Feb. 7, 1928. 1,658,127

C. L. JOHNSTON

AUTOGRAPHIC REGISTER

Filed Feb. 23, 1924 3 Sheets-Sheet 1

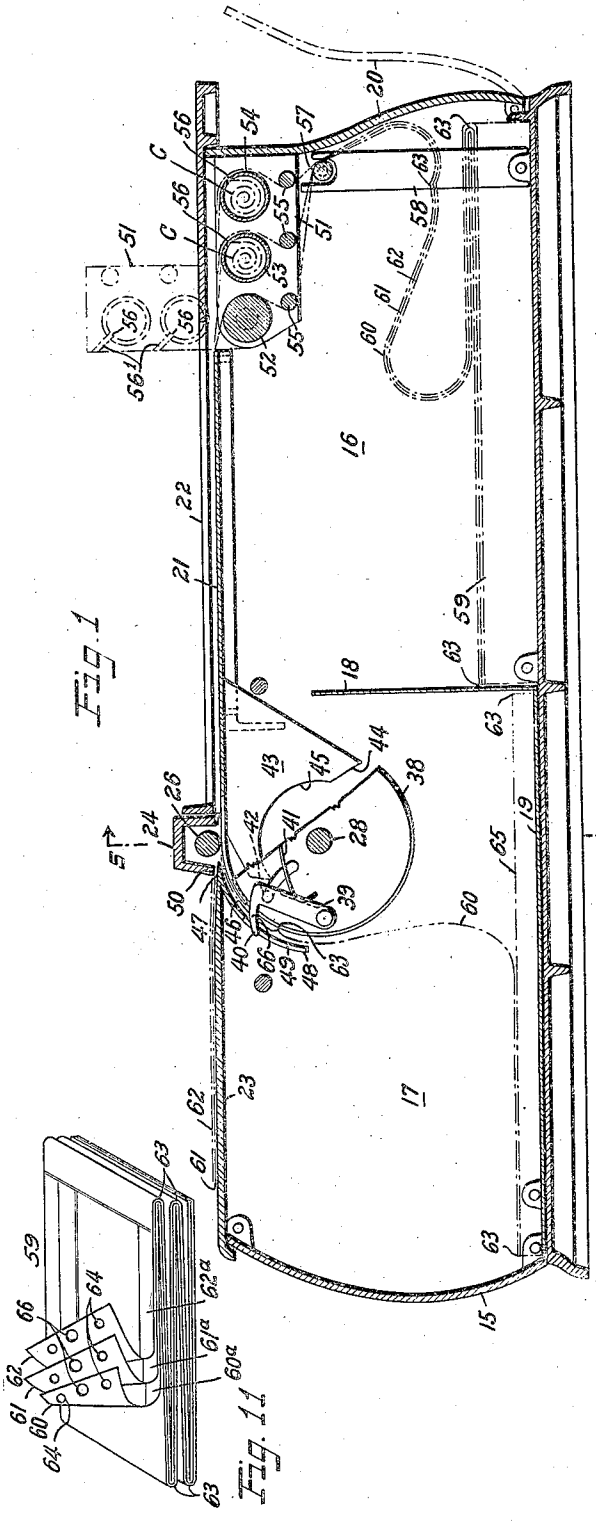


Fig. 1

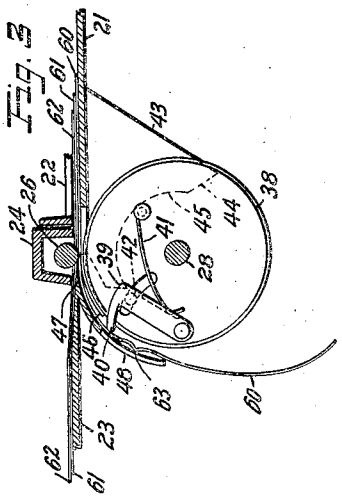


Fig. 3

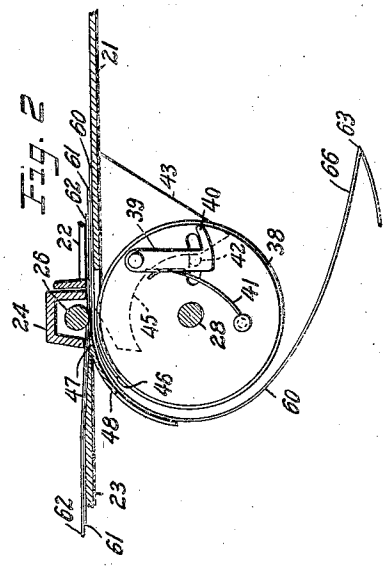


Fig. 2



Fig. 4

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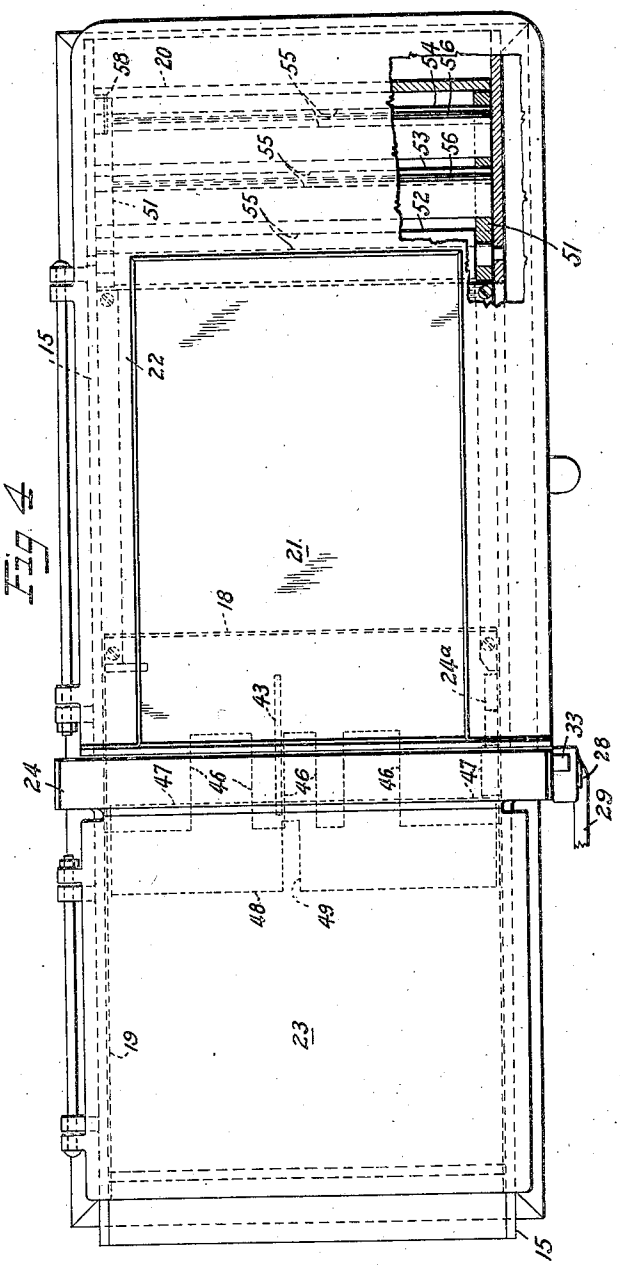



Fig. 4

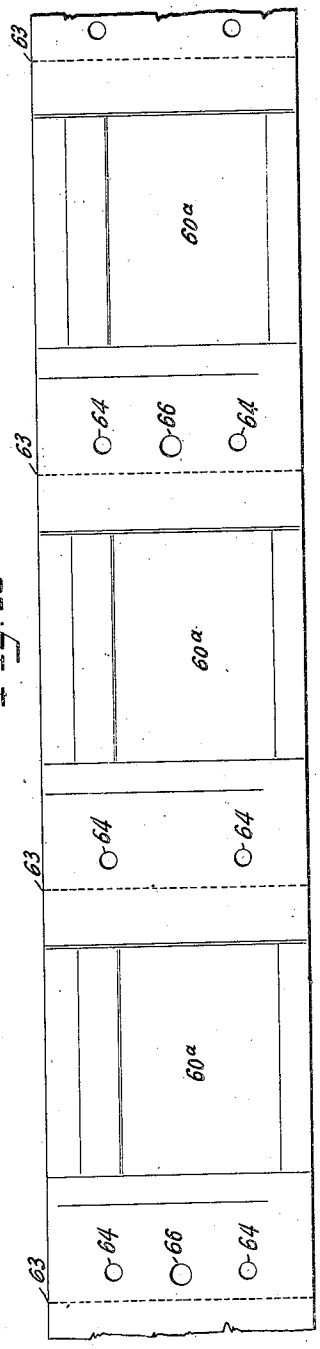



Fig. 10

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Fig. 6

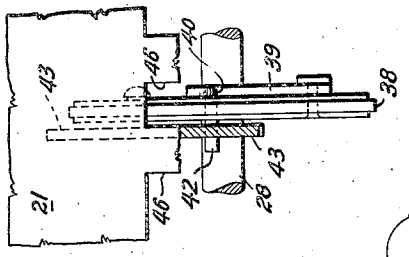



Fig. 7

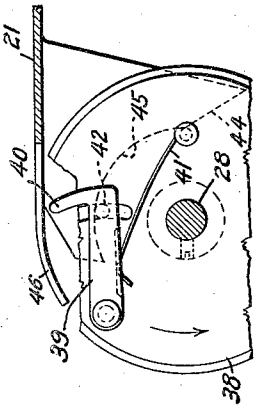



Fig. 5

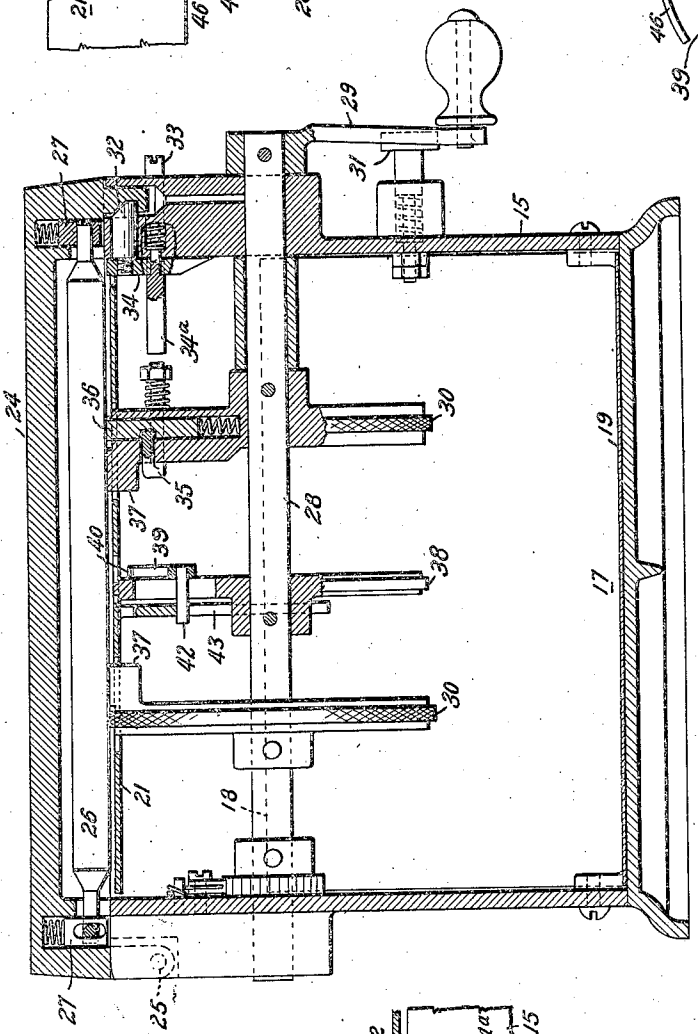



Fig. 8

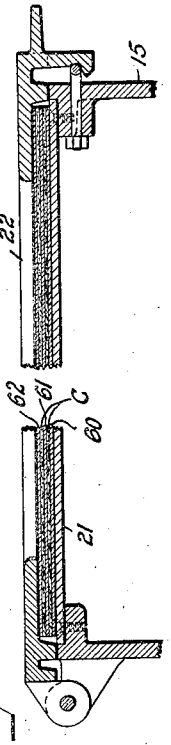
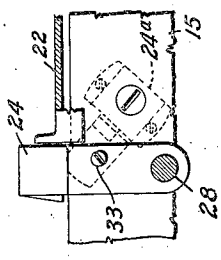



Fig. 9




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Patented Feb. 7, 1928. 1,658,127

# UNITED STATES PATENT OFFICE.

CLARENCE L. JOHNSTON, OF OAKLAND, CALIFORNIA, ASSIGNOR TO AMERICAN SALES BOOK COMPANY, LIMITED, OF TORONTO, ONTARIO, CANADA, A CORPORATION OF ONTARIO, CANADA.

## AUTOGRAPHIC REGISTER.

Application filed February 23, 1924. Serial No. 694,458.

This invention relates to improvements in devices for feeding and controlling advance of strips of flexible material and folding the same in compact form in storage position, and while it may be employed in various applications, it is especially useful in connection with feeding and storing record strips of manifolding or autographic registers, in which connection it is herein disclosed. The invention further contemplates an improved form of supply strip for use in such a register, preferably in the form of zigzag supply pack for insertion in a supply compartment of the register.

It is the general object of the invention to provide an improved mechanism of the class mentioned which will feed a strip and positively direct it into folded form in a compact book or pack.

Another object of the invention is to provide in a register of the class mentioned, a simple and improved construction whereby the functions of feeding and aligning record strips, supporting the carbon sheets in correct operative position under all conditions of use, and filing or storing a record strip in a compact and uniform pack, are more effectually and positively accomplished than heretofore.

It is a further object to provide, in a device of the character mentioned, an improved arrangement for positively directing a record strip into filing or storage position in the machine in such a manner as to avoid wrinkling or crumpling or otherwise injuring the record strip, and to assure placement of the strip in regular and compact formation so as to occupy as little space as possible within the machine.

Another object is to improve the practicability of a machine of the character mentioned by assuring the folding of certain parts or leaves of a record strip in a definite manner relative to the adjacent leaves regardless of the manner in which the strip is initially placed to cooperate with the feeding mechanism.

A further object is to provide an improved means for supporting carbon or transfer sheets in such a manner that they always lie flat and smooth in operative position, and in which the feeding of the record strips tends to maintain such position.

Still another object of the invention is to provide an improved supply strip for use in registers of the class mentioned which is especially formed and adapted to cooperate with operative elements of the machine to aid in placing it in correct storage position as mentioned.

Another object is to provide an improved manifolding supply pack for insertion into the supply magazine of registers of the class mentioned, the record strips whereof are especially formed for feeding and aligning, and one or more being formed for positive cooperation with an element of the machine for direction into a compact storage pack.

Other objects will be in part pointed out in connection with the following detailed description of an illustrative but preferred embodiment of the invention, and will in part be 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 constructions 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 accompanying drawings showing a preferred embodiment of the invention, in which:

Figure 1 is a central vertical longitudinal section of a machine constructed in accordance with the invention, certain operative parts being shown in side elevation;

Fig. 2 is a fragmentary section showing in elevation a detail of the operating mechanism presented in Fig. 1 but with the parts occupying a different operative position;

Fig. 3 is a view similar to Fig. 2 but showing the parts in still another operative position;

Fig. 4 is a top plan view of the machine, parts being broken away for clearness of disclosure;

Fig. 5 is a vertical transverse section taken approximately on a line 5—5 of Fig. 1;

Fig. 6 is a fragmentary top plan view of the mechanism for directing a record strip into filing or storage position;

Fig. 7 is a fragmentary elevational view looking toward the right of Fig. 6;

Fig. 8 is a fragmentary transverse sectional view showing the record and transfer sheets in position in the machine;

Fig. 9 is a detail view of a locking mechanism;

Fig. 10 is a plan view of a section of record strip; and

Fig. 11 is a perspective view of a zig-zag supply pack formed in accordance with the invention.

Referring to the drawing for a detailed description of the embodiment of the invention there shown, a casing 15 is preferably provided for the operating parts of the feeding and folding mechanisms of the register having opposed side and end walls and a top cover plate. The interior space thus provided may be divided into compartments one of which as 16 may be employed for housing a storage supply of record strips, and another compartment as 17 may be employed as a filing storage compartment, the two compartments being separated by a partition 18 which for convenience may be formed in upstanding position on a base plate 19 forming therewith a support for the filed record strip, and providing a convenient means for removing the stored strip from the machine. The end plate 20 is hinged to the base plate as indicated in Fig. 1 and may be swung outwardly as indicated in dot and dash lines, to provide convenient access to the compartment 16 and to the interior mechanism of the machine. Tie rods as shown in section in Fig. 1 may extend between opposed side walls for bracing and supporting them in position. Overlying the interior compartment of the machine is a writing table or platen 21 which may be secured to the casing of the machine by appropriate means, and overlying this platen is a cover 22 hinged for swinging on one longitudinal edge at or adjacent to a side wall of the casing. As shown in Figs. 1 and 4 this hinged cover is provided with an opening through which the upper record strip is exposed in convenient position for receiving an entry or record thereon. The platen 21 and cover 22 are spaced apart slightly so as to provide a guiding runway for the record strips and the transfer sheets are disposed therebetween, as best shown in Fig. 8. The rear cover plate 23 overlies the compartment 17 being hinged at one of its longitudinal edges at or adjacent to a side wall of the casing and forming in effect a continuation of the cover 22. The two cover plates terminate a short distance from each other providing a gap for a roll housing and support 24 preferably hinged as at 25 to the casing and having a cavity in its under side for the reception of a feed roller 26 mounted for yielding up and down movement in spring pressed bearing blocks 27 in the roller housing. As shown in Fig. 9 it is desirable to provide a lock 24ª for securing the roller support 24 in operative position and locking the roll and its support against unauthorized movement toward strip releasing position. It will be observed furthermore that the rear edge of the roller support overlies the door 23 so that locking of the roller support in position also prevents unauthorized access to the record storage compartment 17. A rotatable feed shaft 28 of the strip advancing, or feeding mechanism, is mounted in the side walls of the casing being spaced below the upper or pressure feed roll 26 and provided with an external operating handle 29 and forming a support for the frictional feed rolls or discs 30 mounted on the shaft in spaced position and operable at will by actuation of the handle 29. The peripheral feeding surfaces of these discs, which may be roughened for providing a gripping surface for engaging the record strips, lie in position to cooperate with the pressure roll 26 to grip the record strips. A retractable stop 31 lies in the path of the handle 29 so as to limit movement of the latter to one complete revolution, it being understood that this stop may be pushed into retracted position out of the path of movement of the handle at the beginning of each cycle of operation of the feed discs 30. The stop is automatically projected by its spring into the path of the handle to limit the rotary movement thereof at the end of a cycle.

As best shown in Fig. 5 a latch 32 is provided to hold the upper roll carrier 24 firmly down into operative position so the roll thereof is held against the feed discs 30 to grip the record strips in the bites thereof, the springs of the bearings 27 thus being held under compression. The latch is releasable by means of a spring pressed plunger 33 connected to a plate 34 which in turn is connected to the latch bolt. As shown the plunger 33 may also be extended as at 34 for contacting with a spring pressed latch rod 35, the end of which engages a latch notch in a spring pressed bolt or post 36 mounted in a seat in one of the discs 30. This bolt is arranged to be projected when the latch 35 is moved to released position, and its purpose is to provide means for initially aligning the record strips when placed in the machine. This is accomplished by pulling the strips forward and hooking them through alinging apertures therein, over the projecting post. This aligning post is auto-

matically forced again into retracted position by engagement with the upper roll 26 when the latter is pushed down into operative position.

As clearly seen in Fig. 5 the feed discs 30 are each provided with blocks or lugs projecting from the side face thereof, having strip engaging surfaces laterally adjacent to the feeding peripheries of the discs but being offset from the planes thereof so as to be disaligned with the aligning openings of the feed strips. The purpose of this arrangement is to bring the printed forms of the record strip automatically into longitudinal alignment during the feeding movement thereof, as more fully described hereinafter.

A mechanism for separating the filing strip from the other strip and positively directing one of the record strips into compact folded position in the storage compartment 17 is provided, and in the embodiment shown includes a rotatable carrier or disc 38 mounted on the feed disc shaft 28 being preferably disposed between the two feed discs. The periphery of this disc is preferably circular but of slightly less diameter than that of the feed discs being thus disposed to contact with and support the record strip between the discs 30, but due to its smaller diameter it does not cooperate with the upper pressure roll 26 to exert substantial forward feeding effect upon the record strips. A folding finger 39 is movably mounted upon the disc 30 being preferably pivoted thereto and biased to forwardly or outwardly projecting position by means of a spring 41 movable with disc 38. This finger is also provided with a cam follower, as the pin or lug 42 extending through a slot in the disc lying in position to cooperate with an operating cam 43 carried in stationary position in the casing adjacent the path of the disc. This cam may be conveniently mounted on the under side of the platen 21 as shown in Fig. 1. The cam is provided with an inclined operating surface 44 and with a curved surface 45 concentric with the axis 28 of the rotary discs for cooperation with the lug 42. The surface 44 cooperates to retract finger 39 inwardly of the disc crosswise of the edge of the disc. In the embodiment illustrated, the finger 39 is a hook or of hook shape, having the projection or part 40 disposed at an angle to the shank 39.

The rear or trailing end of the platen 21 is curved downwardly in the casing as at 46 under the pressure roll 26 and adjacent to the peripheries of the feed discs 30 and folding disc 38, while the forward end of the cover 23 carries a knife edge 47 projecting beneath the roll housing 24 to a point adjacent the pressure roll and being spaced slightly above the curved portions 46 of the platen so as to provide a passageway for filing the record strip. Projecting from this knife edge and curved downwardly therefrom is a cross piece, deflector member or guide plate 48 co-acting to guide or divert the filing record strip to the path of movement of the finger 39, and having a slot 49 through which the folding finger may be projected into operative position to engage with the record strip. The rear wall of the housing 24 terminates adjacent the upper surface of the cover plate 23 providing a knife or tearing edge 50 which may be employed as an aid in severing the projecting ends of the record strips.

At the forward end of the machine is a supporting frame 51 pivoted to the casing and carrying spaced record strip guides 52, 53 and 54 mounted between the side plates of the frame which are supported in spaced relation by means of tie rods 55. The tie rods may also serve as guides for directing the record strips from the supply pack over the guides. This frame or support with its guide rods may be swung upwardly to the position shown in dot and dash lines in Fig. 1 for conveniently positioning it for threading the record strips therethrough in loading the machine. When the frame 51 is swung to its strip threading position the storage supply compartment disposed therebeneath is partially uncovered so the ends of the strips in said supply compartment are made accessible from above. Certain of the guides as 53 and 54 may be in the form of hollow tubes to provide storage cells or housings for storage rolls of transfer strips or carbon paper indicated at C in the drawing. In this case each storage cell is provided with a longitudinal slit 56 through which the transfer strip extends into trailing position between adjacent faces of the advancing record strips. The record strip passes directly over the slit in the storage cell contacting against the carbon strip so as to bind it against the edge of the slit thus preventing accidental advancement during the feeding of the record strips. Each transfer strip is thus firmly bound in trailing position and is maintained in smooth operative position by the advancing movement of the record strips. The combined record strip guides and transfer strip cells are firmly supported in the end plates of the frame 51 one of which may be slotted opposite each cell as shown at 56′ for the reception of the extending ends of the transfer sheets C when loaded into the cells.

As shown in Fig. 1 a strip guiding and positioning roller or rod 57 extends transversely of the forward end of the storage compartment and adjacent thereto is a light plate presser spring secured at its lower end to the casing, being preferably bifurcated at its upper end to receive the roller 57. This

presser spring inclines inwardly toward its upper end from the casing wall so as to press against the edges of the record strips and guide them into proper position over the guides 52, 53 and 54, and onto the platen 21. This presser finger or spring 58 also effects relative lateral alignment of the record strips by pressure on the edges thereof.

The supply book or pack 59, as shown in Figs. 1 and 11, is well adapted for insertion into the supply storage compartment 16 for use in the machine above described. This supply pack in the form shown includes triplicate record strips 60, 61 and 62 folded into the pack in zigzag formation. Each of the strips is transversely creased or otherwise deformed or weakened as at 63 so the strip tends to fold smoothly thereon. The deformations of one or more of the strips may include perforations for facilitating detachment. These deformations or folds divide each strip into a series of attached sheets or pad leaves $60^a$, $61^a$ and $62^a$, each bearing one or more blank forms printed or otherwise affixed thereon. Each sheet is provided with form-registering apertures 64 preferably disposed at or near the forward end of each blank form or so as to bear a definite relation thereto. These apertures are arranged in series in the strip, each series being positioned in each strip for alignment with the bite between the corresponding feed disc and the pressure feed roll. Each pad leaf is shown as provided with a single blank form, but if two or more are desired it will be seen that additional form-registering apertures may be provided. The length of record strip occupied by each blank form may be termed a form sheet as distinguishing it from the pad leaf or sheet $60^a$, $61^a$, or $62^a$.

One or more of the record strips may be employed as a filing strip, for example the strip 60 as indicated in the drawing is intended to be filed, after a record is made thereon, into a compact book, pad or pack 65 being folded in zig-zag form as shown in Fig. 1, and may be laid within the filing compartment 17 of the casing on the book support 19. To accomplish this folding the storage record strip is specially formed to cooperate with the folding mechanism of the machine, and is shown in detail in Fig. 10. As shown each alternate record pad leaf $60^a$ is provided at or near its forward or leading end with a finger receiving aperture 66, these apertures being arranged in series in the record strip and spaced from longitudinal alignment with each of the series of form-registering apertures 64. These apertures are arranged for cooperation with the filing or folding finger 39 which is adapted to direct the record strip into folded storage position as is more fully pointed out later on. The filing apertures are best formed in the alternate pad leaves during the printing of the blank forms on the record strip 60 but they may be formed at some other time if desired. They occupy a definite position on each of the alternate pad leaves, preferably at the forward ends thereof and spaced from longitudinal alignment with the form-registering apertures 64, and are formed in alternate leaves only. The other record sheets may also be provided with apertures corresponding to the filing apertures 66 and similarly formed in the sheets but not necessarily so; they remain idle when operating in the machine described but could be employed for filing away more than one of the record strips when desired. The apertures 64 for use in longitudinally aligning the blank forms of the strips, may also be punched when the record form is printed.

In view of the foregoing disclosure, the operation of the machine will be understood and may be summarized as follows: The record strips having been threaded over the guides and longitudinally aligned on the platen as set forth, are gripped at their forward parts in the bites of the feed discs 30 and pressure roll 26. When the feed discs rotate the record strips are advanced or fed forwardly by virtue of this gripping action. The discs being limited to one turn at each feeding cycle by the stop 31, operate to feed the record strips forward about the length of one of the form sheets but the actual feeding action is sufficient to effect a slightly greater feeding movement. Before the feed discs are stopped, however, the apertures in the record strips register with the bites of the discs and roll so as to halt the feeding action before the discs are stopped. If one or more of the record strips chances to be lagging slightly behind the others, its feeding movement may continue after the others are halted, thus bringing all the strips and the printed forms thereon into exact longitudinal alignment assuring correct registry thereof and correct transfer of a record on all the forms. Preferably the lugs 37 should grip the strips when the handle is in contact with the stop. When the next feeding cycle starts, the lugs 37 engage with the strips out of alignment with the apertures 64 to grip them against the pressure roll to start the feeding action. The apertures having been carried beyond the bites, feeding is continued by the discs as described. It will be understood that the transverse deformations 63 are of such a nature as not to interfere with grip of the feed discs for feeding the strips or with the longitudinal aligning of the latter.

When a record has been entered a turn is given to the feed discs, feeding all the record strips forward, the two upper ones passing above the knife edge 47 and below the severing edge 50 into position on the cover or table 23 when they may be severed by pull-

ing them across the severing edge. If the strips are perforated, the tearing action will be facilitated to effect a clean severance, or the detachment may be effected entirely by virtue of the perforations. One of these record sheets may be delivered to the customer for his information while the other may be retained for record. Both sheets are prepared for convenient filing by means of the apertures 64. When the machine is loaded the forward ends of the upper record strips are placed above the knife edge 47 while the lower strip is entered therebelow in position to pass into the space between the deflecting plate 48 and the downwardly directed end of the platen 21. This relative position of the strips is maintained during subsequent operation of the machine.

During the feeding action the folding disc 38 advances from the position shown in Fig. 2 where the folding finger is held in retracted position, against the force of the spring 41 tending to urge it forward by engagement of the lug 42 with the concentric portion of the cam 43. As the operation continues the finger passes beyond the restraining influence of the cam, as shown in Fig. 3, and is projected forwardly by the spring into position to engage in one of the apertures 66 in the storage record strip as shown in Fig. 1. This releasing action occurs after the projection 40 of the finger passes beyond the roll 26 and knife edge 47 so as to avoid obstruction thereby.

Assuming an aperture 66 to be in position to receive the finger, continuance of the feeding operation, after the record strip 60 has been engaged by entry of the finger into the opening, results in a positive action on the strip to move or direct it transversely of the strip feeding movement, and for a distance reversely thereto, to place this part of the strip into storage position under the feed rolls. This available storage space is thus utilized so the length of the machine casing may be diminished. The folding finger, in its reverse movement at the lower part of the disc, effects a folding or doubling of the strip upon itself and when this folded part has arrived at the correct place for depositing on the book or storage pack 65, disengagement of the strip with the finger is effected, and the strip thus released in filing position. This release is effected in the embodiment shown by engagement of the lug 42 with the inclined cam face 44. It will be observed that the folding finger engages the strip at or near to a transverse fold or deformation 63 thereof, but the folding or doubling of the strip, and the reverse movement thereof into filing position, may be effected independently of the deformations; these aid, however, in smooth and compact placement of the strip in filing position in the pack. The periphery of the disc 38 supports the strip, cooperating with the folding finger effectually to accomplish the folding and filing action. When a fold of the record strip is effected and the strip laid as described, the next successive feeding action is accomplished in the manner described, but in this instance the folding finger cannot engage the record strip due to the fact that the next successive pad leaf is unprovided with an aperture to receive the finger. The result is that this leaf or portion of the record strip is projected under the guiding influence of the deflector 48, into the rear of the compartment 17, forming a fold at the opposite or rear end of the storage pack. The transverse deformation 63 again enables the strip to lie flat in compact position. It will be noted that the file strip issues from the feeding mechanism at a point above the filing pack, the position of issuance being such that there is a tendency to project the strip under action of the feeding mechanism toward the end of the filing pack at the rear of the compartment 17. The effect of this arrangement is that the strip is directed to folded position at one end of the filing pack by action of the feeding mechanism and toward the other end thereof by action of the folding finger. It will therefore be seen that the storage record strip is laid in a compact zig-zag pack in the compartment, where it is preserved free from unauthorized access and from which it may be removed when the casing is unlocked.

Due to the fact that the record strip intended for filing is provided with filing apertures only in alternate pad leaves the action of the filing mechanism operates selectively to engage only these alternate sheets, the others being automatically rejected. Also the parts of the strip having a tendency to fold in the same direction about the adjacent weakened line or deformation are automatically selected by the finger 39 so the folding or doubling action is always effected in accordance with folding tendency and the strip is laid in the filing pack 65 in a regular, smooth and even manner. It will be observed that this selection is effected always in the same manner irrespective of what part of the strip is first entered in the feed rolls in loading the machine; if the first pad leaf to pass the feed rolls after loading has a filing aperture it is automatically selected by the finger 39, but it is rejected if there is no such aperture present. Therefore, it is unnecessary to time or synchronize the strip with the feeding mechanism when said strip is being loaded into feeding position in the machine. Since the feed and form aligning mechanism operates automatically to maintain the file strips and the transverse folds thereof in synchronism with the folding finger 40 it will be seen that said finger is always positioned for folding cooperation

with the strip to direct predetermined parts thereof, as the similarly directed creases, to the same end of the zigzag file pack. The strip creases of opposite direction are automatically excluded from cooperation with the folding mechanism by reason of the selective feature thereof mentioned.

It will be noted that as the filing strip is advanced in the receiving chamber 17, it will be refolded into a book of zigzag leaves on the support 19. As it advances, the finger or hook 39 is moved in timed relation to the strip advancing rolls 30, the finger moving in an endless path around the axis 28, the finger having repeated movements in the endless path as the disc 38 repeats its rotation. At a certain interval in its endless path the finger is adapted to enter a finger receiving aperture 66 and positively direct successive apertured portions in the same direction relative to the support 19. In the embodiment illustrated the finger will direct the advance ends of the engaged leaves of the filing strip in opposite direction from the advance ends of the other leaves of that strip, the advance ends of the apertured leaves being all directed toward one end of the support, whereas the advance ends of the other leaves will be directed toward the opposite end of the support, and this will result, irrespective of the order in which the leaves approach the directing finger 39.

It will be seen that the finger or hook 39 engages the filing strip at intervals determined by the apertures 66, and bends or bows the filing strip in the same predetermined direction, at repeated intervals, not only assisting any natural tendency of the filing strip to bend or bow on the weakened lines, but positively compelling bowing in a predetermined direction. Referring to Fig. 1, when the follower 42 escapes the cam profile 45, the finger 39 will be projected by spring 41, toward the filing strip, and while in extended position, will continue to move downwardly by a bowing movement which will bow the strip provided the finger engages an aperture 66. However, should a leaf having no such aperture 66 be then passing the finger, the bowing movement of the finger will still occur, but, the strip will not be bowed in the same direction as by the aperture engagement of the finger. The bowing movement of the finger will then be idle to bow the strip. In consequence the strip may readily fold and lie smoothly at both the right and left ends of support 19. In its idle movement the finger may contact the strip, but spring 41 enables it resiliently to react to pressure by the face of the filing strip, so that the strip will not be injured. When an aperture is engaged by the finger, the apertured portion will be directed down and to the right, Fig. 1, and eventually the cam profile 44 will cause it to disengage the aperture in the strip, engagement and disengagement being facilitated by the finger being pivoted to the disc 38 on an axis eccentric to that of rotation of the disc, as illustrated.

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 a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a finger having, at intervals, strip bowing movement relative to the separated interval of filing strip, and a finger receiving aperture at each of certain intervals in the filing strip selective of bowing coaction between such strip and finger for certain of said bowing movements.

2. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a finger having strip bowing movement at intervals, in the same direction and movable in a path transverse to that of bowing movement into and out of coactive relation to the strip, said strip constructed to render said bowing movements idle to bow the strip except in said direction.

3. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a finger having strip bowing movement at intervals, in the same direction and movable in a path transverse to that of bowing movement into and out of coactive relation to the strip, said strip constructed to render said bowing movements idle to bow the strip except in said direc-

tion, and having a finger receiving aperture at each of certain intervals selective of bowing coaction between said strip and finger for certain of said bowing movements.

4. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others, fold the same into a book of zigzag leaves on said support, and positively to direct the advance ends of certain leaves of the filing strip in the same predetermined direction relative to said support and in a different direction from the advance ends of certain other leaves thereof irrespective of the order in which said leaves approach said directing means, said means including a strip directing finger movable relative to the filing strip.

5. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a strip directing finger movable relative to said filing strip, and means, including apertures in the filing strip, adapted to coact to engage with said finger and positively direct the strip in zigzag folds to said support, the advance ends of successive leaves immediately succeeding said folds to opposite ends of said support, respectively, and the advance ends of alternate leaves to the same end of said support.

6. In a machine for controlling a record strip for inscription, said strip having a longitudinal series of finger receiving apertures, in combination, strip advancing mechanism, operable at will, and means adapted to fold the advancing strip into a book of zigzag leaves, said means including a strip directing finger movable to enter said apertures and positively direct folding movement of the apertured portions of the strip, and means for causing movement of said finger in timed relation to operation of said strip advancing mechanism.

7. In a machine for controlling a record strip for inscription, in combination, a book support, strip advancing mechanism, operable at will, and means adapted to fold the advancing strip into a book of zigzag leaves on said support, said means including a hook-receiving aperture in each of alternate of the leaves of the strip going to make up said book, a strip directing hook movable to enter and leave said apertures and in a path to direct the advance ends of the apertured leaves in the opposite direction from the advance ends of the other leaves, and means for causing said hook to make its said movements at each leaf advance by said advancing mechanism.

8. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a hook having strip bowing movement, at intervals, in the same direction and movable in a path transverse to that of bowing movement into and out of coactive relation to the filing strip, said filing strip constructed to render said bowing movements idle to bow the strip except in the said direction and having a hook receiving aperture at each of certain intervals selective of bowing coaction between said strip and hook for certain of said bowing movements.

9. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a hook having strip bowing movement, at intervals, in the same direction and movable in a path transverse to that of bowing movement into and out of coactive relation to the filing strip, said filing strip constructed to render said bowing movements idle to bow the strip except in the said direction and having a hook receiving aperture at each of certain intervals selective of bowing coaction between said strip and hook for certain of said bowing movements, said hook adapted resiliently to react to pressure by the face of said filing strip.

10. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a finger having at intervals, strip bowing movement relative to the separated interval of filing strip, and a finger receiving aperture at each of certain intervals in the filing strip selective of bowing coaction between such strip and finger for certain of said bowing movements, a finger carrier movable in an endless path to cause said bowing movement, said finger pivoted to said carrier for aperture disengaging movement transversely of said path.

11. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zig-

zag leaves on said support, said means including a finger having, at intervals, strip bowing movement relative to the separated interval of filing strip, and a finger receiving aperture at each of certain intervals in the filing strip selective of bowing coaction between such strip and finger for certain of said bowing movements, a finger carrier movable in an endless path to cause said bowing movement, said finger pivoted to said carrier for aperture disengaging movement transversely of said path, and a spring adapted pivotally to move said finger to effect aperture engagement.

12. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a finger having, at intervals, strip bowing movement relative to the separated interval of filing strip, and a finger receiving aperture at each of certain intervals in the filing strip selective of bowing coaction between such strip and finger for certain of said bowing movements, a finger carrier movable in an endless path to cause said bowing movement, said finger pivoted to said carrier for aperture disengaging movement transversely of said path, a spring adapted pivotally to move said finger to effect aperture engagement, and a stationary cam adapted to cause aperture disengaging movement of said finger.

13. In a machine adapted for controlling a record strip for inscription, in combination, strip advancing mechanism, a movable strip folding finger past which the strip is advanced by said advancing mechanism, said strip having apertures with which said advancing mechanism co-acts to arrest strip advance at intervals and apertures with which said finger interengages positively to direct folding of intervals of the strip in a zigzag manner and means for causing movement of said finger in timed relation to operation of said strip advancing mechanism.

14. In a machine adapted for controlling a record strip for inscription, in combination, strip advancing mechanism, a movable strip folding finger past which the strip is advanced by said advancing mechanism, said strip having apertures with which said advancing mechanism co-acts to arrest strip advance at intervals and with which said finger interengages positively to direct folding of intervals of the strip in a zigzag manner, said advancing mechanism including a friction feed roll adapted, by interception with an aperture, to arrest strip advance, the apertures for engagement with said finger being out of longitudinal alignment with the apertures intercepted by said roll and means for causing movement of said finger in timed relation to operation of said strip advancing mechanism.

15. In a machine adapted for controlling a record strip for inscription, in combination, strip advancing mechanism, a movable strip folding finger past which the strip is advanced by said advancing mechanism, said strip having apertures with which said advancing mechanism co-acts to arrest strip advance at intervals and with which said finger interengages positively to direct folding of intervals of the strip in a zigzag manner, said mechanism having a relatively stationary member adapted to guide the strip into the path of movement of said finger, said guide member having a slot in the path of movement of said finger and means for causing movement of said finger in timed relation to that of said advancing mechanism.

16. In a machine adapted for controlling a record strip for inscription, in combination, strip advancing mechanism, a movable strip folding finger past which the strip is advanced by said advancing mechanism, said strip having apertures with which said advancing mechanism co-acts to arrest strip advance at intervals and with which said finger interengages positively to direct folding of intervals of the strip in a zigzag manner, said advancing mechanism including a friction feed roll adapted, by interception with an aperture, to arrest strip advance, the apertures for engagement with said finger being out of longitudinal alignment with the apertures intercepted by said roll, a strip supporting rotative disk coaxial with and at one side of said roll and closely adjacent the path of movement of said finger and means for causing movement of said finger in timed relation to that of said advancing mechanism.

17. In a machine adapted for controlling a record strip for inscription, in combination, strip advancing mechanism, a movable strip folding finger past which the strip is advanced by said advancing mechanism, said strip having apertures with which said advancing mechanism co-acts to arrest strip advance at intervals and with which said finger interengages positively to direct folding of intervals of the strip in a zigzag manner, said advancing mechanism including a friction feed roll adapted, by interception with an aperture, to arrest strip advance, the apertures for engagement with said finger being out of longitudinal alignment with the aperture intercepted by said roll, and a strip supporting rotative disk coaxial with and at one side of said roll and closely adjacent the path of movement of said finger, said finger being pivoted to said disk eccen-

tric of the axis of rotation of the disk and being hook shaped.

18. In a machine adapted for controlling a record strip for inscription, in combination, strip advancing mechanism, a movable strip folding finger past which the strip is advanced by said advancing mechanism, said strip having apertures with which said advancing mechanism co-acts to arrest strip advance at intervals and with which said finger interengages positively to direct folding of intervals of the strip in a zigzag manner, said advancing mechanism including a friction feed roll adapted, by interception with an aperture, to arrest strip advance, the apertures for engagement with said finger being out of longitudinal alignment with the apertures intercepted by said roll, and a strip supporting rotative disk coaxial with and at one side of said roll and closely adjacent the path of movement of said finger, said finger being pivoted to said disk eccentric of the axis of rotation of the disk and being hook shaped, a spring movable with said disk adapted to project said finger outwardly from said disk on the pivotal axis, and a relatively stationary cam for retracting said finger inwardly of said disk.

19. In a machine adapted for controlling a record strip for inscription, in combination, strip advancing mechanism, a movable strip folding finger past which the strip is advanced by said advancing mechanism, said strip having apertures with which said advancing mechanism coacts to arrest strip advance at intervals and with which said finger interengages positively to direct folding of intervals of the strip in zigzag manner, said advancing mechanism including a friction feed roll adapted, by interception with an aperture, to arrest strip advance, the apertures for engagement with said finger being out of longitudinal alignment with the apertures intercepted by said roll, and a strip supporting rotative disk coaxial with and at one side of said roll and closely adjacent the path of movement of said finger, said finger being pivoted to said disk eccentric of the axis of rotation of the disk and being hook shaped, a spring movable with said disk adapted to project said finger outwardly from said disk on the pivotal axis, a relatively stationary cam for retracting said finger inwardly of said disk, and means carried by said disk adapted to limit the extent of said outward movement of said finger.

20. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a casing having a platen, strip advancing mechanism including a rotatable shaft, a friction feed roll affixed to said shaft and adapted for advancing the strips across said platen, a cross-piece carried by the casing adapted to coact with the filing strip to separate it from the others and divert it into the casing as it advances, a rotatable disk on said shaft adjacent one end of said platen and coaxial with said feed roll, a strip folding finger pivoted to said disk for movement cross-wise of the edge thereof, a stationary cam mounted in said casing adjacent the path of rotation of said disk adapted to move said finger on its pivotal axis inwardly of said disk, and a spring rotatable with said disk adapted to project said finger outwardly of said disk when permitted by said cam.

21. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a casing having a platen, strip advancing mechanism including a rotatable shaft, a friction feed roll affixed to said shaft and adapted for advancing the strips across said platen, a cross-piece carried by the casing adapted to coact with the filing strip to separate it from the others and divert it into the casing as it advances, a rotatable disk on said shaft adjacent one end of said platen and coaxial with said feed roll, a strip folding finger pivoted to said disk for movement cross-wise of the edge thereof, a stationary cam mounted in said casing adjacent the path of rotation of said disk adapted to move said finger on its pivotal axis inwardly of said disk, a spring rotatable with said disk adapted to project said finger outwardly of said disk when permitted by said cam, said finger having a cam follower extending through a slot in said disk into alignment with said cam, and said cross-piece having a curved portion depending in said casing close to said disk and having a slot in alignment with the pivotal movement of said finger.

22. In a machine for controlling advance of relatively superposed record strips, including a filing strip, for manifold inscription, in combination, a platen, a book support, means adapted to separate said filing strip from the others and fold the same into a book of zigzag leaves on said support, said means including a finger having, at intervals, strip bowing movement relative to the separated interval of filing strip and in a direction reverse to that of strip advance to said platen, and a finger receiving aperture at each of certain intervals in the filing strip selective of bowing coaction between such strip and finger for certain of said bowing movements.

23. In a machine for controlling advance of superposed record strips, including a filing strip, for manifold inscription, in combination, a casing having a book support and adapted to contain a record supply packet, said packet including a filing strip folded zigzag, means adapted to feed the

filing strip from said packet at intervals, a platen over which said filing strip is advanced by said feed means, and means adapted to refold said filing strip zigzag on said support, said refolding means including a finger having strip bowing movement at intervals and past which said filing strip is advanced by said feed means, and means, including finger receiving apertures in the filing strip, for causing bowing movement of said finger positively to direct zigzag refolding movement between the leaves of the filing strip in accordance with the refolding tendency engendered by its folded condition in said supply packet.

In testimony whereof I affix my signature.

CLARENCE L. JOHNSTON.