Oct. 30, 1934. W. P. SHOMAKER 1,978,554

DATING AND NUMBERING CYLINDER

Filed Jan. 25, 1932 3 Sheets-Sheet 1

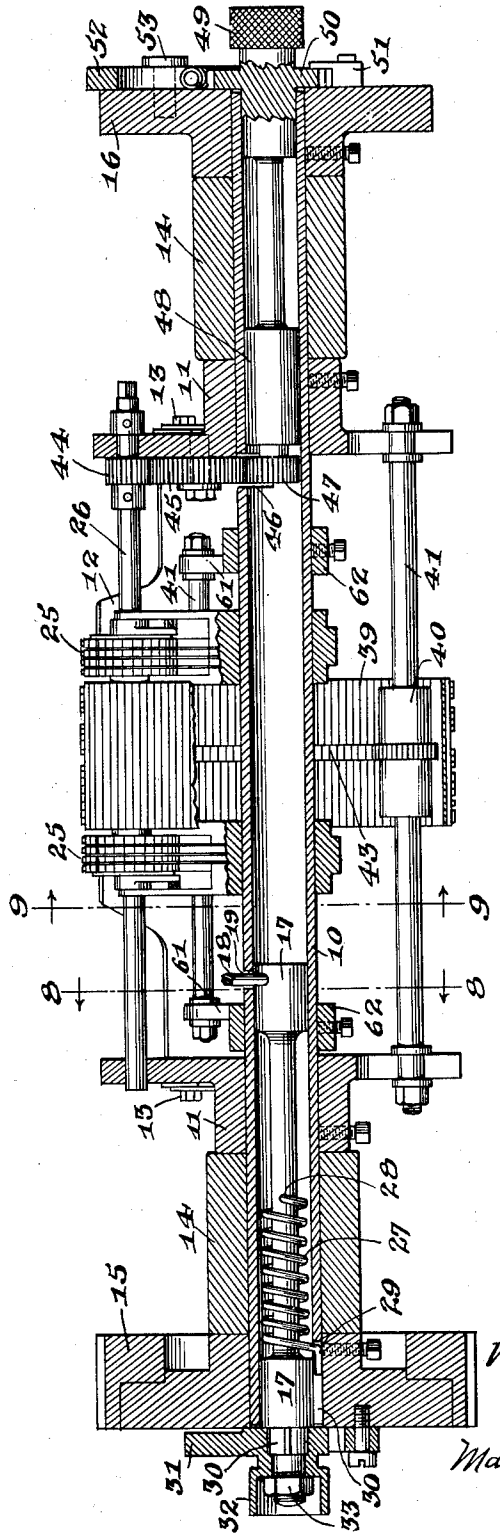

Fig. 1.

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Filed Jan. 25, 1932 3 Sheets-Sheet 2

Fig. 2.

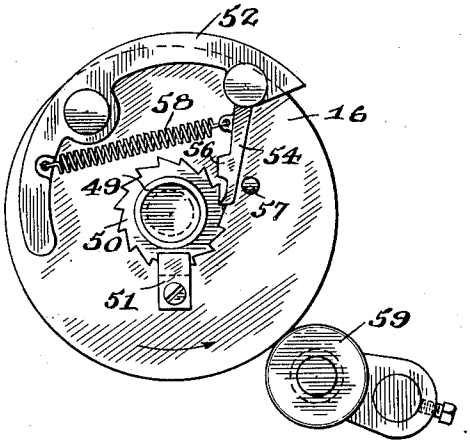


Fig. 3.

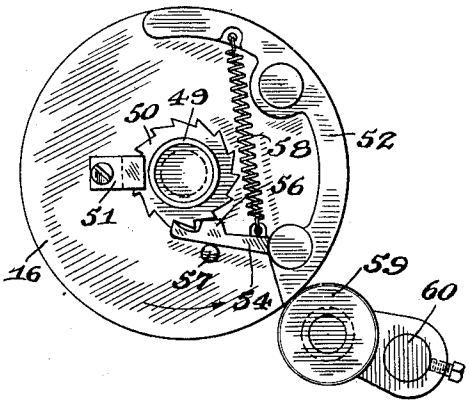


Fig. 5.

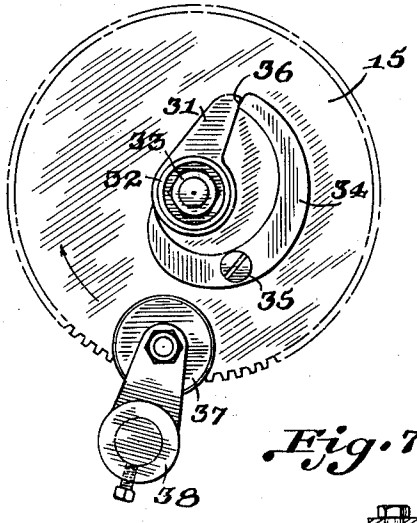


Fig. 6.

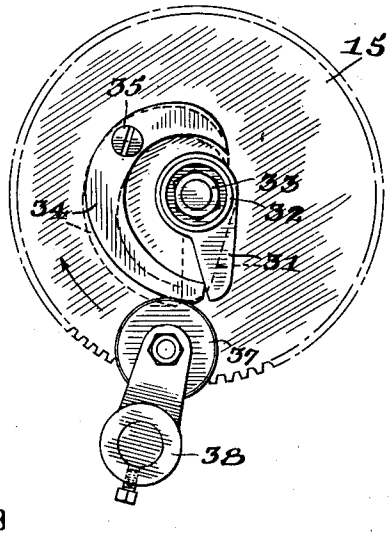
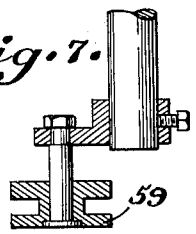


Fig. 7.



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Filed Jan. 25, 1932 3 Sheets-Sheet 3

Fig. 4.

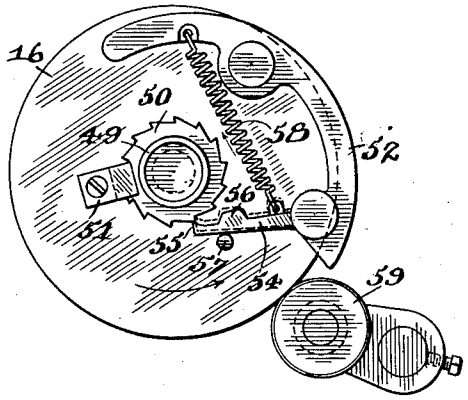


Fig. 8.

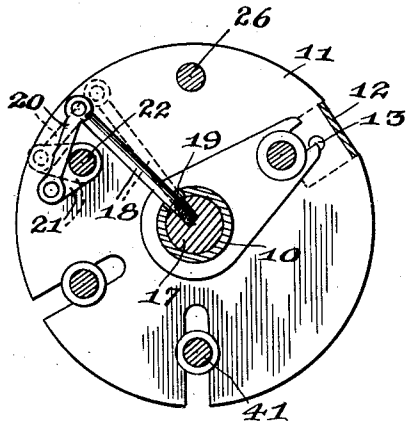
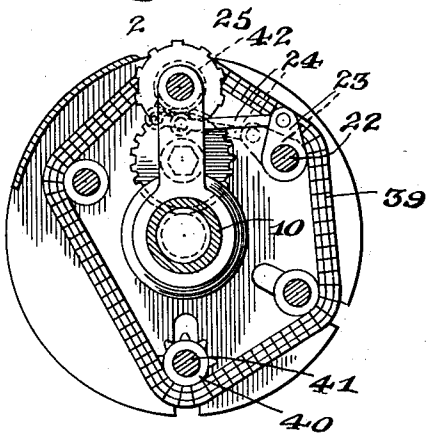


Fig. 9.



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UNITED STATES PATENT OFFICE

1,978,554

DATING AND NUMBERING CYLINDER

Wesley P. Shomaker, Richmond, Va.

Application January 25, 1932, Serial No. 588,695

8 Claims. (Cl. 101—77)

The present invention relates to printing mechanism adapted for use particularly with rotary print presses for printing envelopes, and the like, wherein dates, numbers or other relatively changeable data is to be printed.

An object of the present invention is to provide a positive and simplified construction of cylinder of this type wherein the dating means is operated independently of the numbering means and wherein both of the means are readily and independently controllable.

Another object of the present invention is to provide a novel and simple construction in connection with the pawl feed mechanism of the dating means for effecting a positive stop of the date chain or belt without the use of a brake, or other separate control device, which imposes additional strain and work on the delicate mechanism of the cylinder and which will not effect the desired and necessary positive stopping of the chain at the proper point of register.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views.

Figure 1 is a longitudinal section taken through a dating and numbering cylinder embodying the features of the present invention.

Figure 2 is a right hand end elevation of the cylinder shown in Figure 1 and showing the date changing mechanism in a released position.

Figure 3 is a similar view showing the mechanism in a tripped position immediately after a full stroke of advancement of the dating chain.

Figure 4 is a like view of the mechanism immediately after the same has been released from its tripped position, the dotted lines showing the free play of the combined advancing and stop pawl.

Figure 5 is a left hand elevation of the end of the cylinder shown in Figure 1, and showing the advancing means for the numbering mechanism in released position.

Figure 6 is a like view with the advancing means tripped for stepping the numbering mechanism forward, the dotted lines showing the relative positions of the parts in tripped and released positions.

Figure 7 is a fragmentary sectional view showing in detail the tripping roller.

Figure 8 is a transverse section taken through the cylinder on the line 8—8 of Figure 1, showing the connection between the central operating shaft for the numbering mechanism and the rocker shaft, and

Figure 9 is a transverse section taken on the line 9—9 through Figure 1, showing the connection between the number printing wheels and the rocker shaft.

Referring now to the drawings, and more particularly to Figure 1, the cylinder is provided with a hollow axle 10 upon which are mounted a pair of spaced apart collars 11 which support a shield 12, extending between the collars and having ends which are countersunk in peripheral notches of the collars 11, as shown in Figure 8, to hold the shield 12 rigidly in place. Bolts 13 hold the ends of the shield 12 to the collars. The axle 10 is journalled in bearings 14 and is provided with a gear 15 upon one end, the left end shown in Figure 1, and on its other end is provided with a collar or flange 16.

In one end of the axle 10, the left end shown in Figure 1, is rotatably mounted a shaft 17 provided with a radially extending arm 18 which projects outwardly through a slot 19 provided in the side of the axle 10, the arm 18 being disposed in spaced relation to the inner side of one of the collars 11. As shown in Figure 8, the outer end of the arm 18 is pivotally connected to a link 20 which in turn is pivotally connected to an arm 21 which is carried upon a rocker shaft 22 or rod which is rotatably mounted at opposite ends in the collars 11.

At spaced points upon the intermediate portion of the rocker shaft or rod 22, the latter is provided with arms 23 to which are connected links 24 which extend to and are pivotally connected with numbering mechanisms 25 which are rotatably mounted upon a shaft or rod 26 rotatably supported between the collars 13, as shown in Figure 1. The numbering mechanisms 25 are thus stepped intermittently and equally by the rocking of the rod or shaft 22 each time the shaft 17 is rocked or turned.

The shaft 17 is reduced intermediate its ends and carries a coil spring 27 having one end 28 fixed to the shaft 17 while the other end 29 of the spring is seated in a slot 30 formed in one side of the axle 10 and at its outer end so that the shaft 17 with the spring 27 may be slid endwise into the axle 10 and the anchoring end 29 engaged in the slot 30. The spring 27 yieldingly and normally holds the shaft 17 in one position of angular adjustment.

The shaft 17 is provided at its outer extremity with a reduced non-circular portion 30 upon

which is fitted a finger 31 having an axial knob 32 by means of which the finger and the shaft 17 may be manually turned or rocked for manually operating the numbering mechanisms 25. The shaft 17 is threaded at its outer extremity and carries a retaining nut 33 which is counter-sunk within the knob 32 and disposed to engage and hold the finger 31 on the shaft.

The gear 15 carries upon its outer face a substantially crescent-shaped lever 34 pivoted near one end upon a pin or screw 35 and disposed with its shorter inturned end toward the inner rounded end of the finger 31 and with its longer outer end disposed in contact with a flat shouldered edge 36 on the finger 31 adjacent the lever 34. The finger 31 has its flat edge or shoulder 36 inclined at an angle to the radius of the shaft 17 inwardly and toward the lever 34 so that when the longer end of the lever 34 is swung inwardly toward the shaft 17, the finger 31 is moved or advanced through a predetermined distance, as shown by the full and dotted lines in Figure 6. The outer edge of the lever 34 is formed on a continuous curve which in effect constitutes a cam, and the printing press to which the cylinder of this invention is connected, is provided with a tripping roller 37 disposed at the outer side of the gear 15 and in the path of the cam surface of the lever 34 so that as the cylinder turns, and the roller 37 is adjusted in the tripping position, as shown in Figures 5 and 6, the lever 34 engages the roller 37 and the lever 34 is swung inwardly from the position shown in dotted lines in Figure 6 into the full line position in the same figure. The tension of the spring 27 immediately returns the finger 31 when released from the roller 37, and the finger thus swings the lever 34 back to normal position. When it is desired to continuously rotate the cylinder without advancing the numbering mechanisms 25, the roller 37 is swung, by means of its supporting rocker shaft 38, into a position out of the path of the lever 34 so that the parts remain in normal position when the cylinder turns past the tripping point.

The cylinder is provided at its intermediate portion with a date belt or chain 39 of any suitable construction and which has links upon which are mounted characters of dates, or other printing devices adapted to be impressed on a printing surface in desired combinations with the numbering mechanisms 25. This chain or belt 39 is supported upon rollers 40 which are mounted upon rods 41, or the like, which are carried by and extend between the flanges 11. The chain or belt 39 is arranged between the numbering mechanisms 25 and is so disposed as to expose the printing characters on the chain at the printing surfaces of the numbering mechanisms. The chain 39 therefore passes over an outermost roller 42 which is fixed to the shaft 26 so as to be positively turned thereby when the shaft 26 is rotated. This roller 42 engages the tooth portion 43 at the inner side of the belt 39 and effects a positive feeding of the belt. The shaft 26 carries a pinion 44 adjacent the inner side of the right hand collar 11, as shown in Figure 1 and the pinion 44 meshes with a second pinion 45 carried by the collar 11, and the latter projects through a slot 46 in the axle 10 and engages a pinion 47 disposed in the axle and carried upon a shaft 48. The shaft 48 is mounted in the right hand end of the axle 10 and extends through the end of the shaft and is provided upon its extremity with a knurled knob 49 or the like by means of which the shaft 48 may be manually turned.

The shaft 48 carries on its outer end and adjacent the knob 49 a ratchet wheel 50 the teeth of which correspond to the desired stepping or advancement of the belt 39, and the ratchet wheel with its shaft 48 may be held in position against the outer face of the collar or flange 16 by means of a cleat 51, or the like, carried by the collar 16 and overlapping the outer face of the ratchet wheel 50. The flange or collar 16 is provided with a curved lever 52 the outer edge of which is of slightly greater curvature than that of the periphery of the disc or collar 16 and which is of a length slightly less than half the circumference of the collar. This lever 52 is pivotally mounted on a pin 53 which is carried by the collar 16 adjacent the peripheral edge thereof, as shown in Figure 4. The pin 53 is located near one end of the lever 52 and the longer end of the lever carries a pivoted pawl 54 which is provided with a nose 55 on its outer end adapted to engage against the teeth of the ratchet wheel 50 for turning the latter upon the swinging of the longer end of the lever 52 inwardly toward the axis of the cylinder. The pawl 54 carries a stop 56 which projects from the inner edge of said pawl and is spaced from the nose 55 proportionately to the distance between the teeth of the ratchet 50 so that when the pawl 54 is projected to the end of a full stroke the stop 56 seats against the inclined face of the next adjacent tooth, as shown in Figure 3, and holds the ratchet wheel from over-running. The pawl 54 is held from swinging outwardly from the ratchet 50 by means of a stop pin 57 carried by the collar or flange 16 and which is suitably spaced from the adjacent edge of the ratchet wheel 50, as shown in Figure 4, as to admit of the free retraction of the pawl 54 when the lever 52 is swung outwardly to normal position. A spring 58 is anchored at one end to the shorter end of the lever 52 and at its other end is connected to the pawl 54 for normally swinging the pawl 54 inwardly against the ratchet wheel 50 by a counteracting pressure to normally swing the end of the lever 52 inwardly thus moving the outer end of the lever 52 beyond the peripheral edge of the collar or flange 16 and into the path of a trip roller 59 which is mounted on the shaft 60 carried by the printing press. The shaft 60 is adapted to be rocked for bringing the trip roller 59 into and out of operative position. The lever 52 and the ratchet wheel 50 are so disposed with respect to the rotation of the cylinder, as shown by the arrows in Figures 2, 3 and 4, as to bring the outer edge of the lever 52 gradually into contact with the roller 59 and to thus swing the lever inwardly by an even movement without shock or impact to the parts of the mechanism.

In order to properly adjust the tension of the belt 39, one of the shafts or rods 41 may be mounted in a pair of arms 61 which project from sleeves 62 secured by set screws, or the like, to the axle 10, by turning the sleeves 62 the arms 61 may be swung angularly with respect to the axis of the cylinder so as to move the adjacent supporting roller 40 and adjust the belt 39 to take up any slack which may occur therein.

From the above, the operation of the cylinder will be apparent as the cylinder is turned through the gear wheel 15, the end structures of the cylinder will be brought individually into their respective tripping positions, and at such times as it is desired to change the numbering mechanisms 25, the tripping roller 37 will be moved into tripping position, as shown in Figures 5 and 6. In

like manner, when it is desired to change or advance the date chain or belt 39, the roller 59 will be swung into tripping position, as shown in Figures 2, 3 and 4.

The numbering mechanisms 25 are advanced when the longer end of the lever 34 engages the roller 37 and the lever 34 is swung on its pivot 35 during the continued turning of the cylinder. The long end of the lever 34 engages the shoulder 36 and swings the finger 31 backwardly from the dotted line position shown in Figure 6, to the full line position shown therein. This operation turns the shaft 17 relatively to the axle 10, swings the arm 18 and through the link 20 rocks the rod or shaft 22. The shaft 22 in turn moves the links 24 to actuate the numbering mechanisms 25.

The date chain 39 is advanced by the long arm of the lever 52 engaging the trip roller 59 and, by the continued turning of the cylinder, the lever 52 is swung inwardly at its long end and the pawl 54 is forced against the adjacent tooth of the ratchet 50 and moves the latter one tooth, as shown in Figure 3, until the stop 56 engages the inclined face of the adjacent tooth so as to arrest the turning movement of the ratchet and hold the pawl 54 at the end of its stroke. Immediately the cylinder carries the lever 52 beyond the trip roller 59, as shown in Figure 4, the spring 58 swings the lever 52 outwardly into normal position and withdraws the pawl 54 from engagement with the said tooth of the ratchet 50 and the spring 58 holds the pawl in engagement with the next tooth ready for a second advancement.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:

1. In a dating and numbering cylinder, a printing mechanism, a shaft mounted in the cylinder connected to said mechanism, a finger carried by said shaft and having a hub portion thereon, means for urging the shaft and finger to turn in one direction, a lever pivotally mounted on the cylinder with the heel of the lever adapted for engagement against said hub and the outer end of the lever for contact with the outer end portion of said finger whereby to interlock the lever with the finger and limit the outward swinging of the outer end of the lever under tension of said finger by engagement of said heel portion with said hub, and a trip means adjustably mounted in the path of said outer end of the lever for depressing the same against the tension of the finger for rocking said shaft.

2. In a dating and numbering cylinder, printing mechanism, a shaft mounted in the cylinder connected to the printing mechanism and extending from one end of the cylinder, a finger on said extending end of the shaft having a hub portion engaging the shaft, a lever pivotally mounted intermediate its ends to the end of the cylinder with the ends of the lever curved toward the outer end of the finger and the hub thereof respectively to limit the rocking of the lever and hold said finger against turning in one direction, and an adjustable trip device disposed adjacent said end of the cylinder in the path of said lever for engaging the same and swinging the lever in an opposite direction against the tension of said finger.

3. In a dating and numbering cylinder, printing mechanism, a shaft mounted on the cylinder and connected to said mechanism and extending from one end of the cylinder, a ratchet on the outer end of said shaft, a lever pivoted intermediate its ends on said end of the cylinder, a pawl pivotally mounted upon one end of said lever and having a nose adapted to engage the teeth of the ratchet, a spring disposed between the opposite end of the lever and said pawl for normally holding the pawl against said ratchet and swinging the pawl carrying end of the said lever outwardly from the axis of the cylinder, a trip device mounted at said end of the cylinder for engagement with the outwardly swung end of said lever to depress the same and actuate the pawl against the ratchet, said pawl having an integral stop projection at its inner edge spaced inwardly from but in close proximity to the nose of the pawl for engagement with the inclined side of an adjacent ratchet tooth when said pawl is depressed to hold the ratchet wheel against over-running.

4. In a dating and numbering cylinder, printing mechanism, a ratchet connected to said printing mechanism for actuating the same, a lever pivotally mounted on the cylinder adjacent the ratchet, a pawl pivotally mounted on one end of the lever and having a nose engaging the ratchet and provided with an internal stop projection spaced inwardly from but in close proximity to the nose and proportioned to seat against the inclined side of an adjacent tooth when said pawl is fed against said ratchet to step the same a predetermined distance, and a spring carried between the opposite end of said lever and said pawl for holding the nose of the pawl against the ratchet and normally urging the lever and the pawl to move outwardly with respect to the ratchet.

5. In a dating and numbering cylinder, a dating mechanism, an axial shaft in one end of the cylinder connected to the dating mechanism, a ratchet on the outer end of the shaft for turning the latter, a lever pivoted between its ends to the end of the cylinder and having a long arm and a short arm, a pawl pivoted on the long arm of the lever, a spring connected between the short arm of the lever and said pawl for holding the latter against the ratchet and holding the lever with its long arm in projecting position, and a trip roller for adjustment into the path of the long arm to depress the same upon the turning of the cylinder and to advance the pawl and ratchet and turn the shaft and dating mechanisms.

6. In a dating and numbering cylinder, a movable printing mechanism mounted thereon, a rotatable shaft carried by said cylinder, means connecting said shaft and printing mechanism, a radially extending finger fixed to said shaft, a lever pivoted intermediate its ends to said cylinder adjacent said finger, said lever having an operating arm adapted to engage and actuate said finger when said lever moves in one direction and a stop arm adapted to limit the reverse movement of said finger when said lever moves in the opposite direction, and means engageable by said lever upon the rotation of said cylinder for causing the operation of said finger and shaft.

7. In a dating and numbering cylinder, numbering mechanism, dating mechanism, independent operating means for each of said mechanisms and disposed at opposite ends of said cylinder, each of said mechanisms comprising a pivoted lever having a long arm projecting outwardly with respect to the axis of the cylinder, independently operable tripping means at opposite ends of said cylinder for engaging said levers to operate the

respective operating means, at least one of said tripping means comprising a roller rotatably mounted on a shaft and axially slidable thereon into and out of the path of the respective lever upon the rotation of said cylinder, and means for sliding said roller on said shaft.

8. In a dating and numbering cylinder, a printing mechanism, a shaft rotatably mounted in said cylinder connected to said mechanism, a finger carried by said shaft, means for urging said shaft and finger to turn in one direction, a lever pivotally mounted on said cylinder with one end in constant engagement with said finger and adapted to effect movement thereof in the opposite direction upon the rotation of said cylinder, a trip roller for engaging said lever upon the rotation of said cylinder to move said finger, and means for periodically withdrawing said trip roller from the path of said lever as the cylinder rotates.

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