

Nov. 17, 1925.

1,562,271

L. K. ALDRICH

AUTOMATIC REGISTER

Filed June 27, 1925

2 Sheets-Sheet 1

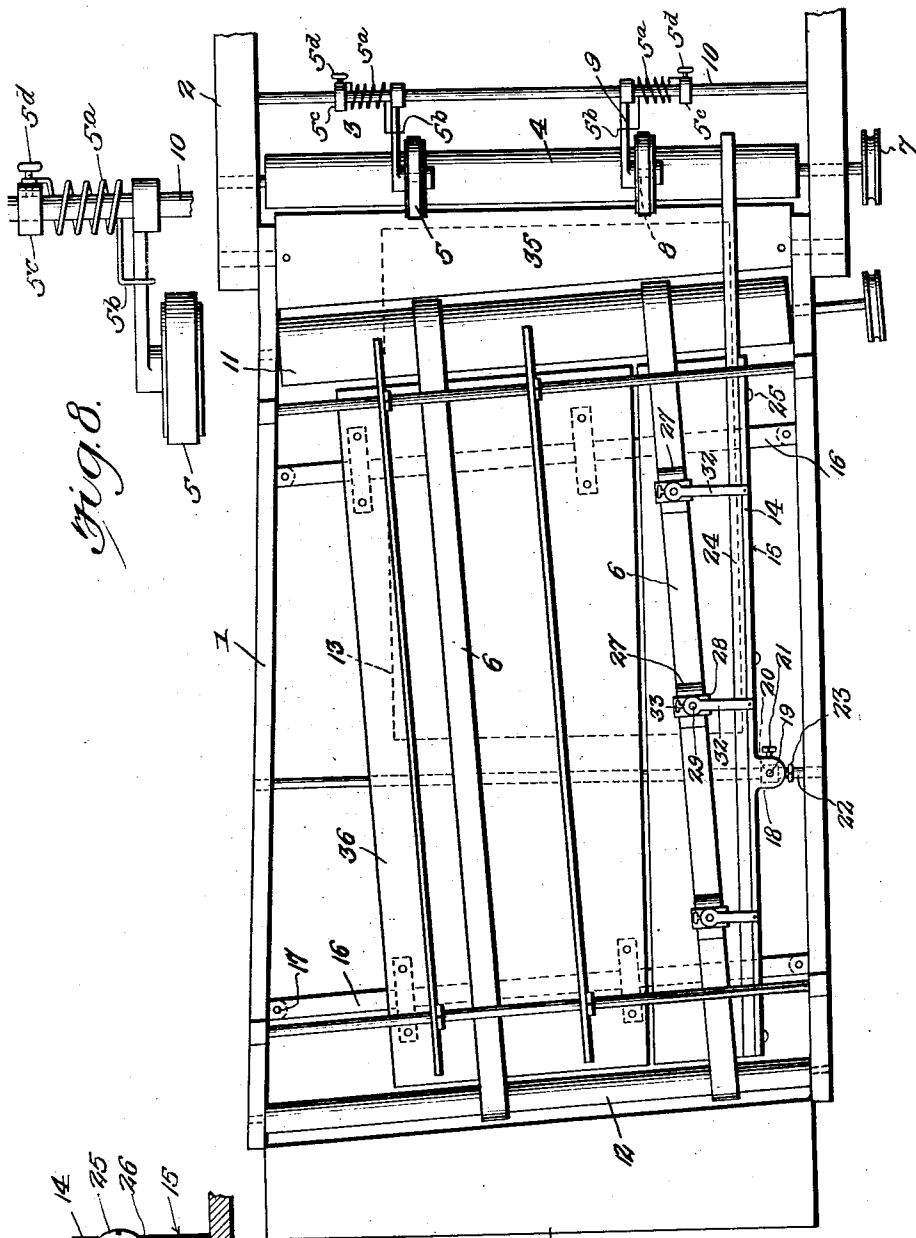


Fig. 8.

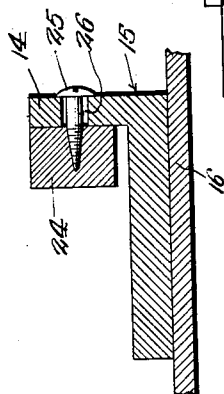


Fig. 7.

Fig. 1.

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By

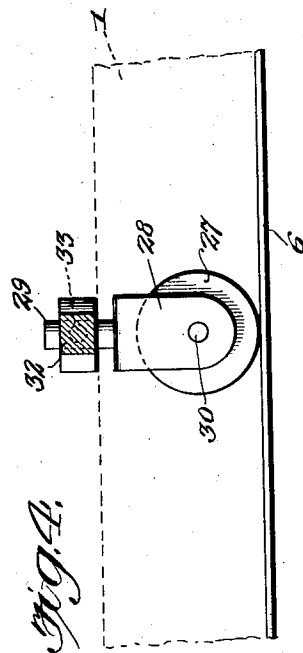
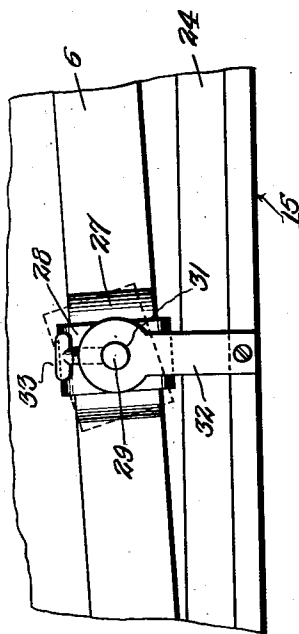
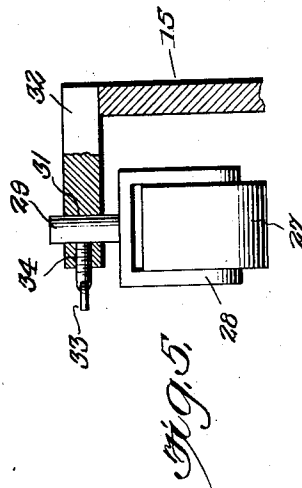
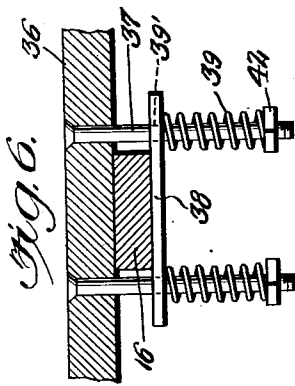
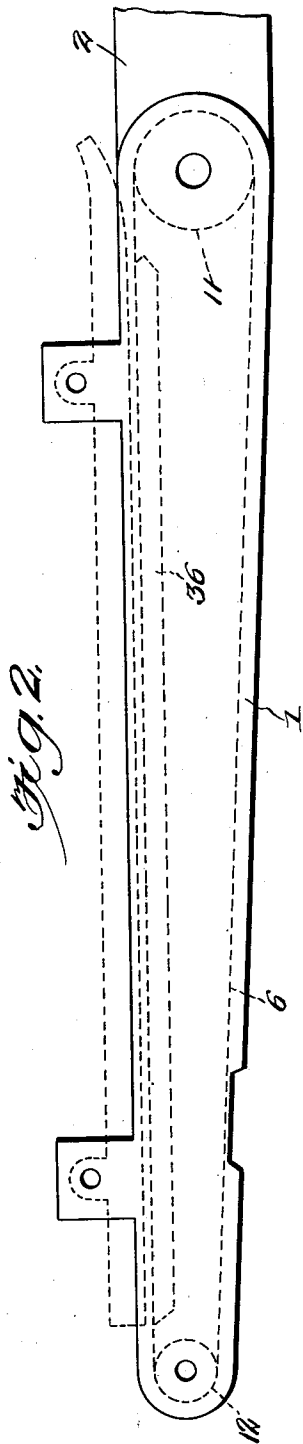
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

LESTER KYLE ALDRICH, OF SIDNEY, OHIO.

AUTOMATIC REGISTER.

Application filed June 27, 1925. Serial No. 39,991.

To all whom it may concern:

Be it known that LESTER KYLE ALDRICH, a citizen of the United States, residing at Sidney, in the county of Shelby and State of Ohio, has invented certain new and useful Improvements in Automatic Registers, of which the following is a specification.

The invention relates to an automatic register for registering sheets of paper for folders, ruling machines, perforators, stitchers, presses and other machines and is an improvement on the automatic register shown and described in my application, Serial No. 745,259, filed October 22, 1924.

The object of the present invention is to improve the construction of automatic registers and to provide a simple, practical and efficient register designed for use between an automatic feeder and a machine to which the sheets are to be fed and adapted particularly for affording better results than heretofore, when operating on cardboard or sheets which have been folded previous to being fed into the automatic register.

A further object of the invention is to provide a machine of this character equipped with diagonally arranged tapes adapted for moving the sheets laterally into contact with a side guide and provided with means for increasing or modifying the effect of the lateral feed or movement of the diagonal tapes without altering either the position or the speed of the tapes whereby folded sheet cardboard and other stock may be more advantageously handled or operated on by an automatic register than heretofore.

With these and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Figure 1 is a plan view of an automatic register constructed in accordance with this invention.

Fig. 2 is a side elevation of the same for convenience of illustration.

Fig. 3 is an enlarged plan view of a portion of the automatic register showing one

of the adjustable rollers in full lines in parallelism with the coacting diagonal tape and arranged in dotted lines at an angle to the tape.

Fig. 4 is a side elevation of the same.

Fig. 5 is a transverse sectional view illustrating the manner of mounting the adjustable roller.

Fig. 6 is a detail view illustrating the manner of mounting the adjustable paper supporting table.

Fig. 7 is a transverse sectional view of the side of the side guide.

Fig. 8 is an enlarged detail view of one of the spring pressed spools.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention the automatic register, which in practice is designed to be located between an automatic feeder and a folder or other machine to be supplied with the sheets from the automatic feeder comprises in its construction, a sub-frame 1 composed of parallel side bars and suitable connecting bars hereinafter described. One end of the sub-frame in Fig. 1 of the drawings is shown connected with a portion 2 of an automatic feeder or between two folders, or between different parts of a folder, to carry sheets in perfect alignment for following operations, but it will be readily understood that the automatic register is adapted to operate on sheets fed by hand. The sheets from the feed table 3 of the automatic feeder are delivered successively to a front transversely straight feed roller 4 and are gripped on the same by rubber covered spools 5 and the sheet of paper is fed forward in a straight direction over the automatic register the full length of the sheet without having its straight advancing movement affected by diagonal feed tapes 6 of the automatic register until the sheet is released by the said advancing means formed by the front feed roller 4 and the rubber covered spools 5. The feed roller 4 is preferably constructed of steel but it may of course be made of any other suitable material and it is journaled in suitable bearings of the adjacent portion 2 of the automatic feeder and it is equipped at one end with a grooved pulley or sheave 7. The rubber covered spools or rotary elements 5 are suitably mounted on laterally extending journals 8 of arms 9 extending forwardly from a transverse rod or shaft 10 mounted in the por-

tion 2 of the frame of the automatic feeder as clearly shown in Fig 1 but the front feed roller 4 and the rubber covered spools 5 may be mounted in any other desired manner as will be readily understood. The arms 9 which carry the rubber covered spools are actuated by coiled springs 5^a mounted on the rod 10 and having its end 5^b engaging the arm 9 and connected at its other end with an adjustable collar 5^c also mounted on the rod 10 and equipped with a clamping screw 5^d. By this construction the desired pressure may be applied to the sheet and the pressure may be increased or diminished by the adjustment of the collar 5^c. Heavy stock has a tendency to move sidewise with the diagonal tapes in leaving the feeder and additional pressure on the opposite side will equalize or compensate for this tendency. By this means the sheet will be positively advanced into the automatic register the full length of the sheet without being moved laterally by the diagonal feed tapes 6 until the sheet is released by the front advancing means and has passed entirely beyond the same, as illustrated in dotted lines in Figure 1 of the drawings.

The diagonal feed tapes are arranged on front and rear rollers 11 and 12, disposed in parallelism and arranged at an angle to the straight transverse front feed roller 4 and at an angle to the straight forward movement of the sheet 13 in entering the automatic register. As soon as the sheet 13 is released by the front feeding or advancing means, it is moved laterally into contact with a vertical guide or portion 14 of a registering gauge 15. The registering gauge 15 is L-shaped in cross section being composed of a horizontal bottom paper receiving portion and an outer vertical guide or portion 14 which receives and guides one of the side edges of the sheet of paper. The sheet 13 is advanced over the register with one of its side edges arranged approximately a quarter of an inch from the vertical guide 14 of the registering gauge 15 and it is maintained in such position with relation to the guide 14 until the sheet of paper is advanced its full length over the register and is released by the front advancing means. The sheet 13 is then acted on by the feed tape 6 and is moved laterally a sufficient distance to carry its side edge into contact with the vertical guide 14, and it is then carried forward without lateral movement and maintained in perfect register and alignment until it passes into the machine to be fed so that the sheets entering the machine will be in perfect alignment and register. The gauge is supported upon transverse connecting and supporting bars 16 arranged in parallelism with the angularly disposed tape rollers 11 and 12 and suitably secured at their ends at 17 to the

sides of the sub-frame 1. The horizontal portion of the registering gauge is arranged upon the upper faces of the said bars 16 and the said gauge is provided at the outer side with an integral sleeve 18, disposed vertically and receiving and secured to a riser arm 19 consisting of a rod provided at its lower end with a suitable sleeve 20, secured by a set screw 21 to a transverse rod or shaft 22. The transverse rod or shaft 22 is straight transversely of the register and is in parallelism with the front feed roller 4 and is arranged at right angles to the parallel sides of the sub-frame, and it forms a support and a guide for the riser arm 19, to permit lateral adjustment of the same and the gauge. The registering gauge has a pivotal movement or adjustment on the riser arm and is secured in proper position with relation to the machine to be fed by means of a set screw 23 or other suitable fastening means and after the gauge has been once set in square registering adjustment, it will be maintained in such adjustment by the set screw 23 and may be adjusted laterally on the transverse guide rod 22 without affecting its square registering position.

The vertical longitudinal guide of the registering gauge is provided at its inner side with a longitudinal guard 24 preferably constructed of wood secured by screws 25 or other suitable fastening means to the guide 14 and arranged slightly above and in spaced relation to the bottom supporting portion of the registering gauge. The sheet 13 as shown in dotted lines in Fig. 1 of the drawing, passes on to the automatic register with one of its side edges under the guard 24 and it is maintained in such position with relation to the guard and the guide during the passage of the sheet through the automatic register. The guard is adjustable vertically to vary the distance between its lower face and the bottom of the gauge to adapt it to the character of the paper passing through the automatic register and this adjustment may be effected by means of slots 26 in the guide 14 or any other suitable means. The guard prevents the curly edge of paper from turning up when it comes in contact with the vertical guide for registration and steel rollers 27 hereinafter described are arranged relatively close to the guide 14 to stiffen and increase the resistance of the sheets and even extremely light stock will not buckle when it comes in contact with the vertical guide if the said rollers 27 are employed.

The adjustable rollers which may be of any desired number and which are designed to be constructed of steel or other suitable material are each mounted in a holder 28 consisting of a lower bifurcated body portion and a vertical pivoted stem 29. The lower bifurcated body portion consists of

spaced sides connected at the top and provided at their lower portions with aligned openings for the reception of a transverse shaft or spindle 30 upon which the roller 5 is mounted. The roller may be journaled between the sides of the holder in any desired manner as will be readily understood and the vertical stem 29 which is preferably formed integral with the body portion 10 extends upwardly from the center of the connecting top portion of the body and is arranged in an opening 31 of a horizontal arm 32 extending forward from the side guide of the gauge and terminating at a point above the adjacent diagonally arranged tape. The eye or opening 31 forms a bearing for the stem 29 which constitutes a pivot for horizontal rotary adjustment of the holder to enable the roller which may be raised or lowered to be also adjusted and arranged either in parallelism with the diagonally arranged tape or at an angle to the same as illustrated in dotted lines in Fig. 3 of the drawing. The roller is raised and lowered to arrange it in proper position with relation to the diagonal tape and the paper for maintaining the desired contact between the sheets of paper and the tape and the angular adjustment of the roller with relation to the tape is to enable the lateral feeding movement of the tape to be increased or modified by the resulting effect of the same. This construction will be found particularly advantageous in the registering of sheets of cardboard or sheets of paper which have been folded previous to their being fed into the automatic register. The roller is secured in its adjustment by suitable clamping means preferably in the form of a thumb screw 33 arranged horizontally and mounted in an opening 34 in the end of the arm 32. The threaded opening 34 communicates with the vertical eye or opening in the end of the arm and the thumb screw 33 engages the stem 29 and clamps the same firmly in its vertical and angular or rotary adjustment for maintaining the roller in proper position with relation to the feed tape. By arranging the roller in the dotted line position illustrated in Fig. 3 the lateral feeding action of the diagonal tapes will be increased and it will be apparent that the latter movement of the sheets of paper to carry them into contact with the side guide of the gauge may be increased or lessened without necessitating any change in the position of the diagonal tapes or the speed of the same. The adjustable rollers will enable the action of the feed tapes to be adjusted to suit the character of the stock and the construction will be found particularly advantageous when feeding cardboard or sheets of paper which have been folded previous to registering.

The adjustment of the rollers enables the same to be arranged either in parallelism with the diagonal tapes or at a greater or less angle to the same and also at the desired elevation. When the rollers are arranged at a greater angle than that of the diagonal tape the device will move cardboard or folded sheets over the gauge much quicker than the tapes alone and on this stock when the rollers are set parallel with the tape 6 quick side or lateral feeding movement will be more mild.

The space between the front feed roller 4 and the front tape roller 11 is closed by a fixed paper supporting board or member 35 and the adjustable paper supporting table 36 substantially fills the space between the rollers 11 and 12, sufficient space being provided at the side opposite the registering gauge to provide for the desired adjustment of the paper supporting table and the gauge to arrange the matter in proper position with relation to the automatic feeder for feeding the sheets of the required size. The table which is supported upon the transverse bar 16 is yieldably maintained in its adjustment by means of resilient clamping means composed of spaced screws 37, a clamping plate 38, and springs 39. The plate is provided with openings 39' to receive the bolts or screws 37 and it is maintained in engagement with the lower face of the transverse supporting bar 16 by the coiled springs 39 which are arranged on the lower portions of the screws 37 and which have their tension adjusted by nuts 42. The springs operate to force the clamping plate 38 upward and draw the adjustable table downward so that the transverse bar is clamped with sufficient frictional force to maintain the table in its adjustment. This will also enable the table to be adjusted laterally of the registering device without necessitating the adjustment of any fastening devices such as set screws or the like.

The sheets of paper are either fed by hand or automatically to the front feeding or sheet advancing means, and the sheet will then travel in an approximately straight line clearing the vertical guide of the registering gauge about a quarter of an inch until the tail end of the sheet has passed the front feeding means. This movement in a straight direction carries the sheet within the automatic register its full length before it is affected by the diagonal or angular feed tapes which then causes the sheet to travel or move sideways in a parallel manner a distance of about a quarter of an inch until the side edge of the sheet comes in contact with the vertical guide of the registering gauge after which the sheet travels in a perfectly straight line across the receiving plate 43 into the machine to be fed and any variation in paper feeding either

by hand or by an automatic feeding machine will be automatically and positively corrected before the sheets enter the machine to be fed, and the lateral movement may be accelerated or modified to suit the character and condition of the sheets without in any way necessitating any modification in the arrangement of the lateral feed tapes or the speed of the same.

10 What I claim is:

1. An automatic register comprising a side guide against which the sheets are to be registered, diagonally arranged feed tapes for moving the sheets laterally into contact with the guide and means for varying the lateral feed or movement of the sheets by the said tapes without changing the position of the tapes or varying the speed of the same, said means including spaced devices capable of independent angular adjustment.

2. An automatic register comprising a side guide against which the sheets are to be registered, diagonally arranged feed tapes for moving the sheets laterally into contact with the guide, and an angular adjustable rotary element located above and coacting with a diagonal feed tape and adapted to increase or modify the lateral feed or movement of the sheets by the feed tape.

3. An automatic register comprising a side guide against which the sheets are to be registered, diagonally arranged feed tapes for moving the sheets laterally into contact with the guide and an angular adjustable roller located above a diagonal feed tape and adapted to be arranged in parallelism with the same or at an angle thereto to increase or modify the action of the feed tape in moving the sheets laterally into contact with the guide.

4. An automatic register comprising a side guide against which the sheets are to be registered, diagonally arranged feed tapes for moving the sheets laterally into contact with the guide and an angular adjustable roller located above and coacting with the feed tape and adapted to accelerate or lessen the action of the feed tape in moving the sheets laterally and adjustable vertically to produce the desired contact between the sheet and the tape.

5. An automatic register comprising a side guide against which the sheets are to be registered, diagonally arranged feed tapes for moving the sheets laterally into contact with the guide, a roller located above and coacting with a diagonal feed tape and a holder carrying the said roller and having a pivotal adjustment to arrange the roller either in parallelism with the feed tape or at an angle thereto to accelerate or modify the lateral feeding action of the said tape.

6. An automatic register comprising a side guide against which the sheets are to

be registered, diagonally arranged feed tapes for moving the sheets laterally into contact with the guide, a roller located above and coacting with the feed tape, a holder carrying the roller and provided with a vertical pivot and means for mounting the pivot to permit angular adjustment of the roller and for securing the pivot in its adjustment to maintain the roller in position with relation to the feed tape.

7. An automatic register comprising a side guide against which the sheets are to be registered, diagonally arranged feed tapes for moving the sheets laterally into contact with the guide, an arm extending inwardly from the guide and terminating above the feed tape, a holder having a vertical pivot mounted in the arm for vertical movement and rotary adjustment and means carried by the arm for engaging the pivot for securing the holder in its adjustment and a roller mounted in the holder and located above and coacting with a diagonal feed tape.

8. An automatic register comprising a side guide against which the sheets are to be registered, means for advancing the sheets in a straight direction over the registering device with the edge of the sheets in close proximity to the guide, but clear of the same, diagonally arranged feed tapes for moving the sheets laterally into contact with the guide at the completion of the straight advancing movement, and adjustable rollers located above a diagonally arranged feed tape adapted to accelerate or modify the lateral feed of the tapes without changing the speed or arrangement of the same.

9. An automatic register comprising a side guide against which the sheets are to be registered, means for advancing the sheets in a straight direction their full length over the register with the edge of the sheet in close proximity to the guide, diagonally arranged feed tapes for moving the sheet laterally into contact with the guide at the completion of the straight advancing movement, and adjustable rollers located above a diagonally arranged feed tape and adapted to accelerate or modify the lateral feed of the tapes without changing the speed or arrangement of the same.

10. An automatic register comprising a side guide, diagonally arranged feed tapes for moving a sheet laterally into contact with the guide, means for advancing the sheet in a straight direction over the diagonal feed tapes without change of direction by the latter and for releasing the sheet to permit the said tapes to move the sheets laterally into contact with the guides at the completion of such straight movement, and adjustable rollers located above a diagonally arranged feed tape and adapted to accelerate-

ate or modify the lateral feed of the tapes without changing the speed or arrangement of the same.

11. An automatic register comprising a side guide, diagonally arranged feed tapes for moving a sheet laterally into contact with the guide, means for advancing the sheet in a straight direction over the diagonal feed tapes, its full length without changing direction by the said tapes and for releasing the sheet to permit the said tapes to move the sheet laterally into contact with the guide at the completion of the said straight movement, and adjustable rollers located above a diagonally arranged feed tape and adapted to accelerate or modify the lateral feed of the tapes without changing the speed or arrangement of the same.

12. An automatic register comprising a side guide, diagonally arranged feed tapes for moving a sheet laterally into contact with the guide, means for advancing the sheet in a straight direction over the diagonal feed tapes without change of direction of the sheet and while in close proximity to the said guide, and for releasing the sheet at the completion of such straight movement to permit the tapes to carry the sheet into contact with the said guide, and adjustable rollers located above a diagonally arranged feed tape and adapted to accelerate or modify the lateral feed of the tapes without changing the speed or arrangement of the same.

13. An automatic register comprising a side guide, against which the sheets are registered, a guard carried by the guide, diag-

onally arranged feed tapes for moving a sheet laterally into contact with the guide, means for advancing the sheet in a straight direction over the diagonal tapes and under the said guard in close proximity to the guide, and for releasing the sheet at the completion of such straight movement to permit the said tapes to move the sheet laterally into contact with the guides, and adjustable rollers located above a diagonally arranged feed tape and adapted to accelerate or modify the lateral feed of the tapes without changing the speed or arrangement of the same.

14. An automatic register comprising a side guide, diagonally arranged feed tapes for moving a sheet laterally into contact with the guide, adjustable rollers located above the diagonally arranged feed tapes and adapted to accelerate or modify the lateral feed of the tapes without changing the speed or the arrangement of the same and means for advancing the sheets in a straight direction over the register, said means including a straight transverse feed roller and a plurality of spring pressed independently controlled spools cooperating with the straight transverse feed roller for advancing the sheet in a straight direction over the registering device with the edge of the sheets in close proximity to the guide but clear of the same until the sheet has passed completely into the automatic register.

In testimony whereof I affix my signature.

LESTER KYLE ALDRICH.