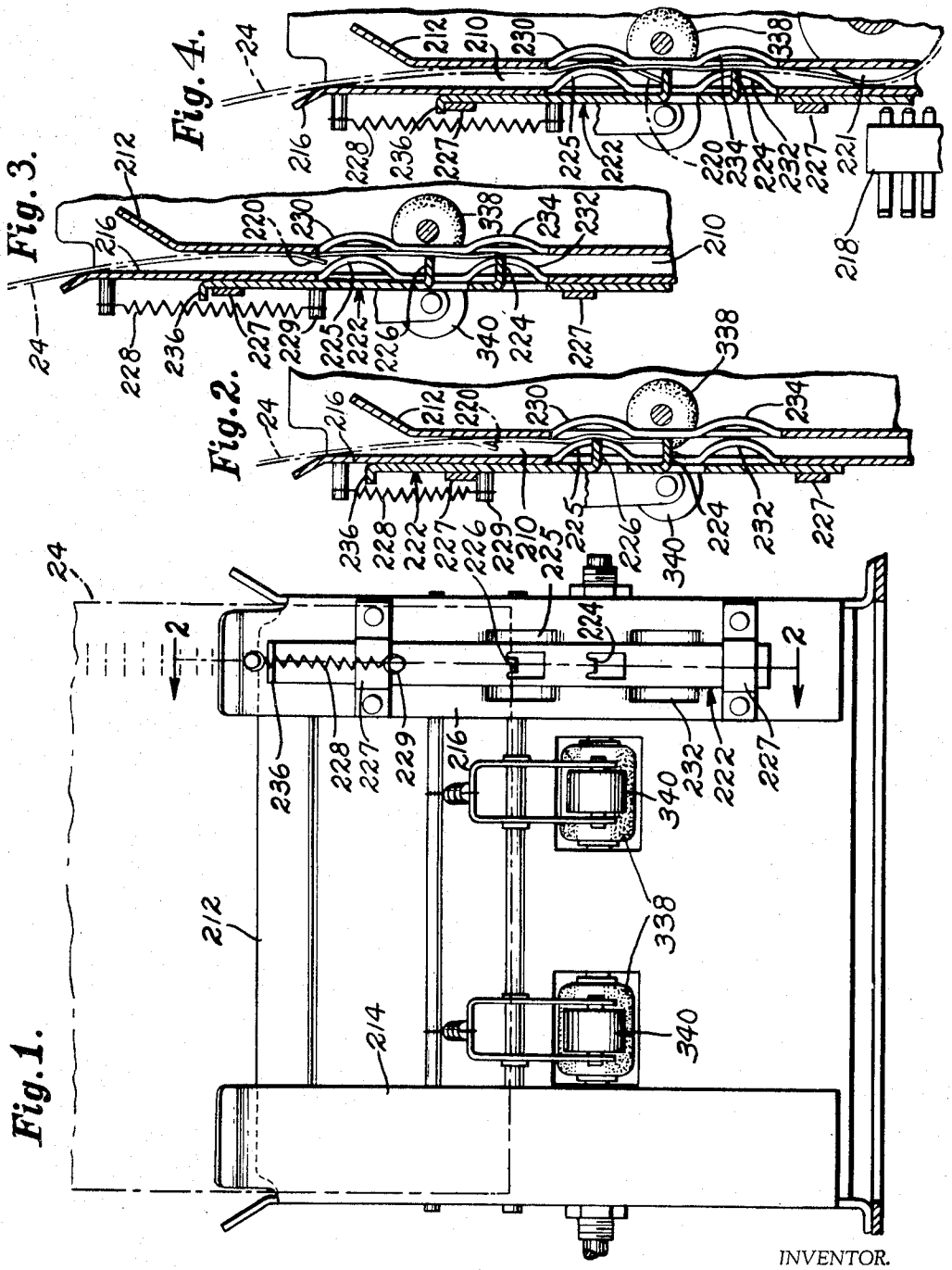
April 5, 1966 W. B. TEMPLETON 3,244,265

LINE FIND MECHANISM

Original Filed April 30, 1963



INVENTOR.
WILLIAM B. TEMPLETON.
BY
ATTORNEY.

United States Patent Office 3,244,265 Patented Apr. 5, 1966

3,244,265

LINE FIND MECHANISM

William B. Templeton, Northville, Mich., assignor to Burroughs Corporation, Detroit, Mich., a corporation of Michigan

Original application Apr. 30, 1963, Ser. No. 276,738. Divided and this application July 19, 1965, Ser. No. 473,037

3 Claims. (Cl. 197—127)

This application is a division of my copending application, Serial No. 276,738, for Line Find Mechanism, filed April 30, 1963.

One of the objects of my invention is to provide for business machines, an improved line find device for stopping the feeding of a record sheet in relation to a print line so as to automatically present thereto the next available unused line on the sheet.

Another object of the invention is to provide an improved line find device which is efficient in operation and inexpensive.

Another object of the invention is to provide an improved line find device of the type having an arm movable by a leading edge of a sheet to move a second sheet stop arm from ineffective position to an effective position for engaging a line designating perforation in a sheet and to effect such positions by the provision of a sinuous sheet guideway.

Specifically, an object of the invention resides in accomplishing the ineffective and effective positions of the arms by the provision of a linearly movable carrier cooperating with a sinuous sheet guide portion in a sheet guideway.

Other objects of the invention will become apparent from the following description, taken in connection with the accompanying drawing in which:

FIG. 1 is a front view of a sheet feed mechanism embodying features of my invention;

FIG. 2 is a vertical sectional view, taken along the line 2—2 of FIG. 1 and showing operating parts thereof in their normal positions;

FIG. 3 is a vertical sectional view similar to FIG. 2 showing the operating parts moved to intermediate positions; and

FIG. 4 is another vertical sectional view similar to FIGS. 2 and 3 showing the sheet stopped in the desired position.

Referring to the drawings by characters of reference, the apparatus includes an upright sheet guideway 210 defined by a rear guide member or plate 212 and a pair of front laterally spaced apart guide members or plates 214 and 216. The pair of front plates 214 and 216 are arranged in broadside relationship to the rear plate, preferably adjacent the side edges respectively of the rear plate. The rear guide plate 212 and front guide plates 214 and 216 can be and preferably are stationary.

A record sheet 24, illustrated in dot and dash lines, is fed downwardly within the guideway either manually or by suitable sheet feed mechanism to a process station herein represented as a print head 218 and a cooperating platen 221. Following the printing operation, the sheet 24 is provided with a perforation designating the last printed line by a punch (not shown). Preferably, the punch is designed to provide a horizontal slit-like perforation and displace laterally a small portion 220 of the sheet immediately above the slit to function as an abutment. The slit, or its displaced portion 220 designates the last line used on the record sheet and is employed in the next processing of the sheet for automatically stopping the sheet at a position to present the next available print line to the printer.

In accordance with my invention, I provide a vertically

movable carrier or slide 222 that carries a pair of arms including a lower arm 224 for engagement by the lower or leading edge of a sheet and an upper arm 226 for engagement by the abutment 220, designating the last line used on the sheet. The slide 222 is mounted in upper and lower guide members 227, affixed to the front face of the sheet guideway member 216, and the arms 224 and 226 are formed out of the slide to project into the guideway 210. A helical coil spring 228 is provided to return the slide member 222 to its normal or "up" position, the spring having one end thereof connected to a stud 229 on the slide and the other end anchored by a stud, to the guideway member 216. As shown, the stud 229 engages the upper guide member 227 as a stop, thus establishing the normal or "up" position of the slide member 222.

In order that the upper sheet stopping arm 226 is without the guideway 210 in the "up" position of slide 222 so as to avoid the leading edge of a descending sheet, I make the guideway 210 sinuous in form by providing complementary offset bends 225 and 230 in the guide plates 212 and 216 at a location including the "up" position of the sheet stop arm 226. The offset of the guideway bends 225 and 230 is made substantially equal to the distance between the opposed faces of the guide members 212 and 216 or length of arm 226, such that the end of the arm, when in the "up" position will be without guideway 210 as shown in FIG. 2. In this position of the sheet stopping arm 226, the arm 224 is in its effective position extending across the guideway 210 for engagement by the leading edge of sheet 24. Further, the arm 224 is in a position intermediate the upper offset portions or bends 225 and 230 and similar lower offset portions 232 and 234 of the sinuous guideway 210. The lower offset of the guideway is provided to extend around or by-pass the lower arm 224 when the latter is in its "down" position, FIG. 4, the purpose being to allow the sheet to move down past the arm 224 which in its down position is, in effect, retracted from the guideway. Both of the guide members 212 and 216 are vertically slotted to receive the arms 224 and 226. In its downward movement, the slide member 222 is limited by an outturned flange 236 on the upper end thereof for abutting the guide member 227.

As previously mentioned, a record sheet to be processed may be fed downwardly within the guideway 210 either manually or by sheet feeding rollers. In the present machine a record sheet is fed downwardly within the guideway 210 by feed rollers including power driven rollers 338 and pressure rollers 340. The rollers 338 and 340 are laterally positioned between the pair of guide members 214 and 216 and are located between the upper and lower bends of the sinuous guideway. These rollers may have polished steel peripheries such that they will slip against the faces of a record sheet when the latter is stopped by the line finding device. Also, the feed roller drive means may be reversible so as to feed processed sheets upwardly for removal by the machine attendant.

Operation

In operation, a record sheet or card to be processed is dropped by the machine attendant into the guideway 210 and passing downwardly below the retracted upper arm 226 into the bight of the normally operating feed rollers 338, 340 with the leading edge of the sheet abutting the lower arm 224 of slide 222. As the rollers 338 and 340 feed the sheet 24 downwardly the slide is now moved downwardly by the feeding action until the side flange 236 engages the stop member 227. During this downward travel of the slide, the lower arm 224 moves to the position shown in FIG. 3 without the guideway, thus allowing the sheet to continue downwardly past the now retracted arm 224. As the lower arm 224 is moving down-

wardly to its ineffective or retracted position, the upper arm 226 is moving downwardly to its effective position, extending across the guideway 210. After the leading edge of the sheet 24 passes the lower arm 224, continued downward movement of the sheet brings the upper edge of the last punched line designating slit into abutment with the upper arm 226 which then moves the slide down until the latter is stopped by engagement of flange 236 engaging stop member 227 which presents the next usable line to the printer. It will be noted that full or partial retraction of slide 222 by the spring 228 may occur after the leading edge of a record sheet disengages from the lower arm 224 of the slide. However, retraction of the slide 222 is not objectionable since the edge 220 of the slide representative of the next available unused line will pass between the laterally positioned offset portions 232, 234 and engage the upper or line find arm 226 of the slide whereby the slide will be moved downward by the sheet until stop member 227 is engaged. Where the feeding action is reversed, following the processing of the record sheet, the feed rollers and the spring 228 together function to raise the slide member 210 to its "up" position, as the sheet is being ejected upwardly. At the upper bend of the sinuous guideway 210, it will be noted that as the last punched line designating slit in the sheet approaches the upper arm 226, FIG. 2, the slight flexing of the sheet by the arm insures good contact by the lower edge of the sheet displaced portion 220 as the latter is further displaced by said sheet flexing action.

What is claimed is:

1. In a machine for stopping a sheet at a position corresponding to the location of a line designating perforation in the sheet comprising a sinuous sheet guideway having a pair of vertically spaced apart bends along one side of the path of sheet travel and offset from and by a distance substantially equal to the width of the guideway, an upper sheet stopping arm for engagement by an edge of the sheet perforation, a lower sheet operated arm for engagement by the leading edge of a sheet, said arms connected for movement together along the path of sheet travel and spaced apart a distance substantially equal to one-half the distance between said bends, said arms having an upper position with the upper arm without said guideway at the upper bend and the lower arm within said guideway intermediate said bends, and means limiting movement of said arms to a second position with the upper arm within said guideway intermediate said bends and the lower arm without said guideway at the lower bend.

2. In a machine for stopping a sheet at a position corresponding to the location of a line designating perforation in the sheet, a sheet guideway having a first bend, a second bend spaced from said first bend in the direction of sheet travel and along one side of the guideway, said bends having convex surfaces defining part of the guideway, a sheet stopping member for engagement by an edge of the sheet perforation and normally located back of said bend without the path of sheet travel, a sheet abutment member engageable by the leading edge of a sheet and normally projecting into said guideway between said bends, said members connected for movement together along said guideway to positions with the sheet stopping member between said bends and the abutment member back of said second bend without the guide member, and stop means to stop said members in said positions.

3. In a machine for stopping a sheet at a position corresponding to the location of a line designating perforation in the sheet, a pair of plates in broadside space apart relationship to receive a sheet therebetween, one of said plates having first and second convex offset portions extending toward the other of said plates and having a slot in said one plate extending along said guideway through both said offset portions, a sheet stop member projecting through said slot and normally located at said first offset portion without said guideway, a sheet abutment member projecting through said slot and normally located between said offset portions within said guideway for engagement by the leading edge of a sheet, said members spaced apart a distance substantially one-half the distance between said offset portions and connected for movement together by the leading edge of a sheet, stop means limiting movement of said members in the direction of sheet travel to a distance substantially one-half the distance between said offset portions to position said stop member in effective position between said offset portions and said abutment member without said guideway at said second offset member, yieldable means operable to return said members to their normal positions, and stop means to stop said members at their normal positions.

References Cited by the Examiner

UNITED STATES PATENTS

2,831,560	4/1958	Oberholzer et al.	197—128
2,832,454	4/1958	Martin	197—127
2,916,129	12/1959	Parker	197—128
3,107,772	10/1963	Templeton	197—127
3,115,963	12/1963	Harbor et al.	197—127
3,137,379	6/1964	Oberholzer et al.	197—128

FOREIGN PATENTS

935,908	12/1955	Germany.
1,080,125	4/1960	Germany.

ROBERT E. PULFREY, *Primary Examiner.*

ERNEST T. WRIGHT, *Assistant Examiner.*