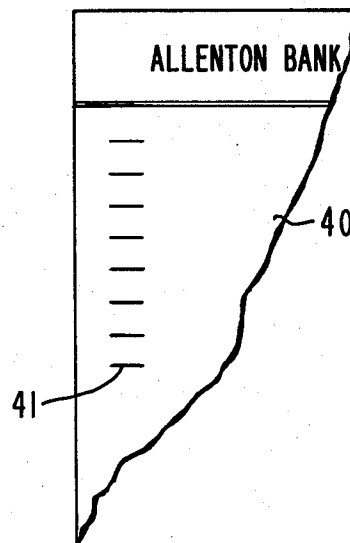
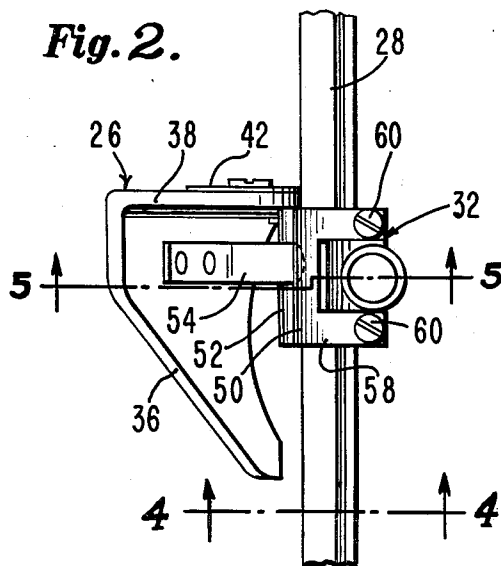
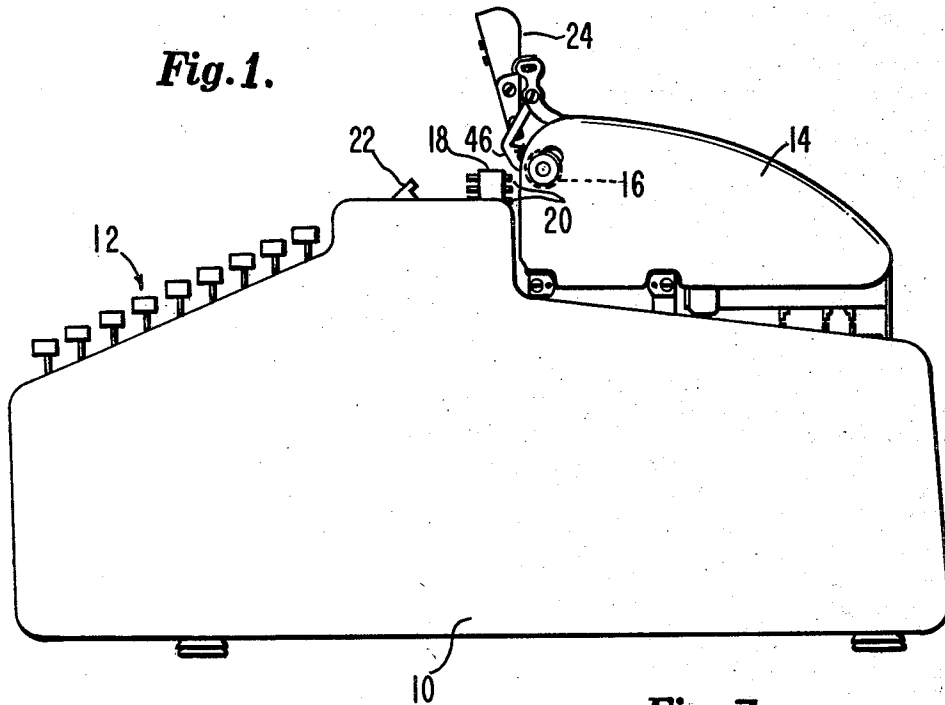


3,107,772

2 Sheets-Sheet 1



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3,107,772

LINE FIND DEVICE

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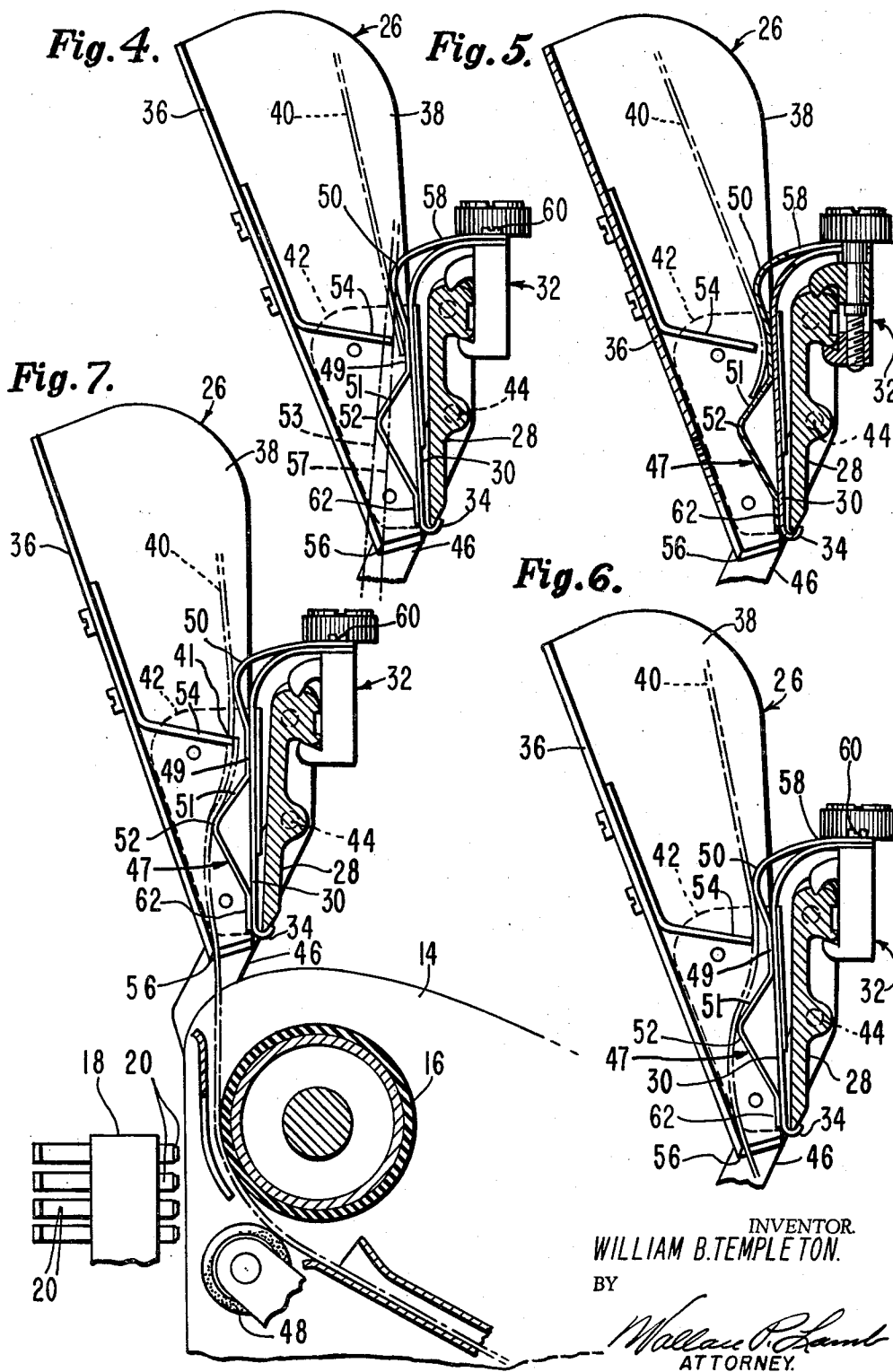
2 Sheets-Sheet 2

Fig. 4.

Fig. 5.

Fig. 7.

Fig. 6.



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3,107,772

LINE FIND DEVICE

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5 Claims. (Cl. 197-127)

This invention relates generally to business machines for processing record sheets or documents and particularly to line find mechanism for stopping a sheet with the next available line at the printing position.

The principal object of the invention is to provide a line find device that is efficient in operation without need of moving parts.

In connection with the above object, it is an object of the invention to provide an inexpensive line find device, yet one which is dependable and efficient in operation.

A further object of the invention resides in the particular construction of a sheet guide of a character such that components thereof function as a line find device.

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

FIG. 1 is a side view of a business machine, embodying my improved line find device;

FIG. 2 is an enlarged fragmentary plan view of the line find device;

FIG. 3 is a fragmentary view of a record sheet or card, usable in connection with the line find device;

FIG. 4 is a sectional view taken along the line 4-4 of FIG. 2, showing a record sheet entering the guideway of the machine;

FIG. 5 is a sectional view taken along the line 5-5 of FIG. 2, showing the sheet in an advanced position along the guideway;

FIG. 6 is a view similar to FIGS. 4 and 5 showing the sheet still further advanced along the guideway, and

FIG. 7 is a view similar to FIGS. 4, 5 and 6 showing the sheet in the position it assumes when stopped by the line find device.

Referring to the drawings, by characters of reference, the business machine of FIG. 1 may be of any well-known type for processing record sheets or cards, such as printing amounts in columns, and the machine is illustrated as including a mechanism housing 10, a keyboard 12 and an encased paper carriage 14. Mounted on the carriage 14 there is the usual rotatable platen 16 and forwardly of the platen there is a print head 18 having a plurality of print elements 20 and print hammers 22, of which only one is shown. As is well known, an amount to be printed is indexed into the machine on the keyboard 12 and upon depressing a motor bar, a machine cycle of operation occurs which includes the vertical positioning of the print head 18, in accordance with the indexed amount, followed by operation of the print hammers 22 to drive the selected ones of the print elements against the platen. Mounted on the carriage 14 is a pair of laterally positioned sheet guide members, designated generally by the numerals 24, 26 which are slidably adjustable along a rail 28 on the carriage.

The above described machine is a well-known conventional type accounting machine and for a more complete description thereof, reference may be had to the patent to Thomas M. Butler, No. 2,629,549, filed July 19, 1950, issued February 24, 1953, for "Automatic Function Control Mechanism for Accounting Machines."

The side guide members 24, 26 are alike and each is individually mounted on the rail 28 by a hanger 30 and a clamp 32, the hanger having a hooked lower edge 34 that hooks under the lower edge of the rail 28, as shown in FIGS. 4, 5 and 6. The guide members 24, 26 are angle

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members, each having a front leg 36 and a side leg 38, the latter being the side edge guide for a record sheet designated by the numeral 40. An angle bracket 42 may be provided to mount the side guide members 24 and 26 on the hanger 30. At its opposite ends, the rail 28 is rigidly mounted by screws 44 respectively to the upper ends of a pair of lever arms 46 which are pivoted at their lower ends to opposite sides of a frame (not shown) within the housing 10. The arms 46 are pivotally mounted so that the side guide assembly can pivot with the opening and closing of the carriage, all of which is shown and described in detail in the aforementioned Butler patent.

A fragment of the record sheet 40 is illustrated in FIG. 3 and adjacent each side edge, of which only one is shown, there is a vertical row of slit-like perforations 41 which designate printed lines on the card. The lowermost slit 41 designates, of course, the last used line on the card. Any suitable punch (not shown) may be used to perforate the cards and the punching operation may be performed following the printing operation.

In accordance with my invention, I provide a guideway to guide a record sheet down to and between the platen 16 and a pressure roller 48, and I construct the guideway of components that also function as a line find device to stop the sheet 40 with the next available unused line at the print position in accordance with the location on the sheet of the last perforation 41. To accomplish this, I provide a sinuous, or serpentine sheet guideway, one side of which is defined by a formed sheet metal guideway member 49 having a pair of vertically spaced guide members 50 and 52, and the other side of which is defined by a pair of vertically spaced guide members 54 and 56 of which the guide member 54 also functions as a perforation sensing, sheet stop member.

The sheet metal guideway member 47 has a base 49 which positions flat against the forward face of the hanger 30, the guideway member being held at the top thereof to the rail 28 by the clamp 32. Near its bottom edge the guideway member 47 may be welded at 62 to the hanger 30. The guide members 50 and 52 are preferably in the form of rounded projections which project forwardly of the base 49 and terminate with their crown points in a plane, designated by the dot and dash line 53 of FIG. 4. As shown, the rounded guide member 52 projects beyond the guide member 50 such that the crown points thereof are relatively offset horizontally, as viewed in FIGS. 4 to 7. Intermediate the guide members 50 and 52, a cam or sheet deflector portion 51 of the sheet metal guideway member 47 extends downwardly and forwardly from the base 49 in spaced relationship thereto. The other or lower guide member 56 is the lower and preferably rounded end of the leg 36. This lower guide member 56 and the free end of the finger 54 are in a plane, designated by the dot and dash line 57 and this plane is between plane 53 and the base 49, as illustrated in FIG. 4. As a consequence, a record sheet of some resilience will be guided in a sinuous path and be tensioned between the guide members 50, 52 to bow against the end of the guide and sensing finger 54. The finger 54 is located such that its sensing end, which is preferably rounded, is in alignment with the column of line designating perforations so as to engage in the last perforation 41 in the sheet.

The sheet guideway is composed of two of the above described guideway units, and these units are respectively mounted on the pair of side edge guides 24, 26 and are adjustable therewith along the rail 28.

3 Operation

A card may be fed downwardly within the guideway manually or by suitable feed means, as desired. In either case, the leading edge of the card clears the end of finger 54 and then is deflected forwardly by the downward and forwardly inclined cam 51 causing a lower portion of the card to bow, as illustrated in FIG. 5. As the card continues downwardly in the sinuous guideway, the leading edge of the card is deflected rearwardly and downwardly by the front legs 36 of the sheet guide members 26 and bears against the lower guide members 56, as shown, in FIGS. 6 and 7. This tensions the card on the rounded guide members 52 which flexes that portion of the card that is between guide members 50 and 52 into engagement with the end of the finger 54. Only part of the tension force stored in the card is used to move the card into contact with the finger 54, the remaining force acting against the end of the finger. As a consequence, when the slit 64 in the card, designating the last used line, arrives at the end of finger 54, the tension force of the card results in a small card area below the slit 64 being deflected rearwardly which exposes the upper edge of the slit to engage the finger and thus stop the card.

While I have shown and described my line find device in considerable detail, it will be understood that many variations and changes may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. In a machine for stopping the feeding of a resilient sheet at a position corresponding to the location of a line designating perforation in the sheet, a first pair of spaced apart guide members defining one side of a path of sheet travel, a second pair of spaced apart sheet guide members defining the other side of the path of sheet travel, the guide members of one pair of guide members in staggered relation to the guide members of the other pair and cooperating to form a sinuous guideway with one of said guide members of one pair projecting between the guide members of the other pair to engage in the perforation.

2. In a machine for stopping the feeding of a resilient sheet at a position corresponding to the location of a line designating perforation in the sheet, a sheet guide member projecting from a reference plane and in part defining the path of travel of a sheet, a second sheet guide member projecting from the reference plane in spaced relation to said first-mentioned guide member and anteriorly disposed thereto with respect to the direction of travel of a sheet, and a stop member having one end projecting toward and between said first and second guide members and positioned to cooperate therewith in flexing the sheet in the area of the perforation and engage an edge of the perforation to stop the sheet.

3. In a machine for stopping the feeding of a resilient sheet in a position corresponding to the location of a

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line designating perforation in the sheet, a first sheet guide member projecting from a reference plane and in part forming a sheet guideway, a second sheet guide member projecting from the reference plane in the same general direction as and beyond said first projection, said second projection spaced from said first projection anteriorly thereof with respect to the direction of travel of a sheet, said first and second projections spanned by a sheet passing therealong, a fixed stop finger positioned to engage an edge of the perforation in the sheet to stop the latter, said finger projecting toward and between said spaced projections to a position forcing a sheet against said projections and flexing the sheet to expose the perforation edge to said stop finger.

4. In a machine for stopping the feeding of a resilient sheet at a position corresponding to the location of a line designating slit in the sheet comprising, a pair of vertically spaced apart guide members horizontally offset from each other and defining one side of a sinuous path of sheet travel, and a sheet guide and stop finger having an end vertically positioned between said pair of guide members and spaced therefrom to in part form the other side of said path of sheet travel, the end of said finger projecting to the same side as said pair of guide members with respect to a plane spanning the latter, and another guide member spaced below and cooperating with the end of said finger to define the said other side of the sinuous sheet guideway, said another guide member on the same side of said plane as said pair of guide members.

5. In a machine for stopping the feeding of a resilient sheet at a position corresponding to the location of a perforation in the sheet designating the last printed line thereon, a base, a pair of vertically spaced apart guide members projecting in the same general direction from said base and cooperating therewith to define one side of a sinuous sheet guideway, said guide members terminating in a common plane spaced from and broadside to said base, a sheet guide member having an end positioned vertically between said pair of vertically spaced guide members and toward said base, a lower guide member below the lower one of said pair of guide members, said end of said sheet guide member and said last-mentioned guide member defining the other side of the sinuous guideway and in a common plane between said first-mentioned plane and said base, and a sheet guiding cam leading downwardly from said base to the lower one of said pair of guide members.

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