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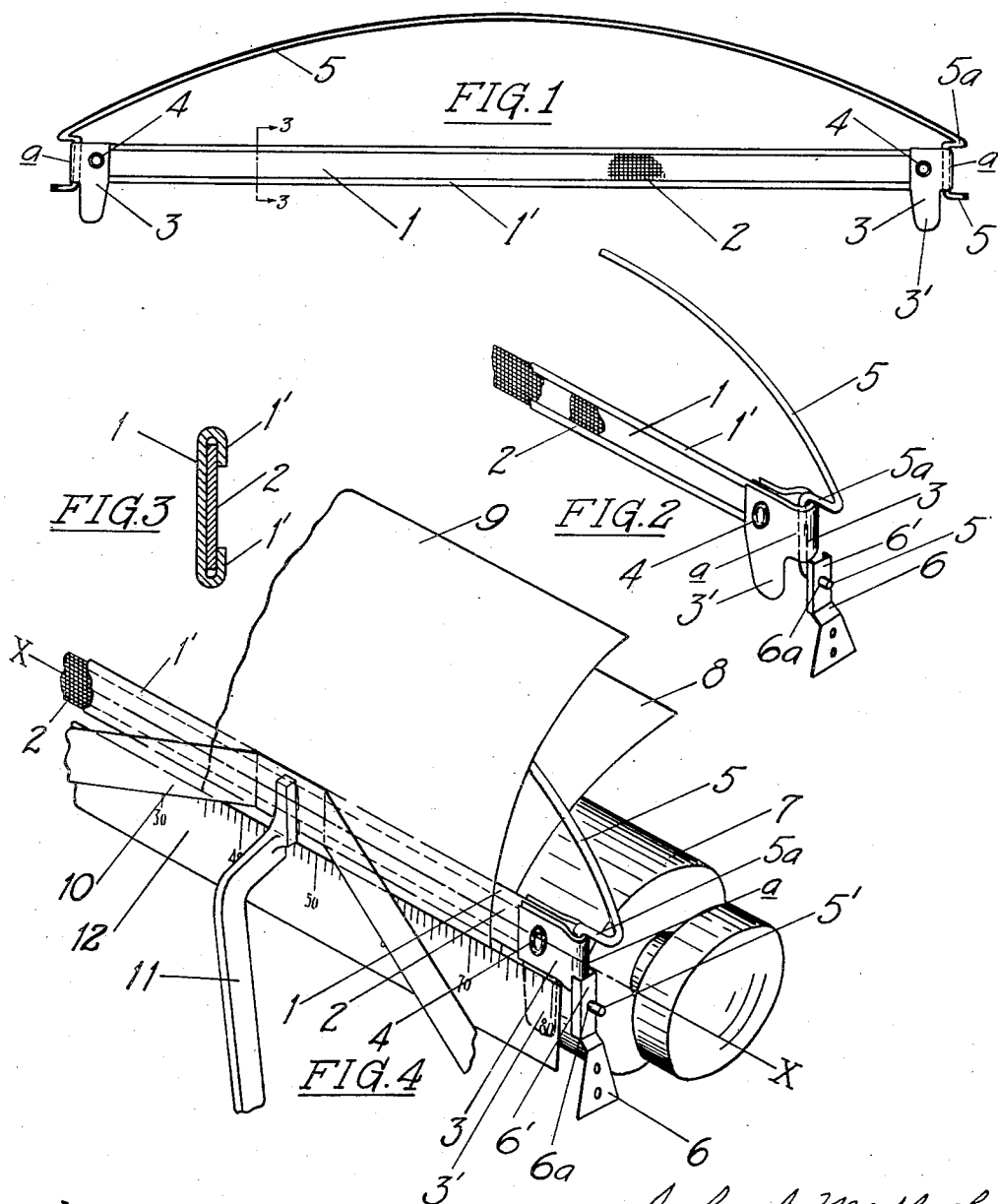
N. V. CARGILL ET AL

2,010,137

DUPLICATING ATTACHMENT FOR TYPEWRITERS

Filed Aug. 1, 1934

2 Sheets-Sheet 1



John J. Medlock
Norman V. Cargill.
INVENTORS

BY *Harry D. Wallace*
ATTORNEY

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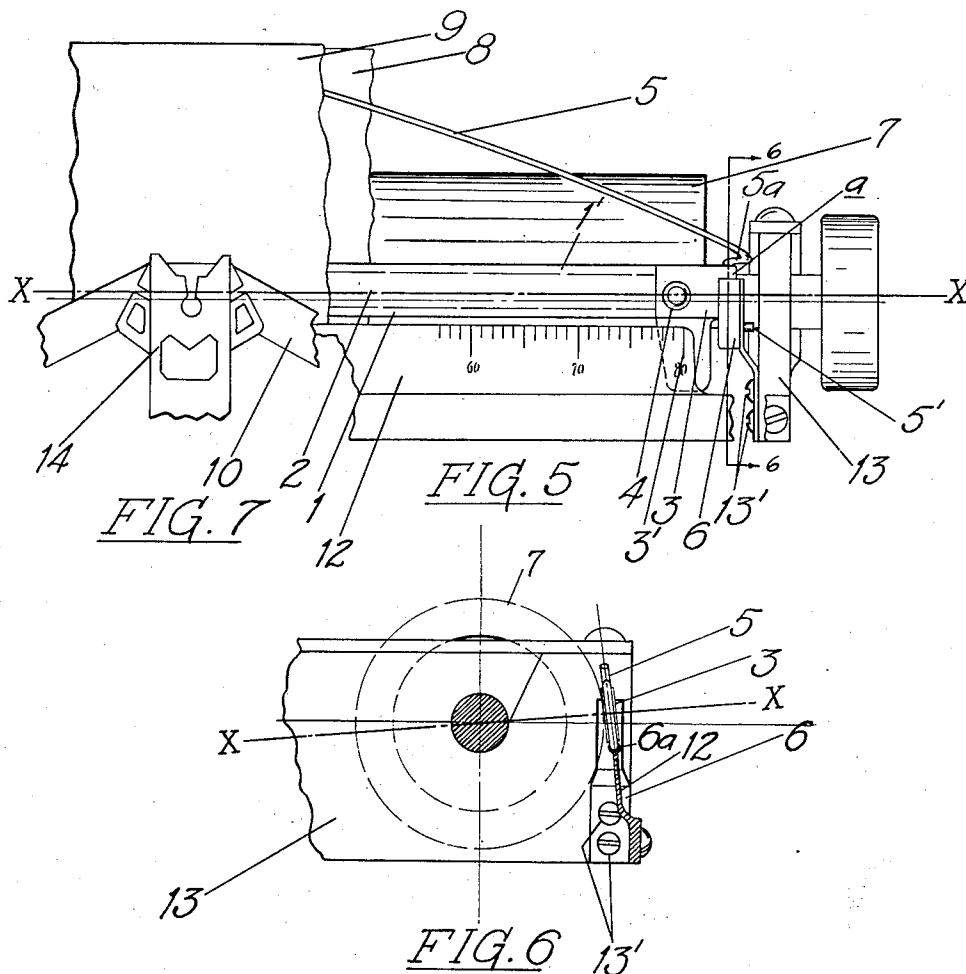
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John G. Medlock
Norman J. Cargill.
INVENTORS

BY *Harry Wallace.*
ATTORNEY.

UNITED STATES PATENT OFFICE

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DUPLICATING ATTACHMENT FOR
TYPEWRITERSNorman V. Cargill and John J. Medlock,
Rochester, N. Y.

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3 Claims. (Cl. 197—126)

This invention relates to a duplicating attachment for typewriters, and has for its primary object to replace the carbon tissues in common use for said purpose, by substituting therefor novel and simple means for producing copies as legible, permanent and smudgeless as the printed originals. A further object is to eliminate roll-marks, "treeing" and general smutting, such as occurs by the use of the present carbon tissues.

A further object is to provide a normally stationary auxiliary cloth or other inked copying ribbon or element, of the same, or of different coloring than the master ribbons, which may be interposed between the first and second sheets of paper, whereby exact duplicates of the original texts may be simultaneously printed in ink upon the second sheets by the impression strokes of the type-bars; the said auxiliary ribbon consisting of a length of inked fabric, that may be disposed between and parallel to the revoluble platen and the reversible master ribbon that travels automatically to and fro lengthwise of the platen by the manipulation of the ordinary keyboard of the machine; the said auxiliary ribbon being secured at its ends to similar novel flaps or members, and being supported and partially sheathed by an extremely thin strip of "cellophane", "Kodapak", or other suitable pliable non-absorbent and non-breakable substance, which is arranged to expose the auxiliary ribbon only to the impression face of the second sheet, and at the same time prevent smudging of the back side of the first sheet; the said copying element being slightly longer than the breadth of the paper, so as to facilitate removably anchoring the duplicating mechanism to convenient carriage attachments of the machine, which, for example, support the usual graduated index bar that parallels, and indicates the spacing of the letters in the line of writing; the sheath having its lateral edges folded inwardly towards each other to grip the corresponding edges of the copying element and to provide a clear longitudinal opening, equal in length to the printing range of the typewriter, that exposes the said element to the impression face of the second sheet.

And a further object is to provide novel and simple means for sealing the sheath and the duplicating element to the end frames, and particularly for tensioning the said element, so as to prevent accidental shifting or derangement of the parts, as well as to normally hold the duplicating element out of contact with the second sheet except while the type-bars are effecting the impression strokes. By this arrangement, the

smutting or other defacing of the second sheets may also be obviated.

We attain these objects by the means set forth in the detailed description which follows, and as illustrated by the accompanying drawings, in which—

Figure 1 is a detached elevational view of the duplicating ribbon or element and related parts, the insertion springs being omitted. Fig. 2 is a broken perspective, showing the construction of one end of the device. Fig. 3 is an enlarged vertical section, taken on line 3—3 of Fig. 1, showing the method of applying the sheath to the copying ribbon. Fig. 4 is a broken perspective, showing one end of the device applied to a typewriter. Fig. 5 is a broken front elevation, showing the relation between the device and the first and second sheets of paper. Fig. 6 is a vertical section, taken on line 6—6 of Fig. 5, showing the method of operatively holding the device in a typewriter. Fig. 7 is a broken elevational view of the master ribbon-guide common to certain makes of typewriters.

In the drawings, 1 represents a strip of "Kodapak" and 2 an inked cloth ribbon, similar to the regular or master typewriter ribbon, which is held in the strip by confining it within the in-turned lateral edges 1', as indicated in Figs. 1, 2 and 3. At both ends of the device 1—2, are fastened folded flaps or members 3 preferably of celluloid, which straddle the strip 1 and ribbon 2, said device being secured to the flaps by means of metal eyes 4, as shown in Fig. 2. By this arrangement, the entire thickness of the materials 1—2—3 is securely fastened together by the eyes 4. This folding of the flaps 3 provides loops a which allow the opposite ends of the bow-wire 5 to pass through and thus put linear tension on the cellophane 1 and ribbon 2. The bow-wire 5, together with the flaps 3 and springs 6, provide novel and extremely simple means for applying the duplicating device to a typewriter carriage. The springs 6 are preferably installed permanently, as for example, by securing them to bearing posts 13—which are standard to several makes of typewriters—in the proper location to receive the removable portions of the device, the posts 13 being disposed in such position that they may be readily utilized for the said purpose without alteration. The springs 6 are of such nature that they may be bent back slightly to receive the device of Fig. 1, by guiding the ends 5' of the bow-wire into channels 6' of the springs, and then depressing the device until the ends 5' of the bow-wire spring outwardly through

holes 6a that are suitably placed in the bottoms of the channels. This locks the device into position, and any frictional resistance communicated to the device through the paper 8-9 and the platen 7 will not cause the parts 1 and 2 to roll up or down relatively to the line of writing x. To remove the duplicating device, the springs 6 are pressed back towards the posts 13 sufficiently to permit the duplicating element to be lifted out.

Referring to Fig. 4, the sheets 8 and 9 are inserted in the typewriter in the usual way and the platen 7 is next turned until the sheets are visible above the index-bar 12. Then the device of Fig. 1 is grasped in one hand by means of the bow-wire 5, and then, using the other hand to raise the paper, said device is pushed down between the sheets 8 and 9 in such way that the ends 5' of the bow-wire engage the channels 6' of springs 6. Then by pushing the device downwardly still farther, the ends 5' of the bow-wire will find the holes 6a in the springs 6, and will then spring into place and effect the locking of the device in the operative position, as shown in Figs. 2, 4 and 5. Ordinarily, the bow-spring 5 comes between the sheets 8 and 9, as shown in Fig. 4, but it may be disposed in front of sheet 9. The shape of the bow-wire is such as to restrain the end flaps 3 and the copying element 1-2 from motion, either upwards or downwards, as long as the wire 5 and the springs 6 are interlocked. This is accomplished by the bends 5a in the bow-wire, which occur just above the loops a of flaps 3, as shown in Figs. 2 and 4. In Figs. 5 and 6, the springs 6 are seen fastened to the bearing posts 13 by screws 13', and the same views show the way the fingers 3' of flaps 3 are held in under the index-bar 12; also the way in which the sheath 1 and auxiliary ribbon 2 are held in back of the first sheet 9, and the usual master ribbon-guide 14, may be seen in Fig. 7. From the foregoing, it will be understood that the only parts that may require replacement are the sheath 1 and ribbon 2, which alone suffer from usage and wear.

The strip 1 has been selected in the present case to sheath and hold the auxiliary ribbon 2 in place and at the same time prevent "take-off" on the back of the first sheet 9, not because it has great strength to resist tearing in single thickness, but by the simple act of turning over its edges 1' as shown in the drawings, the sheath is rendered safe from destruction by tearing. In tension, the sheath is quite strong, and when combined with the auxiliary ribbon 2, and the making of the end seals through the entire thickness with the metal eyes 4, the composite strip thus formed is very strong in its long direction. Furthermore, "Kodapak" has the desired slippery surface to enable the sheets 8 and 9 to slide easily past the strips 1-2. The method of securing the ribbon 2 in the folded sheath provides a very desirable support in the nature of a free edge suspension of the ribbon as long as the ribbon is restrained at its ends, which gives the ribbon the right amount and kind of flexibility to insure good impressions. In fact, the ribbon 2, under these conditions, is only in intimate contact with the second sheet 8 when a type-bar is pressed through to make an impression, for when the type-bar is released, the end restraint breaks the contact with the second sheet, as described. In other words, the ribbon 2 is only in contact with the sheet 8 when a letter is being printed, thus preventing "treeing", roll-marks, and other

smutting by the removal of the cause. The bow-wire provides the necessary tension to the strip 1-2, and at the same time provides a novel and simple method of inserting the copying device in a typewriter. Furthermore, the use of an inked copying element makes the duplicates by the same method as the originals and at the same time. This is a printing process wherein the ink is absorbed by the paper, instead of being merely deposited on the surface of the paper, as characterized by the use of the carbon tissues. Duplicates made by the present device are as permanent as the originals and will not rub off.

It will be understood from the foregoing, that the copying element 1-2 alone is disposed between the sheets 8 and 9, and that by this arrangement only a single thickness of the ribbon and practically a single thickness of the sheath occurs directly in the line of writing x, and adds greatly to the clarity of the duplicate copies. The relatively wide spacing of the flaps or heads 3, call for special means for positively connecting and sealing the joints between the flaps 3 and the sheath 1, so that when the proper tension is exerted by the bow-wire 5 in the long way of the element 1-2, the latter becomes stretched and held taut. The slight thickening of the copying element due to the folding of the lateral margins 1' of the sheath tends to create a slight spacing of the auxiliary ribbon from the second sheet 8, which is very desirable, since it becomes the natural state of the parts, except at the instant a type-bar is making its impression stroke. By this arrangement or condition, there is no danger of the wet ribbon 2 being dragged over and smudging or marring the face of the second sheet.

The confining of ribbon 2 beneath the folded margins 1' of the sheath, as shown herein, provides the free edge suspension of the ribbon 2 that not only holds the ribbon in proper position, but enables the tension created by the bow-wire 5 to act uniformly on the entire breadth and length of the copying element and keeps both members of the element taut as long as the device is installed in the typewriter. This latter feature is quite important, since the relatively long stretch of the said element must be suitably tensioned to prevent wrinkling or other distortion in order that perfectly clear and legible duplicates of the writings may be assured during the life of the duplicating parts.

Having thus described our invention, what we claim, is—

1. A duplicating device for typewriters including an impression strip, and a sheath for the strip composed of an integral strip of cellulose-acetate material engaged with one face of the impression strip and having its sides folded over the side edges and onto the opposite face of the impression strip, said folded sides having their edges spaced from one another and supporting the impression strip for free longitudinal and lateral movement independent of the sheath, and means to connect the sheath and impression strip together at only their ends.

2. A duplicating device for typewriters including an impression strip, and a sheath for the strip composed of an integral strip of material having a glossed surface engaged with one face of the fabric and having its sides folded over the side edges and onto the opposite face of the impression strip, said folded sides having their edges spaced from one another and supporting the im-

pression strip for free longitudinal and lateral movement independent of the sheath, and means to connect the sheath and impression strip together at only their ends.

5 3. A duplicating device for typewriters including an impression strip, and a sheath for the strip composed of an integral strip of material engaged with one face of the fabric and having its sides folded over the side edges and onto the opposite

face of the impression strip, said folded sides having their edges spaced from one another and supporting the impression strip for free longitudinal and lateral movement independent of the sheath, and means to connect the sheath and impression strip together at only their ends.

NORMAN V. CARGILL.
JOHN J. MEDLOCK.