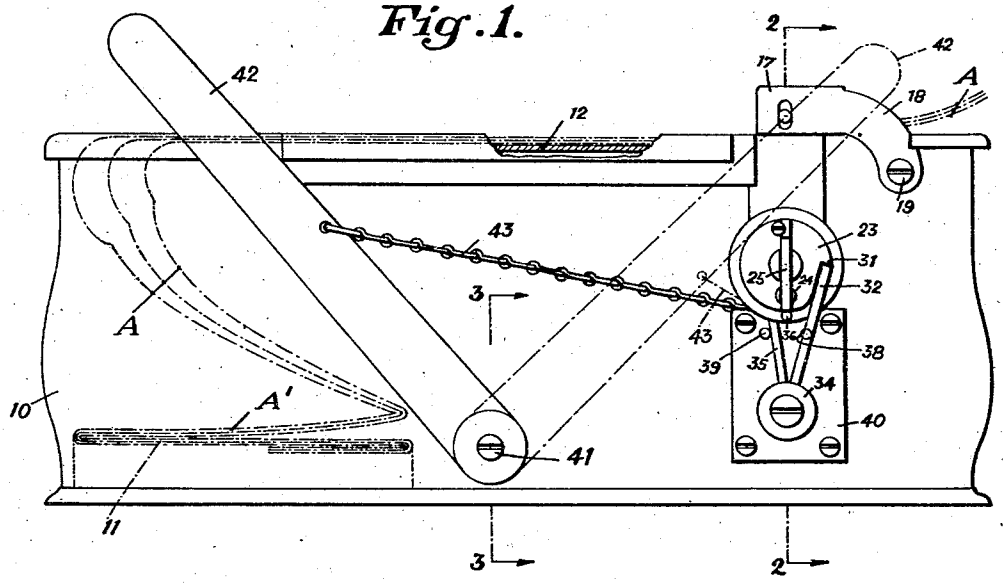
Sept. 30, 1930. L. F. HAGEMANN 1,776,900

STRIP FEED FOR AUTOGRAPHIC REGISTERS

Filed July 11, 1928

Fig. 1.



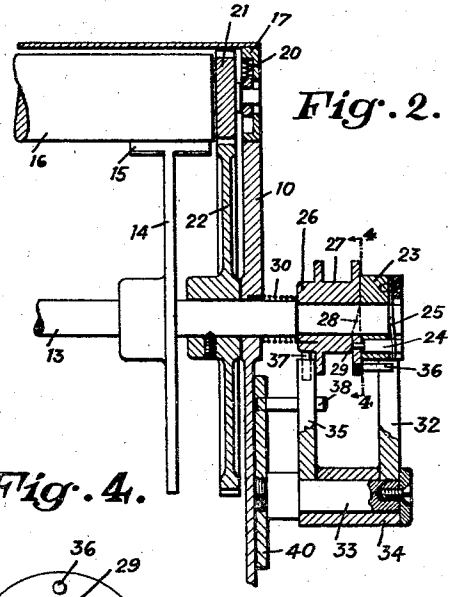


Fig. 2.

Fig. 3.

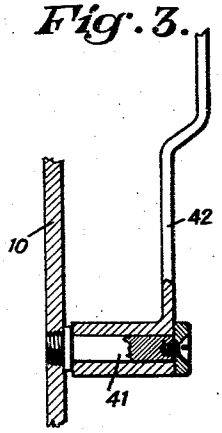
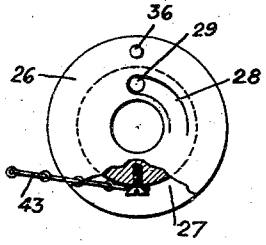


Fig. 4.



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UNITED STATES PATENT OFFICE

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STRIP FEED FOR AUTOGRAPHIC REGISTERS

Application filed July 11, 1928. Serial No. 291,805.

This invention relates to improvements in manifolding machines such, for example, as autographic registers, and with reference to some of its more specific features, it relates to improvements in feed-controlling mechanism for the record strips or work sheets of such machines.

It is a general object of the invention to provide an improved, quick operating machine of the class mentioned which may be used to advantage in taking orders over the telephone where one hand is engaged in holding the telephone receiver, and for similar uses where it is important that a record be quickly and accurately transcribed and the work sheet fed forwardly so as to eject the inscribed ticket or leaf and to place another in inscription-receiving position with a minimum of time and effort.

A further object is to provide in machines of the class mentioned an improved record strip feeding mechanism in which simplicity of construction and low manufacturing costs are attained by means of features of improvement including a flexible driving element for driving the feeding mechanism.

Still another object is to provide for machines of the class mentioned an improved mechanism for limiting to a predetermined value the length of strip feed at each operative cycle of the feeding mechanism.

Still another object is to provide in machines of the class mentioned an improved stop mechanism automatically controlled to stop or release positions by operation of the feed mechanism, so as to limit feed of the record strip to a predetermined amount at each operative cycle.

Another object is to provide in machines of the class mentioned an improved reciprocal feed actuating mechanism operating through recoil or rebound of engaging relatively moving parts so as to effect automatically a feed actuation.

Another object is to provide in machines of the class mentioned an improved drive for the feed mechanism including an improved arrangement for limiting or preventing retrograde feeding action of the feeding mechanism.

Other objects will be in part pointed out in the following detailed description of an illustrative but preferred embodiment of the invention, and will be in part obvious in connection therewith.

The invention accordingly comprises the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a more complete disclosure of the nature and objects of the invention, reference is made to the following detailed description of the illustrative embodiment, and to the accompanying drawings in which:

Fig. 1 is a side elevation of an autographic register embodying the invention;

Fig. 2 is an enlarged transverse section taken approximately on the line 2—2 of Fig. 1 looking in the direction of the arrows;

Fig. 3 is a detail section on the line 3—3 of Fig. 1 looking in the direction of the arrows; and

Fig. 4 is an enlarged section on the line 4—4 of Fig. 2.

Referring to the drawing for a detailed description of the illustrative embodiment of the invention shown in the drawing, a manifolding machine of the type known as autographic registers is illustrated in order to disclose the application of the invention to this type of machine. The register is provided with a casing 10 which may be formed at one end with an interior compartment 11 for the reception of a supply of blank record strips A. These strips may be made up in the form of a zig-zag folded supply pad A′ in which a plurality of the record strips are superposed and folded together in a zig-zag form in the supply pad. A platen or writing table 12 is provided over which the strips are led from the supply pad in relatively superposed manifolding relation with each other. Means may also be provided for supporting one or more transfer sheets, such as carbon paper, so as to be interleaved with the record strips over the platen, in a manner well known in the art, for transferring inscriptions made

upon the upper record strip to the underlying strips.

As disclosed in the patent to Clarence L. Johnston, #1,658,127 for autographic registers dated February 7th, 1928, it will be understood that each of the record strips may be provided with one or more longitudinal series of feeding or form-aligning apertures. Preferably, two such series of apertures are used arranged along and parallel to the longitudinal margins of the strips. Also, if desired, one or more of the record strips may be provided with a longitudinal series of filing or folding apertures for cooperation with a strip-folding mechanism, by means of which such apertured strips may be folded into a file pad, or pack, which may be supported and used in any preferred manner such, for example, as disclosed in the Johnston patent referred to.

The general construction of the strip-feeding mechanism, and the arrangement thereof with reference to the platen and to the supply compartment, may be similar to that disclosed in the Johnston patent.

A feed shaft 13 is rotatably mounted in suitable bearings carried by the casing and on which is mounted for rotation therewith a pair of feed disks 14 spaced apart on the shaft corresponding to the lateral spacing of the form aligning apertures in the strips. Each of the feed disks is provided with a peripheral enlargement or lug 15 similarly arranged laterally opposite to each other on the two disks and having an outer cylindrical contact face in continuation of the peripheral surface of the disk. A cylindrical feed roll 16 overlies the feed disks having its peripheral surface engaging the surfaces of the disks.

The feed roll 16 may be mounted in a roll housing 17 pivotally mounted for swinging movement by means of supporting arms 18 pivoted to the casing at 19. The feed roll is preferably mounted for up and down movement in its supporting housing, the upward movement thereof being yieldingly arrested by means of a spring 20 in a manner similar to that disclosed in the Johnston patent mentioned. A pinion 21 is fixed to one end of the feed roll or to the supporting shaft thereof and meshes with a toothed gear 22 fixed upon the feed shaft 13 so as to cause the feed disks and feed roll to rotate in unison.

At its outer end which preferably projects through the casing, the feed shaft 13 is provided with a clutch head 23 pinned, or otherwise fixed to the shaft, and having an axially extending recess in which is slidably mounted a plunger pin or dog 24, yieldingly urged inwardly by means of a leaf spring 25, secured to the clutch head. Mounted for rotation on the extending end of the shaft 13 adjacent to the clutch head 23 is a driving member in the form of a drum 26 having a peripheral groove 27. As shown in Figs. 2 and 4, the face of the rotary driving drum lying adjacent the clutch head 23 is formed with a slot 28 curved concentrically with the axis of rotation of the drum for the reception of the adjacent end of the clutch dog 24. This slot is relatively deep at one end thereof, forming a tooth or shoulder 29, against which the clutch dog may engage on rotation of the drum in strip-feeding direction. The bottom of the slot 28 inclines upwardly from the shoulder 29 until at its opposite end it lies flush with the adjacent face of the drum.

For the purpose of returning the driving drum 26 to initial position, after a manual actuation thereof as later described, a biasing means is provided such, for example, as the spiral spring 30 surrounding the feed shaft 13 and connected at opposite ends respectively to the drum and to the casing.

At its periphery the clutch head 23 is provided with a tooth or shoulder 31, forming a stop for the feeding mechanism in cooperation with a pawl or detent 32, pivotally carried by a stub shaft 33 suitably supported by the machine. The pawl 32 is preferably attached to the outer end of a sleeve 34 rotatably upon the stub shaft 33, at the inner end of which sleeve is connected an actuating lever 35.

Carried by the rotary actuating drum 26, and projecting from the outer face thereof, is a lug or pin 36 positioned for contacting at a certain point of the rotary movement of the drum with the pawl 32 for a purpose more fully hereinafter described. Also attached to the drum at the inner face thereof is a lug or pin 37 positioned for contacting in certain positions with the pawl actuating lever 35. A forward limiting stop or pin 38 is positioned for contacting with the actuating lever 35 in its forward position, and a similar rearward limiting stop 39 is positioned for contacting with the lever 35 to limit its rearward movement. The forward and rearward limiting stops 38 and 39, as well as the stub shaft 33, are shown as supported by a plate 40 attached to the casing.

Mounted for reciprocal rotary movement upon a stub shaft 41, attached to the casing, is an operating lever 42 connected to which is a flexible operating member such as a chain 43 connected at its opposite end in the groove 27 of the driving drum 26, and wound upon said drum.

An illustrative embodiment of the invention having been described, the operation will now be clearly understood and may be summarized as follows.

After an inscription has been entered upon the record strips above the platen 12, the operating lever 42 is moved by the operator from the dot and dash position thereof, shown in Fig. 1, to the full line position in the same figure. This operation results in rotation of the

drum 26, through unwinding of the chain 43, and corresponding rotation of the clutch head and feed disks is effected by engagement of the clutch dog 24 with the shoulder 29 of the drum.

Toward the end of the feed stroke of the lever 42, the lug 37 engages the actuating lever 35 moving the stop pawl 32 into position to engage the tooth 31 of the clutch head, thus stopping or limiting the feeding movement of the feed disks in a definite position. This stop actuation of the feed disks occurs at about the time that the starting lugs 15 of the feed disks initially engage the feed roller 16, and after the recording forms of the record strips A have been brought into alignment by the aligning action of the feed disks, as understood by those familiar with the art and explained in the Johnston patent referred to.

As the pawl 32 is moved into its feed limiting position as described, the pawl actuating lever 35 may move against the rearward limiting stop 39. Further movement of the operating lever 42 is prevented by this engagement as well as by engagement of the pawl 32 against the clutch head 23.

At the completion of the forward stroke of the operating lever 42, the lever may be released whereupon the driving drum 26 is returned quickly to initial position by actuation of the spring 30 which is then fully stressed. During this return movement the drum 26 rotates idly upon the extending end of feed shaft 13, the end of the clutch dog 24 riding idly in the inclined slot 28. At the end of rotation between the drum and clutch head, equal to the rotation of the drum to complete a feeding actuation or cycle of the record strips which, in the embodiment shown, is 360 degrees, the clutch dog re-engages in the slot 28 and is then positioned to engage again against the shoulder 29.

This return actuation moves the lever 42 rapidly to the dot and dash position shown in Fig. 1 where it engages with the surface of the clutch head 23 as shown. When the lever thus strikes against the clutch head it has considerable momentum and will rebound in strip-feeding direction to cause a supplement feeding action of the feed disks, because at the instant of the rebound the clutch dog 24 will have reengaged the shoulder 29. This supplemental feeding action is sufficient to eject the inscribed record sheets or tickets from the grip of the feed rolls, whereupon they may be severed and disposed of as desired.

As the drum 26 rotates in its reverse movement as described, the lug 36 carried thereby contacts with the adjacent face of the limiting pawl 32 so as to move the latter from its position in engagement with the tooth 31, and so that the feed shaft is again free for movement in feeding direction at the next successive feeding stroke of the operating lever 42. During reverse rotation of the drum 26, the lug 37 carried thereby contacts with the actuating lever 35 carrying the latter forwardly until it contacts with the stop 38, thus limiting the reverse rotation of the drum. When the lug 37 is thus stopped by the lever 35 and stop 38, reverse rotation of the feed disks will be prevented when the clutch dog 24 is in engagement with the shoulder 29. Reverse movement of the forward ends of the record strips, and consequent slackening and wrinkling thereof, are prevented.

Machines embodying the invention as above described are capable of rapid operation without much effort or concentration on the part of the operator. This is partly on account of the fact that the complete feeding operation to feed the form sheets or tickets forwardly can be accomplished by a single pull or push in one direction upon the lever 42. These machines are, therefore, particularly well adapted for the reception of telephone orders or instructions where one hand is ordinarily employed in holding the receiver.

Also the improved machine as above described is well adapted for being countersunk or let down into the surface of a table or desk so that the top of the machine may lie substantially flush with the top of the desk in convenient position for receiving an inscription by the operator. When a machine is thus mounted, the upper end of the operating lever will be positioned above the top of the machine and desk and the feeding operation can be readily accomplished since the operator can grasp the operating lever above the table during the operative stroke.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In an apparatus of the character described, in combination, a record strip feeding member, an actuating member therefor, a rotary drum, a flexible connection wound upon said drum and connected to said actuating member so as to rotate the drum in one direction, a one way driving connection be-

tween said drum and said feeding member having engageable driving parts, said driving parts being relatively positioned for driving engagement only when said rotary drum is in position to rotate forwardly a sufficient distance to effect a complete strip-feeding cycle.

2. In an apparatus of the character described, in combination, a record strip feeding member, an actuating member therefor, a rotary drum, a flexible connection wound upon said drum and connected to said actuating member so as to rotate the drum in one direction, automatic means to return said drum to initial position after operation by said actuating member, and a one-way clutch between said drum and said feeding member permitting reverse rotation of said drum without corresponding movement of said feeding member, said one way clutch including engagement driving parts relatively positioned for driving engagement only when said rotary drum is in position to rotate forwardly a sufficient distance to effect a complete strip feeding cycle.

3. In an apparatus of the character described, in combination, a record strip feeding member, an actuating member therefor, a rotary drum, a flexible connection wound upon said drum and connected to said actuating member so as to rotate the drum in one direction, automatic means to return said drum to initial position after operation by said actuating member, a one-way clutch between said drum and said feeding member permitting reverse rotation of said drum without corresponding movement of said feeding member, and means controlled by said actuating member to limit rotation of said feeding member to a single feeding cycle at each actuation.

4. In an apparatus of the character described, in combination, a record strip feeding member, an actuating member therefor, a rotary drum, a flexible connection wound upon said drum and connected to said actuating member so as to rotate the drum in one direction, a shoulder fixed relatively to said feeding member and operatively connected thereto, and a detent controlled automatically by said actuating member to engage said shoulder so as to limit rotation of said feeding member to a single feeding cycle at each actuation.

5. In an apparatus of the character described, in combination, a record strip feeding member, an actuating member, a rotary driving member connected for operation by said actuating member, a driving clutch between said feeding member and said rotary driving member, a detent cooperable with said feeding member to limit feeding movement thereof, and controlling connections between said driving member and said detent for alternate movement of the latter into its limiting and releasing positions.

6. In an apparatus of the character described, in combination, a record strip feeding member, an actuating member, a rotary driving member connected for operation by said actuating member, a driving clutch between said feeding member and said rotary driving member, a detent cooperable with said feeding member to limit feeding movement thereof, and controlling connections between said driving member and said detent for alternate movement of the latter into its limiting and releasing positions, said clutch having lugs spaced to engage in driving relation only at angular periods equal to the angular period or distance of an operative cycle of the feed mechanism and being of ratchet formation so as to prevent retrograde rotation of said strip feed member through said rotary driving member.

7. In an apparatus of the character described, in combination, a rotary record strip feeding member, an actuating member, a reciprocal rotary driving member connected for operation by said actuating member, a stop for limiting reverse rotation of said rotary driving member, a clutch between said rotary driving member and said feeding member, said stop and clutch cooperating to prevent reverse rotation of said feeding member, a detent for limiting said feeding member to a single feeding cycle and means for limiting advance rotation of said rotary driving member and at the same time setting said detent in its limiting position.

8. In an apparatus of the character described, in combination, a rotary strip feeding member, a reciprocal rotary driving member for said feeding member, means including a return spring for imparting a quick return rotation to said reciprocal rotary member, a one-way driving clutch between said reciprocal rotary member and said feed member, a stop device for limiting reverse rotation of said reciprocal rotary member and thereby limiting retrograde rotation of said feeding member through said clutch device and a detent for said feeding member controlled by said stop device.

9. In an apparatus of the character described, in combination, a rotary strip feeding member, a manual actuating member, a reciprocal winding drum, a flexible driving member wound upon said drum and connected to said manual operating member to impart rotation to said drum in one direction, a one-way driving clutch between said feeding member and said winding drum, and a stop device for limiting both forward and return rotation of said winding drum thereby limiting return rotation of said feeding member through said clutch.

10. In an apparatus of the character described, in combination, a record strip feed-

ing member, an actuating member, a rotary drum, a flexible connection wound on said drum and connected to said actuating member so as to rotate said drum in one direction, automatic quick return means for said drum and said actuating member, and rebound mechanism operated by said quick return means to effect supplemental feeding action of said feeding member.

11. In an apparatus of the character described, in combination, a rotary record strip feeding member, a reciprocal rotary driving member having a clutch connection with said feeding member, means for reciprocating said driving member to effect strip feed, a detent movably mounted adjacent said driving member for cooperation with said feeding member to limit rotation thereof to a single feeding cycle and means controlled by rotation of said reciprocal driving member for setting said detent in limiting position during advance rotation of the driving member and for moving said detent away from its limiting position during retrograde rotation of said driving member.

12. In an apparatus of the character described, in combination, a rotary record strip feeding member, a reciprocal rotary driving member having a clutch connection with said feeding member, means for reciprocating said driving member to effect strip feed, a detent movably mounted adjacent said driving member for cooperation with said feeding member to limit rotation thereof to a single feeding cycle, and means controlled by rotation of said reciprocal driving member for setting said detent in limiting position during advance rotation of the driving member and for moving said detent away from its limiting position during retrograde rotation of said driving member, said detent setting means including cooperating lugs connected to said detent and to said reciprocal driving member and cooperating to limit retrograde rotation of said reciprocal driving member.

13. In an apparatus of the character described, in combination, a record strip feeding member, an actuating member therefor, a rotary drum, a flexible connection wound upon said drum and connected to said actuating member so as to rotate the drum in one direction, a one way driving connection between said drum and said feeding member having engageable driving parts, said driving parts being relatively positioned for driving engagement only when said rotary drum is in position to rotate forwardly a sufficient distance to effect a complete strip-feeding cycle, and a rebound mechanism operative to effect supplemental strip feeding action when said engageable driving parts are reengaged after a feeding actuation of said feeding member.

14. In an apparatus of the character described, in combination, a record strip feeding member, an actuating member therefor, a rotary drum, a flexible connection wound upon said drum and connected to said actuating member so as to rotate the drum in one direction, automatic means to return said drum to initial position after operation by said actuating member, a one-way clutch between said drum and said feeding member permitting reverse rotation of said drum without corresponding movement of said feeding member, said one-way clutch including engagement driving parts relatively positioned for driving engagement only when said rotary drum is in position to rotate forwardly a sufficient distance to effect a complete strip feeding cycle, and a rebound mechanism operative to effect supplemental strip feeding action when said engageable driving parts are reengaged after a feeding actuation of said feeding member.

In testimony whereof I affix my signature.

LOUIS FRED HAGEMANN.