

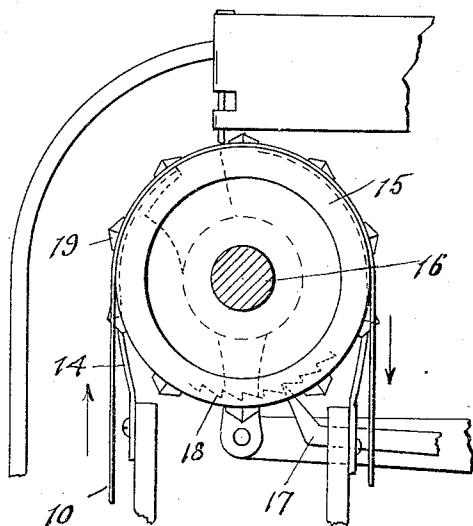
Feb. 7, 1933.

K. D. EVANS

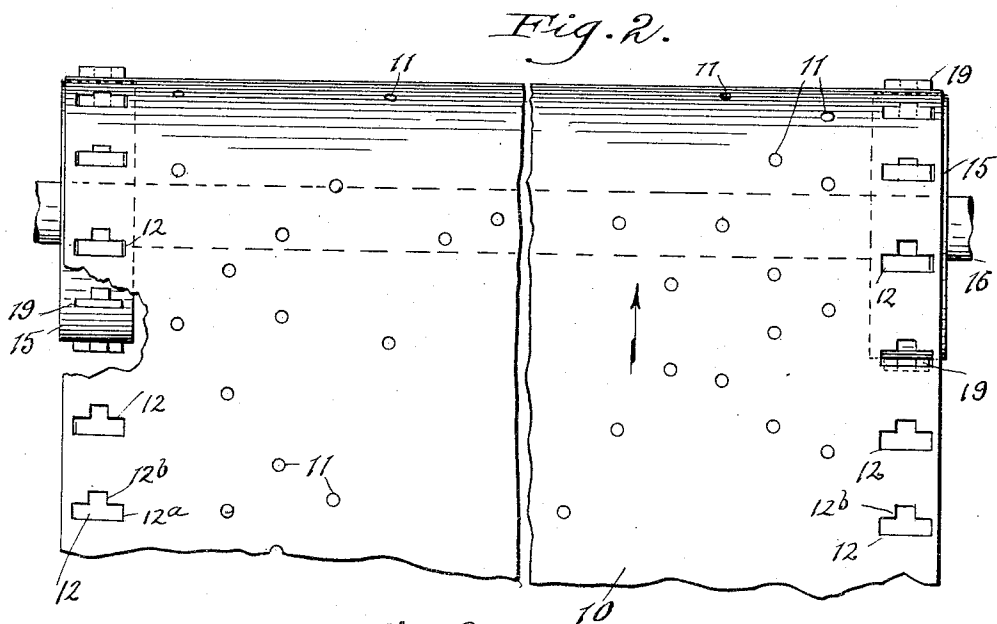
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PERFORATED RECORD SHEET

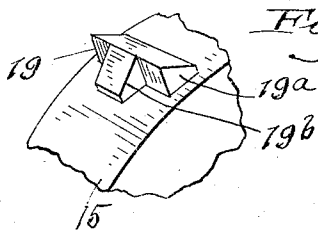
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*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

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## UNITED STATES PATENT OFFICE

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## PERFORATED RECORD SHEET

Application filed May 14, 1927. Serial No. 191,315.

This invention relates to perforated record sheets of the type commonly employed on various machines, such as automatic typewriters or automatic typewriter operating mechanisms, and has special reference to the shape of the perforations which are arranged along the margins of the sheet and are adapted to receive the teeth of the sprockets of the sheet feeding mechanism.

It is customary to control or operate certain types of machines, such as those mentioned above, by a record sheet having along its margin feeding perforations and between its margins other perforations, which may be termed operating perforations, inasmuch as they are so positioned on the record sheet as to bring about the desired operation or functioning of the machine.

The feeding perforations heretofore have always been round and there have generally been two rows along each margin, the same being engaged by two rows of round, pointed sprocket teeth on the peripheries of two sheet feeding sprockets. The objection to the use of round feeding perforations and of correspondingly shaped sprocket teeth is that if there is any considerable resistance to the movement of the sheet the perforations of the sheet become enlarged and the sheet torn. Furthermore, in some types of machines, such as in automatic typewriters or typewriter operating mechanisms, there is a lateral thrust on the sheet which is resisted by the sprocket teeth, and this at times causes enlargement of the perforations and tearing of the sheet.

The principal object of the invention is to provide a record sheet having perforations so shaped that when engaged by appropriately shaped sprocket teeth they will overcome the objections or disadvantages pointed out above.

The invention may be briefly summarized as consisting in a record sheet having along its margins feeding perforations of the novel shape hereinafter described.

In the accompanying sheet of drawing,

Figure 1 is a fragmentary transverse sectional view of a portion of a machine, such as an automatic typewriter, adapted to accommodate a record sheet formed in accordance with the present invention.

Figure 2 is a view looking toward the right of Figure 1, showing the sheet as it comes up from below and passes over the feeding sprockets.

Figure 3 is a view of a portion of one of the feeding sprockets on an enlarged scale showing in perspective the preferred shape of the sprocket teeth.

Referring now to the drawing, my improved record sheet is shown at 10, this sheet being usually an endless sheet of paper provided between the margins with operating perforations 11 and provided along its margins with feeding perforations 12 formed or shaped in accordance with my invention. In Figure 1 I have shown a portion of the sheet feeding mechanism of an automatic typewriter constituting the subject matter of my prior application filed June 12, 1926, Serial No. 115,659. In this mechanism the sheet 10 passes in the direction indicated by the arrows in Figure 1 around a suitably shaped sheet metal guide 14, and is fed by two sprockets 15 on a feeding shaft 16, which sprockets in this instance are given a step-by-step movement by a pawl 17 engaging a ratchet wheel 18 on one of the sprockets.

As above stated, the sprocket wheels were heretofore provided with two annular rows of sprocket teeth, and the feeding perforations along the margins adapted to be engaged by the teeth were round in cross section. In accordance with the present invention, I provide one row of feeding perforations along each margin and they are widened and also deepened to provide sufficient stock adapted to bear against the teeth to resist the pull of the teeth in feeding the sheet and the stresses tending to move the sheet

laterally without materially enlarging the perforations or tearing the sheet. It will be noted that each feeding perforation has a body portion 12<sup>a</sup> which is elongated and is, in fact, of rectangular shape. A perforation of this shape, i. e., rectangular in form, would present sufficient stock for engagement with a correspondingly shaped sprocket tooth to resist tearing by the pull on the sheet exerted by the tooth, but difficulty would be encountered in causing registration or engagement between the perforations and sprocket teeth. Accordingly, I provide a further modification in the shape of the perforations by providing from the middle of one side of each rectangular portion an extension 12<sup>b</sup> making the perforation substantially T-shaped, with the extension projecting from the body portion of the perforation in the direction that the sheet is to be fed.

Feeding perforations of this shape will answer the requirements very effectively providing sprocket teeth having substantially the shape shown in the drawing, wherein the teeth are designated 19, are employed. Each of these sprocket teeth has a rectangular body portion 19<sup>a</sup> adapted to engage in the correspondingly shaped body portion of the perforation, and, in addition, it has an extension 19<sup>b</sup> which is adapted to engage in the extension 12<sup>b</sup> of the perforation. The top faces of the body portion and of the extension are beveled in opposite directions from about the center of the tooth to facilitate the engagement and disengagement of the teeth and perforations.

With this tooth construction employed with the above described shape of perforations, and with the sprockets rotated in a direction such that the extensions of the perforations and teeth are the leading portions thereof, the extensions of the teeth will enter the extensions or narrow portions of the perforations and will centralize the paper, so to speak, with reference to the sprockets, there being a guiding action which will cause the wider or body portions of the teeth to easily enter the wider or body portions of the perforations. The narrow portion of the tooth will enter the narrow portion of the perforations quite readily because of the beveled shape of the former, and the tooth will readily leave the perforation without tearing the sheet because of the beveled top of the trailing portion of the tooth.

When a tooth and a perforation are in full engagement, the flat face at the root of the front end of the extension 19<sup>b</sup> and the flat faces of the body portion on opposite sides of the extensions are the driving portions of the tooth, which portions engage the front wall of the extension of the perforation and the front side of the body portion of the perforation on opposite sides of the extension

thereof. In other words, the full width of the tooth is utilized in feeding the sheet, and, accordingly, the feeding pressure or pull of the tooth is distributed over such a wide area that liability of tearing is minimized and practically eliminated. Furthermore, the full width of the tooth, including the extension 19<sup>b</sup>, is utilized in resisting the lateral stresses and here again there is a sufficient stock of paper engaging the tooth to practically eliminate likelihood of the perforations enlarging or of the sheet being torn.

In consequence, by reason of the shape of these feeding perforations which I provide along the margins of the record sheet, the life of the record sheet is greatly extended, as it can be used repeatedly and for a long period of time without affecting the accuracy and efficiency of the machine with which the sheet is used.

Having thus described my invention, I claim:

1. A record sheet control mechanism comprising a sheet having a series of perforations adjacent each margin, each of said perforations comprising a transversely elongated body portion and a longitudinal extension, and a sprocket having teeth engaging in said perforations, each of said teeth comprising a transversely elongated block and a longitudinal extension intermediate the ends of said block, said block and said extension having their top surfaces oppositely beveled to facilitate engagement and disengagement of the teeth and perforations.

2. A record sheet control mechanism comprising a sheet having a series of perforations adjacent each margin, each of said perforations being of substantially T-shape, and a sprocket having teeth corresponding in configuration to said perforations, each of said teeth comprising portions disposed in the relation of the head and stem of a T, said portions having their top surfaces oppositely inclined to facilitate engagement and disengagement of the teeth and perforations.

In testimony whereof, I hereunto affix my signature.

KELLEY D. EVANS.

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