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H. DECKER

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TYPEWRITER

Filed June 11, 1934

Fig. 1.

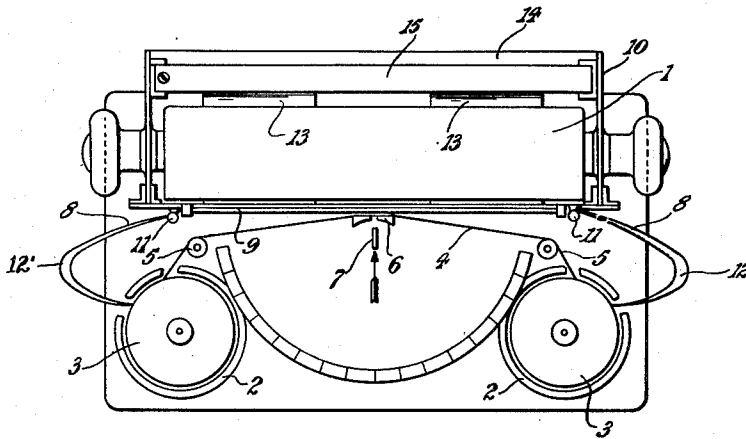
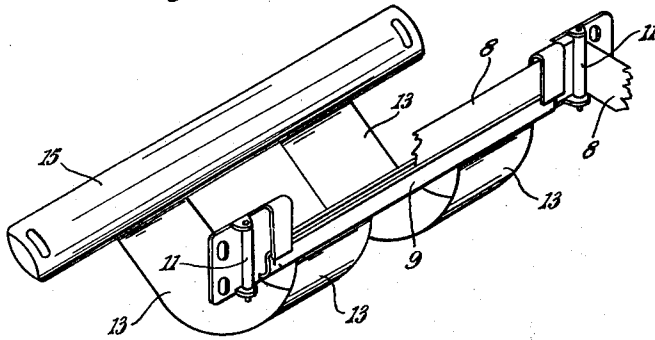


Fig. 2.

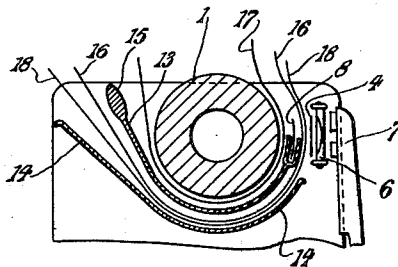


Fig. 3.

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UNITED STATES PATENT OFFICE

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TYPEWRITER

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1 Claim. (Cl. 197—153)

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March 2, 1927; 357 O. G. 5)

This invention relates to typewriters of the kind utilizing besides the usual inking ribbon (called hereinafter the main ribbon) an auxiliary inking ribbon to permit of the simultaneous production of several copies of the matter typed without using carbon paper.

A typewriter of this kind has been proposed in which the main and auxiliary ribbons were wound on separate spools, the main ribbon being supported in front of the platen by the usual vibrator, and the intermediate ribbon being supported to the rear of the main ribbon in a channelled guide extending for substantially the whole length of the platen, the guide being formed integrally with a paper guiding plate extending beneath and round to the rear of the platen. The auxiliary ribbon, which was longer than the main ribbon, was supported in guides carried on brackets extending outwardly on either side of the typewriter frame.

Such an arrangement is unsatisfactory because firstly the use of separate spools renders it a relatively costly undertaking to adapt existing typewriters for use with duplicate ribbons instead of carbon paper, and secondly the outwardly projecting brackets increase the width of the machine, which is a serious disadvantage, not only from the point of view of transport, but also because the typewriter will take up more space in what may be an already overcrowded office. Moreover the brackets impede the operator in turning the handle for effecting line spacing movements of the platen.

Typewriters having main and auxiliary ribbons wound in superimposed relationship on a common pair of spools have been proposed, but none of these have proved satisfactory in practice, owing to the difficulty of ensuring even feeding of the two ribbons, and resulting danger of smudging the paper.

The object of the present invention is to provide a typewriter having main and auxiliary ribbons wound on common spools in which this disadvantage is avoided.

According to the invention the auxiliary ribbon, which is longer than the main ribbon, has its middle portion supported in a guide located behind the main ribbon and of length not exceeding the total width of the platen, so as to form loose loops between the ends of the guide and the spools in the intermediate position of the paper carriage. The guide is adapted to carry the auxiliary ribbon with it as the carriage moves, thus effecting the necessary step-by-step movement of the auxiliary ribbon relatively to

the typewriter keys, until the loose loop away from which the carriage is moving is drawn taut, whereupon the guide will permit the auxiliary ribbon to slide through it to effect the forward feed of the auxiliary ribbon.

To facilitate the understanding of the invention, one form of construction thereof will now be described in detail, by way of example, with reference to the accompanying drawing, in which:—

Fig. 1 is a perspective view of the paper-introducing device and also the guiding contrivance for the auxiliary ribbon.

Fig. 2 is a plan view of a typewriter with the device mounted in position, and

Fig. 3 is a cross section through the platen of the typewriter on an enlarged scale.

In front of the platen 1, which is carried by and moves with the typewriter carriage, are mounted the fixed cases 2 for the spools 3 carrying the two ribbons. The main ribbon 4 is conveyed in the well known manner over the guiding rollers 5 and is guided by means of a guiding device 6, fixed in the centre of the typewriter, past the printing point of the type bars 7. The auxiliary ribbon 8, which makes the copies, is wound together with the main ribbon 4 on the spools 3. In front of the carriage and at the level of the main ribbon 4 and of the spools 3 and near the platen 1, is mounted a channelled guide 9 for guiding the auxiliary ribbon. This guide 9 is fixed between the side walls 10 of the carriage. At each end of the channelled guide 9 is a guide roller 11, which guides the auxiliary ribbon 8 through the guide 9 in front of the platen 1. Loops 12, 12¹ are formed at the two ends of the guide 9 when the carriage is at its mid-position. These loops 12, 12¹ follow the to-and-fro motion of the carriage and allow the auxiliary ribbon 8 to be evenly led through the guide 9 so as, in this way, to pass before the whole length of the platen.

The purpose of the provision of the loops 12, 12¹ is as follows. The central portion of the auxiliary ribbon is carried with the guide as the carriage moves to the left without relative movement of the guide and ribbon taking place, until the loop 12 is drawn tight. Further movement of the carriage to the left will then draw the ribbon through the guide.

The spools 3 are intermittently driven at each key actuation in the ordinary way, so as to feed the two ribbons intermittently forward by a letter space at a time. The length of the loops 12, 12¹ in the auxiliary ribbon is, however, prefer-

ably such as to correspond to the length of a line, so that this movement is taken up by the loops without the auxiliary ribbon moving relatively to the guide, the right hand loop 12, therefore, being drawn tight at the end of the line. The auxiliary ribbon, therefore, operates differently from the main ribbon. The latter is moved relatively to the platen at each key actuation, while the former remains stationary relatively to the platen throughout the typing of a line, but is of course moved relatively to the type bars at each letter impression due to the movement of the carriage, so that in the case of both ribbons the impressions of consecutive letters in a line are spaced apart along the length of the ribbon.

The introduced sheets to be impressed pass on either side of the guide 9 without touching the lower side of the ribbon 8 (see Fig. 3). At the lower side of the channelled guide 9 are disposed the guide strips 13 which lead under the platen 1, and are fixed at their rear ends to a rail 15 which is placed between the platen 1 and the introducing device 14 and fixed between the side walls 10. The guide strips 13 serve to separate the two copy-sheets 16 and 17 which are separately conducted before and behind the auxiliary ribbon 8 and in this way this ribbon 8 is placed between the two copy-sheets 16 and 17. The guide strips 13 may be of metal, fabric, celluloid or any other flexible material.

The original 18 is put simultaneously with a thin transparent copy-sheet 16 between the device 14 and the separating rail 15; and at the same time the copy-sheet 17 is introduced into the space before the separating rail 15 in such a manner that the leading edges of the three sheets simultaneously reach the opening between the platen 1 and the device 14.

On turning the platen 1, the three sheets are advanced at the same time; the copy-sheet 17 placed between the two other sheets, 16 and 18, is always separated from the latter by means of the guide strips 13. If the turning of the platen

1 is continued, the sheet 17 is led into the space between the platen 1 and the auxiliary ribbon 8 which is guided by the rollers 11, whereas the sheets 16 and 18 pass through the space between the ribbons 4 and 8. When the type bar 7 strikes the main ribbon 4, an impression is obtained on the original 18, and, at the same time, there is produced, by means of the auxiliary ribbon, an impression on the back of sheet 16 and on the front of sheet 17, the latter bearing an impression corresponding to the impression of the original, whereas the thin transparent sheet 16 receives the impression on the rear but is quite legible from the front, owing to the transparency of the sheet.

What I claim as my invention and desire to secure by Letters Patent is:—

In a typewriter having a frame, a paper carriage mounted for reciprocating movement on the frame, a platen carried by the carriage, a pair of ribbon spools on the frame, means for effecting intermittent actuation of the spools to feed ribbon carried by them from one spool to the other, a main inking ribbon wound on said spools, and a support for supporting the main ribbon in position in front of the platen, the combination of a transversely extending guide mounted on the paper carriage between the main ribbon and the platen with its ends within the total width of the typewriter, and an auxiliary inking ribbon, of length greater than the main ribbon, which auxiliary ribbon is wound on the same spools as the main ribbon with its middle portion supported by the guide so as to form in the intermediate position of the carriage loose loops between the ends of the guide and the spools, the guide being adapted to carry the auxiliary ribbon with it as the carriage moves during typewriting until one of the loose loops becomes taut, and thereafter to permit the auxiliary ribbon to slide through it to effect the forward feed of the auxiliary ribbon.

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