Oct. 17, 1944. G. SIM 2,360,591

PAPER TEAR-OFF DEVICE FOR TYPING APPARATUS

Filed Nov. 30, 1942

FIG. 1

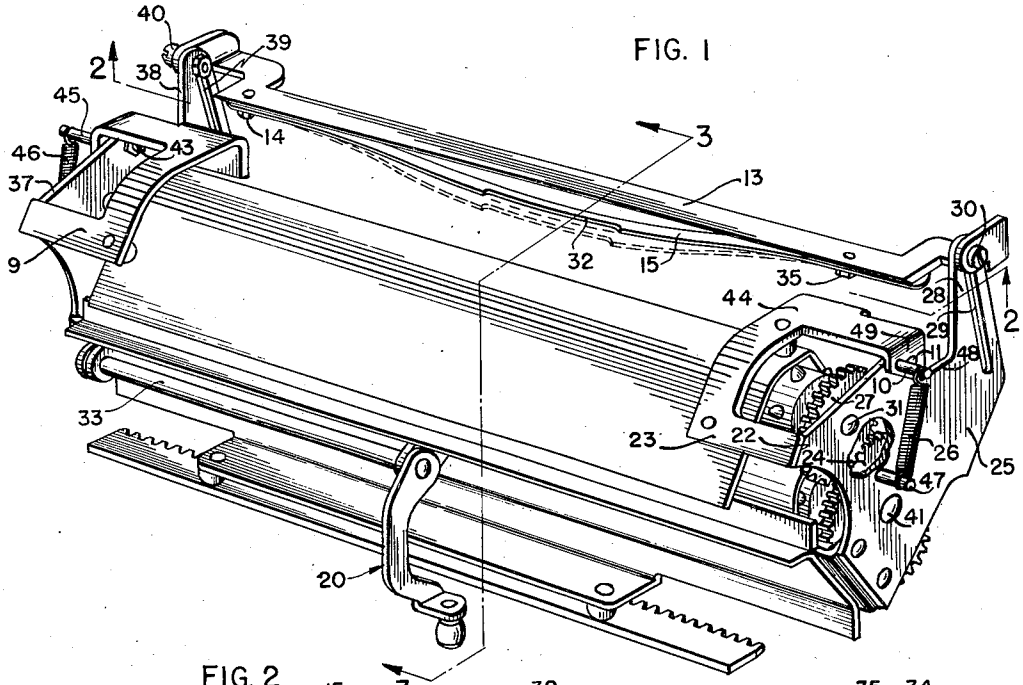


FIG. 2

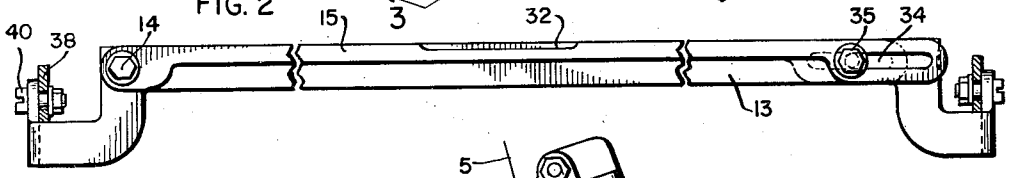
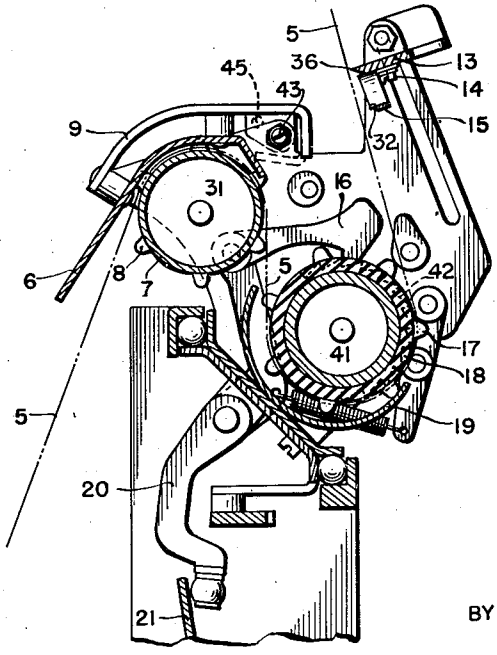


FIG. 3



INVENTOR
GORDON SIM

BY H. B. Whitfield.
ATTORNEY

Patented Oct. 17, 1944

2,360,591

UNITED STATES PATENT OFFICE

2,360,591

PAPER TEAR-OFF DEVICE FOR TYPING APPARATUS

Gordon Sim, Chicago, Ill., assignor to Teletype Corporation, Chicago, Ill., a corporation of Delaware

Application November 30, 1942, Serial No. 467,429

1 Claim. (Cl. 197—133)

This invention relates generally to recording apparatus and more particularly to paper severing and guiding devices therefor.

In the operation of various recording machines whereby intelligence is recorded on a continuous web, it is desirable to sever the recorded portion from the web supply. To accomplish this objective, the paper is, in some instances, perforated at regular intervals so that it may be torn along a straight edge into sheets of uniform size. In other machines a knife or severing edge is mounted on or near the web feeding mechanism for severing the paper at any desired point.

Irrespective of the manner in which the web is detached, its loose end must be guided with respect to the knife or severing edge so that the paper will be in such position relative thereto that it may be torn or detached at the end of the next recording or at a desired perforation line.

In typewriters, printing telegraph recorders, and like machines where the paper is fed over a platen and then to the severing device, it is necessary for the operator to grasp the loose end of the paper and guide it to the device, to prevent it from dropping down or running over the device. This requires the special attention of the operator and, in the case of printing telegraph machines, where several machines are being operated under the attention of a single operator, such procedure is difficult.

Accordingly, the primary object of the present invention is to provide in a recording apparatus a paper severing arrangement which assures the retention of the web of recording material invariably in severing relation with the severing device.

Another object of the invention is to provide for adjusting the paper retaining means to compensate for a change in cooperative relationship between the line feeding means of the recorder and its severing device.

A further object of the invention consists in providing recording machines with an attachment which will prevent the loose end of the web from falling out of alignment with the severing edge of the tear-off device thereof.

To accomplish the foregoing objects of invention, a platen of a printing recorder has associated therewith a paper severing device to which is mounted on the underside thereof a flexible spring-like member extending its entire length. One end of this spring-like member is rigidly secured to the knife by a screw; the other end is adjustably attached thereto by a similar screw extending through an elongated slot in the flexible member. The screw and slot mounting of the movable end of the flexible member affords an adjustment thereto which makes it capable of being formed into a loop or bow on the underside of the tear-off blade. As such, it occupies the space between the knife and the platen, thereby preventing the loose end of the paper from falling outwardly from the machine and running out of alignment with the tear-off blade as the web is fed from the platen by successive line feed operations.

For a more comprehensive understanding of the invention, reference will now be had to the following detailed description and the accompanying drawing forming a part of the specification, wherein like numerals are employed to designate like parts throughout, and in which,

Fig. 1 is a perspective view of a paper feed device for a printing telegraph machine embodying the present invention;

Fig. 2 is an inverted sectional view of the paper tear-off mechanism taken on the line 2—2 of Fig. 1; and

Fig. 3 is a transverse sectional view of the paper feed mechanism taken on the line 3—3 of Fig. 1.

The paper feed device shown in Fig. 1 is a part of a printing telegraph apparatus of the type disclosed in U. S. Patent No. 2,296,874 issued September 29, 1942, to A. H. Reiber, to which reference is made for the operational features thereof.

With reference to Figs. 1 and 3, the paper feed mechanism comprises a feed roll 7 and a platen 18, respectively carrying on the ends of each, sprocket pins 8 and 17. Feed roll 7 is carried on a shaft 31 to which gear 27 is fixedly attached. Gear 27 meshes with gear 24 mounted on platen shaft 41 which, like shaft 31, is journalled in end plates 25 and 37. A guide plate 6 is mounted above the feed roller 7 and is attached to the end plates 25 and 37 by guide plate brackets 44 and 9. Brackets 44 and 9 are rotatably attached to the end plates 25 and 37, respectively, at 11 and 43 by means of screws. Pins 10 and 45, projecting from the depending portions of the brackets 44 and 9 carry springs 26 and 46 anchored to the end plates 25 and 37 by pins as shown at 47. The guide plate 6 is thus pivotable about the points 11 and 43, and when in the raised or lowered position, is held firmly by the springs 26 and 46 since the pins 10 and 45 describe an arc which in either posi-

tion terminates at a point off center with respect to the pivot points 11 and 43. In the raised position the face 48 of end plate 25 coacts with the portion 49 of the bracket 44 to provide a stop against further rotation of the guide plate 6 under the tension of springs 26 and 46. Similar surfaces of the end plate 37 and the bracket 9 operate as a companion stop. In the lowered position, the projection 22 of the end plate 25 acts as a stop against rotation by retarding the arm 23 of bracket 44 at that point. Similar parts of the end plate 37 and the bracket 9 perform a like function.

The paper 5 having suitable apertures in the margin thereof (not shown) for engagement with the sprocket pins 8 and 17, respectively, of the paper feed roll 7 and platen 18 is carried over the feed roll and under the platen as shown in Fig. 3. It is guided in its path and held in engagement with the rolls by guide plates 6 and 19, the latter also serving as a cradle for the web when its direction is reversed during the initial feeding operation. Guide plate 6, when in its raised position, exposes the feed roll 7 making it easily accessible when the paper is started through the feeding mechanism.

Inasmuch as the power is applied to feed roll 7, as well as the platen 18 in a manner later described, the paper is first lifted upwardly and then forced downwardly and around the platen. This arrangement increases the number of points at which the driving force is applied to the web and thus prevents slippage.

This feature is particularly advantageous when the web comprises form assemblies made up of a plurality of sheets interspaced by carbon paper which are held superposed by a steel wire staple located in the center of each at the perforation line, since the alignment of the printed forms is not disturbed by unequal application of the driving force on the separate sheets of the assembly.

The continuous sheet is carried through the rolls and delivered to the paper severing device through the instrumentality of a line feed mechanism such as disclosed in the afore-mentioned patent, the operation of which is briefly described as follows: The power for the line feed operation is supplied by the line feed bail 21 and is transmitted through the arm 20 and the shaft 33 to the ratchet pawl 16 which reciprocally engages the teeth of ratchet 42 rigidly attached to the platen shaft 41 to impart step-by-step rotative movement to platen 18. In the present application, or use of this mechanism, the rotation of the platen 18 is, in turn, utilized to transmit an active force through the gears 24 and 27 to the feed roll 7 to give rotative movement thereto which, together with the action of the platen, carries the paper 5 past the printing point and on to the severing device in response to line feed operations.

A knife 13 is pivotally mounted on the upwardly extending arms 28 and 38 of the end plates 25 and 37 by screws 30 and 40 extending through slots 29 and 39 of said arms. Provision is thus made for two adjustments to the tear-off blade, the purposes of which will presently appear.

To the bottom edge of knife 13 is attached a flexible member 15 having a notch 32 in its center. The screw 14 rigidly secures one end of the flexible member 15 to the blade 13 and the other end of member 15 is adjustably held by a screw 35 operating in a slot 34. By depressing the center of the member 15, the slot 34 can be caused to occupy various positions with respect to the screw 35, and by tightening the screw 35, the flexible member 15 can be held in one of several bowed positions, as shown in Fig. 1.

In operation, the tear-off device, according to the present invention, is adjusted by loosening the screws 30 and 40 and sliding the blade 15 to the desired position in the slots 29 and 39. The knife may also be rotated about the points 30 and 40 to present the cutting edge 36 to the paper at the proper angle for making the tear of the web. When adjusted in this manner, the screws 30 and 40 are tightened to maintain the parts in the adjusted position.

The flexible member 15 is adjusted by loosening the screw 35 and depressing the center of the member 15 to a point commensurate with the above adjustment of the blade with respect to the platen.

The groove 32 in the member 15 permits the unretarded passage of the afore-mentioned paper-carbon form assemblies which are usually held together by a steel wire staple, as described, and the dual adjustment of the tear-off blade in the slots 29 and 39 compensates for the various distances of the first line of printing from the top edge of the forms due to the various sizes or widths of headings printed on the forms.

After the above-described adjustments are properly made, the bowed member 15 will occupy the space between the knife edge 36 and the point on the platen where the paper is delivered. When the paper is severed at the knife edge 36, the loose end will tend to fall forward against the flexible member 15 and as successive line feed operations are effective the paper will be held in alignment by the member 15 and passed to the cutting edge of the knife. Accordingly, the flexible member prevents the loose end of the paper from passing out in front of the knife as it would do if unrestricted and thus assures passage of the paper below the knife edge 36.

The application of this invention to machines not so equipped may be easily made by simple modifications and while only one is herein shown, the scope of the invention is to be limited only by the appended claim.

What is claimed is:

In combination, means for facilitating the severance of form material having preprinted headings, comprising a platen frame, a platen supported by said frame, said frame having end plates for supporting said platen therein, corresponding aligned slots in said end plates extending upwardly from a point in proximity to said platen, a paper severing device including a tearing bar, means for slidably mounting said device in said slots, whereby said device may be adjusted with respect to said platen to compensate for various distances of first line of printing from top edge of form, a flexible member, and means for mounting said flexible member on said severing device whereby said flexible member may be bowed into various sized loops positioned intermediate said severing device and said platen in a manner to be dually effective to guide the form material and to prevent the leading edge of the form material after severance from catching under said tearing bar in any adjusted position of said bar.

GORDON SIM.