GRIP ROLLER CONSTRUCTION FOR AUTOGRAPHIC REGISTERS

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GRIP ROLLER CONSTRUCTION FOR AUTOGRAPHIC REGISTERS

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This invention relates to autographic registers in which the manifolding stationery is used. Such stationery consists of a plurality of superimposed, continuous strips of forms which are folded in zig-zag fashion to provide a packet of conveniently handled size. Two folds are made at transverse lines perforations which define sets of forms within the packet and which permit the forms to be torn apart readily. Each form within a set has a pair of spaced apertures therein which are aligned transversely of the form at the head end thereof adjacent to the line of perforations. These apertures cooperate with feeding and aligning mechanism of the register to insure that the superimposed forms of each set are delivered onto the writing platen of the machine in accurate registry with respect to one another.

In my copending patent application Serial No. 404,561, filed January 18, 1954, I have disclosed improved feeding and aligning mechanism for an autographic register which incorporates a pair of feed discs and a grip roller. The manifolding stationery is engaged between the grip roller, which contacts the upper surface thereof, and the discs, which contact the under surface thereof. The roller and discs are driven by means such as a hand crank and serve to advance the stationery. They also cooperate to align in a general way the superimposed forms by virtue of their relationship to the apertures in the forms. In addition, extensible pins carried on the feed disc serve to complete the alignment of the forms, the aligning pins becoming effective during the last portion only of the operating cycle of the machine, at which time they engage in the apertures and move the forms into accurate registry with respect to one another. The grip roller is cammed upwardly out of contact with the forms during this period in order to free them so that they can be moved by the pins. Except for this one, brief period in the cycle of operation, the grip roller is in contact with the forms, being urged downwardly by springs. Thus, in order to load the register by placing the stationary forms initially in position to be advanced and aligned, means must be provided to raise the grip roller so that the apertures in the first set of forms of the stationery can be engaged by the aligning pins. It is this particular phase of the operation of an autographic register to which the present invention is directed, and it is the objective of the invention to provide an improved grip roller construction which is simple to operate and which is efficient in operation.

One of the novel features of the invention is the provision of a grip roller assembly for an autographic register in which springs are employed to urge the roller downwardly into operating position and are also utilized to urge the roller upwardly for loading purposes. In their hold-down function the springs are employed in tension to pull the roller downwardly into position to cooperate with the feed discs. To raise and free the grip roller for loading purposes, the same springs are utilized in compression to push the roller upwardly out of contact with the feed discs. In order to change over the springs from one operating condition to the other, a novel shifting mechanism is provided. In the preferred embodiment the shift is accomplished by the simple expedient of raising or lowering a finger operated latch which is so placed as to be instantly accessible to the operator upon the opening of the register casing.

For a complete disclosure of a grip roller assembly embodying the principles of the present invention, reference is made to the following detailed description of the drawings in which:

Figure 1 is a top plan view of an autographic register incorporating an improved grip roller construction of the present invention.

Figure 2 is a view similar to Figure 1 in which the lid of the register is open, a portion only of the lid being shown.

Figure 3 is a cross sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a cross sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 3, showing the grip roller in operating position.

Figure 6 is a view similar to Figure 5 showing the grip roller in the process of being raised.

Figure 7 is a cross sectional view taken on the line 7—7 of Figure 3 showing the side of the register opposite to the one illustrated in Figures 5 and 6, in which the grip roller is in the position shown in Figure 6.

Figure 8 is a view similar to Figures 5 and 6 showing the grip roller in raised or released position.

Figure 9 is a view similar to Figure 7 showing the grip roller in released position.

In the drawings an autographic register is indicated generally by the numeral 10. The register shown has a cover or lid 11 which is formed in one piece as a casting of light metal such as aluminum. The lid preferably is hinged to the register casing at one side thereof as shown in Figure 2. The lid has a rectangular window 12 in the top thereof to expose manifolding forms such as the one indicated at 13. The forms are brought into registry upon a writing platen 14, being fed from a packet (not shown) which is placed within the register casing beneath the writing platen. The forms are threaded through an improved separator assembly shown at the right of the writing platen as it appears in Figure 2. The separator assembly is indicated generally by the numeral 15 and is disclosed in detail in my copending patent application Serial No. 404,707, filed January 18, 1954.

The manifolding forms are withdrawn from the packet, through strip separators, across the writing platen, where they are interleaved with carbon paper, and delivered in registry with respect to one another on the writing platen by the feeding and aligning mechanism of copending application Serial No. 404,561, referred to above. During the advancing operation, a set of forms is also discharged through a delivery slot 16 onto the top of the cover at the left as it appears in Figure 1 where they may be torn from the strip. At the same time, the lowermost one of the forms is delivered into a storage compartment indicated generally at 17 and which is located beneath the cover or lid at the left side of the machine as it appears in Figure 2.

The above described path of movement of the forms is conventional and is known to those skilled in the art. For this reason the parts of the register which concern the storage of the forms and their movement to and from the feeding and aligning mechanism, which is located near the center of the register at the head end of the writing platen is not described in detail.
The feeding and aligning mechanism is mounted in a chassis consisting of a pair of side plates 18-18. These plates are secured to the bottom of the register casing adjacent to the respective opposite side walls thereof. Each wall includes a foot flange 19 which may be spot welded to the bottom of the register casing and an interposed, vertical guide 20 which serves to rigidify the upright portion of the wall. The feeding and aligning mechanism consists generally of a grip roller 21, a pair of feed discs 22-22, a pair of aligning pin actuator cams 23-23 and a pair of lift cams 24-24 which are designed to unidirectionally raise the grip roller during that portion of the cycle of operation of the machine when two aligning pins indicated at 25-25 engage within the feed apertures provided in the forms.

The two feed discs are mounted upon a shaft 26 which is journaled at its opposite ends in the side walls 18-18 of the chassis and which extends across the register parallel with and below the grip roller. One end of the shaft 26 extends through a wall 18 at the right side of the graphic register (the left side as seen in Figure 3) and has a gear 27 pinned at its outer end. Gear 27 is designed to mesh with a gear 28 which is pinned to the end of a shaft 29 which is part of the grip roller assembly. Thus, the feed discs and grip roller are arranged to rotate together. Shaft 26 has a gear 30 at the right end thereof just inwardly of the chassis wall which meshes with a gear 31 pinned to a cross shaft 32 which mounts the two actuators 33-33. A third shaft 34 is journaled in the chassis walls. This shaft has a gear 34 pinned to it which is meshed with gear 31. The shaft 33 extends outwardly through the wall 18 at the left side of the machine and has a hand crank 35 pinned to its outer end. Thus, rotation of shaft 33 by means of the hand crank drives both shafts 26 and 32 and the shaft 26 through the gear train consisting of gears 34, 31 and 30. The ratio between gear 34 on the crank shaft 33 and the gear 30 on shaft 26 which mounts the actuator cams 23, is one to one. By contrast, the gear ratio between gear 31 on the actuator shaft 32 and the gear 30 on shaft 26 is one to two. Thus, shaft 26 makes two revolutions for each revolution of shaft 32.

As disclosed in detail in my copending application Serial No. 404,561, the aligning pins 25 are slidably mounted upon the feed discs 22. The respective pins are formed as integral parts of elliptically shaped plates 36-36, each of which is arranged to slide diametrically of the feed disc upon which it is mounted between a retracted position in which the aligning pin is inwardly of the periphery of the feed disc and an extended position in which the pin is outwardly of the feed disc. Normally each plate 36 is urged toward the retracted position by means of a hairpin spring (not shown in the present instance). The actuator cams 23 are designed to contact and extend the aligning pin plates. Such contact, however, takes place only in the position of the cams 23 shown in Figure 3, i.e., when they are substantially straight up and down and the pins are adjacent to the feed rollers 21. Due to the one to two ratio of the respective gears 31 and 30, this occurs only once in every two revolutions of the shaft 26. The purpose of this arrangement is to adapt the feeding and aligning mechanism to forms of various sizes, and particularly long forms.

The grip roller lift cams 24-24 are also mounted upon the shaft 26. These cams are designed to engage the grip roller at the same time that the aligning pins move into the apertures in the forms so as to lift the roller and thereby free the forms so that they may be moved by the pins for registry purposes. Each of the two grip roller lifting cams is pinned to a gear 37 which is in mesh with and is driven by a gear 38. The ratio between gears 37 and 38 is one to one. Gear 38 is pinned to the shaft 26 which makes only one revolution for each two of the shaft 26. Thus, there can be no positive connection between the gear 37 and the grip roller lift cam 36, the shaft 26 merely journaling the two elements.

In the operation of the feeding and aligning mechanism, the grip roller 21 is constantly urged downwardly under the action of two coil springs, one of which, at the right side of the register, is indicated at 39 and the other of which, at the left side of the register, is indicated at 40. Thus, during the operation of the device, the only time that the grip roller 21 is lifted is when it is raised by the cam 24-24, and this occurs at a time just prior to the time of the completion of a cycle of operation. At the end of the cycle the grip roller is again urged downwardly by the two springs 39 and 40 so as to hold the forms securely on the writing plates when they are being written upon.

The grip roller 21 is configured to provide two tread portions 41-41 which are defined by pairs of grooves. The tread portions are spaced to contact the peripheries of the respective feed discs 22-22. In addition, the grip roller at the respective outer ends thereof journals in two sleeves 42-42. These sleeves rotate freely on the roller and are in position to be engaged by the respective lift cams 24-24. The sleeves are provided because the roller in operation revolves at a considerably higher rate of speed than the lift cams and in the opposite direction. They, therefore, serve to protect the lobes on the two lift cams 24 against wear.

The opposite ends of the grip roller are journaled in pivotally mounted bearing arms 43-43. Each arm may include a seat for an anti-friction bearing (not shown) at one end thereof to journal the bearing 44 of the grip roller assembly. The other end of each arm has a plain bore through it to receive a bolt 44 by means of which the arm is pivotally journaled to the adjacent side plate 18 of the chassis. The respective coil springs 39 and 40 are pinned to the respective grip roller bearing arms under the journal in the housing arms 44 and extend down along the outer faces of the chassis side walls. The lower ends of the two springs 39 and 40 are journaled on pins such as those indicated at 46-46 in Figure 3. These two latter pins are secured to rotatably mounted members. These members respectively are pinned to the opposite ends of a cross shaft 47 which is journaled in the two side plates 18-18 and which extends across the machine underneath the shafts of the feeding and aligning mechanism. The member to which the lower end of the spring 39 at the outer left side of the register consists of a simple crank plate 48. At the other side or right side of the machine, the lower end of arm 40 is pinned to a gear 49. The gear 49 and the crank plate 48, being joined together by the shaft 47, are designed to turn together through substantially more than 180° in a position in which the respective pins 46 are overcentered at a lowered position to a position in which the pins are overcentered at an upper position. In the lower overcenter position, the two springs 39 and 40 are under considerable tension so that the two bearing arms and the grip roller are urged downwardly to bring the two tread portions 41-41 into rolling contact with the peripheries of the feed discs 22-22. In the upper overcenter position, however, the two pins 46-46 compress the springs, pulling them upwardly so that they lift the respective bearing arms to elevate the grip roller substantially above the feed discs for loading purposes. The two springs 39 and 40, therefore, act under tension to pull the grip roller downwardly and act in compression to push the grip roller upwardly.

The means to shift the springs from one operating condition to the other consists of a finger operated actuator bar 50 having a finger tab 51 turned over at the upper end thereof. The actuator bar is slidably mounted at the right side of the machine in a housing 52 which may be spot welded to the outside of the wall of the chassis which is at the right. The plate 52 has an offset 53 on it which defines with the outside of the chassis wall a channel in which the actuator bar may slide. The exposed side edge of the actuator bar is configured to pro-
vide a gear rack 54. This rack is meshed with an idler gear 55 which serves to maintain the actuator bar in its channel and which is meshed with the gear 49. Thus, moving the actuator bar 50 longitudinally of the channel in which it is seated causes gear 49 to rotate.

It will be seen that the gear rack 54, gear 55 and gear 49 are so interrelated that moving the actuator bar into the lowered position shown in Figure 5 rotates the gear 49 to a position in which the pin 46, which it carries, is overcenter of a substantially vertical line connecting the center of shaft 47 with the center of pin 45, the latter pin being the one which connects the upper end of the spring to the bearing arm. In this position the spring 40 is under considerable tension. The pin 46 is held in this position by the overturned finger tab 51. It will be seen that the upper end of the actuator bar 50 extends through a groove 56 cut in the inner face of the bearing arm and that the finger tab 51 extends over the upper surface of the bearing arm. The tension of the spring tends to pull the actuator bar 50 downwardly, this movement being resisted by the engagement of the finger tab 51 with the upper surface of the bearing arm. With the finger tab thus engaged, the overcenter position of the pin 46 is a stable one.

Figure 6 shows the actuator bar and spring in an intermediate position in which the actuator bar is being lifted. In the position shown, the coil spring is substantially relaxed with the collars engaging one another. In lifting the actuator bar above the position shown in this figure, the coil spring serves to push or lift the bearing arm upwardly until the pin 46 on the gear 49 reaches top center and moves slightly beyond to the overcenter position shown in Figure 5. The position of the pin 46 is also a stable one inasmuch as further upward movement of the actuator bar is stopped by means of an enlarged tooth 57 provided at the lower end thereof, the tooth wedging against the gear 55.

It will be noted that the shaft 32, to which the two aligning pin actuator arms are affixed is used to journal the gear 55, this being a matter of convenience. The gear merely idles on the shaft, however, being held thereon by a snap ring 58, see Figure 5.

The raising and lowering of the feed roller to clear the aligning pins for loading purposes also serves to latch and unlatch a floating guide plate 59. This plate is pivotally mounted for floating, rocking motion about an axis which extends across the register parallel with the grip roller at the discharge side thereof. The respective opposite ends of the guide plate 59 are received in journal apertures 60 which are formed in tabs 61 extending upwardly from the respective upper edges of the two side plates of the chassis. The guide plate presents a leading edge 62 toward incoming forms. The plate is interlaced between forms, the form or forms passing underneath the plate being directed downwardly into the storage compartment and the form or forms passing over the guide plate being directed through the discharge slot 16 onto the top of the lid of the register. During the operation of the machine the leading edge of the guide plate rides upon the forms, or form if only one record copy is desired, which are being advanced by the feeding mechanism of the register. Inasmuch as the lines of perforations in incoming forms can become fouled on the leading edge of a loosely held guide plate, the present guide plate is arranged to be rigidly clamped during operation of the register as illustrated in Figure 7. Under these conditions the guide plate rests upon tabs 63 which are turned inwardly respectively from each of the side plates of the chassis. The plate is held down against the tabs 63 by tabs 64 which are affixed respectively to the upper surfaces of the bearing arms 43 and which extend inwardly toward one another from the arms to contact the opposite outer ends of the guide plate. When the two bearing arms are down in form gripping relationship as shown in Figure 4, the respective tabs 63 and 64 are spaced apart just far enough to accommodate the respective ends of the guide plate and to clamp the plates tightly there between. This holds the plate so that it cannot be moved by the incoming lines of perforations. It is found that the forms therefore slide over the leading edge instead of pivoting it into a jamming position.

If the guide plate were held by the tabs 63 and 64 when the bearing arms are in their lower positions, it would make it difficult to thread the forms which are to be directed to the storage compartment. For this reason, the tabs 64 are placed upon the bearing arms so that they lift with them when the bearing arms are raised for loading purposes. This permits the leading edge of the guide plate to be swung up into the position shown in Figure 9, in which position a substantial opening is provided to receive the forms or forms which are to pass underneath the plate and into the storage compartment.

The leading edge of the guide plate has appropriate slots in it to provide the necessary clearance for the aligning pins, the feed discs, and for the grip roller lift cams 64. Immediately below the guide plate 59, a plate 65 extends across the register, the latter plate being so engaged to and extending between the respective side plates of the chassis. Plate 65 is slotted in order to provide the necessary clearance for the elements of the feeding and aligning mechanism. The plate 65 constitutes a table for directing the forms moving to storage through the guide plate 59. At the opposite side of the discharge side of the feeding and aligning mechanism, plate 65 serves to support the writing platen 14, the platen being hinged to the plate 65 so that it may be raised, pivoting upon an axis which substantially parallels the grip roller.

To lock the register, the lid is opened and the actuator bar 50 raised by pulling on the finger tab 51. This does two things; it raises the feed roller to provide ample clearance for engaging the forms on the aligning pins and it also frees the guide plate 59 so that it may be swung up to facilitate the threading of forms beneath it. If only one form is to be directed into the storage compartment, the guide plate is released after the lowermost one of the superimposed forms is in place. The other forms are simply laid on top of the guide plate. The loading is completed and the register ready for operation upon sliding the actuator bar to its lowest position and closing the lid.

Having described my invention, I claim:

1. In an autographic register adapted to operate upon manifolding stationery, a grip roller assembly comprising in combination a grip roller, a pair of bearing arms rotatably journalling the respective opposite ends of said grip roller, said bearing arms being pivotally mounted to permit the grip roller to be moved from a lowered operating position to a raised stationery loading position, an elongated coil spring connected to and depending from each of the bearing arms at a point adjacent to said grip roller, a rotatable member disposed adjacent to the lower end of each of said coil springs, a pin affixed to the lower end of each coil spring, the respective pins being mounted upon the rotatable members for simultaneous movement between a lower overcenter position and an upper overcenter position, the distance between said lower overcenter position and said upper overcenter position being greater than the distance the grip roller moves in traveling from its lowered operating position to its raised stationery loading position, said spring being of such length that they are under tension to urge said grip roller downwardly when said pins are in their lower overcenter positions and are under compression to push said grip roller upwardly when said pins are in their upper overcenter position, and means for selectively move said pins from one of their said positions to the other of their said positions.

2. In an autographic register adapted to operate upon manifolding stationery, a grip roller assembly compris-
ing in combination a grip roller, a pair of bearing arms rotatably journaling the respective opposite ends of said grip roller, each of said bearing arms being pivotally mounted to permit the grip roller to be moved from a lower operating position to an upper stationery loading position, an elongated coil spring pinned and depending from at least one of said bearing arms at a point adjacent to the end of said grip roller, a pin affixed to the lower end of said coil spring, said pin being mounted for movement between a lower position and an upper position, the distance of travel of said pin from said lower position to said upper position being greater than the distance of movement of said grip roller from its operating position to its loading position, and said spring being of such length that it is under tension to pull said grip roller downwardly when said pin is in its lower position and is under compression to push said roller upwardly when said pin is in its upper position, and means to selectively move said pin from one of its positions to the other of its positions.

3. In an autographic register adapted to operate upon manifolding stationery, a grip roller assembly comprising in combination a grip roller, means journaling said grip roller, said means movably mounted to permit the grip roller to be raised from an operating position to an inoperative position, an elongated coil spring pinned to and depending from said means, a pin connected to the lower end of said coil spring, said pin being mounted for movement between a lowered position to an upper position, the distance of travel of the pin from said lowered position to said upper position being greater than the movement of said means when the grip roller is raised from its operating position to its inoperative position, said spring being of such length that it is under tension to urge said grip roller downwardly when said pin is in its lowered position and is under compression to push said roller upwardly when said pin is in its upper position, and means to selectively move said pin from one of its said positions to the other of its said positions.

4. In an autographic register adapted to operate upon manifolding stationery, a grip roller assembly comprising in combination a grip roller, mounting means rotatably journaling the respective opposite ends of said grip roller, said mounting means movably mounted to permit said grip roller to be raised from a lowered operating position to an upper stationery loading position, an elongated coil spring pinned to and depending from said mounting means, a rotatable member disposed adjacent to the lower end of said coil spring, a pin connected to the lower end of said coil spring, said pin being mounted upon said rotatable member and adapted for movement therewith through an arc greater than 180° between a lower overcenter position and an upper overcenter position, the distance of vertical travel of said pin from said lower overcenter position to said upper overcenter position being greater than the vertical movement of said grip roller from its lowered operating position to its upper loading position, said coil spring being of such length that it is under tension to urge said grip roller downwardly when said pin is in its lower overcenter position and is under compression to push said roller upwardly when said pin is in its upper overcenter position, and means to selectively move said pin from one of its positions to the other of its positions.

5. In an autographic register, a grip roller assembly comprising in combination a grip roller extending transversely of said register, a pair of bearing arms journaling the respective opposite ends of said grip roller, said bearing arms pivotally mounted for swinging movement between a lower position in which said grip roller is in an operating position and an upper position in which said grip roller is raised to facilitate loading of the register, a pair of rotatable members, each rotatable member disposed beneath a bearing arm, a first spring connector on each of said bearing arms at a point removed from the pivot point thereof, a second spring connector on each of said rotatable members, means interconnecting the respective rotatable members for simultaneous rotational movement from a position in which the spring connectors thereof are in lower overcenter positions with respect to a plane extending through the center about which the rotatable members rotate and through the first spring connectors on the respective bearing arms to a raised position in which the spring connectors on the rotatable members are in upper overcenter positions with respect to said plane, the straight line distance between the second spring connector travels between its lower overcenter position and its upper overcenter position being greater than the distance the grip roller moves from its operating position to its loading position, a coil spring attached to and extending between each of the first spring connectors on the bearing arms and the respective second spring connectors on the rotatable members, each of said coil springs being of such length that it is under tension to urge the grip roller downwardly when the spring connector on the rotatable member to which it is attached is in its lower overcenter position and is under compression to push the grip roller into its raised loading position when the spring connector on the rotatable member to which it is attached is in its upper overcenter position, and means for selectively rotating the respective rotatable members from one position to the other.

6. In an autographic register, a grip roller assembly comprising in combination a grip roller, a pair of bearing arms journaling the respective opposite ends of said grip roller, said bearing arms pivotally mounted for swinging movement between a lower position in which said grip roller is in an operating position and an upper position in which said grip roller is raised to facilitate loading of the register, a rotatable member disposed beneath each of said bearing arms, a first spring connector on each of said bearing arm at a point removed from the pivot point thereof, a second spring connector on said rotatable member, said rotatable member adapted for rotational movement from a position in which said second spring connector is in a lower overcenter position with respect to a line connecting the center of rotation of the rotatable member and the center of the grip roller and the bearing arm to a raised position in which said spring connector is in an upper overcenter position with respect to said line, the straight line distance between said lower overcenter position and said upper overcenter position being greater than the distance the grip roller moves from its operating position to its loading position, a coil spring attached to and extending between the respective spring connectors, said coil spring being of such length that it is under tension to urge the grip roller downwardly when the spring connector on the rotatable member is in its lower overcenter position and is under compression to push the grip roller into its raised loading position when the spring connector on the rotatable member is in its upper overcenter position, and manually operable means for selectively moving the rotatable member from one overcenter position to the other.

7. In an autographic register having a chassis mounting feeding and aligning mechanism including a grip roller extending transversely of the register above said chassis, grip roller mounting and actuating means comprising a pair of bearing arms, said bearing arms rotatably journaling the respective opposite ends of said grip roller, said bearing arms pivotally mounted for swinging movement between a lower position in which said grip roller is in an operating position and an upper position in which said grip roller is raised to facilitate loading of the register, a pair of rotatable members, each rotatable member disposed beneath a bearing arm, a first spring connector on each of said bearing arms at a point removed from the pivot point thereof, a second spring connector on each of said rotatable members, means interconnecting the respective rotatable members for simultaneous rotational movement from a position in which the spring connectors thereof are in lower overcenter positions with respect to a plane extending through the center about which the rotatable members rotate and through the first spring connectors on the respective bearing arms to a raised position in which the spring connectors on the rotatable members are in upper overcenter positions with respect to said plane, the straight line distance between the second spring connector travels between its lower overcenter position and its upper overcenter position being greater than the distance the grip roller moves from its operating position to its loading position, a coil spring attached to and extending between each of the first spring connectors on the bearing arms and the respective second spring connectors on the rotatable members, each of said coil springs being of such length that it is under tension to urge the grip roller downwardly when the spring connector on the rotatable member to which it is attached is in its lower overcenter position and is under compression to push the grip roller into its raised loading position when the spring connector on the rotatable member to which it is attached is in its upper overcenter position, and means for selectively rotating the respective rotatable members from one position to the other.
from at a side of said chassis, a cross shaft rotatably jour-
nelled in said chassis and extending transversely thereof
beneath said grip roller, a gear pinned to one end of said
cross shaft outside of said chassis, a pin on said gear, said
pin being attached to the lower end of the elongated
spring which is at its side of the chassis, means to select-
ively rotate said cross shaft through more than 180° from
a position in which the respective pins are in lower over-
center positions with respect to the plane which passes
through the axis of said cross shaft and through the upper
ends of said springs to an upper overcenter position with
respect to said plane, and the respective coil springs being
of such length that they are under tension to pull the grip
roller downwardly into operating position when the re-
spective pins are in their lower overcenter positions and
they are under compression to raise said roller into its
loading position when the respective pins are in their
upper overcenter positions, and manually operated means,
including a gear rack and an idler gear, said idler gear
being intermeshed with said gear rack and with the gear
which is on the cross shaft adapted to rotate said cross
shaft for moving the respective pins from their lower
overcenter positions to their upper overcenter positions.

8. In an autographic register having a chassis mounting
feeding and aligning mechanism and having a grip roller
extending transversely of the register above said chassis,
grip roller mounting and actuating means comprising a
pair of bearing arms, said bearing arms rotatably jour-
nelled the respective opposite ends of the said grip roller,
means pivotally mounting the respective bearing arms at
opposite sides of said chassis whereby said grip roller is
adapted to be moved from a lowered position in which
it is operatively associated with said feeding and aligning
mechanism to a raised position in which said roller is
spaced upwardly from said feeding and aligning mecha-
nism to facilitate loading of the register, a pair of elon-
gated coil springs, each of said coil springs secured to a
bearing arm and depending therefrom, means to raise
simultaneously the lower ends of said coil springs, whereby
the springs are compressed to lift the grip roller to its
raised position, and the latter named means, in addition,
being adapted to lower simultaneously the lower ends of
said coil springs, whereby the springs are tensioned to pull
the grip roller downwardly into its operative position.

9. In an autographic register having a chassis mounting
feeding and aligning mechanism and having a grip roller
extending transversely of the register above said chassis,
means to move selectively said grip roller from a lower
position in which it is operatively associated with said
feeding and aligning mechanism to an upper position in
which it is raised with respect to said mechanism to facil-
itate loading of the register, said means comprising pivotal
means to mount said grip roller for swinging movement
between said two positions, an actuator bar slidably
mounted at a side of said chassis, a gear rack formed in
a side edge of said actuator bar, an idler gear intermeshed
with said gear rack, a second gear intermeshed with the
first mentioned gear, a spring connector on said second
gear, the actuator bar and the two gears interrelated so
that said spring connector is moved from a lower on to an
upper position upon the sliding of said actuator bar
between said two positions, a spring connector disposed
below and in spaced relationship to said pivotal means,
manually operable means for moving said spring con-
nector between a lower position and a raised position
through a vertical distance greater than the distance be-
tween the two position of the grip roller, and a coil spring
interconnecting said spring connector and said pivotal
means, said coil spring being of such length that it is
under tension to urge said pivotal means downwardly
when said actuator bar is in its lower position and it
is under compression to push said pivotal means upwardly
when said actuator bar is in its upper position.

10. In an autographic register having a chassis mount-
ing feeding and aligning mechanism and having a grip
roller extending transversely of the register above said
chassis, means to move selectively said grip roller from
a lower position in which it is operatively associated with
said feeding and aligning mechanism to a raised position
in which it is spaced above said mechanism to facilitate
loading of the register, said means comprising pivotal
means to mount said grip roller for swinging movement
between said two positions, a spring connector disposed
below and in spaced relationship to said pivotal means,
manually operable means for moving said spring con-
nector between a lower position and a raised position
through a vertical distance greater than the distance be-
tween the two position of the grip roller, and a coil spring
interconnecting said spring connector and said pivotal
means, said coil spring being of such length that it is
under tension to urge said pivotal means downwardly
when said actuator bar is in its lower position and it
is under compression to push said pivotal means upwardly
when said actuator bar is in its upper position.

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