Nov. 19, 1935. J. Q. SHERMAN 2,021,391

AUTOMATIC MANIFOLDING COLLATOR AND CARBON ASSEMBLY

Filed Dec. 21, 1931

Fig. 1

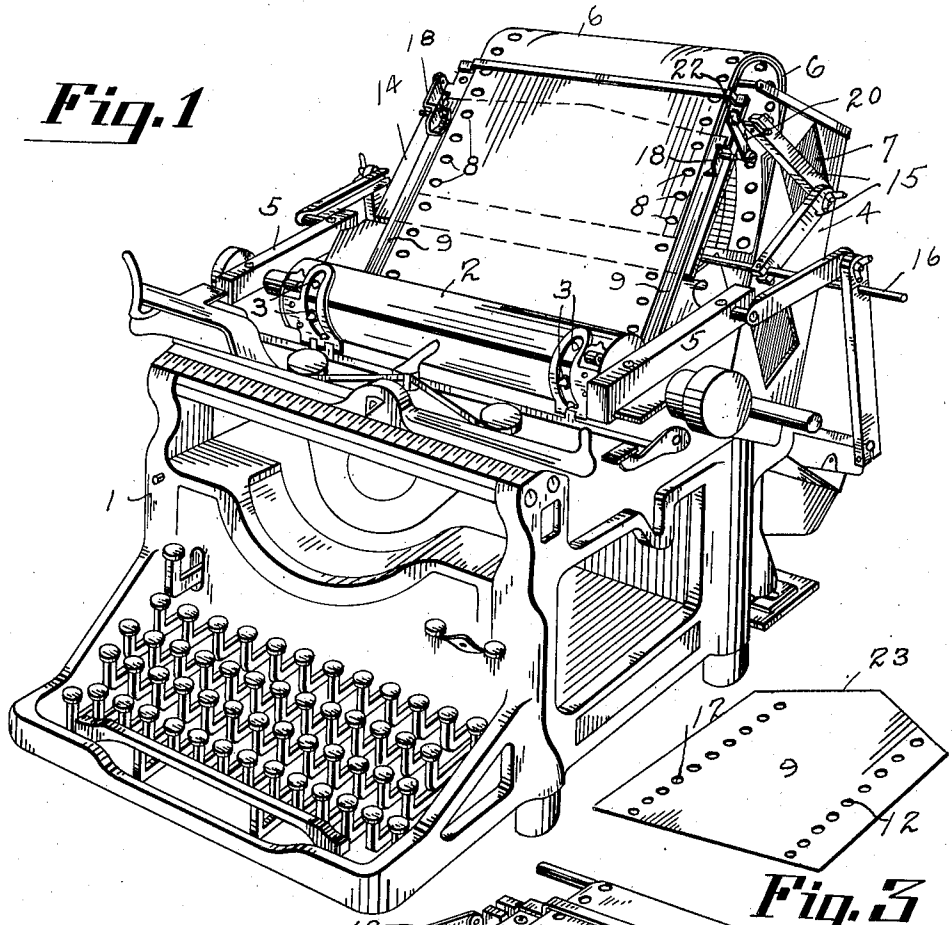
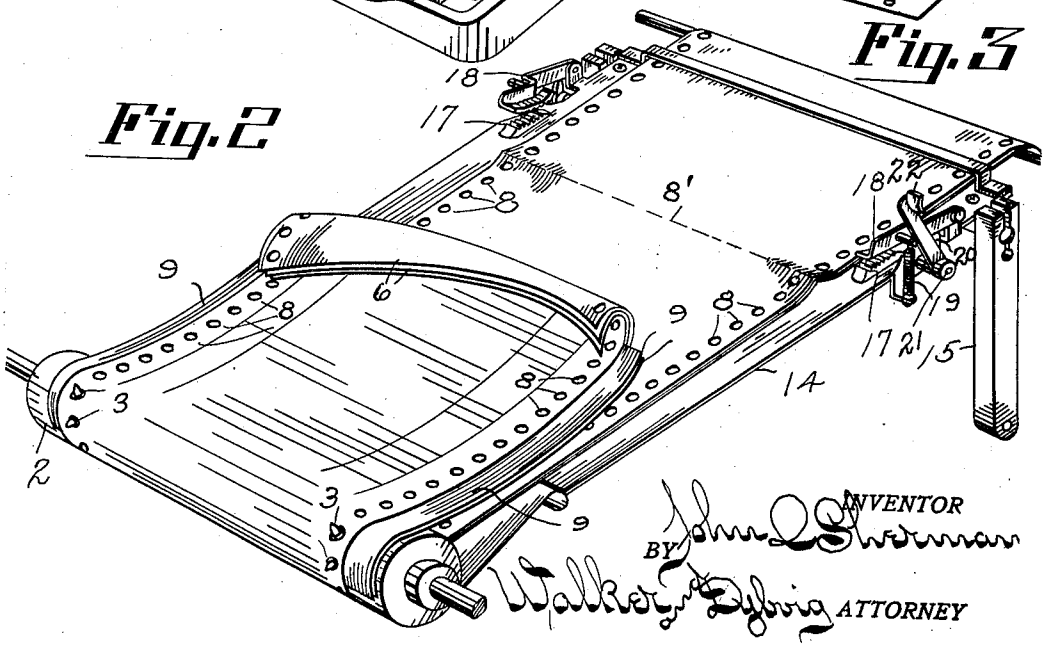


Fig. 3

Fig. 2



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AUTOMATIC MANIFOLDING COLLATOR AND CARBON ASSEMBLY

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Application December 21, 1931, Serial No. 582,380

9 Claims. (Cl. 197—126)

This invention relates to manifolding apparatus, and more particularly to a typewriter attachment and method of operation for repetitiously employing short lengths of carbon or transfer sheets with continuous multi-form or series connected stationery.

The present invention is a further development and amplification of the apparatus and method of operation illustrated and described in co-pending application of John Q. Sherman, Serial No. 565,591, filed September 28, 1931.

For increased efficiency and rapidity of operation, it has become quite common practice to employ continuous strips of multiple forms arranged in superposed relation and fed through a writing machine, the written portions of which are detached at predetermined intervals upon transverse division or score lines. Usually such continuous record strips are interleaved with like strips of "one-time" transfer or carbon material which, after being once used, is discarded. In lieu of such continuous carbon strips, the use of which is expensive and involves great waste and economic loss, it has been proposed to employ packets of transfer sheets carried in holders of various forms, through which the record strips are threaded and which must be manually retracted and readjusted between succeeding writing operations.

The present apparatus enables an ordinary typewriter to be converted into a billing machine for use of such continuous multi-form stationery, and enables the use therewith of ordinary carbon sheets which, being initially interleaved between the superposed record strips in proper registry with the terminal printed forms or sheet sections to be inscribed, are automatically fed through the writing machine in unison with the advance of the record strips and then retracted indepedently of the strips into registry with the succeeding forms or writing sections of the sheets and returned therewith to the writing machine for the next writing operation.

Whereas in the co-pending application before referred to, the transfer strips are engaged at the forward side of the platen after they have passed writing position and held in their advanced position while the record strips are advanced relative thereto to present the succeeding forms in registry with the transfer sheets, after which the strips and transfer sheets are retracted in unison into the writing position, the present construction operates in somewhat reverse order, the assembly of record strips and interleaved transfer sheets being retracted in unison after completion of the writing operation and the margins of the transfer sheets gripped at the rear or feeding side of the platen roll, such sheets being held stationary while the record strips are advanced relative thereto until the succeeding forms are in registry with the transfer sheets and the written portions of the strips advanced to tear-off position, whereupon the transfer sheets are released and the entire assembly of strips and interleaved transfer sheets is advanced past the writing position, while manifolded impressions are made thereon.

The object of the invention is to simplify the construction as well as the means and mode of operation of manifolding apparatus whereby it will not only be cheapened in construction, but will be more efficient in use, convenient, accurate and uniform in operation and unlikely to get out of repair.

A further object of the invention is to provide means for facilitating the shifting of transfer or carbon material out of and into registry with succeeding sets of superposed forms.

A further object of the invention is to provide improved means and method of operation wherein the transfer or record material is mechanically shifted relative to each other after each writing operation to present the transfer material in registry with succeeding sets of multi-forms or record sheets, and whereby registry of the transfer material therewith is automatically maintained.

A further object of the invention is to provide a simple and inexpensive writing machine attachment for intermittently holding the ends of the record strips during relative movement of the transfer sheets and thereafter releasing the record strips for detachment of the used portions thereof.

With the above primary and other incidental objects in view, as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof and the mode of operation, or their equivalents, as hereinafter described and set forth in the claims.

Referring to the accompanying drawing, wherein is shown the preferred form but obviously not necessarily the only forms of the embodiment of the invention, Fig. 1 is a perspective view of a conventional form of typewriter to which the present apparatus has been applied. Fig. 2 is a perspective view of the apparatus, forming the subject matter hereof, removed from the writing machine. Fig. 3 is a detail view of one of the transfer sheets removed from the assembly.

Like parts are indicated by similar characters of reference throughout the several views.

The present invention is applicable to manifolding apparatus of various forms including typewriters, billing machines, autographic registers and other forms of recording mechanisms. For illustrative purposes but with no intent to

limit the invention or its application, it has been herein shown and will be described as applied to a conventional form of typewriter 1, the platen roll 2 of which has been provided with feeding pins 3 for uniformly feeding marginally punched stationery in continuous strip form which is supplied from a traveling carrier 4 operatively coupled to and reciprocating in unison with the typewriter platen carriage 5. Such traveling carriage provides a convenient storage space for superfolded forms to prevent their disarrangement or mutilation.

The record material comprises successions of forms or record sheets preferably, but not necessarily, marginally punched at 8 and interconnected end to end into continuous strip formation as at 6, such strips being superfolded one upon the other with succeeding forms or record sheets in registry with those of contiguous strips, the several superposed strips being transversely scored or perforated at spaced intervals as at 8' for separation into separate sheets or sections and preferably, though not necessarily, superfolded at spaced intervals reversely in proximate relation with such transverse score lines into zigzag formation, thereby forming a supply packet 7 to be located in the traveling carriage 4. The transfer or carbon material for use with such continuous interconnected stationery strips comprises a plurality of sheets of approximately the length of succeeding forms or record sheets comprising the continuous strip 6 but of somewhat greater width than such strips whereby the transfer sheets 9 project marginally beyond the record strips at opposite sides thereof.

While for convenience the assembly of transfer sheets 9, of which there may be any number to correspond with the number of continuous strips 6 being employed, may be interconnected into a unitary assembly by sewing, stapling or gluing such sheets at one corner or along one margin thereof leaving the remaining margins of the sheets free to facilitate their interleaved assembly between the superposed record strips or along both margins if desired, such transfer sheets are preferably entirely independent of each other.

The transfer sheets 9 are marginally punched at 12 for engagement over the pins of the feeding device. Such holes 12 in the transfer sheets necessarily register with each other and with like punched feeding holes in the margins of the over and underlying record strips through which registering holes the feeding pins 3 engage to positively and accurately advance the record strips past writing position with the superposed forms in registry with each other. The several sheets of interleaved transfer material may, if desired, be interconnected along opposite side margins or at opposite corners, in which case the record strips must be threaded between the sheets. Otherwise the arrangement and operation is the same as when the sheets are independent of each other.

Extending upwardly and rearwardly substantially in alinement with the intake side of the platen roll is a guide plate or table 14 over which the superposed record strips are advanced in their travel from the supply packet to the writing position. That is to say, in the present construction the record strips pass over the table 14 before being inscribed, whereas in the former construction referred to they pass over the table after having passed beyond the writing position.

While the guide plate or table 14 may be mounted upon and carried by the traveling carriage of the writing machine as illustrated and described in the former application for patent, such plate or table is here shown mounted upon and carried by the traveling paper supply carrier 4.

The guide plate or table 14 is shown mounted upon the traveling carrier 4 by adjustable arms 15 carried by the rod 16 which forms a part of the coupling yoke between the supply carrier 4 and the traveling carriage of the writing machine.

Mounted at each side of the upper and rear portion of the guide plate 14 is a pair of gripper members comprising a stationary gripper 17 carried upon the plate or table 14 and a pivoted gripper member 18 co-operating therewith. The pivoted grippers 18 are actuated into engagement with the margins of the transfer sheets interposed between the gripper members 17 and 18 by springs 19. The movable grippers 18 are normally held elevated and inoperative by cam fingers 20 carried upon a rock shaft 21 and adjusted by a finger trip arm 22 on said rock shaft.

The superposed record strips and interleaved transfer sheets are advanced in unison past the writing position by the rotation of the platen roll in the usual manner. When the writing operation is completed the transfer sheets will have been advanced beyond the platen roll as shown in Fig. 2. The feeding movement of the platen roll is then reversed and the written portions of the strips and transfer sheets are retracted in unison until they are again positioned upon the guide plate 14 with the transfer sheets beyond the platen roll and with the extreme ends of their marginal portions interposed between the gripper members 17 and 18. The finger lever 22 is then operated to release the movable grippers 18 by oscillating the cams 20 out of engagement with the grippers 18 which thereupon clamp the projecting margins of the transfer sheets. While the sheets 9 are thus held stationary, the platen is again operated to advance the superposed strips independently of the transfer sheets until the succeeding set of printed forms upon the strips is drawn into registry with the transfer sheets. By the same advance movement the inscribed portions of the strips are advanced to the tear-off position without the transfer sheets therebetween. Upon release of the transfer sheets by readjustment of the grippers 18, the assembly is ready for the succeeding writing operation.

To facilitate the feeding of the record strips past the transfer sheets and the retractive movement of the transfer sheets about the platen roll, the transfer sheets are preferably though not necessarily trimmed to an obtuse angle as at 23. Such shape enables the folds of the record strips to pass over the ends of the transfer sheets without interference and greatly facilitates the adjusting or collating operation.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more

or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. The combination with a writing machine including feeding means for advancing multi superposed strips of record material having interleaved sheets of transfer material in unison past writing position, a guide support over which the strips and transfer sheets travel, spacing mechanism for deflecting the transfer sheets away from said guide support so as to permit the free movement of the record strips independently of the transfer sheets and retarding means associated with said spacer mechanism for retarding the travel of the transfer sheets relative to the record strips.

2. The combination with a writing machine including feeding means for advancing multi superposed strips of record material having interleaved sheets of transfer material in unison past writing position, a guide plate over which the strips and transfer sheets are fed, and spacer means mounted upon said guide plate for deflecting the transfer sheets therefrom so as to permit the free movement of the record strips independently of the transfer sheets.

3. The combination with a writing machine including feeding means for advancing multi superposed strips of record material having interleaved sheets of transfer material in unison past writing position, a guide support over which the strips of record material and sheets of transfer material travel while being fed past writing position and spacer mechanism associated with said guide support for deflecting the transfer sheets away from said guide support so as to permit the free movement of the record strips independently of the transfer sheets.

4. The combination with a writing machine including feeding means for advancing multi superposed strips of record material having interleaved sheets of transfer material in unison past writing position, a guide plate over which the strips of transfer sheets advance and gripper means located in proximity to the guide plate and engageable with the lateral margins of the transfer sheets for holding said sheets stationary while the record strips are moved relative thereto, said gripper means including spacer mechanism for deflecting the transfer sheets from said guide plate so as to permit the free movement of the record strips independently of the transfer sheets.

5. The combination with a writing machine including feeding means for advancing multi superposed strips of record material having interleaved sheets of transfer material in unison past writing position, a guide support over which the strips and transfer sheets advance while being fed past the writing position and gripper means located in proximity to the guide support and engageable with the lateral margins of the transfer sheets for holding said sheets stationary while the record strips are shifted relative thereto, said gripper means including spacer mechanism for deflecting the transfer sheets away from said guide support so as to permit free movement of the record strips independently of the transfer sheets.

6. The combination with a writing machine including feeding means for advancing multiple superposed record strips and interleaved transfer sheets in unison past a writing position, a guide plate leading to the intake side of the feeding means over which the strips and transfer sheets advance to the writing position, and means for retarding the travel of the transfer sheets thereover relative to the travel of the record strips whereby the record strips are projected in advance of the transfer sheets, said retarding means including spacer mechanism for spacing the transfer sheets away from said guide so as to permit the free advancement of the record strips independently of the transfer sheets.

7. The herein described method of utilizing relatively short sheets of transfer material interleaved between superposed record strips consisting in retracting the record strips and interleaved transfer sheets in unison from writing position to a position at the supply side thereof, deflecting the transfer sheets to permit the record strips to separate holding the transfer sheets immovable at the supply side of the writing position, advancing the record strips relative to the deflected stationary transfer sheets until succeeding portions of the strips are brought into registry with the transfer sheets preparatory to the succeeding operation and advancing the record strips and interleaved transfer sheets in unison past the writing position.

8. The herein described manifolding method of utilizing relatively short sheets of transfer material interleaved between superposed strips of record material each comprising a succession of writing sections consisting in advancing the transfer sheets and strips in unison past a writing position in which manifolded inscription is made thereon, retracting the inscribed portions of the strips and interleaved transfer sheets in unison from writing portions, deflecting the margins of the transfer material to permit separation of the record strips advancing the inscribed portions of the strips past writing position independently of the transfer sheets until succeeding writing sections of the strips are in registry with the transfer sheets preparatory to the succeeding writing operation and then advancing the record strips and interleaved transfer sheets in unison into writing position to receive further inscription.

9. The herein described manifolding method of utilizing relatively short sheets of transfer material interleaved between superposed strips of record material each comprising a succession of writing sections consisting in advancing the transfer sheets and strips in unison past a writing position in which manifolded inscription is made thereon, consisting in retracting the record strips and interleaved transfer sheets in unison substantially a distance of one writing section, deflecting the margins of the transfer material to permit separation of the record strips advancing the record strips independently of the transfer sheets substantially a distance of one writing section and subsequently advancing the record strips and interleaved transfer sheets in unison into writing position to receive further manifolded inscription thereon.

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