June 7, 1938. A. S. WHEELBARGER ET AL 2,119,693

PRINTING MECHANISM FOR REGISTERS

Filed Nov. 12, 1934 2 Sheets-Sheet 1

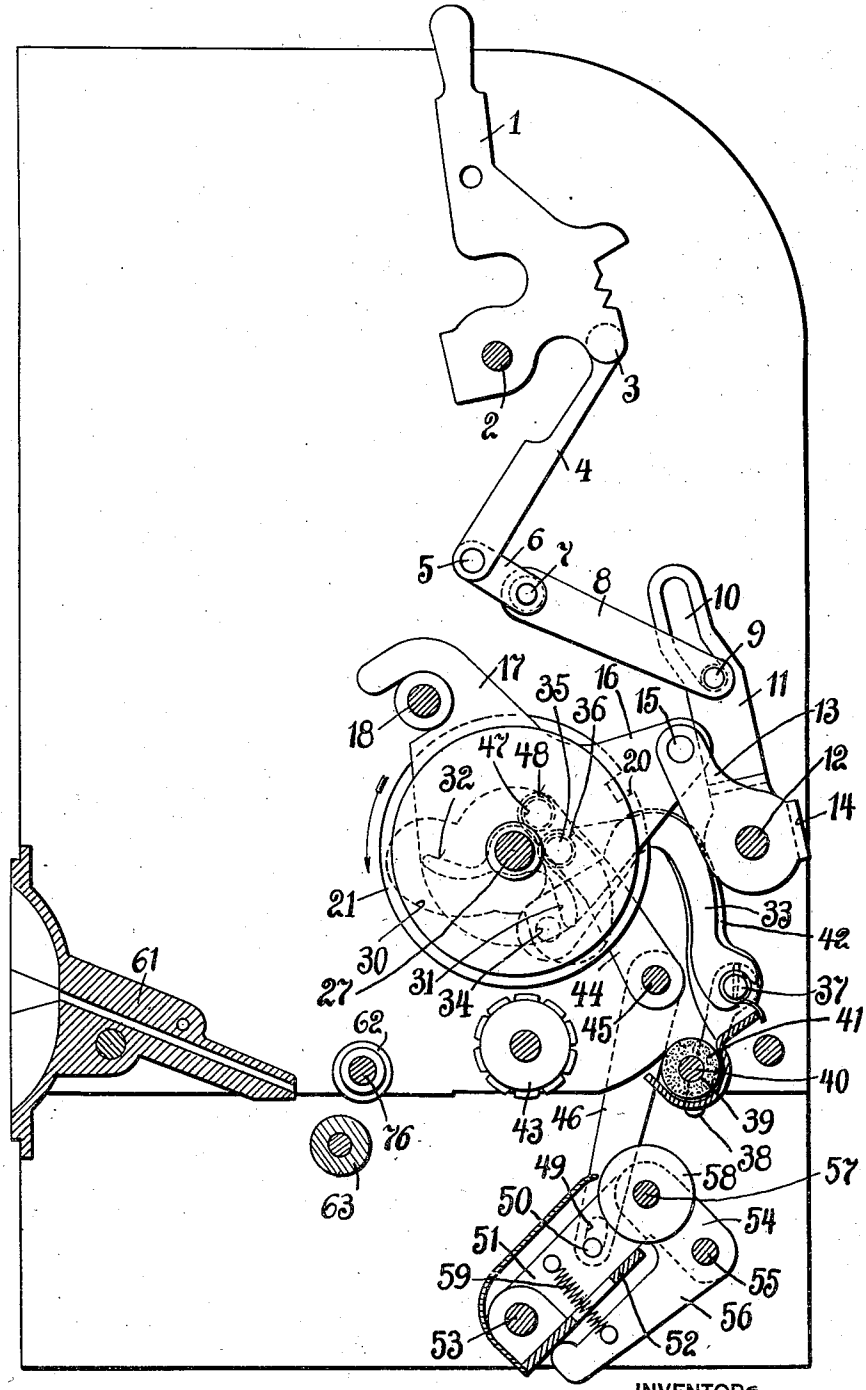


Fig. 1.

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Fig. 3.

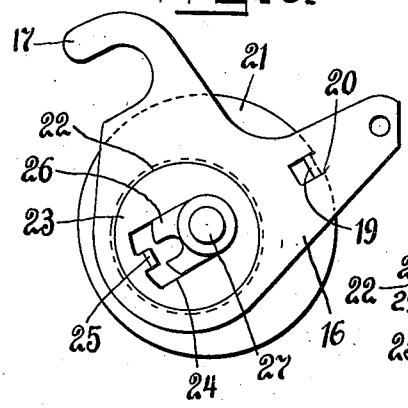


Fig. 5.

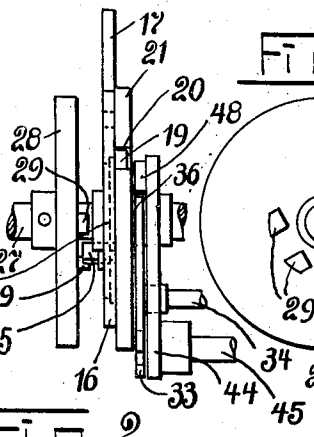


Fig. 4.

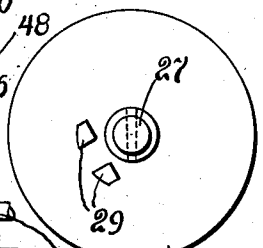
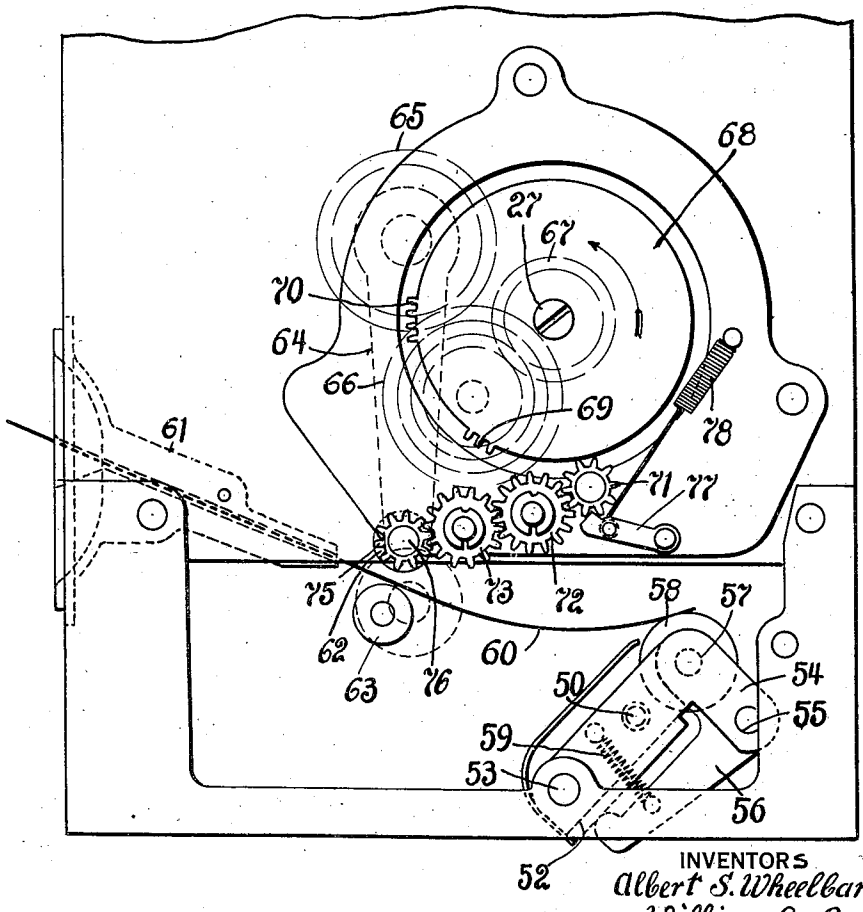


Fig. 2.



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PRINTING MECHANISM FOR REGISTERS

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Application November 12, 1934, Serial No. 752,677

8 Claims. (Cl. 101—93)

The object of this invention is to provide an improved printing mechanism for registers in which it is desired to print two or more duplicate impressions from printing wheels. Means are also provided whereby the impression may be taken on either a record strip or an inserted slip. We also provide means to space the stock of paper between the various impressions and have provided means so that the paper would be spaced a certain distance between the double impressions and a different distance when the next registration is to be made. Means is also provided to render the printing mechanism inoperative if desired.

In the drawings:

Figure 1 is a side elevational view taken through the register, certain of the parts being shown in cross section;

Figure 2 is an end elevational view;

Figure 3 is a detail elevational view of the shifting lever and box cam controlled thereby;

Figure 4 is a side elevational view of the driving disk shown in Figure 1; and

Figure 5 is an end elevational view of the structure shown in Figures 3 and 4 and the parts associated therewith.

An "on and off" lever 1 is pivoted on a shaft 2. This lever is provided with a pin 3 on which is hung a link 4 which carries a pin 5 at its lower end connected to a lever 6 secured to a shaft 7. A lever 8 is also secured to the shaft 7 and for all practical purposes the levers 6 and 8 might be considered as one lever. At the end of the lever 8 remote from the pin 5 is a pin 9 which rides in a cam channel 10 in a lever 11 mounted on a shaft 12. The lever 11 is secured to a lever 13 by means of a yoke member 14. The lever 13 is provided with a pin 15 which is operatively connected to a lever 16. The lever 16 is provided with an upstanding arm 17 which is bifurcated to receive a shaft 18 which holds the lever 16 against rotation. The lever 16, as shown in Figure 3, is provided with an outstanding lug 19 which may be moved into or out of a radially extending slot 20 in a box cam disk 21. When the "on and off" lever is in the position shown in Figure 1, which is its "off" position, the lug 19 extends within the slot 20 of the disk 21 and locks the disk against rotation so that the printing which will hereinafter be described cannot take place. If the lever 1 is rotated clockwise, however, to its "on" position, the link 4 will be lowered, which will rotate the levers 6 and 8 anti-clockwise, raising the pin 9 in the cam channel 10 and rotating the levers 11 and 13 in a clockwise direction, pulling the lever 16 upwardly and to the right as viewed in Figures 1 and 3 and removing the lug 19 out of the radially extending slot 20 in the disk 21 so that the said disk is free to rotate.

The lever 16 is provided with a circular cut-away portion 22 which receives a disk 23 provided with a slot 24 and a radially extending lug 25. Within the slot 24 is a bifurcation 26 which is a part of the disk 21. As the lever 16 is moved upwardly and to the right as viewed in Figure 3 it carries the disk 23 with it so as to engage the radially extending lug 25 with the slot in the bifurcation 26 of the disk 21 and immediately thereafter the lug 19 is moved out of the radially extending slot 20 in the said disk so that the disk 21 and the disk 23 are locked together. When the lever 1 has been moved to its "on" position, the disk 23 will be concentric with the shaft 27, which is the main drive shaft for the machine.

Both of the disks 23 and 21 are loosely mounted on the drive shaft 27 but a disk 28 is secured thereto, which disk has outstanding lugs 29 between which may be received the lug 25 carried by the disk 23 so that if the lever 1 is shifted to its "on" position, the lug 25 not only engages the bifurcation 26 on the disk 21 but also it extends between the lugs 29 on the disk 28 secured to the main drive shaft so that the disks 28, 21 and 23, will now rotate as a unit with the main drive shaft.

The box cam disk 21 is provided with a box cam 30 shown in dotted lines in Figure 1. This box cam is provided with lobes 31 and 32. The lobe 31 causes the inking mechanism to ink the type and the platen to make the first impression while the lobe 32 performs a similar function to repeat this process. If it is desired to repeat it a third time, a third lobe cam would be used. Since the main drive shaft makes one revolution for each operation of the machine, it, of course, follows that the box cam 30 and the lobes 31 and 32 make one revolution for each operation of the machine. An ink roll operating arm 33 is mounted on a pivot pin 34 carried by the side walls of the machine. This operating arm 33 carries a pin 35 on which is mounted a roller 36 which extends within the box cam 30. This arm 33 is secured to a shaft 37 to which is also secured an arm 38 provided with a semi-circular cut-away portion 39 which engages one side of a shaft 40 on which is mounted an ink roll 41. Guide arms 42 are also pivoted on the pivot pin 34, which arms carry the shafts 37 and 40. The only function of these guide arms is to prevent any whipping or side turning of the shaft 40. As

the box cam 30 is rotated anti-clockwise as shown in Figure 1 the roller 36 will be actuated by the lobe 31 so as to move the ink roll operating arm 33 in a clockwise direction and move the ink roller 41 beneath the printing wheels 43. As soon as the lobe 31 has passed the roller 36 the outer wall of the box cam will return the ink roll 41 to its position as shown in Figure 1. The lobe 32 will, of course, repeat this process but after each time that the ink roll 41 inks the type 43 a printed impression will be made on the paper stock as will now be described.

. A lever 44 is mounted on a shaft 45 and has a downwardly extending arm 46. The upper end of the lever 44 carries a pin 47 on which is mounted a roller 48 which lies within the box cam 30 a short distance above the roller 36. The lower end of the arm 46 is provided with a slot 49 which receives a pin 50 carried by one of the side walls 51 of a platen carrier. There are two side walls 51 connected by a yoke 52. Extending between the side walls 51 is a pivot shaft 53. The two side walls 51 are provided with downwardly extending arms 54 which carry a shaft 55. Mounted on the shaft 55 are L-shaped levers 56 which carry a shaft 57 on which is mounted a platen 58. A spring 59 pulls the lower end of the levers 56 towards the yoke 52. By this construction it is apparent that the box cam will first operate the inking mechanism to ink the type 43 and immediately after the inking mechanism is withdrawn the platen 58 will be moved beneath the type 43 so as to make a printed impression on an inserted strip or a record strip, which motions would be caused by the lobe 31 and the associated parts of the box cam. This inking and printing would be repeated by the lobe 32 and associated parts of the cam 30. If a third printing operation were required, it would be necessary to remove the box cam disk 21 and insert one which was provided with three lobes.

An inserted slip 60 may be inserted through a chute 61 and between a feed roller 62 and an idler roller 63 from whence the paper slip passes above the platen 58 and beneath the printing wheels 43. As is well known in the art, the roller 63 is moved upwardly so as to force the paper against the feed roller 62 after the slip is inserted.

We have provided means to move the slip so as to properly space the slip between the various impressions. Of course, the machine may be operated by the conventional motor or it may be operated by a crank 64 which drives the gear 65 which meshes with and drives a gear 66, which drives a gear 67 secured on a shaft 27 and which also carries a Geneva gear 68 provided with a set of teeth 69 and a second set of teeth 70. As shown, one set of teeth 69 consists of three teeth and the set 70 consists of four teeth. Obviously, the number of teeth in either of these sets may be varied so as to feed the paper any distance desired. The sets of teeth 69 and 70 drive a gear train consisting of pinions 71, 72, 73, and 75, which pinion 75 is secured to a shaft 76 which carries the feed roller 62. A holding pawl 77 is pulled against the teeth of the pinion 71 by means of a spring 78 to prevent rotation of the gear train unless the gear train is positively actuated by the sets of teeth 69 or 70.

Instead of using an inserted slip the conventional record strip may be used and the sets of teeth 69 and 70 are so positioned on the Geneva gear 68 so that the set of teeth 69 will rotate the gear train and feed roller 62 so as to move the paper so as to leave a proper space between a previous impression, if any, and an impression that is now to be made and after the impression is made, the set of teeth 70 will space it the same or a different distance from the first spacing, depending upon the number of teeth in the sets of teeth 69 and 70 and the second impression will now be made. If a third lobe is used on the box cam so as to make a third printed impression, it is obvious that a third set of teeth would be provided on the Geneva gear 68.

We realize that many changes may be made in our invention without departing from the spirit thereof and we, therefore, desire to claim the same broadly except as we may limit ourselves in the appended claims.

Having now described our invention, we claim:

1. In a register comprising operating mechanism and a printing element, a cam connected with said operating mechanism for rotation thereby, a lever, an inking device carried by said lever, a part rigidly connected with said lever and arranged to be engaged by said cam to move said inking device into inking contact with said printing element, a second lever, a platen carried by said second lever, and a part rigidly connected with said second lever and arranged to be engaged by said cam to move said platen into impression taking relation to said printing element, said parts of said levers being arranged for successive operation by the same cam surface of said cam.

2. In a register comprising operating mechanism and a printing element, a rotatable cam, a lever, an inking device carried by said lever, a part rigidly secured to said lever and arranged to be engaged by said cam to move said inking device into inking contact with said printing element, a second lever, a platen carried by said second lever, a part rigidly secured to said second lever and arranged to be engaged by said cam to move said platen into impression taking relation to said printing element, said parts of said lever being arranged for successive operation by the same cam surface of said cam, and manually controlled means for connecting said cam with and disconnecting the same from said operating mechanism.

3. In a register comprising a printing element and operating mechanism including a shaft, two carriers mounted for separate movement about different axes, an inking device mounted on one of said carriers for movement thereby into inking contact with said printing element, a platen mounted on the other of said carriers for movement thereby into impression taking relation to said printing element, said carriers having separate actuating members, a single cam to engage said actuating members and impart operative movement to said carriers successively, said cam being loosely mounted on said shaft, clutch mechanism to connect said cam to said shaft, a member movable transversely to said shaft to actuate said clutch mechanism, and a manually operated device to actuate said member.

4. In a register comprising operating mechanism and a printing element, an inking device mounted for movement into inking contact with said printing element, a platen mounted for movement toward and from said printing element, an actuating device driven by said operating mechanism, means actuated by said actuating device to move said inking device into inking contact with said printing element at least twice upon each operation of said mechanism, and

separate means actuated by said actuating device to impart operative movement to said platen immediately following each operative movement of said inking device.

5. In a register comprising operating mechanism and a printing element, an inking device mounted for movement into inking contact with said printing element, a platen mounted for movement toward and from said printing element, an actuating device driven by said operating mechanism, means actuated by said actuating device to move said inking device into inking contact with said printing element at least twice upon each operation of said mechanism, separate means actuated by said actuating device to impart operative movement to said platen immediately following each operative movement of said inking device, and clutch means to connect said actuating device with and disconnect the same from said operating mechanism.

6. In a register comprising operating mechanism and a printing element, two separately operable carriers movably mounted adjacent to said printing element, an inking device mounted on one of said carriers for movement thereby into inking contact with said printing element, a platen mounted on the other of said carriers for movement thereby into impression taking relation to said printing element, a cam driven by said operating mechanism, and separate means actuated by said cam for imparting successive movements to the respective carriers to cause at least two inking operations of said inking device and at least two impression taking operations of said platen upon each operative movement of said cam, said movements being so timed by said cam that impressions will be taken from said printing element by said platen between successive inking operations of said inking device and following the final inking operation of said inking device.

7. In a register comprising a printing element, an inking device, and operating mechanism including a shaft adapted to make a single complete rotation upon each operation of said mechanism, two separately operable carriers pivotally mounted for movement about separate axes, an inking device mounted on one of said carriers for movement thereby into inking contact with said printing element, a platen mounted on the other of said carriers for movement thereby into impression taking relation to said printing element, separate actuating members connected with the respective carriers, and a cam secured to said shaft for rotation therewith and having parts acting on said actuating members to operate said carriers successively and to impart at least two inking operations to said inking device and at least two impression taking operations to said platen upon each complete rotation of said cam.

8. In a register comprising a printing element, an inking device, and operating mechanism including a shaft, a cam connected with said shaft for rotation thereby, a lever having two parts, an inking device carried by one part of said lever, the other part of said lever being arranged to be engaged by said cam to move said inking device into inking contact with said printing element, a second lever, a platen carried by said second lever, and a part connected with said second lever and arranged to be engaged by said cam to move said platen into impression taking relation to said printing element, said parts of said levers being arranged for successive operation by said cam and said cam having means to impart successive operative movements to each lever to cause at least two inking operations and at least two impression taking operations during each rotation of said cam.

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