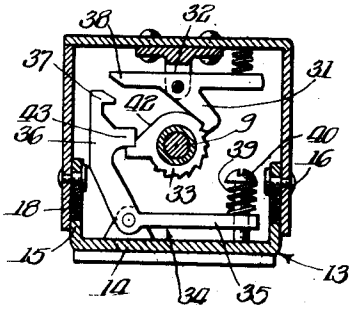


Fig. 5.

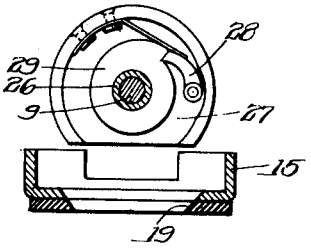
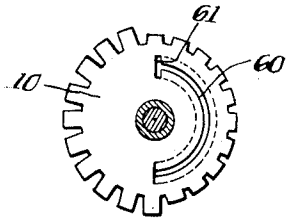


Fig. 6.



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UNITED STATES PATENT OFFICE

1,962,729

POSTAGE STAMPING AND REGISTERING DEVICE

Edward W. Andrews, Chicago, Ill.

Application January 19, 1931, Serial No. 509,689

10 Claims. (Cl. 235—101)

This invention relates in general to a combined stamping and registering device for printing postage on parcel post packages and relates more particularly to a device of the character described in a copending application Serial No. 406,227 filed November 11, 1929, of which the present application is a continuation in part.

One object of this invention is to provide a new and improved stamping device having a single type carrying wheel shiftable axially to print both the tens and units digit of the amount of postage.

A further object of this invention is the provision in a stamping and registering device of a novel connection between the type-wheel and the registering means whereby the latter is differentially responsive to the rotation of said type-wheel in its different axial positions.

Another object is the provision of a stamping and registering device which is guarded in a novel manner against improper and fraudulent manipulation.

The latter object is accomplished by a construction in which the type-wheel is always returned to zero after each stamping operation and in which the type-wheel is shiftable axially only when in zero position.

Still another object of this invention is the provision of a novel stamping and registering device which is operable by a digit of the hand of the operator in which the device is held.

Other objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a plan view of a stamping and registering device embodying the features of this invention.

Fig. 2 is a longitudinal vertical sectional view taken in the plane of line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view in the plane of line 3—3 of Fig. 2.

Fig. 4 is a vertical sectional view taken in the plane of line 4—4 of Fig. 2.

Fig. 5 is a vertical sectional view taken in the plane of line 5—5 of Fig. 2.

Fig. 6 is a fragmentary detail view of the type carrying wheel showing means for preventing fraudulent shifting of the type carrying wheel.

In the exemplary embodiment illustrated in the drawing the principal operating parts of my improved device are enclosed in an elongated casing 7 to prevent any tampering with or fraudulent adjustment of those parts by the operator. Secured to the upper wall of the casing 7 near one end thereof is an upstanding handle 8 shaped to be conveniently held in the hand of the operator while the stamp is applied to the package to print thereon an amount of the postage.

Extending longitudinally of the casing 7 and secured in the end walls thereof is a rigid shaft 9 supporting a type carrying wheel 10 loosely mounted thereon. The function of the type-wheel 10 is to print on the package the amount of postage and to this end usually carries a series of numbers uniformly and consecutively spaced about its circumference. In this particular construction the type-wheel 10 carries two sets of numbers ranging from 0 to 9, one set being composed of type, the other set constituting an indicating set. The numbers of one set are positioned diametrically opposite the corresponding numbers of the other set so that when the type-wheel 10 is rotated to place any one type in printing position, that is the lowermost position of the type-wheel, the corresponding indicating member will be visible through a window 11 in the upper wall of the casing.

Positioned below the type-wheel 10 in an opening 12 in the bottom wall of the casing, is a control element 13 comprising a plate 14 having upstanding flanges 15 forming its periphery. The control element 13 is guided for limited vertical reciprocation by shouldered rivets 16 projecting from the side walls of the casing 7 through vertical slots in the flanges 15. Mounted in each of the slots is a compression spring 18 yieldably urging the element 13 downward. Formed in the bottom of the control element 13 is an aperture 19 through which the type-wheel 10 projects when the element 13 is forced upward by reason of the stamp being pressed onto a package. Any other desired data may be affixed in a suitable manner to the bottom of the control element.

The control element 13 and the type-wheel 10 are inked after the wheel has been rotated to the desired position by placing the device on an inking pad as is the common practice. The pad here employed would have a raised portion projecting through the aperture 19 into contact with the type-wheel 10.

To expedite the printing operation, means is provided whereby setting of the type-wheel 10 to a desired position is effected by a digit of the hand of the operator in which the stamp is held. For this purpose the handle 8 is hollow and has extending longitudinally within it a lever 20 pivoted intermediate its ends on a block 21 which in turn is journalled in the walls of the handle 8 on an axis parallel with the shaft 9 and at right

angles to the pivotal axis of the lever. At its upper end, the lever 20 projects through an elongated slot 22 in the top of the handle 8 where the lever may be conveniently manipulated by the thumb of the hand of the operator in which the handle is gripped. The slot extends at right angles to the shaft 9 and is displaced slightly from the center of the handle top.

To convert the oscillatory movement of the handle 20 transversely of the casing 7, as permitted by the slot 22, into rotary movement of the type-wheel 10, the lower end of the lever 20 projects into the casing and carries a rack 23 which meshes with a pinion 24 fast on a sleeve 25 loose on the shaft 9. Abutting the sleeve 25 is a second sleeve 26 also loose on the shaft 9 and carrying the type-wheel 10 rigidly mounted near the abutting end of the sleeve.

The rotary motion of the pinion 24 is imparted to the type-wheel 10 and the sleeve with which it is rigid by a one-way connection between the type-wheel and a flanged disk 27 rigidly mounted on the end of the sleeve 25 adjacent the type-wheel. This one-way connection is here comprised of a spring pressed dog 28 mounted on the disk 27 and engaging a single-toothed ratchet wheel 29 fast on the sleeve 26. The relative position of the dog 28 and the tooth on the ratchet 29 is such that they are in contact when the zero type of the wheel 10 is in printing position, which will hereafter be referred to as the zero position, and the disk 27 is in normal position as shown in Fig. 2. The disk 27 is operatively connected with the wheel 10 to rotate it in a counter-clockwise direction as viewed in Fig. 5 but is free to be returned to normal position by a spring 30 acting in torsion between the pinion 24 and the end wall of the casing.

In order to relieve the operator of the necessity of holding the type-wheel in position by means of the lever 20 during the printing operation, the wheel 10 is adapted to be latched in successive positions as it is rotated out of zero position. Latching of the type-wheel 10 in the desired position is accomplished by a pawl 31 pivoted on a lug 32, depending from the top wall of the casing, and spring pressed into engagement with a ratchet wheel 33 fast on the sleeve 26. The teeth of the ratchet wheel 33 correspond in number to the figures on the type-wheel 10 and, like the figures, occupy only half of the circumference.

The type-wheel 10 is released as an incident to the printing operation. This is effected by means of an L-shaped latch 34 movable with the control element 13 and engageable with the pawl 31 to retract the same from engagement with the ratchet wheel 33. The latch 34 comprises a horizontal leg 35 extending substantially parallel with the plate 14 and a substantially vertical leg 36 extending upwardly beyond the ratchet wheel 33. The latch 34 occupies a plane perpendicular to the shaft 9 and is pivotally attached to the upper side of the plate 14 at substantially the intersection of the legs constituting the latch.

At its upper end, the vertical leg 36 terminates in a hook 37 which upon upward movement of the plate 14 in the printing operation engages a horizontal extension 38 of the pawl 31. The upper surface of the hook 37 and the lower surface of the extension 38 are bevelled to cam the hook outward against the action of a spring 39 acting in compression between a lug 40 on the plate 14 and the free end of the horizontal leg 35 of the latch urging the hook 37 over the end of the extension. Upon removal of the stamp from the package, the plate 14 moves downward causing the pawl 31 to pivot out of engagement with the ratchet wheel 33 and releasing the type-wheel 10 to the control of a spring 41 acting in torsion and compression between the end wall of the casing and the sleeve 26 bearing the type-wheel.

To arrest the return movement of the type-wheel at the zero position, the half of the ratchet wheel 33 not required for teeth is shaped to form a cam 42 which coacts with a horizontally projecting lug 43 on the vertical leg 36 to disengage the hook 37 from the pawl 31 substantially simultaneously with the return of the type-wheel to zero position. The spring pressed pawl 31 thus released returns to normal position and engages the ratchet wheel 33 at the tooth corresponding to the numeral zero of the type-wheel whereby it is arrested in its initial or zero position. The stamp is now in condition for a repetition of the setting and printing operation.

It is essential that the stamp be capable of printing numbers higher than nine and with the provision of but one type carrying wheel bearing no numbers above nine, it becomes necessary that the type-wheel be capable of axial movement to position it for printing both tens and units digits. With this end to be accomplished, the combined length of the sleeves 25 and 26 is made less than the length of the shaft 9 upon which they are loosely mounted. The axial movement of the type-wheel thus permitted by the sleeves is effected by means of the lever 20 which, as stated, is pivoted for movement in the plane of the shaft 9 on a block 21 journaled in the walls of the handle 8. Movement of the end of the lever 20 in a direction to shift the type-wheel 10 from units position (Fig. 2) to tens position is transmitted to the sleeves and consequently to the type-wheel by the disk 27 the hub of which forms a shoulder 44 against which the lever abuts in such movement. Return of the type-wheel 10 to units position is effected by the spring 41 which holds the type-wheel yieldably in units position.

To permit the movement of the lever 20 required to shift the type-wheel axially, a slot 45 perpendicular to and intersecting the slot 22 at the end occupied by the lever 20 when in normal position (Fig. 1) is cut in the top of the handle 8. Movement of the lever 20 from normal position to the right, as viewed in Fig. 1, will thus shift the type-wheel 10 from units to tens position in which position the type-wheel may be rotated by movement of the lever along a slot 46 parallel with the slot 22. Latching of the type-wheel 10 in any position and releasing the same as an incident to the printing operation are effected in the same manner and by the same construction as described in connection with the units position of the type-wheel. The ratchet wheel 33 is for this purpose made of substantial axial thickness so that it may be engaged by the pawl 31 and the latch 34 in either axial position.

With the operator or clerk receiving money without parting with anything of value for which he is held accountable, other provisions must be made for holding the clerk accountable for the money received by him. This is generally accomplished by a registering device responsive to the degree of rotation of the type-wheel in one direction and indicating the accumulative effects of such rotation. The means for indicating the total amount of postage received here con-

sists of a dial register 47 of well known construction coupled with the type-wheel 10 in a manner to be differentially responsive to the rotation of the type-wheel in its various axial positions.

The register 47 is attached to the open end of a housing 48 formed integrally with the top of the stamp casing. A sleeve 49 rigid at one end with the units dial 50 of the register and with a gear 51 at the other end is rotatable on a shaft 52 connecting a similar gear 53 and the tens dial 54 of the register. The gears 51 and 53 form one end of two gear trains culminating respectively in gears 55 and 56 loose on the sleeve 26. The ratio of the two gear trains is the same and such that half revolutions of the gears 55 and 56 causes complete revolutions of the units and tens dials respectively.

To selectively couple the gear train actuating the units or tens dial of the register with the type-wheel 10 in accordance with the position of the latter, the sleeve 26 carries two clutch members 57 and 57' rigid therewith and spaced thereon to engage respectively complementary clutch members 58 and 58' formed on the gears 55 and 56 as the type-wheel occupies the units or tens printing position. With the type-wheel 10 in units position (Fig. 2), the clutch member 57 engages the complementary member 58 on the gear 55 coupled with the units dial. Rotation of the type-wheel will then increase the reading of the register by the amount represented by the numeral which is printed, i. e. if the type-wheel is rotated to print 4 the reading of the register is increased by 4. When the type-wheel is shifted to the tens position, the gear 56, associated with the tens dial, is operatively connected with the clutch member 57' and rotation of the type-wheel will then increase the reading of the register by ten times the amount represented by the numeral printed because the tens dial is rotated. The reading of the register will thus indicate the amount of postage collected by the clerk and for which he is accountable.

This manner of registration is obviously subject to the honesty of the operator unless means are provided which prohibit fraudulent operation of the device. The two possibilities of fraudulent operation consists in the successive printing of the same or different characters without return of the type-wheel to the zero position and the printing of a tens figure by first rotating the type-wheel to the desired figure while in the units position and then shifting the wheel axially to the tens position.

The first of these fraudulent operations is prevented by removing the type-wheel 10 from the control of the operator before a printing operation may take place. To this end, the disk 27 is of such radius that its periphery falls just short of contact with the control element 13, thereby preventing the inward movement essential to a printing operation. However, inward movement of the control element 13 when the lever 20 is in normal position (Fig. 1) is provided for by cutting away that portion of the disk 27 lying below a horizontal chord (see Fig. 5). It follows from such a construction that the operator after rotating the type-wheel 10 to the desired position must return the lever 20 to normal position before a printing operation can be effected, thereby preventing the operator from retaining the type-wheel in the same position for a second printing operation without a return of the type-wheel to zero.

The other fraudulent operation which must be guarded against is the shifting of the type-wheel from units to tens position at a position other than zero. For this purpose there is mounted on the lug 32 supporting the pawl 31 a T-shaped projection 59 which extends into the space occupied by the type-wheel 10 when in tens position. The cross bar of the projection 59 is vertical. Cut in the type-wheel is an arcuate slot 60 T-shaped in cross section (see Figs. 2 and 6) and terminating in a vertical slot 61 positioned to receive the projection 59 when the type-wheel is in zero position. Thus with the type-wheel in zero position entry of the projection 59 in the slot 61 will permit axial shifting of the type-wheel 10 and the arcuate slot 60 will permit rotation of the type-wheel after being shifted. In any other position, however, the type-wheel upon attempted axial movement will abut against the projection 59 and thereby be confined to the units position. The operator is thus prohibited from advancing the register only a given number of units while printing tens corresponding to those units.

Let it be assumed that the amount of postage due on a package is twenty-five cents. The operations for printing an amount on a package will be as follows: Grasping the handle 8 of the stamp in his hand, the clerk will move the lever 20 upward along the slot 22 (Fig. 1) until the numeral 5 is visible in the window 11. As the type-wheel 10 is rotated by movement of the handle, the wheel is latched in each successive position by means of the pawl 31 and ratchet 33 and thus held in position to print the numeral 5 without the aid of the lever 20. After the type-wheel 10 has been set but before the lever 20 is released, the clerk applies the stamp to an inking pad. This may be done without danger of releasing the pawl 31 because with the lever 20 in other than normal position the disk 27 obstructs inward movement of the control element. The lever is then released by the clerk and returned to normal position by the spring 30 whereupon the stamp is then applied to the package and the numeral 5 printed thereon. Should the operator accidently or with intent to operate the stamp fraudulently retain the lever in the position to which it had been moved, the disk 27 would obstruct inward movement of the control element 13 and prohibit a stamping operation until the lever 20 had been fully returned to normal position.

In the inward movement of the control element 13 resulting from the printing operation, permitted when the lever is in normal position, the latch 34 mounted on the element 13 is carried upward into engagement with the pawl 31 and upon subsequent outward movement of the element retracts the pawl 31 from the ratchet 33 to permit the spring 41 to return the type-wheel to zero position. The pawl 31 is restored to holding position by the cam 42 substantially simultaneously with the return of the type-wheel to zero position thereby conditioning the stamp for a second printing operation.

The rotation of the type-wheel 10 from zero position to a position for printing the numeral 5 is by engagement of a clutch member with the gear 55 and the train of which it forms a part transmitted to the units dial of the register which accordingly indicates that the numeral 5 has been printed.

The clerk next moves the lever 20 to the right in groove 45 (Fig. 1) thereby shifting the type-wheel from units to tens position and also shift-

ing the clutch members 57 to disengage the gear 55 and engage gear 56. The clerk then moves the handle upward in the slot 46 until the numeral 2 is visible and then returns the handle to the bottom of the slot. Since the type-wheel 10 is shifted to the tens position against the action of the spring 41 the lever is not released entirely but is held in the right end of the slot 45 until completion of the printing operation which takes place in the manner described above. The rotation of the type-wheel 10 from zero position to a position placing the numeral two in printing position is transmitted to the register, but by means of the clutch is imparted to the tens and not the units dial thus by the two stamping operations increasing the register reading by 25 units.

Should the clerk attempt to register the two on the units dial but print it in the tens column by first rotating the type-wheel to the numeral two printing position while occupying the units position and then shifting to the tens position such attempt will be thwarted by the T-shaped projection which permits axial shifting only in the zero position of the type-wheel.

It is evident that I have thus provided a stamping and registering device which is operable by the use of one hand only and which may not be fraudulently manipulated. The device is made small and compact by the use of a single type-wheel bearing only the numbers zero to nine which type-wheel is adapted to print both tens and units and is coupled with the register in a manner to make it differentially responsive to the rotation of the type-wheel in its various axial positions.

I claim as my invention:—

1. In a postage stamping and registering device, a rotatable type-wheel bearing consecutively arranged numerals on its circumference and yieldably retained in zero position, a lever also yieldably retained in a normal position having a one-way connection with said type-wheel to effect rotation in one direction, means for latching said type-wheel in advanced position, means for releasing the type-wheel as an incident to a printing operation, and means for preventing printing of a number by said wheel at any position of said lever other than normal position.

2. In a postage stamping and registering device, a casing, a rotatable type-wheel bearing consecutively arranged numerals on its circumference and yieldably retained in zero position, a control element yieldably mounted beneath said wheel in an opening in said casing and apertured to permit said wheel to project through said element upon inward movement thereof, a lever yieldably urged to a normal position, means forming a one-way connection between said lever and said type-wheel to effect rotation in one direction, means for latching said type wheel in position, means movable with said element for releasing said wheel as an incident to a printing operation, and a segmental disk constituting a part of said connecting means, said disk being mounted axially of said type-wheel over said control element and cut away at the bottom on a horizontal chord when said lever is in normal position to permit inward movement of said element, said disk in any position other than normal preventing inward movement of said element.

3. In a postage stamping and registering device, a rotatable type-wheel carrying numerical type spaced around its circumference, said type-wheel being mounted for limited axial movement to print both the tens and units digits of the amount of the postage, means for imparting axial and rotary movement to said type-wheel, and registering means for indicating the amount of postage printed differentially responsive to the rotation of the type-wheel in its various axial positions.

4. In a postage stamping and registering device, a type-wheel carrying the numerical digits consecutively and uniformly spaced on its circumference, said type-wheel being mounted for rotational and limited axial movement to print both the tens and units digits of an amount of postage, a registering means for indicating the amount of postage printed, a lever for imparting axial and rotary movement to said type-wheel, and means selectively connecting said type-wheel with the units and tens dial of the register respectively depending on whether the type-wheel is positioned to print the units or tens figure of an amount of postage.

5. In a postage stamping and registering device, a type-wheel carrying the numerical digits consecutively and uniformly spaced on its circumference, said type-wheel being mounted for rotational and limited axial movement to print both the tens and units digits of an amount of postage, a register for indicating the amount of postage printed having dials representing units and ten figures of a number, a lever for imparting axial and rotary movement to said type-wheel, two gear trains of equal ratio engaging the units and tens dial of the register, and clutch members rotatable with said type-wheel positioned to engage one of said gear trains to actuate the units or tens dial of the register respectively as the type wheel occupies the units or tens printing position.

6. A postage stamping and registering device comprising, in combination, a rotatable type-wheel having the numerical digits consecutively arranged on its circumference, said type-wheel being mounted for limited axial movement to print both the tens and units digits of an amount of postage, means for shifting said type-wheel axially and for rotating the same, registering means differentially responsive to the rotation of said type-wheel in its different axial positions, and means prohibiting the axial shifting of said type-wheel at any position other than zero.

7. A postage stamping and registering device comprising, in combination, a rotatable type-wheel having the numerical digits consecutively arranged on its circumference, said type-wheel being mounted for limited axial movement to print both the tens and units digits of an amount of postage and having a recess therein, means for shifting said type-wheel axially and for rotating the same, registering means differentially responsive to the rotation of said type-wheel in its various axial positions, and means prohibiting the axial shifting of said type-wheel at any position other than zero comprising a stationary member adapted to coact with said recess in the type-wheel in the axial movement of the latter, said recess being adapted to receive said member only when said type-wheel is in zero position.

8. In a postage stamping and registering device, a casing, a handle on said casing, a type-wheel within said casing mounted for rotational and limited axial movement and bearing a plurality of number types spaced around its circumference, and a lever for actuating said type-wheel pivoted on said handle to be manipulable by a digit of the operator's hand grasping the handle to position a type on the wheel for printing either the tens or units digit of an amount of postage.

9. In a postage stamping and registering device,

a rotatable type-wheel bearing consecutively arranged numerals on its circumference and yieldably retained in zero position, a lever having a one-way connection with said wheel to impart rotation thereto, means for latching said wheel in advanced position, and means operable as an incident to the printing operation to release said type-wheel from said latching means.

10. In a postage stamping and registering device, a casing, a rotatable type-wheel bearing consecutively arranged numerals on its circumference and yieldably retained in zero position, a control element yieldably mounted beneath said wheel in an opening in said casing and apertured to permit said wheel to project therethrough, a lever having a one-way connection with said wheel to impart rotation thereto, means for latching said wheel in advanced position, and means movable with said control element as an incident to a printing operation and acting to release said type-wheel from said latching means.

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