April 29, 1930. W. H. ROBERTSON 1,756,386

AUTOGRAPHIC REGISTER

Filed Jan. 17, 1927 2 Sheets-Sheet 1

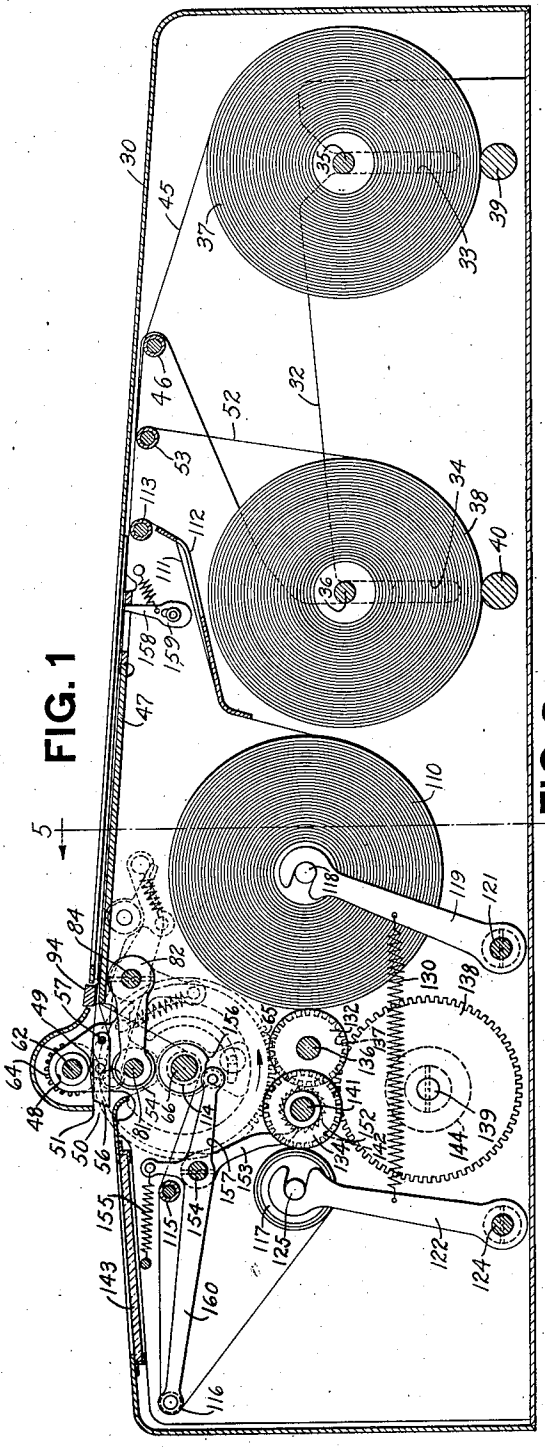


FIG. 1

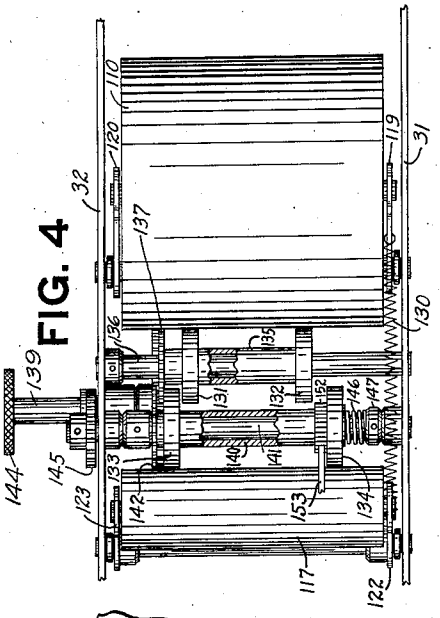


FIG. 4

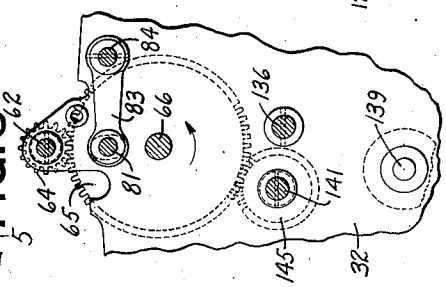


FIG. 3

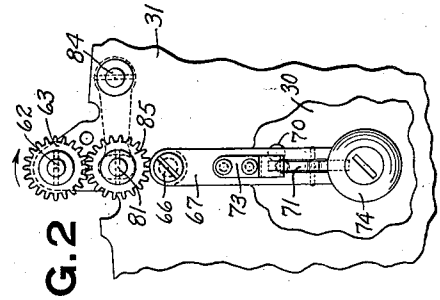


FIG. 2

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FIG. 5

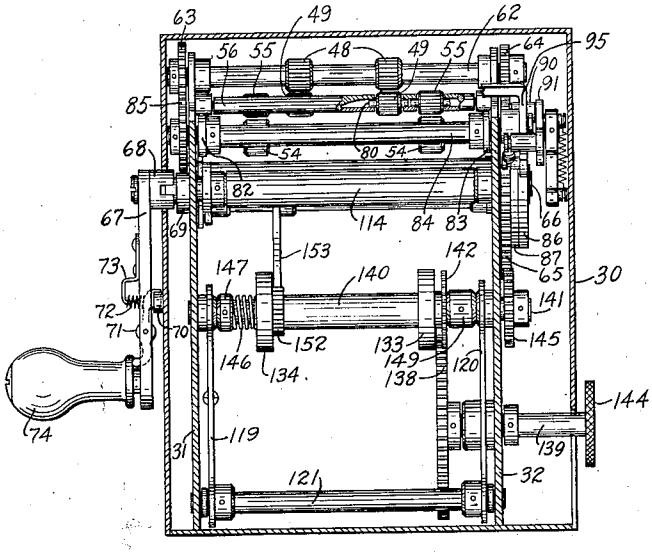


FIG. 6

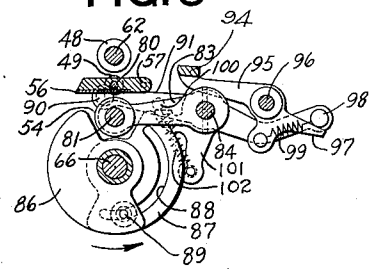
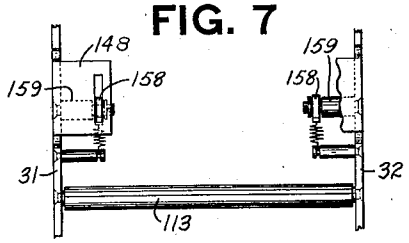


FIG. 7



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UNITED STATES PATENT OFFICE

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AUTOGRAPHIC REGISTER

Application filed January 17, 1927. Serial No. 161,588.

This invention relates to manifolding devices and more particularly to that type of manifolding devices known as autographic registers.

An object of the invention is to provide an autographic register which will feed out from the register a plurality of slips of different lengths. The longer slip, for example, may contain advertising matter or other data, such as the date, which it is not necessary to have on the shorter slip. Other reasons for different lengths of slips are presented in various lines of businesses in which a register of the type shown and described herein may be used.

Another object of the invention is to provide feeding means for a record strip, whereby the strip may be fed from a supply roll, to a receiving roll and then from the receiving roll back to the supply roll to enable the reading of previously-made records.

Still another object of the invention is to provide means for alining the different strips with each other during each operation of the register, and also to provide an arrangement whereby the amount of strip material advanced at each operation can be varied.

With these and incidental objects in view the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are set forth in the appended claims and a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form part of this specification.

Of said drawings:

Fig. 1 is a longitudinal sectional view of the register.

Fig. 2 is a detail view of a portion of the driving mechanism.

Fig. 3 is a detail view of another portion of the driving mechanism.

Fig. 4 is a detail top plan view of the record strip feeding mechanism.

Fig. 5 is a transverse sectional view of the register taken on line 5—5 of Fig. 1, showing the driving and feeding mechanism.

Fig. 6 is a detail view of the adjustable feed control mechanism.

Fig. 7 is a detail view of the strip alining device.

In general, the register has an original and two duplicate strips passing over a writing table, the original and the first duplicate issuing from the register, while the second-duplicate strip, hereinafter known as the record strip, remains in the register as a complete record of the transactions. If it is desired to refer to any of the previously-made records, the record strip feed can be fed backwardly to bring the desired record to the writing opening.

The duplicate records are made by means of carbon paper inserted between the strips, or by having the backs of the strips carbon coated.

During each operation of the register, the strips are automatically alined with each other so that the slips or checks are always uniform.

Described in detail, the register consists of a casing 30 (Figs. 1 and 5) enclosing the operating mechanism which is directly supported by the side plates 31 and 32 rising from the base of the casing. These plates are properly spaced and tied together by various rods which will hereinafter be described. Each side plate 31 and 32 is provided with two vertical slots 33 and 34, the slots in plate 32 being shown in Fig. 1. In these slots are fitted rods 35 and 36 supporting rolls of record material 37 and 38, the peripheries of which rest upon rods 39 and 40, respectively. The weight of the rolls resting on the rods serves to effect a friction braking action between the rods and rolls to prevent the rolls from turning freely under the momentum imparted to the rolls by the unwinding operation, and as the rolls become exhausted, their spindles 35 and 36 are free to descend in the vertical slots 33 and 34 so as to maintain frictional contact between the rolls and the brake rods 39 and 40. The rods 39 and 40 are supported at their ends in the plates 31 and 32.

From the record material roll 37 is fed an original strip 45 which passes over a guide roller 46, across a writing table 47, thence between pairs of feed rollers 48 and 49, (Figs. 1, 5 and 6) and out of the casing 30 through

an opening 50. A slip or check may be severed from the strip 45 by pulling the portion of the strip fed out against the edge 51 of the opening 50 in the casing.

From the record material roll 38 is fed a duplicate strip 52 which passes over a guide roller 53, across the writing table, between pairs of feed rollers 54 and 55 (Fig. 5) and out through the opening 50 in the casing. The feed rollers 55 are mounted in axial alignment with the feed rollers 49 for the original strip, but rotate independently of the rollers 49. A check or slip may be severed from this duplicate strip by pulling upwardly on the strip against the lower edge of a swinging bar 56 pivoted at each end at a point 57 to the side plates 31 and 32.

The feed rollers 48 which feed the original strip 45 are fastened upon a shaft 62 journaled at each end in bearings supported by the side plates 31 and 32. On the opposite ends of the shaft are pinned small gears 63 and 64 (Figs. 2 and 3). The gear 64 is in mesh with a larger gear 65 secured to a main driving shaft 66 which is given one cycle of movement by an operating crank 67 at each operation of the machine. The crank is connected to the shaft through clutch members 68 and 69 (Fig. 5).

As the operating crank completes its rotation, it is stopped by a pin 70 projecting from the casing into the path of a double-ended pawl 71 held in normal position by a spring 72, one end of which presses on the pawl while the other end of the spring contacts a bracket 73 riveted to the crank. The lower end of the pawl engages the inside face of a handle 74 which is rotatably and slidably mounted on a stud supported at one end in the crank 67. When the machine is to be operated, the crank is released by pressing the handle 74 inwardly to rock the pawl 71 counter-clockwise to withdraw the upper end thereof from behind the stud 70 (Fig. 5).

The rollers 49, cooperating with the feed rollers 48 to feed the original strip, are freely mounted upon a rod 80 (Figs. 5 and 6) supported in the severing bar 56. The rollers 55, which cooperate with the feed rollers 54 in feeding the duplicate strip, are also mounted upon the rod 80. The under face of the severing bar 56 is recessed to accommodate the pintles on shafts 80 which support the feed rollers 49 and 55, as shown in Figs. 5 and 6, and apertures are formed through the bar at points opposite the pair of rollers 48 coacting with the feed rollers 49, and opposite the feed rollers 54, to afford room for said feed rollers 49 and 55. A cover plate suitably secured to the under surface of the severing bar 56 with apertures which register with the apertures in the severing bar, holds the feed rollers and their pintles 80 in their place. The feeding rollers 54 are secured to a shaft 81 which is supported at its ends by two arms 82 and 83 (Fig. 1) fastened to hubs pinned to a rod 84 supported at its ends by the side plates 31 and 32. The shaft 81 is rotated by a gear 85 (Fig. 2) pinned to the end of the shaft and meshing with the gear 63. These gears 63 and 85 are loosely meshed to permit the gear 85 to be shifted upwardly, for a purpose to be later described.

The roller 54 is of larger diameter than the roller 48 so that the portion of the duplicate strip 52 fed out is always longer than the portion of the original strip 45 fed out. This proportion is maintained regardless of the lengths of the checks issued as controlled by means next described.

One reason for having the duplicate slip longer than the original is that the proprietor may wish to have certain advertising matter or the date printed on this longer slip and not wish to have this data on the original. In some cases the data may require more space than in others, therefore, a special control is provided for varying the lengths of the issued slip to suit the various conditions presented.

The length of the slips or checks issued by the register from both the original strip and the duplicate strip can be variably controlled by two adjustable semi-circular disks 86 and 87 (Fig. 5) which are shown in detail in Fig. 6. These disks are arranged in complementary relation to each other on the drive shaft 66. One of the semi-circular disks, as the disk 87 is fixed to said shaft 66, whereas the complementary disk 86 is journaled on the shaft. The lower sections of the disks 86 and 87 are arranged to overlap, thereby spacing apart the upper sections of the disks, more or less depending upon the degree to which the lower sections overlap. The space thus formed between the upper sections of the disks accommodates the roller 90 carried by an arm 91 journaled on the rod 84. The disk 87 is provided with a curved slot 88 through which passes a clamping screw 89 to hold the disks against relative movement after they have been properly adjusted. The circular peripheries of the disks contact a roller 90 carried on an arm 91 freely mounted on the rod 84. This arm 91 carries a pin 100 held in contact with a nose on an arm 101, by a spring 102. The arm 101 is secured to the rod 84. This constitutes means for positively moving the feed rollers out of functioning position and for yieldably holding them in functioning position. With the mechanism of the register in the home position, the disks 86 and 87 are not in contact with the roller 90, and therefore, the feeding rollers 54 are lowered to a position affording a clearance between the rollers 54 and 55, and the severing bar 56, carrying rollers 55 and 49, is then free to move counter-clockwise around its pivot point 57, providing a clearance also between the rollers 48 and 49, and

also lowering the gear 85 into a loosely meshed position in relation to the gear 63.

As the driving shaft 66 rotates during an operation of the register, the circular peripheries of the disks 86 and 87 will contact the roller 90 and move the rod 84 clockwise, placing the feeding rollers 54 and 49 in engagement with each other, and also raising the gear 85 to completely mesh it with the gear 63, so as to feed both the original strip and the duplicate strip. The adjusting feature between the two disks 86, 87 provides for control of the length of time that the feeding rollers 54 and 49 are in cooperative relation with rollers 55 and 48 respectively, during one cycle of movement of the operating crank.

It is desirable to apply a braking force to the check strips at the time they are severed, and to all the strips at the time they are alined near the end of an operation. This is accomplished by a brake bar 94 (Figs. 1 and 6) carried by an arm 95 of a lever pivoted on a stud 96. The other arm 97 of this lever is held in engagement with a stud 98 on an arm integral with the arm 91, by a spring 99. As the arm 91 and connected parts are lowered at the end of an operation, the pin 98 is raised, and through the spring 99, the brake bar 94 is drawn downwardly into contact with the original or upper check strip 45, thereby placing a friction on all three strips 45, 52, and 111. The alining means, later described, can function immediately after the feed rollers 48, 49 and 54, 55 for the check strips have been disabled.

The brake bar 94 is accessible from the outside of the casing so that additional pressure can be applied thereto as the checks are torn off from the strips.

A roll of record material 110 known as a record strip roll is located within the register and can be removed by a person authorized to do so. From the roll is fed a strip 111 which moves over a guide plate 112, passing through an opening in the plate, over a guide roller 113, across the writing table, under a roller 114, then over guide rollers 115, and 116, and finally onto a receiving roller 117.

The roll of record material 110 is mounted on a rod 118 which is supported at each end by arms 119 and 120 fastened to a rod 121 journaled in the side plates 31 and 32.

The receiving roll 117 is mounted on a rod 125 supported by two arms 122 and 123 fastened to a rod 124 journaled at each end in the side plates. A spring 130, one end of which is connected to the arm 119 and the other end to arm 122, is a means for normally holding the supply roll of record material 110 in contact with a pair of feed rollers 131 and 132, (Fig. 4) and the receiving roll 117 in contact with a pair of feed rollers 133 and 134 (see also Figs. 1 and 5). The feed rollers 131 and 132 are secured to opposite ends of a sleeve 135 freely mounted upon a rod 136 supported in the side plates. Secured to the sleeve 135 is a gear 137 which meshes with a larger gear 138 pinned to a shaft 139 journaled in a bearing supported by the plate 32.

The feed rollers 133 and 134 which operate the receiving roll 117 are secured to opposite ends of a sleeve 140 freely mounted on a shaft 141 journaled in the side plates. Secured to one end of the sleeve 140 is a gear 142 which meshes with the larger gear 138. The purpose of driving the feed rollers by the large gear 138 is to rewind the record strip 111 from the receiving roll 117 to the supply roll 110 so as to be able to read previously made records through a glass window 143 in the top of the casing. The gear 138 is manually operated, in clockwise direction (Fig. 1) to rewind the strip on the supply roll 110, by a hand knob 144 on the end of the shaft 139 and located outside the casing.

The record strip 111 is fed from the supply roll to the receiving roll by the large driving gear 65 meshing with a smaller gear 145 which is secured to the end of the shaft 141. A friction drive means, comprising a spring 146 (Fig. 5) compressed between a collar 147, secured to the shaft 141 and the roller 134 secured to the sleeve 140, is provided. The spring 146 presses the hub of the roller 133 firmly against a collar 149 also secured to the shaft 141. Thus, as the gear 65 turns the gear 145 clockwise (Fig. 3), the shaft 141, through the spring 146, and collars 147—149 frictionally drives the feed rollers 133 and 134 to wind the record strip 111 on the receiving roll 117.

Mounted upon the sleeve 140 adjacent to the feed roller 134 is a ratchet wheel 152 (Fig. 1) cooperating with which is a pawl 153, which stops the rotation of the feed rollers 133 and 134 after the correct amount of record material has been placed on the receiving roll 117 during each operation. The pawl is secured to a shaft 154 and held in engagement with the ratchet by a spring 155. As previously stated, the record strip 111 may be rewound on the supply roll 110 when the mechanism is in home position, by turning the knob 144 clockwise (Fig. 1) which, through the gears 138 and 142, rotates the rollers 133 and 134 and turns the receiving roll 117 clockwise to unwind the paper therefrom. As the rollers 133 and 134 are thus turned, the ratchet 152 is turned counterclockwise, and the pawl 153 merely rocks back and forth over the ratchet. The gear 138 also turns the gear 137 and rollers 131 and 132, whereby the supply roll 110 is rotated clockwise to rewind the paper thereon as it is unwound from the receiving roll 117. The operator may now view, through the glass plate 143, the notations just moved beneath the glass by the rewind operation.

During such a rewind operation the oper-

ator holds the handle 67, to overcome the friction drive between the rollers 133—134 and shaft 141, thus preventing the check strip rollers 48—49, 54—55 from feeding the ends of said check strips back into the machine.

However, before the operator can again wind the unwound section of the record strip back on the receiving roll 117, it will be necessary to disengage the pawl 153 from the ratchet 152, and therefore, a cam 156 (Fig. 1) is secured to the main driving shaft 66 to cooperate with a roller supported on the end of an arm 157 also secured to the shaft 154. Upon slight movement of the operating crank 67, the cam 156 will disengage the pawl 153 from the ratchet 152, allowing the operator to operate the hand knob 144 counterclockwise (Fig. 1) whereby the gears 138—142 turn the rollers 133—134 clockwise to wind the unwound section of the record strip back on the receiving roll. The gear 138 simultaneously turns the gear 137 and rollers 131—132 clockwise to rotate the supply roll 110 to give up the section of the strip that had been rewound thereon. As the paper is being again wound on the receiving roll 117, as just described, the operator holds the handle 67 in its slightly moved position, until he stops turning the knob. He then may return the handle 67 to its normal position so that the roller on the arm 157 may again assume its normal position in the depression in the cam 156.

The machine is now ready to be operated by the crank 67 in regular way whereby the check strips are fed out of the machine and the record strip wound on the receiving roll 117.

During such operations the cam 156 also controls the pawl 153 in stopping the feed rollers 133 and 134. Thus when the operator commences to turn the crank 67 and main drive shaft 66, the low portion of the cam 156 in which the roller on the end of the arm 157 normally seats when the machine is in its home position, and the succeeding high portion of the cam, rocks the arm 157 and pawl 153 to disable the latter.

As the shaft 66 completes one rotation, the low point of the cam is brought opposite the roller on the end of arm 157 and the spring 155, immediately rocks the arm 157 to restore the pawl 153 into engagement with its ratchet.

This cam 156 also serves another purpose in that it provides slack in the record strip 111 between the supply roll and the receiving roll so that, at each operation of the register, this strip may be placed in true alinement with the other strips by a pair of spring-actuated arms 158 (Fig. 1), the lower slotted ends of which are pivotally supported on studs 159. Only one of these arms is shown. The upper free ends of the arms move in slots formed in lugs 148 (Fig. 7) adjacent the lower edge of the writing table 47. Formed along the edges of each of the various strips and spaced at regular intervals are holes (not shown). The holes in the several strips may be differently spaced according to the lengths of slips and feed of the record material desired. Certain at least of the holes in the respective strips are intended to lie in registry when the strips are superposed in use, but due in part to inexpert threading of the strips through the machine when replacing rolls, and also, to the slight and unavoidable slippage or other accidental relative movement between the strips, it sometimes happens that the strips get out of proper registry with each other, that is, the printed line on one strip may not register with the corresponding or desired printing on another strip.

The aligning fingers 158 which cooperate with the holes in the several strips to continuously restore the strips to alined positions, are yieldably supported by their springs (Fig. 1) which operate to draw these alining fingers upwardly into feeling contact with the strips.

The free ends of the alining fingers project through the alined holes in the several strips, when the machine is at rest. As the strips move over the writing table toward the left (Fig. 1) the edges of the holes will carry the arms 158 to the left in which position they will be pressed against the record strip 111, and later, as the record, duplicate and original strips near the end of their feeding movements, the arms 158 will reenter the holes in the strips and draw the strips to the right, after slack has been created in the record strip, by means later described, and the feed rollers for the original and duplicate strips have been disabled. This will aline the three strips with each other for the next entry of items.

The slack placed in the record strip near the end of an operation of the register is effected by the cam 156 in cooperation with the arm 157 which has rigidly connected thereto an arm 160 carrying the guide roller 116. As the register is operated, the cam 156 will move the arm 160 clockwise and as it returns to the position shown in Fig. 1, there will be a sufficient slack in the strip 111 to allow the arms 158 to aline this strip with the other two strips.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein described, but that it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:

1. In an autographic register, the combi-

nation of a record strip supply roll, a record strip receiving roll, a feed roller engaging the periphery of the record strip supply roll to unwind the record strip, a gear connected with said roller, a feed roller engaging the periphery of the record strip receiving roll to wind the record strip onto the receiving roll, a second gear connected with the second mentioned roller, driving means for said feed rollers including a gear meshing with both of the above mentioned gears, a power gear, and a friction device between the power gear and one of the feed rollers, and resilient means for holding the feed rollers against the supply and receiving rolls.

2. In an autographic register, the combination of a record strip supply roll, a feed roller engaging the periphery of said supply roll to rotate said roll in either direction, a record strip receiving roll, a feed roller engaging the periphery of said receiving roll to rotate said roll in either direction, a driving means for said feed rollers including a gear train to operate the shaft upon which the receiving roll feed roller is mounted, a gear for each feed roller, an intermediate gear therefor, a flexible connection between the gear train and the receiving roll feed roller, and means to disable said receiving roll driving means.

3. In an autographic register, the combination of a record strip supply roll, a feed roller engaging the periphery of said supply roll to rotate said roll in either direction, a record strip receiving roll, a feed roller engaging the periphery of said receiving roll to rotate said roll in either direction, a driving means for said feed rollers, means for disabling said receiving roll driving means, a check strip feed roller operated by said driving means, means adapted to engage holes in said strips to aline the same during each operation, a support for the record strip, and means to adjust the support to form a slack in said record strip to assist the aligning means in bringing the record strip into alinement with said check strip.

4. In an autographic register, the combination of a writing table, a set of feed rollers to feed a check strip a certain extent, a second set of feed rollers to feed a second check strip a different extent, an adjustable means to shift said sets of rollers into feeding relation with each other to obtain predetermined lengths of checks, and a common driving means for operating said feed rollers and adjustable means during one operation of said driving means.

5. In an autographic register, the combination of a set of feed rollers to feed a check strip a certain extent, a second set of feed rollers to feed a second check strip a different extent, relatively adjustable, rotatable disks adapted to shift said feed rollers into feeding relation with each other for a common pre-determined portion of a cycle of operation, and a driving means for simultaneously rotating said rollers and disks.

6. In an autographic register, the combination of a pair of feed rollers adapted to feed a check strip, a pair of rotatable disks mounted upon a common axis and relatively adjustable to hold said feed rollers in feeding relation with each other for a predetermined portion of a cycle of operation, and a driving means for said disks.

7. In an autographic register, the combination of relatively adjustable feed rollers adapted to feed a check strip, a movable support for said rollers, a pair of rotatable disks mounted upon a common axis to hold said feed rollers in feeding relation with each other for a predetermined portion of a cycle of operation, a driving means for said disks, and means controlled by said support for placing friction on said strip as said feed rollers move out of feeding relation.

8. In an autographic register, the combination of a feed roller having a fixed axis, a feed roller having a movable axis and in spaced relation with said first mentioned roller, cooperating feed rollers located intermediate said first mentioned feed rollers, and means movably supporting the axis of said cooperating rollers to permit the roller cooperating with the first mentioned feed roller to move away from said roller when the second mentioned feed roller moves out of feeding position.

9. In an autographic register, the combination of normally disengaged feed rollers, means for engaging and disengaging said feed rollers as the register is operated, friction means adapted to be applied to strips of record material fed by said feed rollers, and a connection between said friction means and certain of said feed rollers and actuated by the engaging and disengaging means to move the friction means to effective position as the rollers are disengaged.

10. In an autographic register, the combination with a record strip supply roll, a record strip receiving roll, and means to feed the strip from the supply roll and onto the receiving roll, a check strip supply roll, and a duplicate check strip supply roll; of a pair of feed rollers for the check strip; a second pair of feed rollers for the duplicate check strip; shiftable supports for one roller of each of the respective pairs of feed rollers; means to drive the feed rollers; and a control member adjustable to maintain the feed rollers in effective positions at various predetermined intervals in the operation of the machine.

11. In an autographic register, the combination of feed means for a check strip, including two sets of rollers between which the strip passes; drive means for one set of rollers; a shiftable support for one set of

rollers; an arm shiftable with the support; and a plurality of relatively adjustable supporting members operated by the drive means, to contact the arm and thereby shift the one set of feed rollers into effective relation with its coacting set of feed rollers, and to release said arm to enable the one set of feed rollers to become ineffective relatively to its coacting set at different periods in the driving cycle.

12. In an autographic registering device, a casing, a platen carried thereby, means for directing a master web and a copy web over said platen, said casing having a display opening spaced from said platen in the line of movement of said copy web, means for simultaneously advancing both webs over said platen, and means for advancing said copy web across said opening in either direction, independently of said master web.

In testimony whereof I affix my signature.

WILLIAM H. ROBERTSON.

CERTIFICATE OF CORRECTION.

Patent No. 1,756,386. **Granted April 29, 1930, to**

WILLIAM H. ROBERTSON.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, line 58, claim 4, after the word "said" insert the word "common"; same page, line 78, claim 7, strike out the words "relatively adjustable" and insert the same to follow after the word "of" in line 80; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 3rd day of June, A. D. 1930.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.