United States Patent

[11] **3,581,861**

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[32] Priority **Sept. 6, 1967**
[33] **Italy**
[31] **52931-A/67**

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[54] **PAPER GUIDE STRUCTURE**
2 Claims, 1 Drawing Fig.

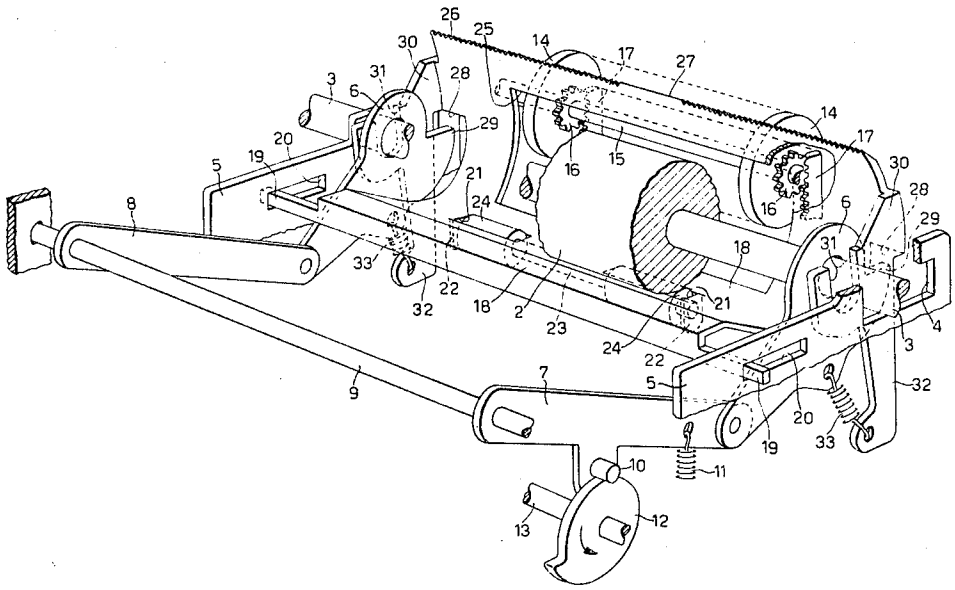
[52] **U.S. Cl.** **197/127,**
197/133A, 197/138R, 197/143
[51] **Int. Cl.** **B41j 13/00**
[50] **Field of Search** 197/126,
127, 133, 134, 138, 138.5, 143

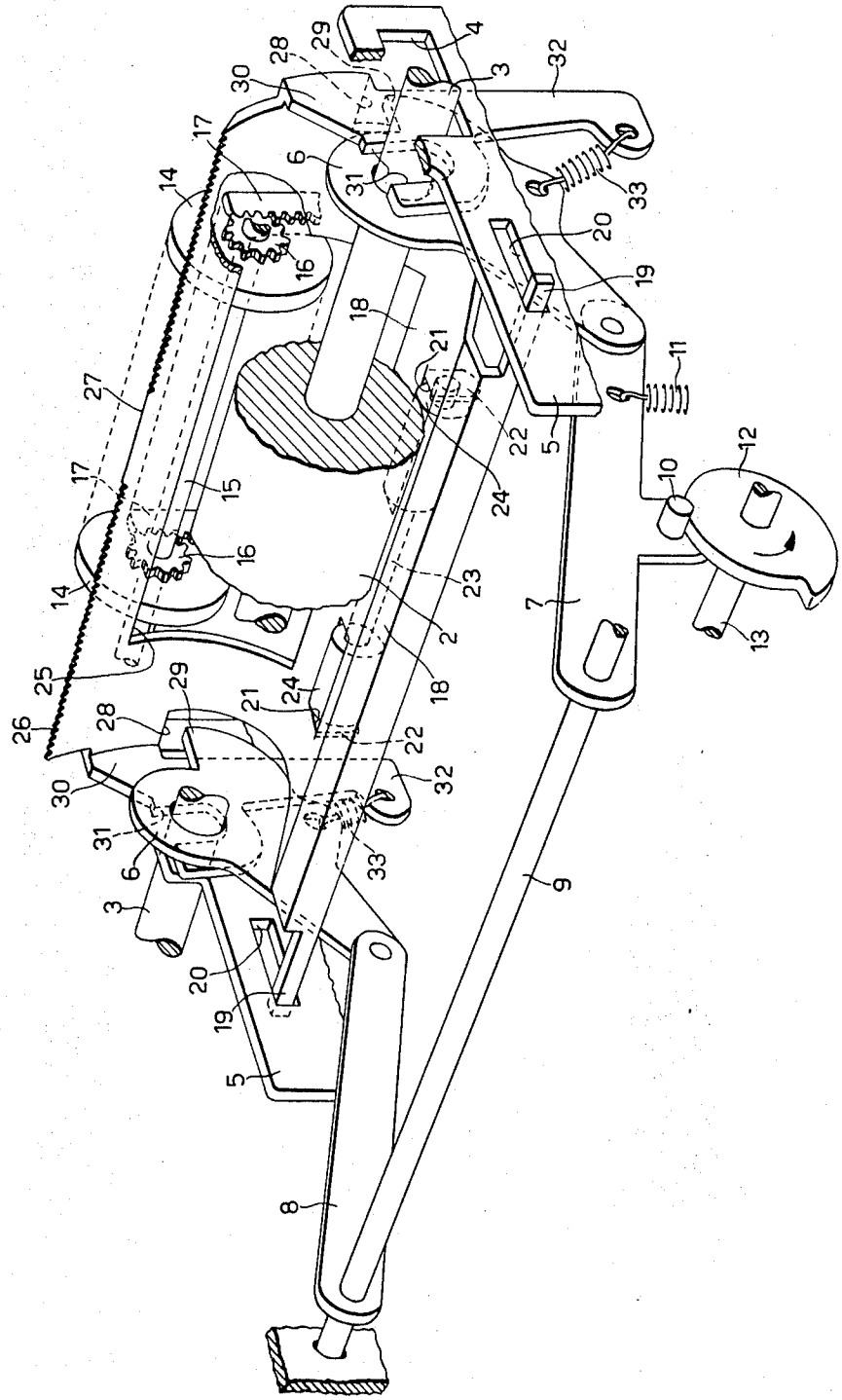
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ABSTRACT: Paper guide structure comprising an arcuate deflector having a window therein and a serrated edge. The deflector is mounted for swinging toward and away from a roller platen. The deflector extends part way around the platen and the window provides access for printing means to contact a paper strip disposed between the deflector and the platen.




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PAPER GUIDE STRUCTURE

CROSS REFERENCE TO RELATED APPLICATION

Applicant claims priority from corresponding Italian Pat. application Ser. No. 52931-A/67, filed Sept. 6, 1967.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to structure for guiding the paper strip in a printing device having a roller platen and printing means in the nature of a series of type carrying members, (e.g., an adding-listing machine). In particular, the structure comprises a deflector on which bail rollers are rotatably mounted for pressing the paper resiliently against the platen.

2. Description of the Prior Art

Normally, in known adding machines of the above-mentioned type, the paper is guided by the deflector and the bail rollers which can be withdrawn from the platen manually be means of a lever, whilst the cutter is fixed to a second deflector situated above the platen, which results in a costly construction. In order to insert the paper it is necessary to guide it between the platen and the cutter so that the operation requires a relatively long time.

SUMMARY OF THE INVENTION

The foregoing and other inconveniences are obviated by the invention which broadly provides paper guide structure for a printing device having a roller platen and printing means in the nature of a series of type carrying members for printing on a paper strip against the platen (e.g., an adding-listing machine). The structure comprises an arcuate deflector having a window therein and a serrated edge. The deflector is mounted for movement toward and away from the platen with the deflector extending part way around the platen, with the window disposed adjacent the printing means facilitating printing on a strip of paper disposed between the deflector and the platen, and with the serrated edge disposed substantially parallel to the axis of rotation of the platen to facilitate tearing of the printed strip. The deflector is biased toward the platen and is provided with paper contacting means such as bail rollers, for holding the strip of paper tightly against the platen. An intermediate portion of the serrated edge is free from serrations permitting manual engagement to shift the deflector and the bail rollers to thereby withdraw the latter from the platen to facilitate insertion of the paper strip. The nonserrated portion is not of such length as to inhibit the cutting action of the edge.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be described in more detail, by way of example, with reference to the accompanying drawing, in which the sole FIGURE is a perspective view from the rear and one side of part of a printing device in the nature of an adding-listing machine which includes paper guide structure according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing, the adding machine comprises a roller platen 2 fixed to a shaft 3 slidable in the front-to-rear direction of the machine in two slots 4 formed in two fixed side members 5 of the frame of the machine. On shaft 3 are pivoted two levers 6 which are pivotally connected to two levers 7 and 8 fixed on a shaft 9 rotatable in the fixed frame of the machine. Lever 7 has a pin 10 normally urged by a spring 11 against a cam 12 fixed to a main shaft 13 which rotates cyclically in the anticlockwise direction indicated.

In front of platen 2 is disposed printing means in the nature of a series of type carrying members constituted by print wheels 14 rotatable on a fixed axle 15. Each wheel 14 is unitary with a pinion 16 in engagement with a corresponding rack 17 movable cyclically in the vertical direction for effecting the calculating operations.

The device for guiding the usual paper strip on which are to be printed details of the calculations, comprises a deflector 18 cut and pressed from sheet metal, which passes underneath platen 2 and has a pair of elongated longitudinally aligned pivot elements 19 which project outwardly of deflector 18 on respective opposite sides thereof in substantial parallelism with the axis of rotation of platen 2. Elements 19 are received in respective slots 20 in side members 5, slots 20 being elongated toward and away from wheels 14. Deflector 18 has two apertures 21, each terminating externally in a perforated lug 22. A shaft 23 is fixed between lugs 22 and on this are freely mounted two bail rollers 24 which bear against platen 2 through apertures 21 and are free to rotate about an axis parallel to the axis of rotation of platen 2.

Deflector 18 extends part way around platen 2 and upwardly in front of the latter. Deflector 18 also has a window 25 disposed adjacent wheels 14 through which the latter effect the printing, 2, platen 2, of a paper strip disposed between deflector 18 and platen 2. Deflector 18 is also provided with a beveled and serrated upper edge 26 which is substantially parallel to the axis of rotation of platen 2 and which constitutes a cutter for tearing off the paper strip. Edge 26 has a central portion 27 without serrations by means of which deflector 18 can be manipulated. Nonserrated portion 27 is beveled and is not of such length as to inhibit the cutting action provided by upper edge 26, the major portion of which is serrated.

Finally, deflector 18 has two shoulders 28 adapted to cooperate with two projections 29 on levers 6 and two side members 30, each of which has a vertical slot 31 in which shaft 3 engages. Each side member 30 has a downwardly projecting arm 32 linked to the corresponding lever 6 by a spring 33. The springs 33 bias deflector 18 toward platen 2 and into the rest position shown in the drawing with bail rollers 24 resiliently held against platen 2.

The elements 19 and the slots 20 comprise pivot structure mounting deflector 18 for swinging about an axis parallel to the axis of rotation of platen 2. This pivot structure is disposed on the opposite side of platen 2 from edge 26. Further, elements 19 are shiftable longitudinally of slots 20 to permit deflector 18 to shift toward and away from wheels 14 with platen 2.

The operation of the device is as follows:

During each rotation of shaft 13, cam 12 rotates levers 7 and 8 anticlockwise. Levers 7 and 8 thereby push levers 6 forwardly (to the rear in the drawing), causing shaft 3 to slide in slots 4. Thus, platen 2 is urged forwardly against wheels 14 to effect printing. Shaft 3 also pulls deflector 18 forwardly, elements 19 sliding in slots 20.

In order to insert the paper strip around platen 2, a light pressure is exerted by hand on unserrated portion 27 and this lowers cutting edge 26 to withdraw bail rollers 24 from platen 2, causing deflector 18 to rotate about elements 19 in slots 20 until it is arrested with shoulders 28 against projections 29 of levers 6. The end of the paper strip is then introduced between deflector 18 and platen 2 and portion 27 is released. Springs 33 then return deflector 18 to the position of the drawing, by means of which the paper is urged against platen 2 by bail rollers 24 and automatically remains behind cutter 26.

I claim:

1. A paper guide structure for a printing device having a roller platen and printing means comprising

a support frame fixedly mounting said printing means,

an arcuate deflector extending part way around said platen having a window therein disposed adjacent said printing means facilitating printing on a strip of paper disposed between said deflector and said platen and a serrated edge disposed substantially parallel to the axis of rotation of said platen to facilitate tearing of said printed strip, said platen and said deflector being movably mounted on said support frame for movement together toward and away from said printing means to effect said printing,

pivot structure mounting said deflector for swinging about an axis parallel to the axis of rotation of said platen as to move away from said platen when a strip of paper is to be inserted, said pivot structure being disposed on the opposite side of said platen from said edge and comprising a pair of elongated, longitudinally aligned pivot elements projecting outwardly of said deflector on respective opposite sides thereof, and means defining a slot for each of said pivot elements, each of said slots being elongated in a direction toward and away from said printing means and receiving a respective pivot element therein, said elements being pivoted about their mutual longitudinal axis within said slots and shiftable longitudinally of said slots,

spring means connected to said deflector and biasing said deflector toward said platen, said deflector having roller means mounted for rotation about an axis parallel to the axis of rotation of said platen, said roller means being disposed for holding said strip of paper tightly against said platen,

an intermediate portion of said edge being free from serrations and permitting manual engagement to swing said deflector and said roller means away from said platen by pivoting on said pivot structure, and

stop means to arrest said deflector at the end of said swing.

2. A paper guide structure for a printing device having a roller platen and printing means comprising

an arcuate deflector having a window disposed adjacent to said printing means for printing through said window upon a strip of paper interposed between said deflector and said platen,

a pivot structure having a shiftable pivot axis parallel to the axis of said platen mounting said deflector for compound

arcuate movement about said shiftable pivot axis between a first position in juxtaposition to said platen and a second position outwardly spaced from said platen, said shiftable pivot axis being spaced from said axis of rotation of said platen and projecting on the opposite side of said platen from said printing means, whereby said strip of paper can be inserted between said platen and said deflector when said deflector is in said second position,

spring means biasing said deflector toward said first position,

a support frame including a pair of stationary plates perpendicular to the axis of rotation of said platen,

a pair of end shafts secured to said platen on its axis of rotation,

a first pair of elongated slots in said pair of plates receiving said end shafts whereby said platen is shiftable in said first pair of elongated slots with respect to said printing means between a rest position wherein said strip of paper is spaced from said printing means and a printing position wherein said strip of paper is placed in contact with said printing means, said platen being biased toward said rest position,

a second pair of elongated slots in said pair of plates receiving said pivot structure whereby said deflector is shiftable in said second pair of elongated slots,

lever means connected to said shifts and operable for positively moving said platen and said deflector to said printing position against said bias, and

stop means carried by said lever means and abutted by said deflector when in said second position.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,581,861 Dated June 1, 1971

Inventor(s) Carlo Bellis

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 19, "printing, 2, platen 2" should read -- printing, against platen 2, --.

Signed and sealed this 7th day of March 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

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