Oct. 20, 1931. L. F. HAGEMANN 1,827,745

LEVER FEED AUTOGRAPHIC REGISTER

Filed April 11, 1929

Fig. 1.

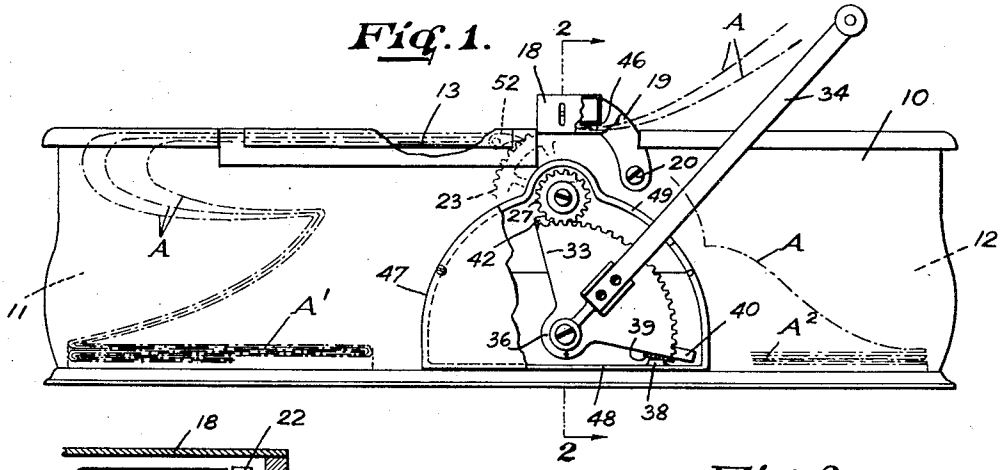


Fig. 2.

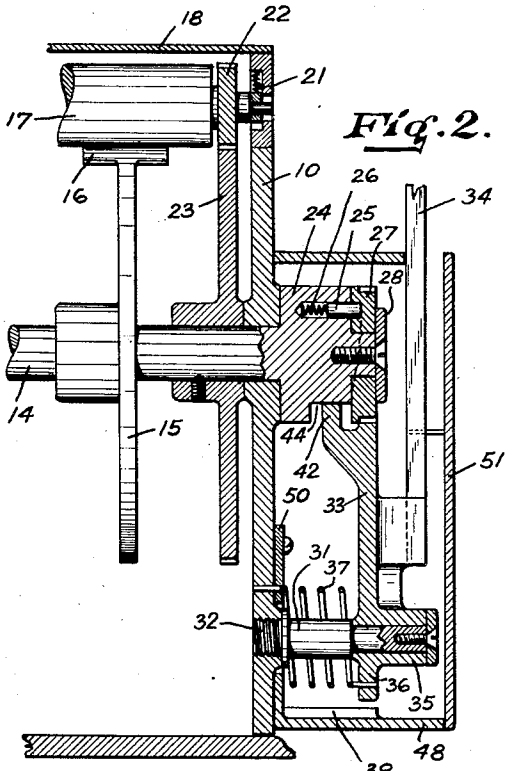


Fig. 3.

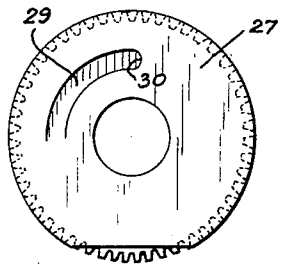


Fig. 4.

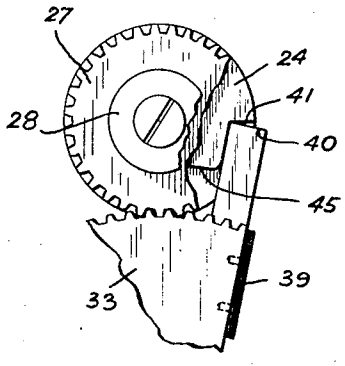
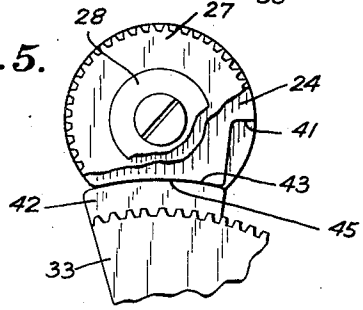


Fig. 5.



INVENTOR.
Louis F. Hagemann
BY
Duell, Dunn & Anderson
ATTORNEYS.

Patented Oct. 20, 1931 1,827,745

UNITED STATES PATENT OFFICE

LOUIS F. HAGEMANN, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO AMERICAN SALES BOOK COMPANY, LIMITED, OF NIAGARA FALLS, NEW YORK, A CORPORATION OF ONTARIO, CANADA

LEVER FEED AUTOGRAPHIC REGISTER

Application filed April 11, 1929. Serial No. 354,187.

This invention relates to improvements in manifolding or like machines using continuous record sheets or work webs, such, for example, as autographic registers and in relation to the more particular features thereof, the invention relates to improvements in the feeding mechanism for advancing and positioning the record strips.

It is a general object of the invention to provide an improved machine of the class mentioned which may be used to advantage in receiving and recording telephone orders where one hand is engaged in holding the telephone receiver and for similar uses where it is important that the order or other data be quickly and accurately transcribed and the work sheet fed forwardly to discharge the inscribed parts thereof and to place a blank portion 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 feed mechanism, whereby, by a single feed stroke in one direction, a definite length of record strip corresponding, for example, to the length of a single record leaf, may be fed forwardly.

Still another object is to provide, in machines of the class mentioned, an improved means to prevent accidental advancement of the record strip after completion of a feeding cycle, especially to avoid such advancement of the strip during severance of the forwardly fed inscribed part thereof at the termination of a complete feeding operation or cycle.

Another object is to provide, in machines of the class mentioned, a record strip feeding mechanism having an improved automatically controlled stop arrangement for limiting the strip feeding movement at each feed cycle and for preventing excess feed or advancement of the strip after the feed mechanism has returned to normal position after a feeding operation.

Another object is to provide, in machines of the class mentioned, an improved automatically controlled device for locking the feed mechanism against movement in either direction when the feed mechanism is in neutral position.

A further object is to provide, for machines of the class mentioned, an improved feed mechanism of the reciprocal lever type, wherein means is provided for locking the feed mechanism, such as feed gripping disks, against forward feeding movement when the operating lever is in normal position.

Other objects of the invention 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 combination of elements, and arrangements 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 understanding of the nature and objects of the invention, reference is had to the following detailed description and to the accompanying drawings in which,

Fig. 1 is a side elevation of an autographic register embodying the invention, parts being removed in order to disclose the structure more clearly.

Fig. 2 is an enlarged transverse sectional view taken substantially on the line 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a view showing a part of the one-way clutch or coupling.

Fig. 4 is a fragmentary view of the stop device for the feed mecahnism, and

Fig. 5 is a fragmentary view showing a detail of the mechanism for locking the record strip against accidental advancement when the feed mechanism is in normal position as shown in Fig. 1.

Referring to the drawings for a detailed description concerning the embodiment of the invention disclosed in Figs. 1 to 5 inclusive, a manifolding machine of the type known as an autographic register is shown for the purpose of illustrating the application to this type of machine of an embodiment of the invention. This autographic register may be provided with the usual casing 10 which may be formed at one end with an interior compartment 11 for the recep-

tion of a supply of blank record strips A. This supply may be made up in the form of a zigzag folded supply pad A' wherein a plurality of the record strips are folded together in zigzag form in the pad. Also, at the forward end of the register casing, a storage compartment 12 may be provided for the reception in folded condition of one of the record strips A after it has been written upon in the ordinary course of business. A platen or writing bed 13 is provided over which the strips are led in relatively superposed manifolding relation with each other. Also, at a suitable position relatively to the platen, supporting means may be provided for one or more transfer sheets such as carbon paper whereby the transfer sheets may be interleaved with the record strips in order to transfer the inscriptions to the underlying strips.

Strip filing or folding mechanism, such for example as that disclosed by the patent to Clarence L. Johnston #1,658,127, dated February 7, 1928, for autographic register, may be utilized for causing one or more of the inscribed strips to be folded in zigzag formation in the filing compartment 12 as indicated in Fig. 1 at A^2. As disclosed in the Johnston patent, it will be understood that each of the record strips may have one or more series of feeding or form aligning apertures arranged therealong adjacent the edges and also a series of strip folding apertures may be provided in one or more of the record strips for the purpose of cooperating with the folding mechanism in folding the strip in the compartment 12. The general construction of the strip feeding and filing mechanism and the arrangement thereof with reference to the platen and to the supply and filing compartments may be similar to that disclosed in the Johnston patent mentioned.

There are, however, certain improvements embodied in the strip feeding mechanism which will now be described. A feed shaft 14 is rotatably mounted in suitable bearings carried by the machine and carries a pair of spaced feed disks 15 only one of which is shown in the drawings. Each of the feed disks is provided with a peripheral enlargement or lug 16 similarly arranged on the two disks and having an outer cylindrical contact face in continuation of the periphery of the disk. A cylindrical feed roll 17 overlies the feed disks having its peripheral surface engaging that of the disks.

The feed roll 17 may be mounted in a roll housing 18 pivotally mounted for swinging movement by means of arms 19 pivoted to the casing at 20. The feed roll is preferably mounted for up and down movement in the housing, the upward movement thereof being yieldingly resisted as by means of springs 21 in a manner similar to that disclosed in the Johnston patent mentioned. A pinion 22 is mounted on one end of the feed roll or roll shaft and meshes with a toothed gear 23 carried by and rotatable with the feed shaft 14 so as to cause the feed disks and feed roll to rotate in unison.

The feed shaft 14 preferably projects through the casing as shown in Fig. 2 being provided at the extension thereof with a clutch head 24 having a recess in which is slidably mounted a plunger pin or dog 25 yieldingly urged outwardly by means of a spring 26. The clutch head 24 is keyed or otherwise secured to shaft 14 so as to rotate therewith. A clutch pinion 27 is rotatably mounted on the outer end of the clutch head being retained in position by means of a retaining plate 28 screwed to the clutch head.

As shown in Fig. 3, the inner face of the clutch pinion 27 is preferably formed with a slot 29 curved concentrically with the axis of rotation of the pinion for the reception of the adjacent end of the clutch dog 25. This slot is relatively deep at one end thereof forming a tooth or seat 30 against which the clutch dog may engage upon rotation of the clutch pinion in feeding direction, thus causing the feed disks 15 to be rotated in strip feeding direction. The bottom of the slot 29 inclines upwardly from the seat 30 until at its opposite end it lies flush with the adjacent face of the clutch pinion.

As shown in Fig. 2, mounted for reciprocal rotation upon a stub shaft 31, suitably secured to the machine as by means of a thread 32 is a toothed sector 33 meshing with the clutch pinion 27 and having secured thereto through an integral enlargement a manual operating arm or lever 34. The toothed sector may be formed as shown with an integral hub 35 having an integral collar 36 merging with the sector.

For biasing the sector 33 for return movement to its initial or normal position as shown in Fig. 1, a spring 37 may be provided connected at one end as shown to the collar 36 and at its other end to the inner wall of the housing 47 for the feed driving mechanism or to the adjacent wall of the register housing 10. One or both ends of this spring may be inserted in any one of a series of spaced apertures provided in a wall or the collar 36 thus providing a convenient means for adjusting the tension of the spring. It will be observed that the spring is increasingly stressed by the forward or feeding movement of the feed lever 31 from initial position and said spring is also under some initial stress whereby it functions to return the lever to its neutral or initial position after a feeding movement thereof. Return movement of the feed lever 31 may be limited by a buffer or cushioning mechanism including a lug 38 formed on the bottom wall of the housing 47 which lug is arranged to receive the impact of the return

movement of the reciprocating parts. A yielding cushioning member 39 of yielding material such for example as felt or the like may be attached either to the sector or to the lug 38. This arrangement provides an impact receiving buffer which not only checks the movement of the reciprocating parts in their initial position but also avoids unnecessary noise and shock.

For the purpose of limiting the forward feeding movement of the record strip to a predetermined amount at each feed stroke of the operating lever 34, an automatic stop mechanism is provided including a pawl or detent 40 which may be carried in any appropriate manner by the sector 33.

As shown, the detent 40 is offset inwardly from the plane of the sector 33 being either rigid and integral therewith or otherwise appropriately secured thereto and positioned toward the forward terminal of the sector. Formed upon or carried by the clutch head 24 or other part rotatable or moving with the feed disks 13 or other feed mechanism is a lug or shoulder 41 positioned in the plane of movement of the detent 40 so as to be engaged by the latter when the feed lever is moved forwardly and the shoulder and detent occupy the position shown in Fig. 4.

Also a locking device is provided for locking or checking the strip and feed mechanism against accidental or other advancement when the feed operating mechanism is in the initial position as shown in Fig. 1. This locking device may include, as shown, a second pawl or detent 42 carried by the sector 33 and spaced forwardly thereon from the detent 40. The detent 42 may also be suitably, rigidly or otherwise secured to the sector or it may be, if desired, made integral with the latter. It is shown as being in the form of a sector having a smooth curved outwardly convexed face 43 substantially concentric with the axis of rotation of the sector and adapted to be seated in a complementary slot or seat 44 formed in the clutch head 24 or other part moving with the feed disks. The bottom of the slot 44 is concaved as indicated at 45 to provide the substantial counterpart of the convex face of the detent 42. When the concave and convex parts are in engagement as shown in Fig. 5, it will be seen that a stop is provided for preventing or limiting forward movement of the feed shaft 14 and consequently of the feed disks 15. Due to the fact that the record strips are at this time gripped between the feed roll 17 and the starting lugs 16 of the feed disks, it will be seen therefore that the record strips will also be checked against forward advancement.

As shown in Fig. 1, the roll housing 18 may be formed at its rear side with a shoulder 46 extending transversely of the register and record strips and forming a tearing shoulder or edge over which the strips may be severed when the ends thereof are fed forwardly to project beyond the tearing shoulder. For this purpose, the strips may, if desired, be provided with transverse weakened lines such as scores or perforations so as to facilitate severance.

If desired, a housing 47 may be provided for the sector 33 and other operative driving parts for the feed mechanism. This housing may conveniently be constructed with a bottom plate 48, a curved top plate 49 and a back plate 50 lying adjacent to the wall of the register casing 10 and by means of which the housing may be attached to the register casing. A slot may be provided in the upper wall of the housing for receiving the feed lever 31 and permitting reciprocation thereof. The cover 51 is removable.

Reverse rotation of the feed disks 15 may be prevented by a pawl 52 suitably mounted on the casing and positioned for engagement with the teeth of the gear 23 as shown in dotted lines in Fig. 1. This pawl is positioned to permit free forward rotation of the feed disks but to obstruct reverse rotation thereof, and it may be held in engaging position by any appropriate means. If desired, the stop mechanism shown in Fig. 5 embodying the detent 42 may also be formed to prevent retrograde movement of the disks 15 when the feed sector 33 is in normal or initial position.

The operation of the invention will be clearly understood from the above disclosure of the illustrative embodiment thereof but for clearness may be summarized as follows:

When the record strips are loaded into the machine as shown in Fig. 1 and well understood in the art, an inscription may be made upon the top record strip over the platen which may be transferred to the lower strips by carbon transfer sheets. The inscription having been made the operating lever 34 is swung forwardly from the initial position shown in Fig. 1 thus rotating the feed disks 15 and rolls 17 to feed the record strips forwardly. This feeding stroke of the operating lever is checked when the detent 40 engages with the shoulder 41 of the clutch head 24. This forward movement of the operating lever rotates the feed disks so as to feed the strips forwardly about the length of a single form sheet or ticket into which the strips may be divided as disclosed in the Johnston patent mentioned. At the end of the forward feeding movement of the feed disks, the starting lugs 16 have again come into position to grip the strips against the upper feed roll 17. At this point, the operator may release the feed lever whereupon it is returned to neutral or initial position by action of the spring 37 thus terminating a single feeding cycle.

Alignment of the strips longitudinally is

effected by engagement of the peripheries of the feed disks 15 in the strip aligning apertures of the strips as said apertures come into alignment with the feeding grip between the disks and the feed roll 17. The feed of the strips may subsequently be started when the apertures are aligned with the feeding grip by virtue of the action of the starting lugs 16 which grip the strips against the upper roll at points thereof out of longitudinal alignment with the form aligning apertures. Also the folding action on the lower or file strip is accomplished during the feeding movement as fully described in the Johnston patent mentioned.

At the beginning of the operating stroke of the sector 33 the clutch pin 25 will be in engagement with the seat 30, thus causing rotation of the feed shaft 14 and the feed gripping rolls. When reverse rotation of the sector begins at the end of the strip feeding stroke thereof, reverse rotation of the clutch pinion 27 will be effected, thus causing the clutch pin to move away from the seat 30 along the slot 29. Continued reverse rotation of the clutch pinion will cause the clutch pin to slide over the face of the pinion until it again comes into alignment with the deep end of the slot 29, whereupon it will be projected by its spring into position to engage again with the seat 30. This action occurs substantially at or slightly before the operating lever 34 and sector 33 reach their normal or initial position, as shown in Fig. 1. The operating mechanism will then be in position to begin a new strip feeding cycle.

When the feeding lever approaches the forward terminal of its feeding stroke, the detent 40 engages against the shoulder 41 of the clutch head as shown in Fig. 4. This action not only limits the forward movement of the feeding lever but also positively stops the forward feeding action of the disks in a predetermined position.

When the feed lever 34 approaches its initial position, the locking detent 42 engages in the seat 45, the parts then assuming the position as shown in Fig. 5, and the feed lever assuming the position shown in Fig. 1. Considering Figs. 1, 2, and 5, it will be clear that as the lever 34 approaches its normal or initial position, as in Fig. 1, the complementary detent faces 43 and 45 will be rotated in opposite directions and will come into locking engagement with each other, as shown in Fig. 5, much in the manner of the well known Geneva stop movement. When the parts have assumed the Fig. 5 position, the lever 34 and sector 33 are in their home position of Fig. 1 and further rotation of the feed gripping rolls or discs will be checked by the engagement of the complementary faces 43 and 45. When the next feed stroke begins, these complementary detent faces will be rotated away from engaging position with each other, sufficient tolerance being provided in the engaging parts to permit this movement without binding. By virtue of this relation, it will be seen that the detent 42 acts as a stop or lock for preventing any further advance rotation of the feed disks when the operating lever reaches the initial position at the termination of a feeding cycle. Since at this time, the strip is gripped between the lugs 16 and the feed roll 17, any additional or accidental advancement of the strips is prevented thus retaining the next successive forms of the strips in correct writing position over the platen of the machine. At this time, that is at the termination of the feeding cycle, the inscribed forms will have been fed forwardly beyond the feed rolls extending beyond the housing 18 as shown in Fig. 1. The forwardly fed ends of the strips may then be severed from the main bodies of the strips by pulling them across the tearing edge 46 with a tearing action. Accidental advancement during such tearing action is of course entirely avoided by the locking action of the detent 42 as described. The record sheets are thus effectually aligned in writing position and retained against accidental advancement or other displacement. Maintenance of the blank forms of these strips in correct superposed registry is thus assured at all times and the transfer of inscriptions in correct relation with reference to the blank forms will always be provided for.

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 drawings 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 rotary strip engaging strip feeding member, means for actuating said strip feeding member to effect strip feed, stop mechanism including a detent cooperating with said strip feeding member to stop it at a predetermined position and separate means controlled by said actuating means for locking forward strip feeding rotation of said strip feeding member.

2. In an apparatus of the character described, in combination, a rotary strip engaging strip feeding member, means for actuating said strip feeding member to effect strip feed, stop mechanism including a detent co-

operating with said strip feeding member to stop it at a predetermined position, separate means controlled by said actuating means for locking forward strip feeding rotation of said strip feeding member and means automatically controlled by said actuating means to set said detent and said separate locking means in operative positions.

3. In an apparatus of the character described, in combination, a rotary strip engaging strip feeding member, means for actuating said strip feeding member to effect strip feed, stop mechanism including a detent cooperating with said strip feeding member to stop rotation thereof at a predetermined position and a detent controlled by said actuating means when in a different position locking said strip feeding member against forward feeding rotation to avoid accidental strip advancement.

4. In an apparatus of the character described, in combination, strip feeding means including a strip gripping feed roll, operating means including a one-way driving coupling for operating said strip feeding roll to effect strip feed and strip holding means including a lock controlled by said operating means to lock said feed roll when in strip gripping position for preventing accidental strip advancement at the termination of a strip feeding operation by said operating means.

5. In an apparatus of the character described, in combination, a strip feeding member, operating means including a one-way driving coupling for operating said strip feeding member to effect strip feed, a tear-off means for severing the forwardly fed strip and means controlled automatically by return of said operating means to normal position after feeding operation thereof for preventing strip advancement incident to severing the strip.

6. In an apparatus of the character described, in combination, a strip feeding member, operating means including a one-way driving coupling for operating said strip feeding member to effect strip feed, strip holding means for preventing accidental strip advancement at the termination of a strip feeding operation by said operating means and means controlled by return of said operating means to normal position after feeding operation thereof for setting said strip holding means in holding position.

7. In an apparatus of the character described, in combination, a strip feeding member, operating means including a one-way driving coupling for operating said strip feeding member to effect strip feed, strip holding means for preventing accidental strip advancement at the termination of a strip feeding operation by said operating means, means controlled by return of said operating means to normal position after feeding operation thereof for setting said strip holding means in holding position and stop mechanism including a detent controlled by said operating means for stopping said strip feeding member after predetermined strip advancement.

8. In an apparatus of the character described, in combination, a strip feeding member, operating means including a one-way driving coupling for operating said strip feeding member to effect strip feed and strip holding means for preventing accidental strip advancement at the termination of a strip feeding operation by said operating means, said strip holding means including a detent cooperating with said strip feeding member to limit strip advancing movement thereof.

9. In an apparatus of the character described, in combination, a strip feeding member, operating means including a one-way driving coupling for operating said strip feeding member to effect strip feed, strip holding means for preventing accidental strip advancement at the termination of a strip feeding operation by said operating means, said strip holding means including a detent cooperating with said strip feeding member to limit strip advancing movement and automatic means for setting said detent in movement limiting position at the termination of a feeding cycle.

10. In an apparatus of the character described, in combination, a strip feeding member, operating means including a one-way driving coupling for operating said strip feeding member to effect strip feed, strip holding means for preventing accidental strip advancement at the termination of a strip feeding operation by said operating means, said strip holding means including a detent cooperating with said strip feeding member to limit strip advancing movement, automatic means for setting said detent in movement limiting position at the termination of a feeding cycle, and stop mechanism including a detent controlled by said operating means for stopping said strip feeding member after predetermined strip advancement.

11. In an apparatus of the character described, in combination, a strip gripping device for gripping and feeding a strip, operating means including a one-way coupling for operating said gripping device to effect strip feed, a reciprocal actuating member connected for operating said gripping device through said coupling to effect strip feed and to return thereafter to normal position and an automatic locking device actuated by said operating means upon return movement of said actuating member, for locking said gripping device so as to restrain strip advancement at the termination of a feed cycle.

12. In an apparatus of the character described, in combination, a strip gripping device for gripping and feeding a strip, oper-

ating means including a one-way coupling for operating said gripping device to effect strip feed, a reciprocal actuating member connected for operating said gripping device through said coupling upon movement thereof in one direction to effect strip feed and then to return to normal position, a tear-off edge for severing strip ends, a locking device for locking said gripping device so as to restrain strip advancement and means controlled by said operating means upon return to normal position of said reciprocal actuating member for setting said locking device to prevent strip advancement during severance of said strip.

13. In an apparatus of the character described, in combination, a strip gripping device for gripping and feeding a strip, operating means including a one-way coupling for operating said gripping device to effect strip feed, a reciprocal actuating member connected for operating said gripping device through said coupling to effect strip feed and to return thereafter to normal position, a stop mechanism including a detent controlled by said reciprocal actuating member upon movement thereof in strip feeding direction to stop said gripping device after a predetermined strip feed and a locking mechanism including a detent controlled by said reciprocal actuating member upon movement thereof in the opposite direction for locking said gripping device at the termination of a feed cycle so as to restrain accidental strip advancement.

14. In an apparatus of the character described, in combination, a rotary strip gripping device for gripping and feeding a strip, rotary means for operating said gripping device to effect strip feed, a reciprocal toothed sector connected for actuating said gripping device to effect strip feed, stop mechanism including a detent carried by said toothed sector and positioned by movement thereof in strip feeding direction to stop rotation of said gripping device after predetermined strip feed and a locking mechanism including a detent carried by said toothed sector and positioned upon movement of the latter in the opposite direction for locking said gripping device against rotation at the termination of a feed cycle so as to restrain strip advancement.

15. In an apparatus of the character described, in combination, a rotary strip gripping device for gripping and feeding a strip, rotating means for operating said gripping device to effect strip feed, a reciprocal toothed sector connected for actuating said gripping device to effect strip feed, stop mechanism including a detent carried by said toothed sector and positioned by movement thereof in strip feeding direction to stop rotation of said gripping device after predetermined strip feed, a second detent carried in fixed position upon said toothed sector, and a shoulder rotatable with said gripping device and positioned to cooperate with said fixed detent to check forward feeding rotation of the gripping device.

16. In an apparatus of the character described, in combination, a strip gripping device for gripping and feeding a strip, a reciprocal toothed sector rotatable about a center and connected for actuating said gripping device to effect strip feed, a stop member having a concave contact face and connected for movement with feeding movement of said gripping device and a detent carried by said sector and having a contact face substantially concentric with said sector center and positioned to contact wih the concave face of said stop member when said sector is returned to normal position after feeding movement thereof so as to lock said gripping device when gripping the strip to prevent accidental advancement of said strip.

In testimony whereof I affix my signature.

LOUIS F. HAGEMANN.

CERTIFICATE OF CORRECTION.

Patent No. 1,827,745. Granted October 20, 1931, to

LOUIS F. HAGEMANN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 6, line 39, claim 14, for "rotary means for operating" read operating means for rotating; line 57, claim 15, for "rotating means for operating" read operating means for rotating; line 82, claim 16, for "wih" read with; 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 22nd day of December, A. D. 1931.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)