Sept. 12, 1939. J. W. FADER 2,172,637

STRIP FEEDING AND REGISTERING MECHANISM FOR MANIFOLDING DEVICES

Filed Feb. 26, 1937 3 Sheets-Sheet 1

Fig. 1.

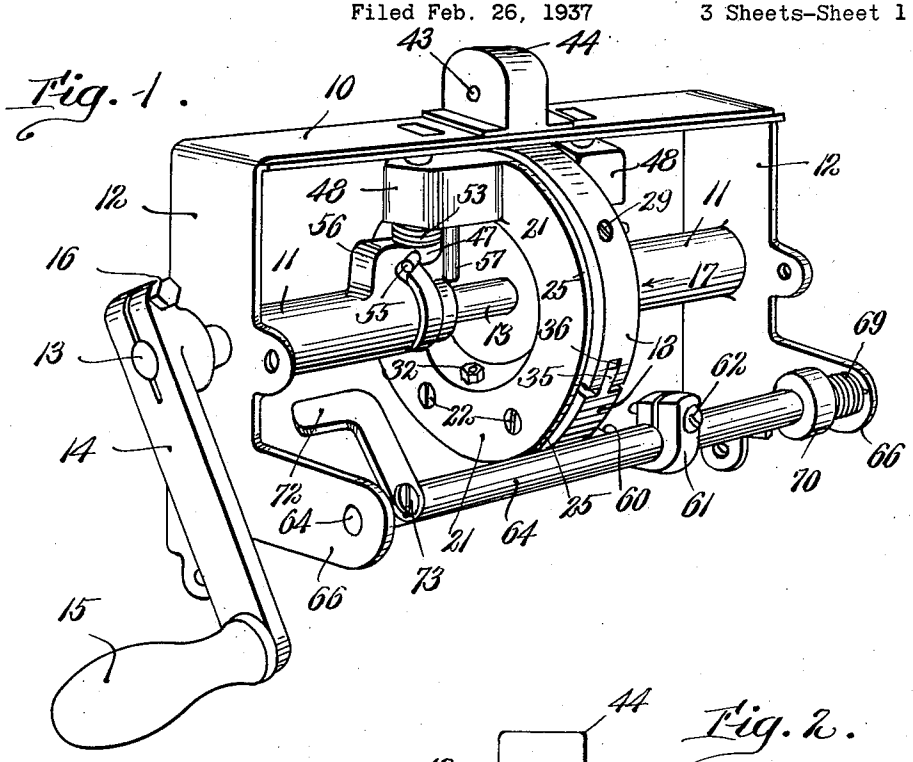
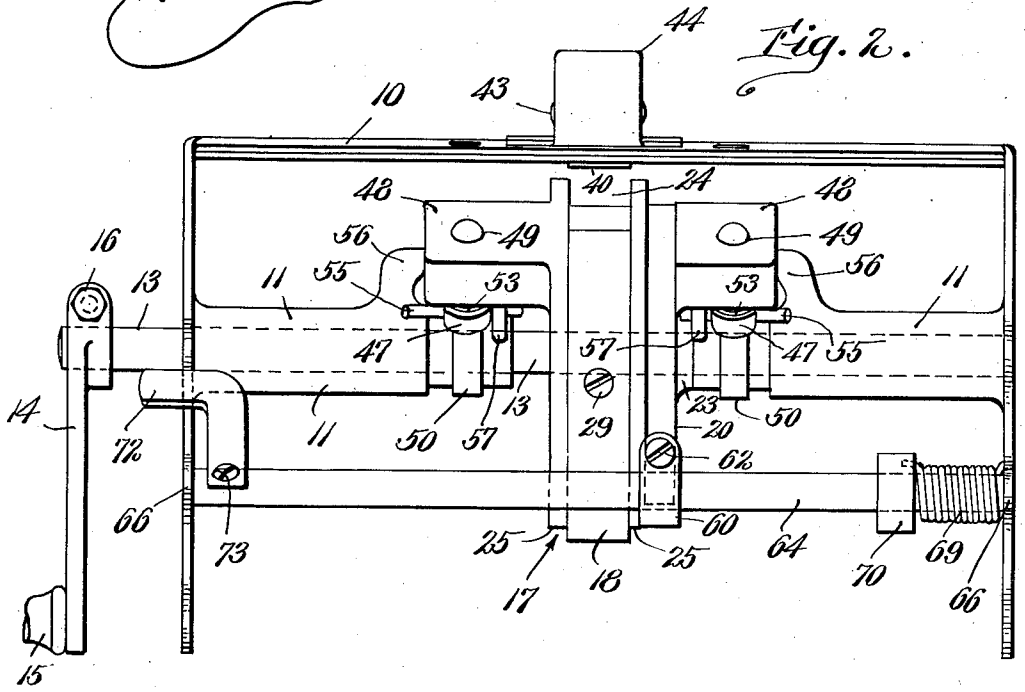


Fig. 2.



Inventor.
James W. Fader
by Francis J. Durkin
Atty.

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Filed Feb. 26, 1937 3 Sheets-Sheet 2

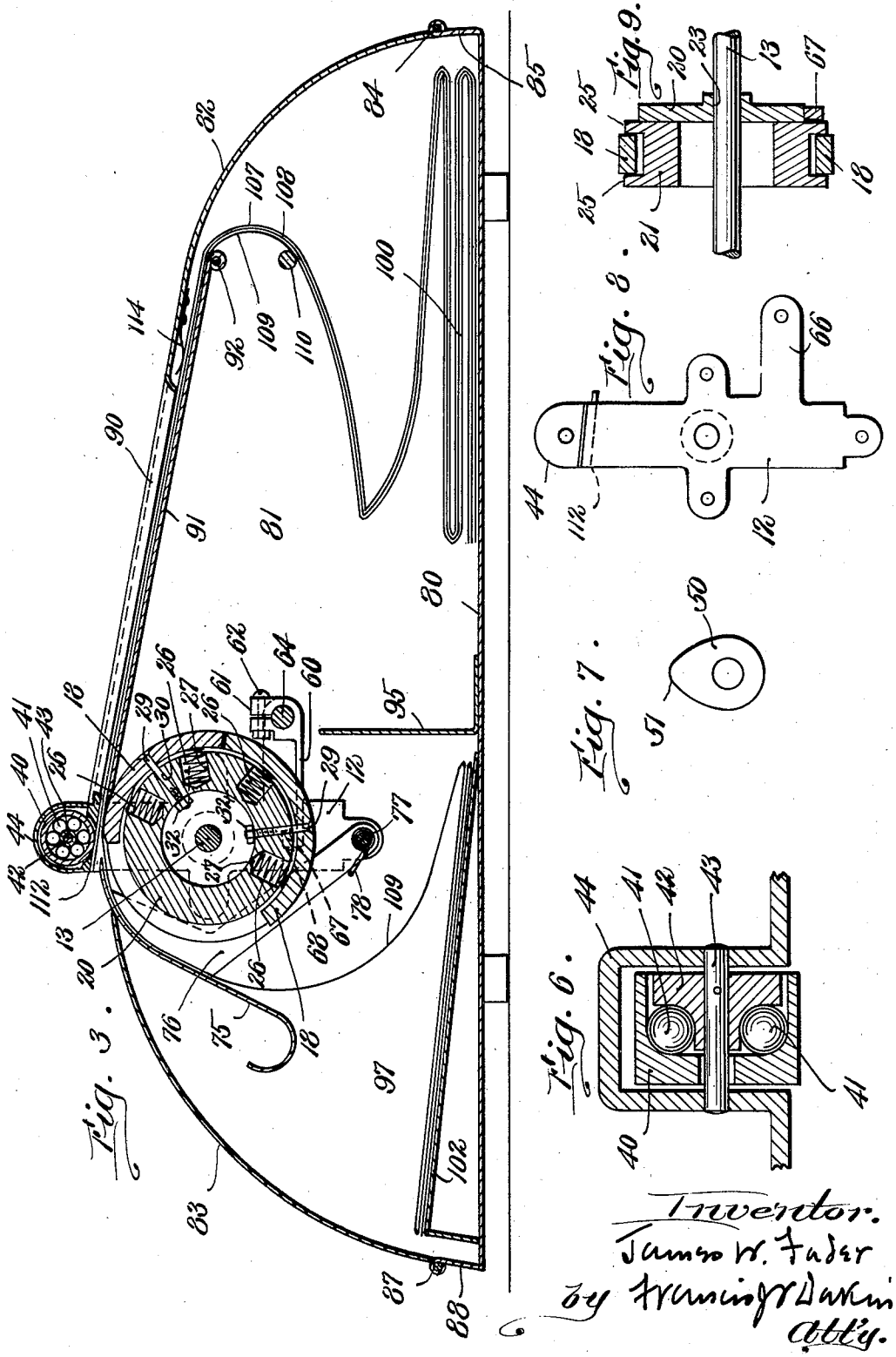


Fig. 3.

Fig. 9.

Fig. 8.

Fig. 7.

Fig. 6.

Inventor.
James W. Fader
by Francis J. Larkin
Atty.

Sept. 12, 1939. J. W. FADER 2,172,637

STRIP FEEDING AND REGISTERING MECHANISM FOR MANIFOLDING DEVICES

Filed Feb. 26, 1937 3 Sheets-Sheet 3

Fig. 4.

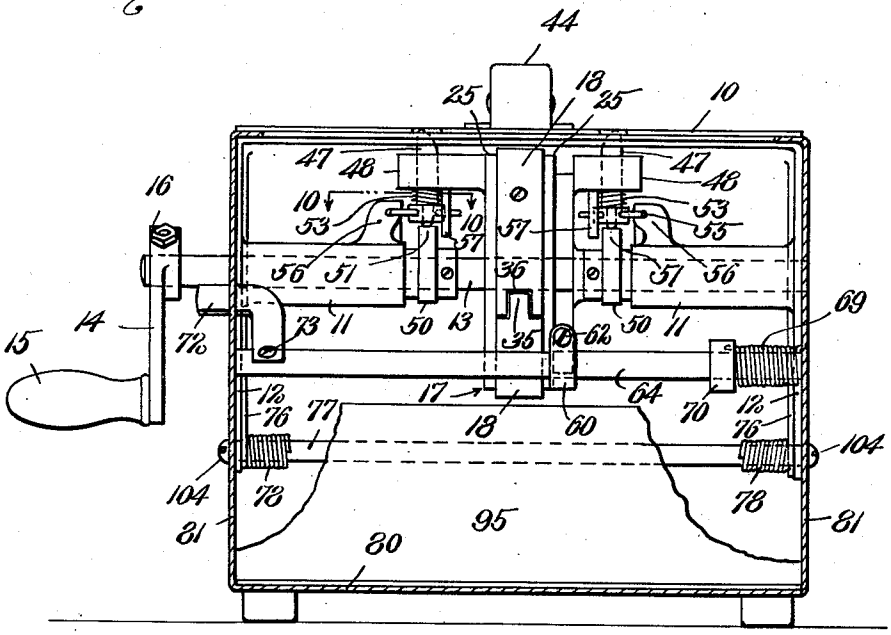


Fig. 10.

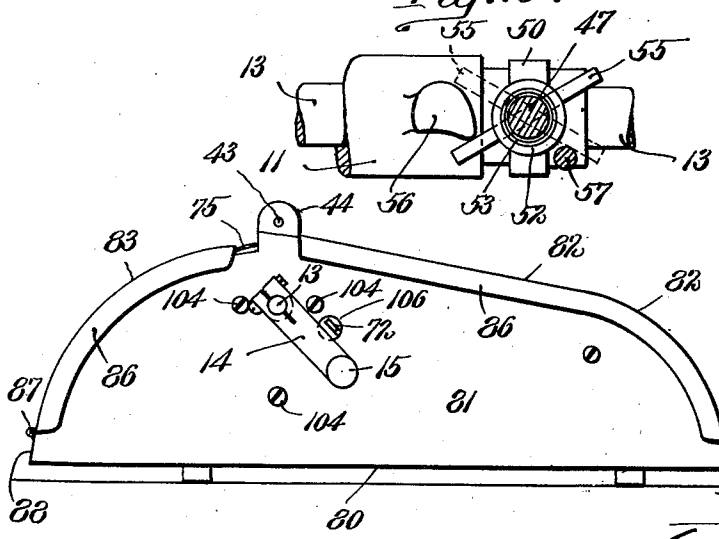


Fig. 5.

Inventor.
James W. Fader
by Francis P. Garvin
Atty.

Patented Sept. 12, 1939

2,172,637

UNITED STATES PATENT OFFICE

2,172,637

STRIP FEEDING AND REGISTERING MECHANISM FOR MANIFOLDING DEVICES

James W. Fader, Dorchester, Mass., assignor to Atlantic Register Company, Waltham, Mass., a corporation of Massachusetts

Application February 26, 1937, Serial No. 128,030

17 Claims. (Cl. 271—2.4)

This invention relates to a strip feeding and registering mechanism for manifolding devices, and, although susceptible to other uses, it is more particularly designed for use in what are commonly known as autographic registers.

In manifolding devices of this character, it is customary to use continuous superposed strips of paper having equally spaced transverse weakened or perforated lines, upon which the superposed strips are folded zigzag to form a pack commonly known as a "fold pack". These strips generally contain printed forms, one on each fold, suitable for a particular use, and each form generally contains at its top a pair of spaced holes suitable for filing purposes. In the machines, the strips are fed from a pack over a writing table between fixed carbon sheets, so that the writing on the top strip is reproduced on the underlying strips. After a set of forms has been filled out, the strips are fed forward to bring a new set of forms over the writing table, and the filled-in forms are torn off along a weakened or perforated line. It is important that the strips should all be in register in order that the writing on the underlying strips will be in proper relation to the printed forms. One of the principal difficulties encountered in the production of manifolding devices has been the provision of satisfactory means for attaining this end.

The principal object of my invention is the provision of a mechanism of the character described, which is adapted for feeding a set of superposed strips a predetermined distance and for registering and aligning the strips at the end of each feeding movement both longitudinally and transversely, so that the forms are in perfect register.

Another object of the invention is to provide a mechanism which is simple in form and construction, which is positive in its operation, and which is durable.

Another object of the invention is the provision of spring-pressed feeding means which will maintain a constant pressure upon the superposed strips during the feeding movement in order to prevent any relative movement between the strips.

A further object is the provision of a feeding mechanism which is mounted in a suitable frame so that it may be handled as a unit and incorporated as such in any suitable environment.

Another object of the invention is the provision of means for separating and directing the bottom strip of a plurality of superposed strips into a compartment, where it is permitted to refold naturally, and for directing the remaining strips into a position where they may be torn off by the operator.

Further objects of the invention will be described hereinafter.

My invention contemplates the provision of means for feeding superposed continuous strips of paper a predetermined distance on each operation and for aligning and registering the strips at the end of the feeding movement. The preferred form of this means comprises a feed roll having a segmental tread adapted by cooperation with an idler for feeding the strips a distance slightly less than the desired length of feed, and carrying a pair of pins adapted to enter spaced holes in the strips just prior to the end of a complete revolution of the feed roll to carry the strips forward a short distance to complete the feeding movement, and, at the same time, to align and register the strips.

One feature of the invention resides in the provision of a spring-pressed feeding tread on the feed roll whereby a constant spring pressure is maintained on the paper strips while being fed, to prevent relative movement between them during that time. Preferably, the feed roll is provided with a circumferential channel in which is removably mounted one or more tread segments backed up by springs under compression for exerting a constant spring pressure on the paper strips during the feeding movement. The length of the feeding segment, if one only is used, or their combined lengths, if more than one is employed, is slightly less than the length of feeding movement desired.

Another feature of the invention consists in providing pins which are normally in a retracted position but are thrown outwardly by cams at the proper time to enter the spaced holes in the strips, and, after they enter the holes, are turned by suitable means to register and align the strips both longitudinally and transversely, so that when the feeding movement is completed, the strips are in perfect register.

Another important feature of my invention resides in the provision of a unit feeding mechanism in which the feeding mechanism is fastened in a frame of any suitable form, such as a yoke, so that it may be handled as a unit for mounting in a suitable casing or other environment ready for operation. One advantage of this feature is that it may be easily removed from its environment when necessary, either to remove and insert new segments to change the length of feed, or to make repairs. When the unit is removed, all of

the parts are fully exposed and accessible, so that changes or repairs may be easily and expeditiously made. Furthermore, this feature permits the feeding mechanism to be used in connection with a writing table or support over which the strips are fed in an environment where a casing of the form used for autographic registers is not required.

In the drawings, Figure 1 is a view in perspective, looking forwardly, of a strip feeding and registering mechanism constructed and adapted to be operated in accordance with my invention, with the parts shown in normal position for starting a feeding movement;

Fig. 2 is a side elevation of the same, looking forwardly, with the parts shown in their positions just prior to the end of a feeding movement;

Fig. 3 is a central vertical longitudinal sectional view of the mechanism mounted in a casing and adapted for use as an autographic register, the parts being shown in position for starting a feeding movement;

Fig. 4 is a cross-sectional view of the same, showing the vertical partition broken away and the feeding mechanism in elevation;

Fig. 5 is a side elevation on a reduced scale of the autographic register;

Fig. 6 is a vertical central sectional view of the idler and housing;

Fig. 7 is a side elevation of one of the cams for controlling the registering pins carried by the feed roll;

Fig. 8 is a side elevation of the yoke frame in which is mounted the feeding mechanism;

Fig. 9 is a vertical central sectional view of the feed roll; and

Fig. 10 is a plan view, looking downwardly on line 10—10 in Figure 4, showing the means for turning the registering pins.

Referring to Figure 1 of the drawings, there is shown a feeding and registering mechanism made in accordance with my invention, in which the operative parts are mounted in a frame or yoke **10** of any suitable form, but shown as of reversed U-shape, which permits the device to be handled as a unit for installation in any suitable environment, such as a manifolding machine or device, and such installation may be accomplished by merely fastening the ends of the yoke in the desired position.

Rotatably mounted in a pair of sleeve bearings **11** fastened to the end portions **12** of the yoke **10**, is a shaft **13** having one end extended outside the end of the yoke. For rotating said shaft, a crank arm **14** provided with a handle **15** is fastened by a screw **16** to the extended end of the shaft.

Fastened to the shaft **13** approximately midway the ends of the yoke is a feed roll designated generally as **17** and having a segmental tread comprising one or more tread segments **18**. The feed roll, as shown, is made up of a disk **20** and an annular rim **21** fastened in offset relation to the marginal portion of one face of the disk by screws **22**. The disk is provided with a central bored hub **23** permitting it to be mounted on and fastened to the shaft **13** by any suitable means. The rim is of somewhat greater diameter than the diameter of the disk and its circumferential face is provided with an annular channel **24** within which is mounted one or more of the segments **18**.

Each of these segments is supported between the rim flanges **25** and held away from the floor of the channel by a pair of springs **26** mounted in suitable recesses **27** in said floor. The springs are under compression at all times and tend to force the segment outwardly, which movement, however, is limited by the head of a screw **29**, the shank of which is loosely mounted in a radial bore **30** in the rim and is held therein by a nut **32** threaded on the projecting end of the shank and in engagement with the inner face of the rim. The screw is centrally positioned in the segment in each case, and the springs are arranged one on each side of the screw. The head of the screw is countersunk in the tread surface of the segment to avoid interference with the feed, and the outward position of the segment is regulated by manipulation of the nut **32**.

The length of the segment, if but one is used, or their combined lengths, if more than one is employed, is slightly less than the length of feed desired. When two or more segments are used, their adjacent ends are interlocked in any suitable manner to present a continuous feeding tread. As shown, the continuous joint may be formed by providing one of the segments with an end tongue **35**, which engages a recess **36** in the adjacent end of the next segment.

Cooperating with the segmental feeding tread is an idler roll, which may be of any suitable form, but, as shown, comprises two parts, a tread member **40**, which is recessed on one side to form a runway for a plurality of ball bearings **41** held in place by a disk **42** closing the recessed side of the tread member. The disk is fixed to a pin **43** which, in turn, is fixedly mounted in and between the two sides of a housing **44** formed in the top of the yoke **10**. The tread member **40** is supported on the ball bearings only and turns freely thereon without appreciable friction.

For completing a feeding movement after the segmental tread has ceased feeding, and for aligning and registering the strips, the feed roll is provided with a pair of pins **47** adapted to be projected into the spaced holes in the strips at the proper time. Preferably, the two pins are mounted in and carried by a pair of arms **48** integral with or fastened to the feed roll. The two arms are arranged opposite each other and extend laterally in opposite directions from the marginal portion of the feed roll at the forward end of the segmental tread.

Each of the pins **47** is loosely mounted in a radial bore **49** in its respective arm **48** and is held therein by a cam **50** fastened to the inner end of the adjacent sleeve **11** in such position that its peripheral face **51** is engaged by the lower end of the pin at all times. That end of the pin is enlarged to form an annular shoulder **52**, and a helical spring **53** under compression is mounted on the pin between said shoulder and the under face of the arm to hold said pin in engagement with the cam. The cam is provided with a high point at its top, the remaining portion of the cam being low, and when the pin is in engagement with the low portion of the cam, it is in a retracted position in said arm and its top end is not projected outwardly from said arm until the pin engages the high portion of the cam.

Preferably, each pin is formed with an oblique top end, the high point of which is on the forward side of the pin when it is in normal position, and means is provided for turning the pins each through an arc of approximately ninety degrees after they enter the spaced holes in the strips, so as to turn the high points in the pins outwardly

away from the feed roll and against the outward sides of said holes, in order to register said strips in a transverse direction in addition to longitudinal registration. One form of means for accomplishing this end comprises a cross-pin **55** mounted transversely in the lower end of each pin and an upright cam **56** on the top of the inner end of the adjacent sleeve **11**. The ends of each spring **53** are fastened, one to its respective arm **48** and the other to the enlarged lower end of the pin **47**, so that it is normally held by the spring with one end of the cross-pin in engagement with a depending stop-pin **57** set in the bottom face of the arm, as shown in dotted lines in Fig. 10. In this position, the cross-pin lies at an angle of approximately forty-five degrees to the normal line of feed and in position to be turned approximately ninety degrees by the engagement of its other end with the cam **56** during the conclusion of a feeding movement, as shown in full lines in Fig. 10.

For stopping the feed roll at the end of each feeding operation, a finger **60** having a bored split butt **61** is fastened by a screw **62** to a rock shaft **64** rotatably mounted in rearward extensions **66** on the ends **12** of the yoke **10**, and the free end of the finger is provided with a nose **67** adapted to fit a notch **68** formed in the periphery of the disk **20**. A helical spring **69** mounted on the rock shaft **64**, having one end locked in the extension **66** and the other end in a collar **70** mounted on the rock shaft and fastened thereto, holds the finger in engagement with the periphery of the disk **20**, so that at the end of each revolution, the nose of the finger is forced into the notch to stop the rotation of the feed roll. The notch **68** is so positioned in the disk that when the feed roll is stopped, the forward end of the segmental tread and the pins are in position for starting a new feeding movement, as shown in Figures 1 and 4. A finger piece **72** fastened by a screw **73** to the rock shaft at one end thereof, permits the shaft to be rocked to withdraw the nose of the finger from the notch to permit the feed roll to be turned for another feeding movement.

For separating the bottom strip from a plurality of superposed strips and to guide it downwardly into a compartment where it may refold naturally, a stripper **75** in the form of a thin curved plate is supported on a pair of right-angled arms **76** loosely mounted at their free ends for pivotal movement on a cross shaft **77**, which is fixed to and between the end plates **12** of the yoke. The stripper plate is positioned forwardly of the feed roll and is held in operative position with its upper transverse edge just forward of the line of delivery of the strips from the feeding means by a pair of springs **78** mounted one on each end of the cross shaft **77**. Each of said springs is held under tension by having one end locked in the shaft and the other end locked in an end plate **12** of the yoke. The stripper plate may be turned downwardly against the tension of said springs, when necessary, for loading the feeding mechanism or for other purposes.

In Figure 3 is shown a unit mechanism made in accordance with my invention, mounted in a casing for use as an autographic register. The casing may be of any suitable form, but, as shown, comprises a base **80** with sides **81**, and having its top closed by a rear cover **82** and a forward cover **83**. The rear cover is hinged at its rear end at **84** to an upturned end **85** of the base **80** and is provided with side flanges **86** for overlapping the top edges of the sides of the casing, and the forward cover is similarly hinged at **87** to an upturned end **88** of the base **80** and likewise has side flanges **86**. The rear cover **82** is provided with a rectangular opening **90** adjacent its upper end to expose a writing table **91** pivotally mounted at its rear end on a cross shaft **92** having its ends fastened in the side plate. The forward end of the writing table is supported by any suitable means in close proximity to the feed roll. Within the casing is a transverse vertical partition **95** which divides the interior of the casing into two compartments **96** and **97**.

The rear compartment **96** serves as a storage chamber for a supply of forms which is preferably in the form of a "fold pack" **100**, and the forward compartment **97** is intended to receive and to hold in refolded condition the bottom strip of the fold pack to be used for auditing or other purposes. To facilitate the refolding of the bottom strip as it is fed into the forward compartment through successive operations of the machine, that compartment may be provided with a false bottom **102** inclined upwardly in a forward direction.

The yoke **10**, carrying the feeding mechanism and stripper, is mounted in the top of the casing just forward of the transverse partition **95**, and the two ends of the yoke are fastened to the inner faces of the two sides of the casing by screws **104**. The handle end of the shaft **13** projects out one side of the casing, the handle being fastened to the shaft after installation of the yoke in the casing. That side of the casing is also provided with a suitable opening **106** through which the end of the finger piece **72** projects for permitting its operation to release the feed roll for feeding.

In the operation of my mechanism, the manifolding device in which it is mounted is first loaded with a suitable supply of continuous superposed strips, the ends of which are adjusted in proper relation to the feeding mechanism to permit feeding operations. In this preparation of the device for operation, the cover **82** is turned upwardly and the fold pack **100** is placed in the rear compartment **97**. This pack comprises a plurality of superposed continuous strips, generally varying in number from two to six, and occasionally more, folded zigzag on transverse perforated lines. In Figure 3, the pack **100** is shown as made up of three strips, **107**, **108** and **109**, which together may be termed a multiple strip. The end of the multiple strip is drawn from the top of the pack, led around a transverse roll **110** rotatably mounted in and between the sides of the casing, then around the rear end of and over the writing table **91**. In these devices, carbon sheets are fixedly arranged transversely the writing table for insertion between the strips for transferring whatever is written on the top strip to the strips underneath, but, since these transfer means are old and well-known, they are not shown in the drawings. After the multiple strip has been drawn over the writing table, one carbon sheet is arranged between strips **107** and **108**, and another between strips **108** and **109**, and the ends of the strips are drawn forward into a position where, when the feed roll is turned, the pins **47** may enter the spaced holes in the forward ends of the strips, to feed the strips forward a short distance into the positions shown in Figure 3. The ends of the strips then project slightly forward of the feed roll and idler, so that the upper edge of the stripper **75** may be inserted between the ends of strips **108** and **109** to direct

the bottom strip downwardly into compartment 97. After the loading of the register is completed and the covers closed, it is then ready for use.

Assuming that the set of forms on the writing table has been filled in, the operator then presses the finger piece 72 downwardly to release the feed roll, and then turns the handle 15 to start rotation of the feed roll to bring the next succeeding set of forms over the writing table. When the feed roll is in stopped position, the pins 47 are in the spaced holes in the forward ends of the strips in a twelve o'clock position, which insures the start of the feeding of the strips simultaneously with the starting of the rotation of the feed roll, so as to correct any deficiency which may be present in the feeding cooperation of the forward end of the segmental tread with the idler roll. The pins remain in the hole for a short distance only and are then retracted by the springs 53, and the feeding of the strips is continued by the cooperative action of the segmental tread and the idler roll until such time as the rear end of the tread passes the idler roll, when feeding ceases until just prior to a complete revolution of the feed roll. At this time, the pins 47 are projected outwardly by the cams 50 into the holes in the next succeeding set of forms to carry said strips forward the necessary distance to complete the desired length of feed, at which point further rotation of the feed roll is prevented by the finger 60. After the pins are projected into the holes, they are turned by the engagement of the cross pins 55 with the cams 56 to register the strips transversely as well as longitudinally.

In this feeding operation, the bottom sheet of the first set of forms is directed downwardly by the stripper into compartment 97, and the two upper sheets are fed outwardly from the machine in position to be grasped by the operator. At the end of a feeding operation, the transverse perforated lines between the first forms and the second forms are in register with the forward edge 112 of the yoke, and the two upper sheets of the first set of forms may, thereupon, be torn off against said edge along said lines of perforation.

It will be observed that the feeding mechanism, which is forward of the intermediate partition 95, is entirely within the forward compartment and in its upper portion, and that, in consequence, the refolded bottom strip extends rearwardly under the feeding mechanism, so that that strip is directed by the stripper in a path which is approximately midway the ends of the refold pack and approximately perpendicular to the false bottom 102. This is an important feature, because it insures a natural refolding of the bottom strip into pack form. When the guiding means which directs the course of the bottom strip from the feeding mechanism downwardly, is positioned above one end or the other of the refolded pack, it frequently happens that the strip instead of refolding naturally in a zigzag manner, folds in the opposite direction, which invariably results in open folds, so that the sheets will not lie in flat condition, and the compartment soon fills up with a mass of crumpled paper. This is one of the particular difficulties experienced in autographic registers having a compartment in which the bottom strip is designed to refold. I have found that when the stripper or other guiding means directs the strip toward the center of the refolded pack rather than toward one of its ends, I eliminate all possibility of the strip folding otherwise than in a natural zigzag manner. The inclined floor in the compartment also contributes to this result, since it is approximately perpendicular to the directed path of the bottom strip.

After each feeding operation, the set of filled-in forms fed out of the machine, with the exception of the bottom sheet, is torn off. The bottom sheet is fed into the forward compartment in a continuous strip and refolds into a flat pack which may be removed at the end of each day, or from time to time as found convenient.

It will be observed that a feeding mechanism made in accordance with my invention is of extremely simple construction, employing a minimum number of parts. By using a feeding member having an adjustable spring-pressed or resilient tread in cooperation with an idler, all necessity for gears or the like is eliminated. Furthermore, the compactness of the structure, when it is used in a suitable casing as an autographic register, permits it to be so positioned therein as to insure proper refolding of the bottom strip at all times.

It is to be understood that my invention is not to be limited to the precise form herein shown and described, since it may be embodied in other forms within the purview of the following claims.

What I claim is:

1. In a mechanism for feeding continuous superposed strips having transverse pairs of holes spaced at equal intervals, the combination of an idler, a feed roll rotatably mounted for cooperation therewith, said feed roll being provided with a resilient circumferential tread of slightly shorter length than the length of feed desired, said tread comprising a plurality of tread segments having their adjacent ends interlocked for providing a continuous tread, and a pair of pins carried by said feed roll and adapted to enter a pair of holes in said strips just prior to the end of each complete revolution of said feed roll for completing the feed of said strips.

2. In a mechanism for feeding continuous superposed strips having equally spaced transverse pairs of holes, the combination of a feed roll provided with a resilient circumferential tread of slightly shorter length than the length of feed desired, said tread comprising a plurality of spring supported segments having their adjacent ends interlocked for providing a continuous tread, and a pair of pins carried by said feed roll and adapted to enter a pair of spaced holes in said strips just prior to the end of a complete revolution of said feed roll for completing the feed of said strips.

3. In a mechanism for feeding continuous superposed strips having spaced transverse pairs of holes, the combination of a feed roll and a cooperating idler roll, said feed roll having a resilient circumferential tread of slightly shorter length than the length of feed desired, said tread comprising a plurality of spring supported tread segments having their adjacent ends interlocked for providing a continuous tread, and a pair of pins carried by said feed roll, means for projecting, just prior to the end of a complete revolution of said feed roll, said pins into a pair of said holes in said strips for completing the feed thereof and means for turning said pins in said holes to register said strips both transversely and longitudinally at the end of each complete revolution of said feed roll.

4. In a mechanism for feeding continuous superposed strips having transverse pairs of holes spaced at equal intervals, the combination of an

idler roll and a feed roll cooperating therewith, said feed roll having a circumferential channel, a resilient spring-supported segmental tread mounted in said channel, a pair of pins carried by said feed roll, said pins being normally in retracted position, and means for projecting said pins into a pair of spaced holes in said strips for completing the feed thereof at the end of each complete revolution of said feed roll.

5. In a mechanism for feeding continuous superposed strips having transverse pairs of holes spaced at equal intervals, the combination of an idler roll and a feed roll cooperating therewith, said feed roll having a circumferential channel, a resilient spring-supported segmental tread mounted in said channel, means for limiting the outward movement of said tread, a pair of pins carried by said feed roll, said pins being normally in retracted position, and means for projecting said pins into a pair of spaced holes in said strips for registering said strips and completing the feed thereof at the end of each complete revolution of said feed roll.

6. In a mechanism for feeding continuous superposed strips having transverse pairs of holes spaced at equal intervals, the combination of an idler, a feed roll cooperating therewith and having a resilient circumferential segmental tread surface for feeding said strips on each rotation of said feed roll a distance slightly less than the distance between adjacent pairs of holes, a pair of pins carried by said feed roll and normally in retracted position and cams for projecting said pins at the end of each revolution of said feed roll into a pair of spaced holes in said strips for registering said strips both longitudinally and transversely and for completing the feed thereof.

7. In a mechanism for feeding continuous superposed strips having transverse pairs of holes spaced at equal intervals, the combination of an idler, a feed roll cooperating therewith and having a resilient circumferential tread surface for feeding said strips on each rotation of said feed roll a distance slightly less than the distance between said pairs of holes, said resilient tread comprising a circumferential channel in said feed roll, a plurality of tread segments mounted in series in said channel, a pair of springs for holding each of said segments away from the floor of said channel, and means for limiting the outward position of each of said segments, a pair of pins carried by said feed roll and normally in retracted position and means for projecting said pins at the end of each revolution of said feed roll into a pair of spaced holes in said strips for registering said strips both longitudinally and transversely and for completing the feed thereof.

8. In a mechanism for feeding continuous superposed strips having transverse pairs of holes placed at equal intervals, the combination of a reversed U-shaped band frame, an idler and a feed roll both rotatably mounted in said frame for cooperation, said feed roll being provided with a resilient circumferential tread of slightly shorter length than the length of feed desired, and a pair of pins carried by said feed roll and adapted, just prior to the end of each complete revolution of said feed roll, to enter a pair of holes in said strips for completing the feed thereof, means mounted on said frame for locking said feed roll against rotation at the end of each complete revolution, said frame and said feeding mechanism being adapted to be handled as a unit and secured in any suitable environment by fastening the frame therein.

9. In a machanism for feeding continuous superposed strips having transverse pairs of holes placed at equal intervals, the combination of a reversed U-shaped frame, a feed roll and an idler roll both rotatably mounted in said frame for cooperative action, said feed roll being provided with a circumferential channel, a tread segment mounted in said channel, a pair of springs seated in the floor of said channel for holding said segment away from said floor, and means for limiting the outward position of said segment, said frame and said feeding mechanism being adapted to be handled as a unit and secured in any suitable environment by fastening the frame therein.

10. In a mechanism of the character described, a feed roll having a rim provided with a circumferential channel, a plurality of tread segments mounted in said channel, the adjacent ends of said segments being interlocked to present a continuous tread, a pair of springs seated in the floor of said channel for holding each of said segments away from said floor, screws loosely mounted in said rim, each with its head countersunk in the outer face of one of said segments and a nut threaded on the end of each screw in engagement with the inner face of said rim for adjustably limiting the outward position of said segment.

11. In a mechanism for feeding continuous superposed strips having transverse pairs of holes spaced at equal intervals, the combination of an idler, a feed roll cooperating therewith and having a resilient circumferential tread surface for feeding said strips on each rotation of said feed roll a distance slightly less than the distance between said pairs of holes, said resilient tread comprising a circumferential channel in said feed roll, a plurality of tread segments mounted in series in said channel, said segments having their adjacent ends interlocked to present a continuous tread, a pair of springs for holding each of said segments away from the floor of said channel, and means for limiting the outward position of each of said segments, a pair of pins carried by said feed roll and normally in retracted position and a pair of fixed cams for projecting said pins just prior to the end of each revolution of said feed roll into a pair of spaced holes in said strips for registering said strips both longitudinally and transversely and for completing the feed thereof.

12. In a mechanism for feeding continuous superposed strips having transverse pairs of holes spaced at equal intervals, the combination of an idler, a feed roll cooperating therewith and having a rim provided with a resilient circumferential tread surface for feeding said strips on each rotation of said feed roll a distance slightly less than the distance between said pairs of holes, said resilient tread comprising a circumferential channel in the rim of said feed roll, a plurality of tread segments mounted in series in said channel, the total length of said segments being shorter than the circumferential length of said channel, a pair of springs for holding each of said segments away from the floor of said channel, and a screw loosely mounted in each of said segments and said rim and having a nut adjustably threaded on its inner end for limiting the outward position of each of said segments, a pair of pins carried by said feed roll and normally in retracted position and a pair of fixed cams for projecting said pins just prior to the end of each revolution of said feed roll into a pair of spaced roles in said strips for completing the feed of said strips and

registering said strips both longitudinally and transversely.

13. In a mechanism for feeding continuous superposed strips, the combination of a reversed U-shaped band frame having a roll housing on its top portion, a shaft rotatably mounted in the side portions of said frame, a handle on one end of said shaft, a feed roll mounted on and fastened to said shaft, an idler roll mounted in said housing for cooperation with said feed roll, said feed roll being provided with a circumferential channel, a tread segment mounted in said channel, a pair of springs seated in the floor of said channel for holding said segment away from said floor, adjustable means for limiting the outward position of said segment, and spring-pressed means carried by said frame for automatically stopping the rotation of said feed roll at the end of each complete revolution, said frame and said feeding mechanism being adapted to be handled as a unit and secured in any suitable environment by fastening the frame therein.

14. In a mechanism for feeding continuous superposed strips, the combination of a reversed U-shaped band frame having a roll housing on its top portion, a shaft rotatably mounted in the side portions of said frame, a handle on one end of said shaft, a feed roll mounted on and fastened to said shaft, an idler roll mounted in said housing for cooperation with said feed roll, said feed roll being provided with a circumferential channel, a resilient tread comprising a plurality of tread segments mounted in series in said channel, said segments having their adjacent ends interlocked to present a continuous tread, a pair of springs for holding each of said segments away from the floor of said channel, adjustable means for limiting the outward position of said segment, and spring-pressed means carried by said frame for automatically stopping the rotation of said feed roll at the end of each complete revolution, said frame and said feeding mechanism being adapted to be handled as a unit and secured in any suitable environment by fastening the frame therein.

15. In a mechanism for feeding continuous superposed strips having transverse pairs of holes spaced at equal intervals, the combination of a reversed U-shaped band frame, an idler and a feed roll cooperating therewith and both mounted in said frame, said feed roll having a resilient circumferential tread surface for feeding said strips on each rotation of said feed roll a distance slightly less than the distance between said pairs of holes, said resilient tread comprising a circumferential channel in said feed roll, a plurality of tread segments mounted in series in said channel, said segments having their adjacent ends interlocked to present a continuous tread, a pair of springs for holding each of said segments away from the floor of said channel, and means for limiting the outward position of each of said segments, a pair of pins carried by said feed roll and normally in retracted position and a pair of fixed cams for projecting said pins just prior to the end of each revolution of said feed roll into a pair of spaced holes in said strips for registering said strips both longitudinally and transversely and for completing the feed thereof.

16. In a mechanism for feeding continuous superposed strips, the combination of a reversed U-shaped band frame having a pair of inwardly projecting sleeves on its side portions, a shaft rotatably mounted in said sleeves and said side portions, a feed roll mounted on and fastened to said shaft between said sleeves, an idler roll mounted in the top of said frame for cooperation with said feed roll, said feed roll having a resilient circumferential tread surface for feeding said strips on each rotation of said feed roll a distance slightly less than the distance between said pairs of holes, said resilient tread comprising a circumferential channel in said feed roll, a plurality of tread segments mounted in series in said channel, said segments having their adjacent ends interlocked to present a continuous tread, a pair of springs for holding each of said segments away from the floor of said channel, and means for limiting the outward position of each of said segments, a pair of pins carried by said feed roll and normally in retracted position and a pair of fixed cams mounted one on each of said sleeves for projecting said pins just prior to the end of each revolution of said feed roll into a pair of spaced holes in said strips for registering said strips both longitudinally and transversely and for completing the feed thereof.

17. In a mechanism for feeding continuous superposed strips having transverse pairs of holes placed at equal intervals, the combination of a reversed U-shaped frame, a feed roll and an idler roll both rotatably mounted in said frame for cooperative action, said feed roll being provided with a circumferential channel, a tread segment mounted in said channel, a pair of springs seated in the floor of said channel for holding said segment away from said floor, means for limiting the outward position of said segment, and means for locking said feed roll against rotation at the end of each complete revolution, said means comprising a shaft mounted in said frame, a notch in said feed roll, a finger fixed on said shaft and a spring for forcing said finger into said notch at the end of each revolution, said frame and said feeding mechanism being adapted to be handled as a unit and secured in any suitable environment by fastening the frame therein.

JAMES W. FADER.