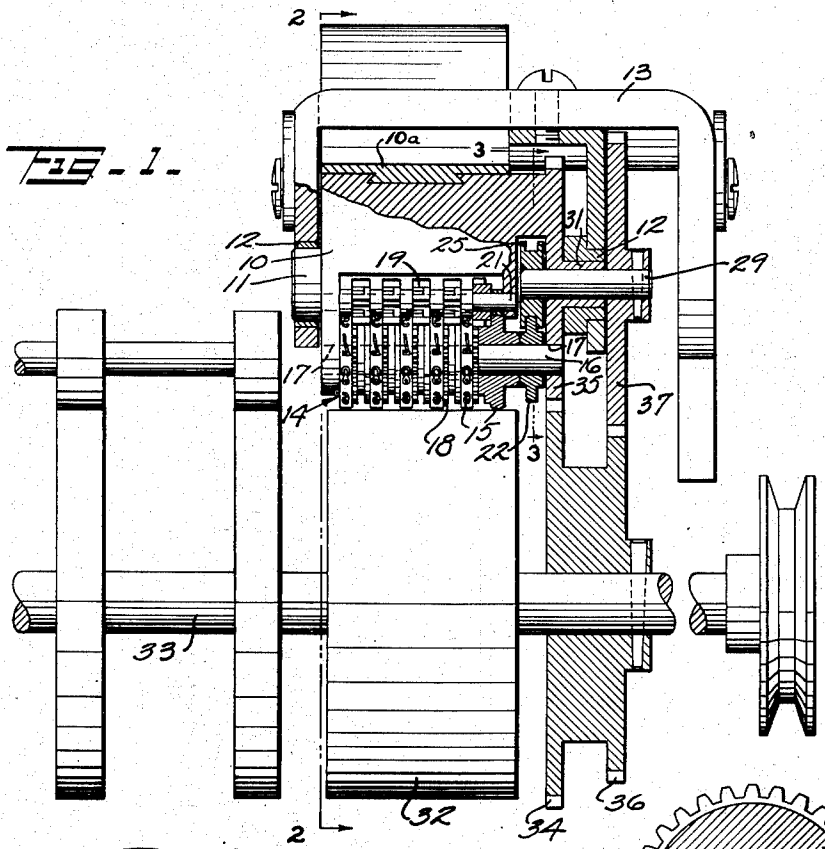
Feb. 24, 1953 V. P. BAPTIST 2,629,320

SERIAL NUMBER PRINTING CONTROL DEVICE

Filed Dec. 7, 1949

FIG. 1.



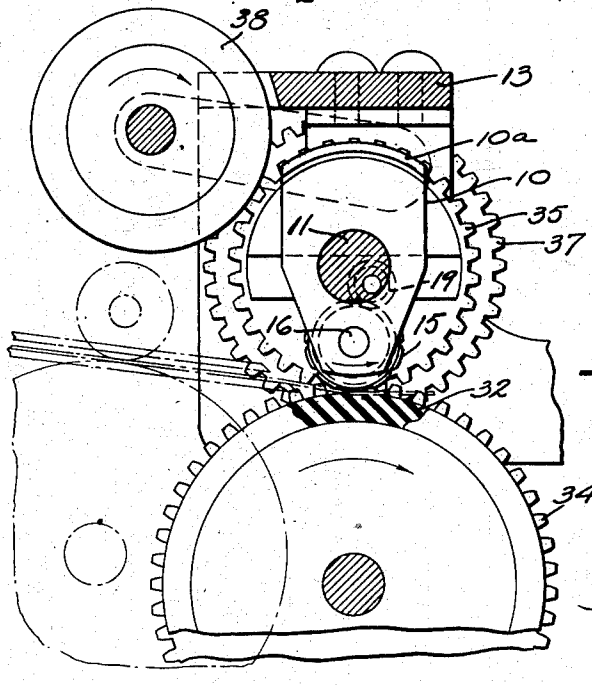


FIG. 2.

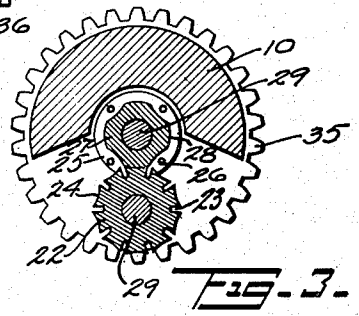


FIG. 3.

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SERIAL NUMBER PRINTING CONTROL DEVICE

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5 Claims. (Cl. 101—77)

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This invention relates to a rotary printing device wherein a serial numbering mechanism is employed to print a serial number on each article printed, and more particularly to the means provided to effect adjustment of the units numeral type wheel of the serial numbering mechanism during a predetermined portion of the printing cycle of operation, namely between a printing and an inking position, and to effect such serial number wheel adjustment while the printing cylinder rotates.

It is the principal object of this invention to provide control means to effect the continuous drive of a units numeral type wheel of a serial number printing device during a predetermined portion of a printing cycle of operation while advancing the units type wheel one digit.

It is another object to provide a speed differential between the printing cylinder drive and an intermittent drive gear which drives the units numeral wheel, whereby the intermittent drive gear may be continuously driven during a printing cycle of operation to effect advancement of the numeral wheel one digit during a predetermined part of the cycle.

A preferred form of the invention is disclosed in the drawings wherein:

Fig. 1 is a part sectional and part elevational view showing a printing cylinder with serial numbering type wheels in a printing position relative to a platen roller and further includes the drive means for controlling the rotation of the printing cylinder and adjustment of the type wheels;

Fig. 2 is a side view of Fig. 1 with parts broken away and parts in section, as taken in the direction of arrows 2—2; and

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1.

Referring to the drawings in detail, a printing cylinder 10 has a printing die 10a and includes projecting pintles 11—11 at each end thereof, which are supported in bearings 12—12 of a bracket 13.

A serial numbering type wheel assembly, noted generally at 14, comprises a plurality of numeral type wheels 15, which are freely mounted on a shaft 16. The shaft 16 is supported within bearings 17—17 in end walls of the printing cylinder 10. Each type wheel 15 of higher denomination than the units type wheel, also has a gear 18 fixed to one side wall thereof, and each of said gears is adapted to mesh with an associated Geneva pinion 19. The Geneva pinions are freely mounted on a shaft 21, also supported within the printing cylinder 10, and each pinion is adapted to be advanced one tooth by a wheel of lower order in the accustomed manner, when said wheel moves from a 9 to a 10 position.

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A driven Geneva gear member 22 is fixed to the units numeral wheel and is also supported by the shaft 16, said gear having ten radial slots 23 therein and ten concave curvature portions 24 along the peripheral surface thereof.

Cooperating with said latter Geneva gear 22 is an intermittent drive gear member 25 which has four equally spaced pins 26 arranged so that one will engage a slot 23 of the gear 22 to effect the drive thereof during each 90° rotation. Said gear member 25 further includes a hub portion 27, having curved peripheral portions 28 which engage the curvatures 24 of the gear member 22 during dwell periods. Said intermittent drive gear member 25 is also fixed to a shaft 29, which shaft is mounted within a bearing 31 provided at one end of the printing cylinder, and has its axis coaxially aligned with the axis of the printing cylinder.

A platen roller 32, mounted on a power driven shaft 33, cooperates with the printing cylinder 10 and serial numbering wheels 15 in the printing of articles fed thereto.

Drive means is provided to effect a drive from the power driven shaft 33 to the printing cylinder and to the serial number units wheel, the latter being adapted to function during a printing cycle of operation to advance a units serial numbering wheel one digit. The printing cylinder drive comprises a gear 34 fixed to the drive shaft 33, which gear meshes with a gear 35 forming an integral part of the printing cylinder 10. The serial number wheel drive comprises a gear 36, shown as an integral part of the gear 34, which gear 36 meshes with a gear 37, fixed to the shaft 29 which carries the intermittent drive gear 25. By reducing the ratio of the gears 36—37 with relation to the gears 34—35, the intermittent drive gear 25 will rotate through 270° while the printing cylinder rotates 360°. It will be noted therefore, that inasmuch as both the gear 25 and printing cylinder rotate together, actual rotation of the gear 25 is 90° less than the rotation of the printing cylinder, which 90° provides the required timing to produce the desired intermittent drive of the gear 22. Further, by means of the intermittent drive construction of the gear members 22 and 25, the effective drive of the units serial numbering wheel 15 will take place between the printing and inking positions, a dwell of the serial numbering wheels being effected between inking and printing positions.

Inking is effected by means of an ink roller 38, suitably mounted in the path of the printing cylinder 10 and serial numbering wheel type surfaces.

From the foregoing it will be noted that adjustment of the units serial numbering wheel is provided through a reduction gear drive which first produces a differential of 90° of rotation of the intermittent drive gear 25 during each printing cycle, and through the drive of the gear 22, will effect an intermittent drive to advance the serial numbering units wheel one digit. This arrangement provides for continuous motion of the intermittent drive gear 25 during the printing cycle of operation, which in turn produces a continuous drive of the units numbering wheel during that portion of the printing cycle when one of the pins 26 of the drive gear 25 drives the driven gear 22.

What is claimed is:

1. In a combined rotary printing and serial numbering device, a printing cylinder, a consecutive numeral type wheel rotatable about an axis removed from the axis of the printing cylinder, an intermittent geared drive including a drive gear having its axis coinciding with the axis of the printing cylinder and arranged in operative relation with a gear on the type wheel, a power driven shaft, a geared drive between the power driven shaft and printing cylinder, and a reduction geared drive between the power driven shaft and type wheel drive gear, whereby during a printing cycle of rotation of the printing cylinder the type wheel drive will be rotated simultaneously with the printing cylinder but at a slower speed to thereby effect the advancement of the type wheel one digit in accordance with the speed differential.

2. In a rotary printing and serial numbering device, a printing cylinder, consecutive numeral type wheels carried by the printing cylinder and rotatable about an axis removed from the axis of the printing cylinder, Geneva tens transfer pinions operatively connected with the type wheels to effect transfer from a type wheel of lower to a type wheel of next higher order, an intermittent geared drive for the type wheel of lowest order including a drive gear having its axis coinciding with the axis of the printing cylinder and arranged in operative relation with a gear on the type wheel of lowest order, a power driven shaft, a geared drive between the power driven shaft and printing cylinder, and a reduction geared drive between the power driven shaft and Geneva drive gear, whereby during a printing cycle of rotation of the printing cylinder the type wheel drive will be rotated simultaneously with the printing cylinder but at a slower speed to thereby effect the advancement of the type wheel one digit in accordance with the speed differential.

3. In combination with a printing cylinder having serial numbering type wheels mounted therein and including Geneva transfer members between pairs of adjacent type wheels, and inker means engageable by the type wheels before arriving at the printing position during each printing cycle; the improvement which comprises a drive for the type wheel of lowest order and operable during each printing cycle to advance said type wheel one digit and including a Geneva drive gear, a Geneva gear operatively connected with the type wheel of lowest order and driven by the Geneva drive gear, a drive to rotate the printing cylinder, a drive to rotate the Geneva drive gear while the driven Geneva gear and type wheels move with the printing cylinder, said latter drive being at a slower speed than the printing cylinder drive, thereby providing rotation of the Geneva drive gear relative to rotation of the printing cylinder and effecting rotation of the type wheel of lowest order accordingly.

4. In combination with a printing cylinder having serial numbering type wheels mounted therein and including Geneva transfer members between pairs of adjacent type wheels, and inker means engageable by the type wheels before arriving at the printing position during each printing cycle; the improvement which comprises a drive for the type wheel of lowest order and operable during each printing cycle to advance said type wheel one digit and including a Geneva drive gear coaxial with the printing cylinder, a Geneva gear operatively connected with the type wheel of lowest order and driven by the Geneva drive gear, a drive to rotate the printing cylinder, a drive to rotate the Geneva drive gear while the driven Geneva gear and type wheels move with the printing cylinder, said latter drive being at a slower speed than the printing cylinder drive, thereby providing rotation of the Geneva drive gear relative to rotation of the printing cylinder and effecting rotation of the numeral wheel of lowest order accordingly.

5. In combination with a driven printing cylinder having serial numbering type wheels mounted therein and including Geneva transfer members between pairs of adjacent type wheels, and inker means engageable by the type wheels before printing during each printing cycle; the improvment which comprises a drive for the type wheel of lowest order and including a Geneva drive gear, a power drive geared to the printing cylinder, gearing between the power drive and Geneva drive gear to continuously rotate said Geneva drive gear relative to the printing cylinder during a printing cycle, and a Geneva gear operatively connecting the Geneva drive gear with the type wheel of lowest order, said Geneva drive gear and Geneva gear including means to limit the drive of the units type wheel to that part of a printing cycle within which the type wheels move with the printing cylinder from a printing to an inking position.

VICTOR P. BAPTIST.

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