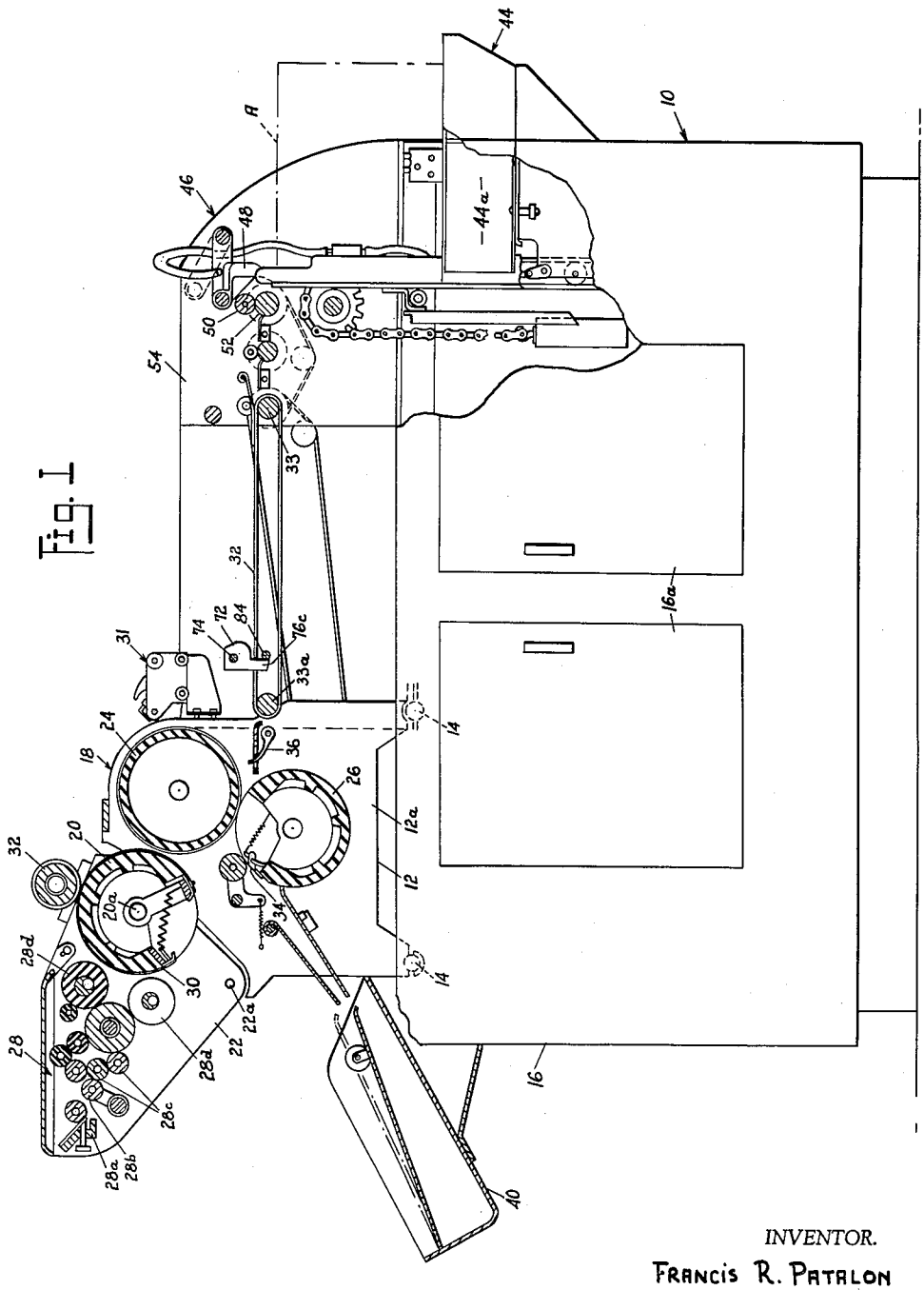
Feb. 27, 1962 F. R. PATALON 3,022,998

PRINTING APPARATUS

Filed April 27, 1960 3 Sheets-Sheet 1

Fig. 1



INVENTOR.
FRANCIS R. PATALON

BY

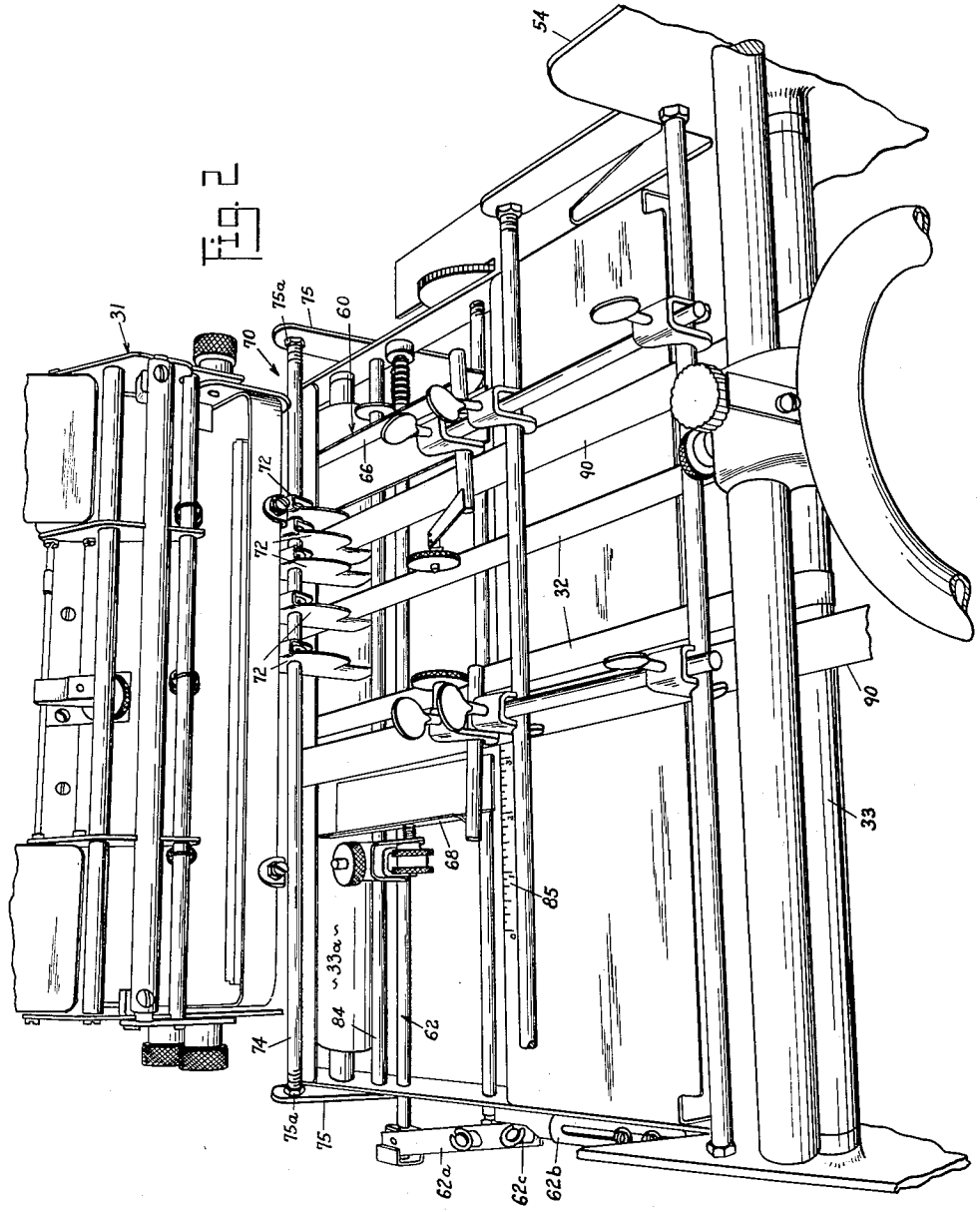
Teare & Felzer
ATTORNEYS

Feb. 27, 1962 F. R. PATALON 3,022,998

PRINTING APPARATUS

Filed April 27, 1960 3 Sheets-Sheet 2

Fig. 2



INVENTOR.
FRANCIS R. PATALON

BY

Teare & Fetzer
ATTORNEYS

Feb. 27, 1962 F. R. PATALON 3,022,998

PRINTING APPARATUS

Filed April 27, 1960 3 Sheets-Sheet 3

Fig. 5

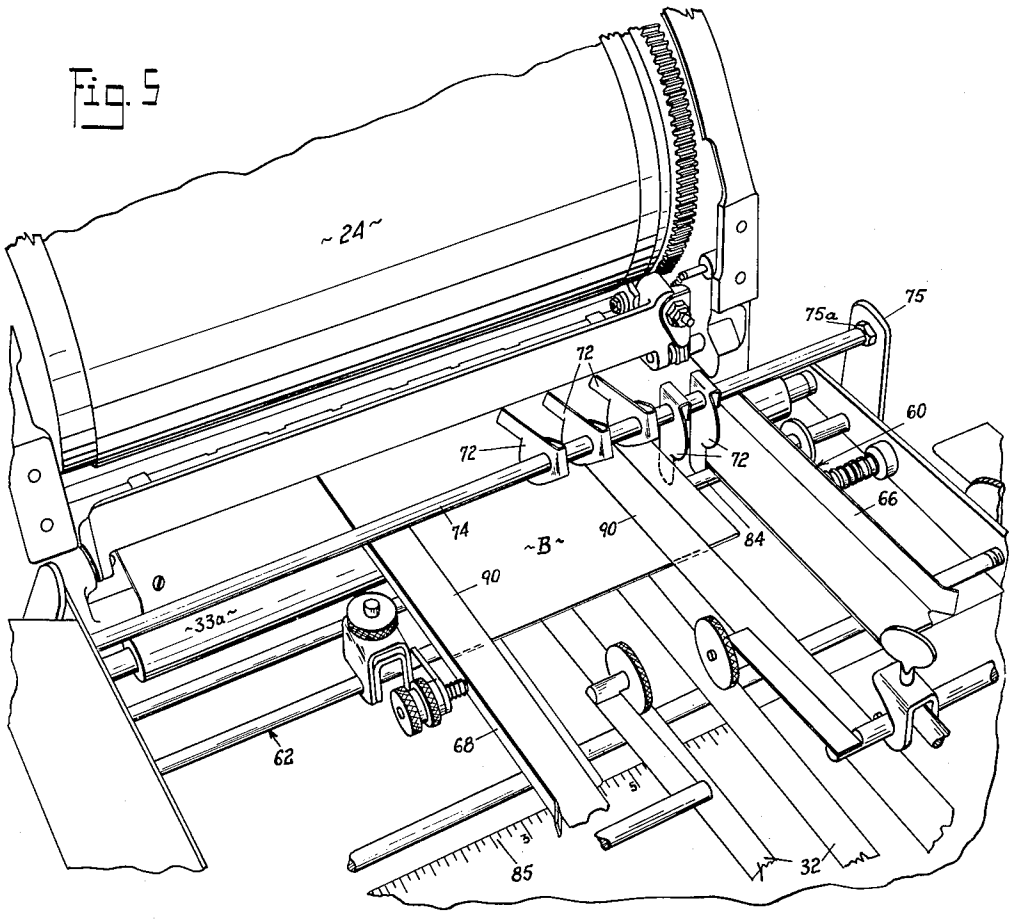


Fig. 6

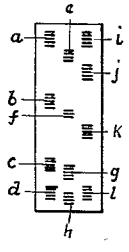


Fig. 7

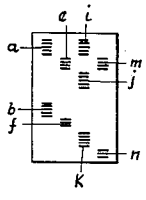
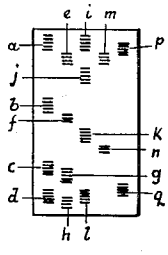


Fig. 8



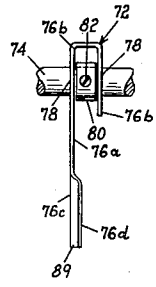


Fig. 3

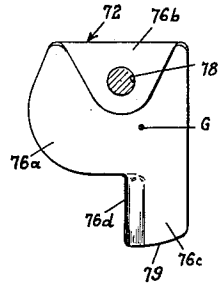


Fig. 4

INVENTOR.

FRANCIS R. PATALON

BY

Teare & Fetzer

ATTORNEYS

United States Patent Office 3,022,998 Patented Feb. 27, 1962

3,022,998

PRINTING APPARATUS

Francis R. Patalon, Willowick, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio, a corporation of Delaware

Filed Apr. 27, 1960, Ser. No. 24,953
14 Claims. (Cl. 271—49)

This invention relates to improvements in or relating to printing machines, and particularly to an improved arrangement for positioning or side registering various widths of work sheets on the conveyor of a printing or duplicating machine.

Heretofore, work sheets of varying widths could not be registered on the conveyor without repositioning the various conventional side guiding elements of the machine, such as the jogger side guide and feeder side guide, and for each of the different sizes of sheets being run.

In many instances, such as for instance in the insurance field, it is desirable to be able to imprint only various portions of the data or image carried by the master printing cylinder or printing plate, on particular copy sheets or business forms, and to imprint more or less of such data on other copy sheets or business forms. In the past, in order to provide a fairly efficient arrangement, deletion of information from the master plate in a direction circumferentially thereof was generally accomplished by using various lengths of copy sheets, but all of the same width, the latter representing an arrangement whereby information from the master printing cylinder could be deleted upon imprinting of the business forms or copy sheets, but still providing for proper side registration of the copy sheets or business forms on the conveyor of the printing apparatus without continual repositioning of the side guide elements.

The present invention provides a novel arrangement for printing or duplicating apparatus wherein information can be deleted from the master printing plate both in a direction circumferentially thereof as aforementioned, and also in a direction transverse thereof, by providing novel guiding means mounted adjacent the conveyor of the printing apparatus and automatically providing for proper side registration of various widths and/or lengths of copy sheets, prior to their being imprinted by the printing mechanism of the apparatus.

Accordingly an object of the invention is to provide an improved printing or duplicating apparatus embodying guide means for automatically providing proper side registration for various widths of copy sheets to be imprinted by such apparatus.

Another object of the invention is to provide a novel guiding arrangement for printing or duplicating apparatus, to accomplish automatic side registration for various widths of copy sheets to be imprinted by such apparatus.

A further object of the invention is to provide a guiding arrangement for printing or duplicating apparatus comprising a plurality of guiding elements adapted to be positioned above the conventional conveyor of such apparatus and pivotally mounted with respect to such conveyor, for accomplishing automatic side registration of various widths of copy sheets to be imprinted by the apparatus.

A still further object of the invention is to provide a simplified and economical guiding arrangement for printing or duplicating apparatus, and one which can be readily embodied in existing printing machines and which can

be easily embodied in new printing machines, and which provides for automatic side registration for various widths of copy sheets to be imprinted by the machine.

Briefly, the foregoing objects are accomplished by the provision of a series of side guide elements mounted adjacent the conveyor of the feeding mechanism of the printing or duplicating apparatus, ahead of front registering printing position. The guide elements are laterally spaced with respect to one another and transversely of the printing mechanism to provide side registration of copy sheets, according to the various widths of copy sheets to be run and imprinted by the printing mechanism, and with such guide elements being pivotable in generally vertical planes to be moved out of interfering relation with wider widths of copy sheets, as the latter move to front registering printing position.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a substantially central, longitudinal vertical section through a printing or duplicating apparatus embodying the instant invention;

FIG. 2 is an enlarged, fragmentary, generally top perspective view of the printing apparatus and associated conveyor mechanism of FIG. 1, illustrating the guide elements of the invention mounted above the conveyor mechanism and in normal resposed condition;

FIG. 3 is an enlarged, front end elevational view of one of the aforementioned guide elements as mounted on its supporting rod;

FIG. 4 is an enlarged, side elevational view of the guide element illustrated in FIG. 3, taken from the right hand side thereof;

FIG. 5 is an enlarged, fragmentary, generally top perspective view, illustrating one width of copy sheet passing into front registering position after having pivoted certain of the guide elements upwardly out of interfering relation therewith, while being properly side registered by another of the non-pivoted guide elements;

FIGS. 6, 7 and 8 are reduced size, top plan views of various widths and lengths of copy sheets or business forms, which have been imprinted by the printing mechanism after automatic side registration of the same by the guiding means of the instant invention, and illustrating in diagrammatic form thereon the deletion of certain material found on the master printing plate from the narrower copy sheets, while the wider copy sheets include printed information as found on such master printing plate, and in a direction transverse of the master printing plate and associated copy sheets; the shorter length copy sheet (FIG. 7) also illustrates the deletion of printed matter therefrom as found on the master printing plate, and in a direction circumferentially of the latter.

Referring now particularly to FIG. 1, there is illustrated a printing or duplicating machine **10** which includes a frame **12** comprising a pair of spaced side plates **12***a* (only one of which is shown due to the vertical sectional nature of FIG. 1) supported on cross frame members **14** of a cabinet **16**. Cabinet **16** is preferably provided with doors **16***a* to permit access to the interior thereof.

A printing mechanism **18** is mounted on frame **12** at the left hand end of machine **10**. Such printing mechanism, in the embodiment illustrated, broadly comprises a master or form cylinder **20** rotatably journaled on a shaft **20***a* which extends between and is rotatably mounted on a supplemental frame **22** which is journaled as at **22***a* to aforementioned frame **12**. The printing mechanism

may also comprise an offset or transfer cylinder 24 rotatably journaled on side plates 12*a*, and a platen roller or cylinder 26 likewise journaled on side plates 12*a*.

A suitable inking mechanism 28 is also mounted, in the embodiment illustrated, on supplemental frame 22, such inking mechanism preferably including an ink fountain 28*a*, a ductor roll 28*b*, a series of distributing rolls 28*c*, and one or more form rolls 28*d*. The form roll applies ink to a printing or master plate 30 which is removably secured to and extends about the periphery of the master cylinder 20. The supplemental frame 22 may also support a repellant applicator mechanism 32 for applying ink repellant to the master printing plate 30 in the usual manner. A conventional cleaning device 31 may be mounted on the machine for cleaning the inked surface of transfer cylinder 24.

Copy sheets or business forms A (FIG. 1) to be printed are moved forwardly to the printing mechanism by a series of endless movable tapes 32 supported by rollers 33, 33*a* and which tapes 32 forward the sheets to a sheet gripper 34 carried by the platen roller 26. Suitable timing devices, including conventional stop fingers 36, accurately time the entrance of the sheets to the grippers, and likewise a sheet ejector mechanism, not shown, may cooperate with the gripper 34 to strip the imprinted sheet from the platen roller, and guide it to a discharge receptacle 40.

The printing mechanism above described is of the general duplicating types shown in United States Patent 2,813,484, issued November 19, 1957, to Adrian B. Pratt, and reference is made to such patent for more detailed description of details including the mounting of the printing plate, the sheet gripping and stripping mechanism, and various other details.

The printing mechanism may be driven by an electric motor disposed within the cabinet 16 and drivingly connected to the platen cylinder by driving elements including belts, pulleys and gears. The master cylinder 20, the transfer cylinder 24 and the platen cylinder 26 are provided with interengaging gearing so that each cylinder will be driven in synchronism with the other and in the conventional manner.

The copy sheets are stored or placed in a pile or stack in a feed magazine mechanism 44. This mechanism may include a table or platform 44*a* on which the stack rests. The table is preferably slidably mounted for vertical movement in the cabinet 16 and is preferably raised automatically at predetermined intervals to maintain the uppermost sheet in the stack substantially in a predetermined horizontal plane where it may be conveniently engaged by the sheet separating mechanism 46 and as disclosed in the aforementioned patent. This sheet separating mechanism may be of any suitable type, and in the embodiment illustrated briefly includes a suction foot 48 positioned above the forward end of the stack with such foot being adapted to be lowered into contact with the uppermost sheet in the stack and thus draw the sheet into contact with the lower base of the foot. The foot is then automatically raised to lift such sheet from the stack and move the same forward to be inserted into the bite of a pair of feed rollers 50, 52, which are rotatably mounted between spaced separator frame plates 54 carried by the cabinet 16. When the sheet has been inserted into the bite of the feed rollers, the suction is released so that the rolls 50, 52 may advance the sheets toward the printing mechanism 18. The suction foot is then returned to its initial position relative to the stack and the cycle of operation repeated. Reference may be had to the aforementioned United States Patent 2,813,484 for a more detailed description of sheet separating mechanism.

Referring now in particular to FIG. 2, reference number 60 designates conventional and well known right hand side register mechanism as conventionally found on printing machines of the aforediscussed type, and reference number 62 refers to the conventional left hand side register mechanism known in the art as a paper jogger, which is automatically actuated by means of jogger lever, cam, and roll mechanism 62*a*, 62*b* and 62*c*, to register a copy sheet between the guide plate 66 of the right hand side register mechanism 60 and the jogger side guide plate 68 in conventional machines adapted for use with uniform widths of copy sheets. It will be seen, therefore, that with heretofore known arrangements it was necessary to use standard widths of copy sheets for a particular run, in order to obtain proper side registration of the sheets when at front registering position and before entry thereof into the bite of the printing mechanism.

In accordance with the instant invention, novel means 70 is provided for properly registering copy sheets of various widths, as they are carried by the conveyor 32 to the printing mechanism of the apparatus. Such means 70 comprises a plurality, in the embodiment illustrated, of guiding elements 72 pivotally mounted on cross member or shaft 74 extending above the conveyor or sheet forwarding mechanism. Shaft 74 is supported by brackets 75 and is preferably detachable therefrom as by means of nuts 75*a*. Each of said guide elements, in the embodiment illustrated, includes a plate-like member (FIGS. 3 and 4) comprising a generally flat body portion 76*a* adapted to be oriented in a generally vertical plane extending generally parallel to the movement of the conveyor and to the longitudinal vertical center plane of the machine, and including a reverse bend head portion 76*b*. Axially aligned openings 78 are provided through the reverse bend head portion 76*b* for pivotally mounting the guide element on shaft 74. A detachable collar 80 is disposed intermediate the head portion 76*b*, when the guide element is in mounted relation on the shaft 74, with such collar including suitable means, such as a threaded set screw 82, for securing the collar to the shaft 74, and thus fixing the position of the guide element on the shaft in a direction axially of the shaft, while permitting pivotal movement of the guide element in a generally vertical plane with respect to the shaft 74. There is preferably provided sufficient clearance between collar 80 and the confronting surfaces of the guiding element for free pivotal movement of the guiding element with respect to shaft 74. The guiding elements are preferably formed of aluminum sheet or some such relatively light metal, and having a relatively smooth surface thereon, for ready pivoting of the guide elements when actuated by the copy sheets and for ready relative sliding movement between the copy sheets and the guide elements, as will be hereinafter discussed.

The body portion 76*a* of each guide element is provided with a foot portion 76*c* depending therefrom, with the forward edge 76*d* of such foot portion being bent diagonally in a laterally inward direction, or in a direction opposite to the side of the sheet adapted to be jogged by the jogger mechanism 62 and as can be best seen in FIG. 3. This obliquely disposed edge of the foot portion 76*c* provides for guiding the leading edge of a copy sheet, traveling to front registered printing position on the conveyor, intermediate the side jogger guide 68 and the remainder of the foot portion 76*c*, for proper side registration of such copy sheet. The bottom edge 79 of the foot portion is sloped diagonally upwardly in a rearward direction as will be best seen in FIG. 4, to ensure clearance between the foot portion and the rear conveyor driving roller 33*a* of the conveyor, when such guiding element is pivoted rearwardly and upwardly by a copy sheet.

It will be seen that in the embodiment illustrated, the center of gravity G of the guide element is preferably disposed rearwardly of a vertical plane passing through the axes of openings 78 in the guide element, due to the disposition of the foot portion adjacent the rearward edge of the guide element. Such an arrangement provides for

increased speed of a guide element in its return from a pivoted to a non-pivoted condition. Thus the foot portion 76c is adapted to engage cross bar member 84 which acts as a stop to limit the forward pivotal movement of the guiding element and maintain it in proper condition for side registering the copy sheets. While a specific configuration of guiding element has been illustrated, it will be understood that various other configurations could be readily provided, the main requirement being that such guide element provide an abutment for side registration of a copy sheet between the guide element and the side jogger mechanism 62 in the non-pivoted condition of the guide element.

Referring now to FIG. 5, operation of the novel guiding means is as follows: Various widths (and possibly various lengths) of copy sheets or business forms, such as for instance are diagrammatically illustrated in FIGS. 6, 7 and 8, are provided in one or more of the feed magazines 44 on the right hand or forward end of the machine, as shown in FIG. 1, and each of the guide elements is laterally positioned from the conveyor jogger side plate 68 a distance corresponding to the width of each of the different widths of copy sheets in the feeder magazine, such positioning being accomplished by adjustment of the set screw 82 on collar 80 of each guide element. Visible space measuring means 85 may be provided to expedite proper lateral positioning of the guide elements 72 with respect to the jogger abutment 68. As a copy sheet traveling on the conveyor from the feed magazine reaches the guide elements, it is guided past the respective element by the angular deflecting surface 89 (FIG. 3) on the front edge of the foot portion 76c of the guide element 72, which has been previously positioned, as aforementioned, for that particular width of sheet. After the sheet passes the front edge of the foot portion and abuts against the aforementioned front registering stop fingers 36 of the apparatus, the jogger mechanism 62 is automatically actuated to side register the sheet laterally between the respective guide element and the jogger side guide 68.

In an application having, for instance, five different widths of copy sheets, there may be provided five guide elements. When a copy sheet which is wider than certain of the guide elements moves to sheet registering position, the copy sheet causes said certain of the guide elements to pivot upwardly by front end engagement therewith so that they ride on top of the sheet, while the guide element which has been positioned for such width of copy sheet remains in its "down" position to register one side of the sheet, and in conjunction with the side jogger 62, provide positive and accurate side registration of the copy sheet.

In FIG. 5 there is illustrated a copy sheet B which is of a width greater than three of the guide elements illustrated, having pivoted such three guide elements upwardly out of interfering relation, while being properly side registered by the fourth of such guide elements. As each copy sheet leaves the conveyor and moves rearwardly into the bite of the printing mechanism and past the guiding elements, the latter which have been moved or have been pivoted out of the way, drop or swing back to their original positions and into engagement with the stop 84. Elements 90 shown in FIGS. 2 and 5, are conventional sheet retainer strips, well known in the art.

FIGS. 6, 7 and 8 illustrate in reduced size, various widths and lengths of copy sheets or business forms which may be used in the instant apparatus, and diagrammatically illustrate the deletion of printed matter thereon from the basic format of the master printing plate 30 on the master printing cylinder. The FIG. 6 showing illustrates a relatively narrow width of copy sheet containing printed areas *a, b, c, d, e, f, g, h, i, j, k* and *l* thereon, after having been passed through the printing mechanism of the apparatus. The FIG. 7 illustration shows a wider width of copy sheet but of a shorter length. Due to the shorter length, printed areas *c, d, g, h* and *l* found on the FIG. 6 copy sheet do not appear on the FIG. 7 copy sheet, but due to its wider width, printed areas *m* and *n* not found on the FIG. 6 copy sheet appear on the FIG. 7 copy sheet. FIG. 8 shows a copy sheet of a wider width than those of FIGS. 6 and 7, but of a length substantially the same as that of FIG. 6. On the FIG. 8 copy sheet all of the printed areas found on the previous two copy sheets are found on the FIG. 8 copy sheet, and in addition due to its wider width, printed areas *p* and *q* are also found on the FIG. 8 copy sheet. It will be seen therefore, that the present arrangement provides for proper and accurate side registration of various widths of copy sheets, thereby enabling inclusion or deletion of data from such various sizes of copy sheets as found in the format of the master printing plate, and in a highly simplified and effective manner.

The terms and expressions which have been used are terms of description and not of limitation and there is no intention in the use of such terms and expressions of excluding any equivalents of any of the features shown or described or portions thereof, and it is to be understood that various modifications are possible within the scope of the invention claimed.

I claim:

1. A guide element for a side register device of a printing machine adapted for printing different widths of copy sheets, said element comprising an abutment on a side thereof adapted for engagement with a respective edge of a copy sheet to be imprinted by the machine for side registration of the copy sheet, means on said element for pivotally mounting the same on and with respect to a rod-like support for selective movement of said element in a generally vertical plane, and means disposed in contiguous relation with said abutment adjacent the front boundary thereof and offset diagonally from said plane for guiding a copy sheet into juxtaposed relation with said abutment.

2. A guide element in accordance with claim 1 wherein the center of gravity of said element is disposed rearwardly of a vertical plane passing through the pivotal axis of said element.

3. A plate-like guide element for a side register device of a printing machine adapted for printing different widths of copy sheets, the upper end of said element being bent into a generally inverted U-shape configuration, said inverted U-shaped portion of said element having axially aligned openings extending therethrough adapted for receiving a supporting rod-like member for mounting said element for pivotal movement with respect to the rod-like member in a generally vertical plane, said element comprising a depending foot portion disposed rearwardly of a transverse vertical plane passing through the pivotal axis of said element, said foot portion having a planar abutment surface on one side thereof, the leading edge of said foot portion being bent diagonally outwardly from the plane of said surface and in a direction toward the other side of said foot portion, the center of gravity of said element being disposed rearwardly of said transverse vertical plane passing through the pivotal axis of said element.

4. In a side register device for different widths of copy sheets fed to a printing machine or the like having a feed conveyor on which copy sheets are fed to the printing mechanism of the machine with said conveyor comprising power driven longitudinally extending laterally spaced endless tapes, a stationary cross bar extending transversely above said conveyor, a plurality of guide elements supported by said cross bar in depending relation thereto and including means mounting each of said guide elements on said cross bar for individual pivotal movement with respect to said cross bar in a generally vertical plane and parallel to the direction of movement of said conveyor, each of said guide elements being disposed intermediate respective ones of said tapes with the bottom

boundary of said guide elements disposed below the top surface of the upper stretches of said respective tapes in the non-pivoted condition of said guide elements, and an abutment on one side of each of said guide elements adapted for engagement with a respective copy sheet for side registration of the confronting edge of the copy sheet.

5. In a side register device in accordance with claim 4 including means for selectively adjusting the position of each of said guide elements on said cross bar in an axial direction with respect to said cross bar.

6. In a side register device in accordance with claim 4 wherein said guide elements are disposed adjacent the rearward end of said conveyor and are adapted for rearward pivotal movement with respect to said conveyor, the center of gravity of each of said guide elements being disposed rearwardly of a transverse vertical plane passing through the pivotal axis of the respective guide element, and stop means disposed forwardly of said guide elements for limiting the forward pivotal movement of said guide elements with respect to said conveyor, said stop means comprising a transversely extending member disposed intermediate the upper and lower stretches of said tapes.

7. In a duplicating machine for imprinting copy sheets of various widths fed to the printing mechanism of the machine, a feed conveyor on which the sheets are fed to the printing mechanism, said conveyor comprising power driven longitudinally extending laterally spaced endless tapes, side jogger mechanism including a laterally reciprocal abutment element disposed adjacent the rearward end of one side of the conveyor forwardly of the printing mechanism for automatically urging a copy sheet transversely of the conveyor when the copy sheet arrives at printing position in the machine, a support extending transversely above the conveyor at said rearward end thereof, and a plurality of laterally spaced guide elements mounted on said support in depending relation therefrom, each of said guide elements being mounted on said support for pivotal movement in a generally vertical plane parallel to the direction of movement of said conveyor and being pivotable above the plane of said conveyor, said guide elements being disposed intermediate respective ones of said conveyor tapes with the bottom boundaries of said guide elements disposed below the top surfaces of the upper stretches of said conveyor tapes in the non-pivoted condition of said guide elements, each of said guide elements being disposed laterally of said abutment element of said jogger mechanism a distance corresponding to the width of a respective copy sheet to be imprinted by said machine, each of said guide elements comprising an abutment on one side thereof facing said abutment element of said jogger mechanism, said abutment being engageable with the corresponding side edge of a respective width copy sheet disposed intermediate said abutment and said abutment element of said jogger mechanism to side register the copy sheet when the latter is in printing position in said machine, and means on the forward end of each of said guide elements for guiding coaction with the leading end of the respective width copy sheet for guiding the corresponding side edge of the copy sheet into juxtaposed relation with said abutment, said guide elements being pivotable upwardly and rearwardly out of interfering relation with copy sheets which are of a greater width than the distance between the abutment on the respective guide element and said abutment element.

8. In a duplicating machine in accordance with claim 7, including means for adjusting each of said guide elements transversely with respect to said support, and visible means on said machine adapted for coaction with each of said guide elements and said abutment element of said jogger mechanism for obtaining the proper predetermined spacing between a respective guide element and said abutment element for a predetermined width of copy sheet.

9. In a duplicating machine in accordance with claim 7, including means for detachably mounting said support and associated guide elements on said machine whereby the latter may be removed as a unit from said machine.

10. In a duplicating machine in accordance with claim 7, wherein said guide elements are comprised of a relatively lightweight metallic material, such as aluminum sheet, and having a relatively smooth exterior surface thereon.

11. In a duplicating machine and the like for imprinting copy sheets of various widths fed to the printing mechanism of the machine, a feed conveyor on which the various width sheets are sequentially fed to the printing mechanism, side jogger mechanism including a laterally reciprocal abutment element disposed adjacent the rearward end of one side of the conveyor forwardly of the printing mechanism for automatically urging a copy sheet transversely of the conveyor when the copy sheet arrives at printing position in the machine, a support extending transversely above the conveyor at said rearward end thereof, and a plurality of laterally spaced guide elements mounted on said support in depending relation therefrom, each of said guide elements being mounted on said support for individual pivotal movement in a generally vertical plane parallel to the direction of movement of said conveyor and being pivotable about the plane of said conveyor, each of said guide elements being disposed laterally of said abutment element of said jogger mechanism a predetermined distance corresponding to the width of a respective copy sheet to be printed by said machine, each of said guide elements comprising an abutment on one side thereof facing said abutment element of said jogger mechanism, said abutment being engageable with the corresponding side edge of a respective width copy sheet disposed intermediate said abutment and said abutment element of said jogger mechanism, to side register the copy sheet when the latter is in printing position in said machine, said guide elements being individually pivotable upwardly and rearwardly out of interfering relation with copy sheets which are of a greater width than said distance between the abutment on the respective guide element and said abutment element.

12. In a side register device for different widths of copy sheets fed to a printing machine or the like having a rearwardly disposed printing mechanism and a forwardly disposed support across which the sheets are fed to the printing mechanism, support means adapted to extend transversely of the support, a plurality of laterally spaced guide elements mounted on said support means for individual pivotal movement in generally vertical planes, each of said guide elements embodying a side abutment adapted to be engaged by a side edge of a respective sheet for side registration of the respective edge of the sheet, prior to printing of the latter, and means on the forward boundary of each of said guide elements adapted for guiding coaction with a leading corner of a copy sheet to facilitate movement of the corresponding side edge of the copy sheet into engagement with the respective side abutment.

13. A side register device in accordance with claim 12, including means for adjustably positioning each of said guide elements on said support means in an axial direction with respect thereto, and transversely with respect to the support, said positioning means including a collar coacting with the respective guide element to locate the same in predetermined position on said support means, and means for detachably coupling said collar to said support means.

14. In a side register device for different widths of copy sheets fed to a printing machine or the like having a forwardly disposed support across which the sheets are fed to the printing mechanism of the machine, a plurality of laterally spaced guide elements adapted to be engaged by a side edge of a respective sheet and each providing an abutment for side registration of the respective edge of the sheet prior to printing thereof, a stationary rod adapted to extend generally transverse of the associated machine, said rod mounting said guide elements for in-

dividual pivotal movement in generally vertical planes, each of said guide elements being suspended on said rod and comprising a generally flat plate-like portion depending from the rod, said plate-like portion being disposed in a generally vertical plane, and means on the forward edge of said plate-like portion off-set diagonally from said last mentioned plane and adapted for guiding coaction with a leading corner of a respective sheet to facilitate movement of the corresponding side edge of the copy sheet into engagement with said abutment.

References Cited in the file of this patent

UNITED STATES PATENTS

913,641	Hammer	Feb. 23, 1909
1,427,757	MacDowell et al.	Aug. 29, 1922
1,763,333	Vivarttas	June 10, 1930
1,993,219	Merrigan	Mar. 5, 1935
2,729,136	Feich et al.	Jan. 3, 1956
2,809,831	Nordquist	Oct. 15, 1957