

Jan. 2, 1940.

G. U. LACROIX

2,185,815

MANIFOLD TRANSFER DEVICE

Filed April 22, 1937

4 Sheets-Sheet 1

Fig. 1.

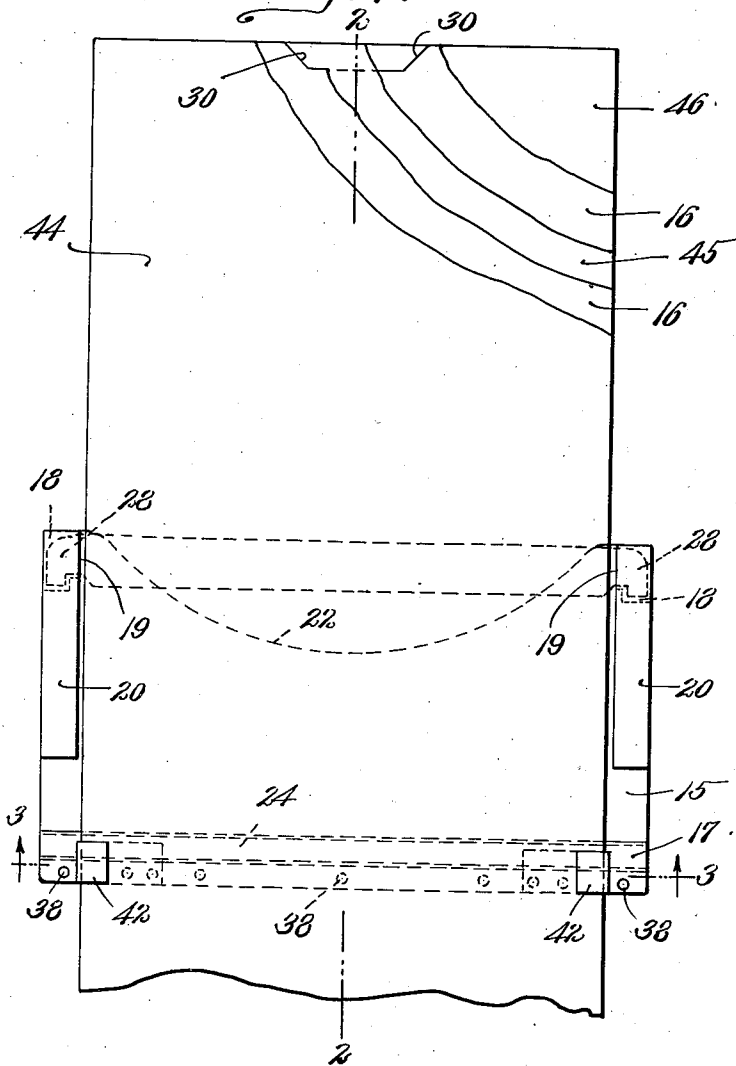


Fig. 2.

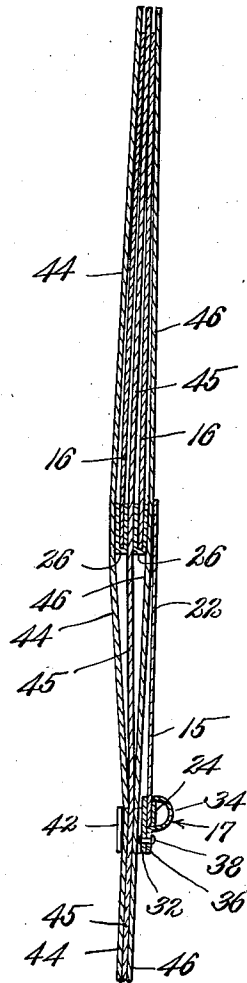
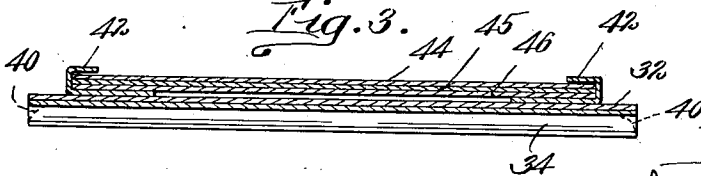


Fig. 3.



Inventor.
George U. Lacroix
by Francis V. Durkin
att'y.

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4 Sheets-Sheet 2

Fig. 4.

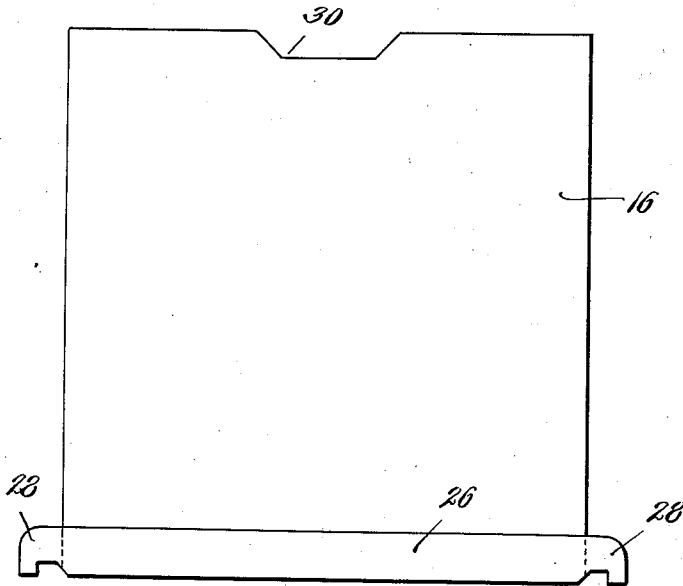


Fig. 6.

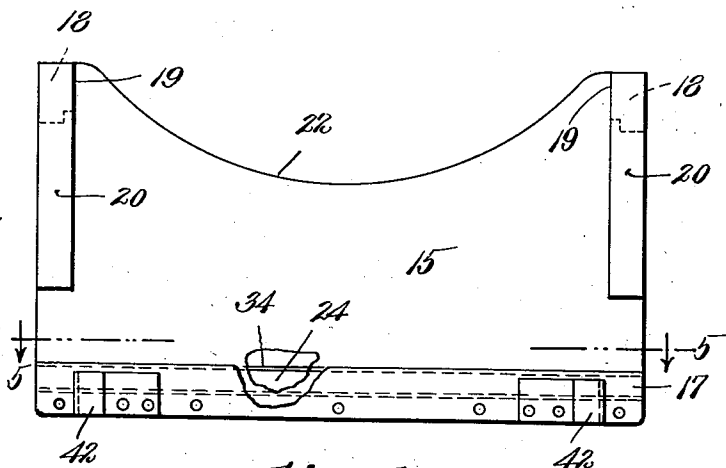
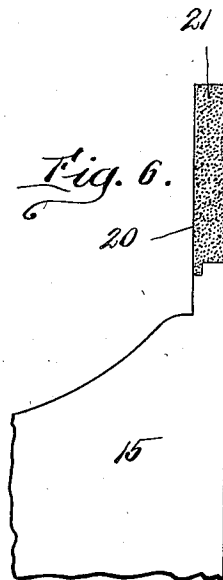


Fig. 5.

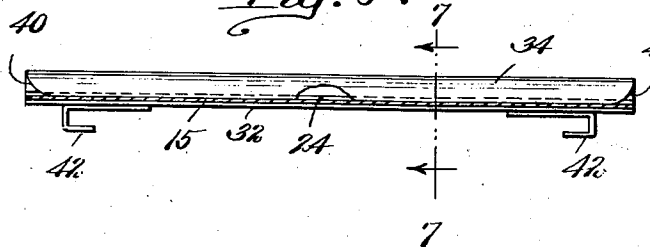
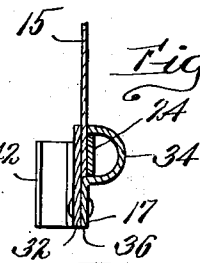


Fig. 7.



Inventor.

George U. Lacroix
By *Frank J. V. Dakin*
Att'y.

Jan. 2, 1940.

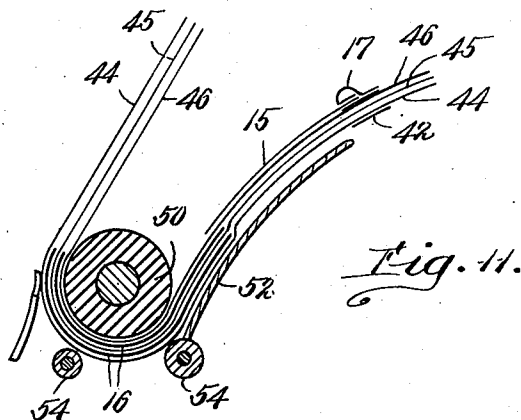
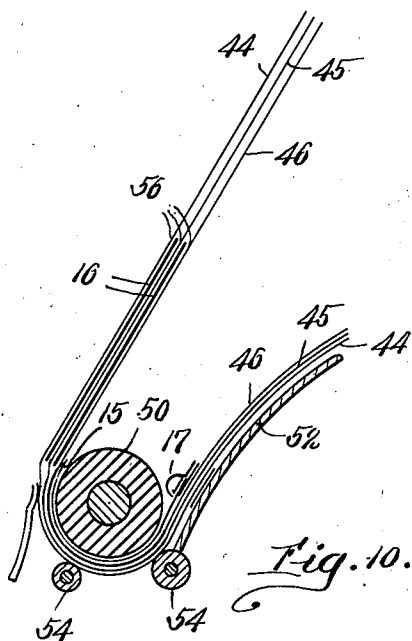
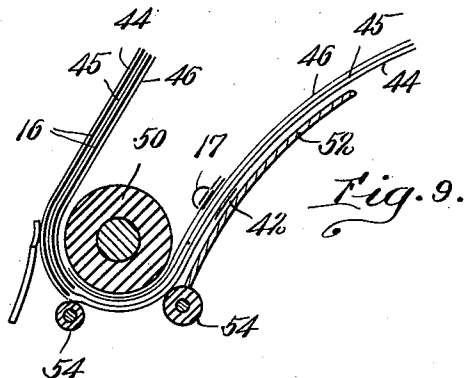
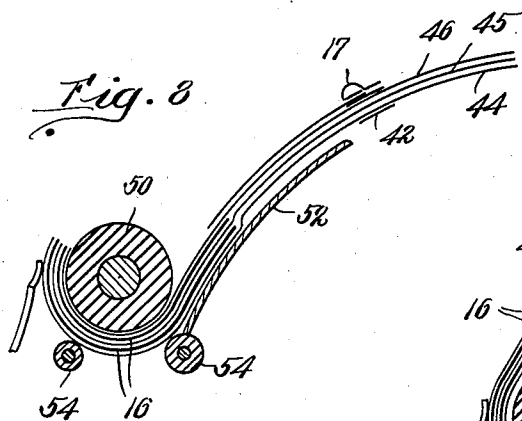
G. U. LACROIX

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4 Sheets-Sheet 3



Inventor.
George U. Lacroix
by Francis V. Durkin
att'y.

Jan. 2, 1940.

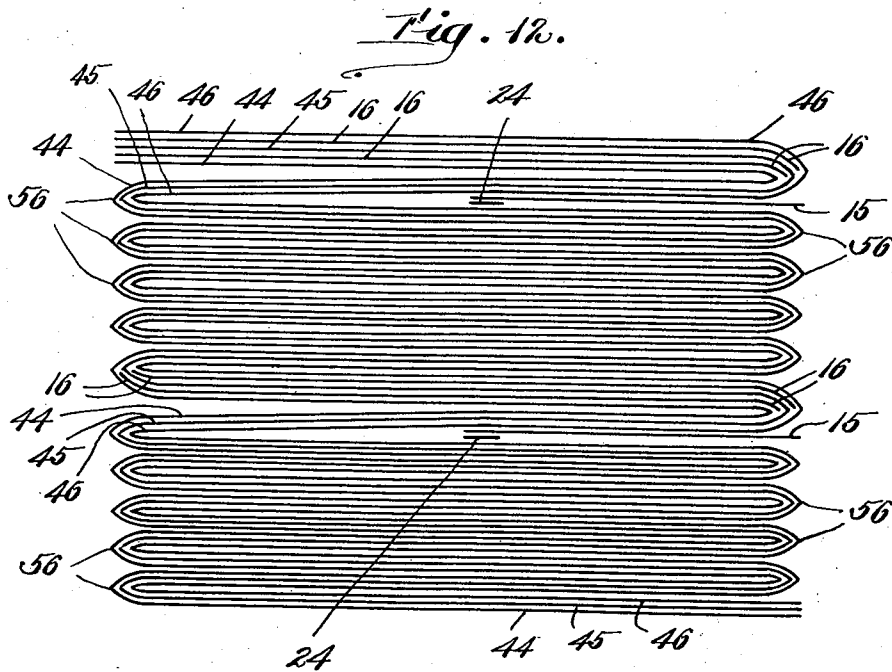
G. U. LACROIX

2,185,815

MANIFOLD TRANSFER DEVICE

Filed April 22, 1937

4 Sheets-Sheet 4



Inventor.
George U. Lacroix
by Francis J. V. Dakin
att'y.

UNITED STATES PATENT OFFICE

2,185,815

MANIFOLD TRANSFER DEVICE

George U. Lacroix, Waltham, Mass.

Application April 22, 1937, Serial No. 138,386

12 Claims. (Cl. 282—29)

This invention relates to a manifold transfer device for use in making multiple copies on a typewriter.

In general, the function of such a device is to provide means for typing a ribbon copy and one or more carbon copies upon copy sheets, generally in the form of continuous superposed strips, usually containing series of printed forms for billing and other purposes. The superposed strips have weakened lines of rupture at regularly spaced intervals and between the forms, and are folded zigzag on these weakened lines to make up what are commonly known as "fold packs" or "flat packs". The weakened lines of rupture permit a set of forms when filled out by the typewriter to be torn off or separated along said lines from the continuous strips. Necessary carbon sheets are interleaved with the copy sheets, said carbon sheets, however, being commensurate in size only with the forms or folds, and the arrangement thereof is such that after typing each set of copy sheets, the continuous strips may be repositioned with respect to said carbon sheets, to bring into registration therewith a new set of copy sheets. In this manner, a single set of carbon sheets may be employed for a number of sets of copy sheets without the necessity of repeating the interleaving operation.

In these devices, it has been customary to provide a holder, generally of fabric or other stiff material, provided with a plurality of forwardly extending superposed carbon sheets, either permanently or detachably fastened at their rear corners to the forward edge of the holder sheet. In the detachable type, the carbon sheets may, after being used up, be detached from the holder sheet and new carbons attached to its forward edge, the new carbons in this process being interleaved between the continuous superposed strips in proper position for producing carbon copies of what is written on the top sheet. After a set of carbon sheets has been used up, the devices now in use are either thrown away, if the carbon sheets are permanently fastened thereto, or the carbon sheets, if detachably fastened thereto, are removed and fresh carbons are attached in their places. This requires the operator, however, to spend considerable time in adjusting the holder in proper position on the forward ends of the continuous strips and in interleaving the carbon sheets in proper position before inserting the forward ends of the continuous strips and carbon sheets in the typewriter. These operations consume a material portion of the

operator's time and delay and impede the typewriting work.

One of the important objects of the invention is the provision of a manifold transfer device of simple, efficient and cheap construction.

Another object of the invention is the provision of a device of the character described which will feed through a typewriting machine without buckling on the platen of the machine.

A further object is the provision of a device of such form as to permit sets of carbon sheets to be arranged in interleaved relation throughout a "fold pack" at intervals determined by the life of the carbons in order to save the time of the typist now expended in renewing and interleaving carbons during the progress of the work.

Other objects will be set forth and explained hereinafter.

My invention contemplates a manifold transfer device comprising a transfer sheet holder of thin, flexible material, a plurality of transfer sheets fastened at their rear edges to the ends of the forward edge of the holder, and a combined guide and stop member detachably mounted on the rear edge of said holder. The holder is preferably made of any thin, flexible and tough material which is cheap, such as paper, so that it may be discarded when the transfer sheets attached thereto are used up.

The combined guide and stop member is of a form adapted to limit the travel of the transfer device around the platen of a typewriter and is provided with a pair of edge guides for centering and guiding the copy strips in the machine. Since this member is intended for indefinite use with renewal of the holders, it is preferably made of metal or other suitable and durable material and is adapted to be readily mounted on and removed from the holder portion of the device.

This feature of the invention has a number of distinct advantages. It reduces the cost of the device to a minimum because the parts which are discarded, the transfer sheets and the holder, can be made at a very low cost, and the combination guide and stop member, which represents the larger portion of the cost of the device, is retained for indefinite use.

Further, this feature permits the user to be furnished with fold packs in which holders carrying transfer sheets interleaved with the copy sheets, are arranged at suitable intervals ready for use when the combination member is mounted on each holder in turn. This saves the time now expended by the operator of the typewriter in interleaving new transfer sheets when those

in use are worn out, and, at the same time, raises the standards of the work.

Another feature of my invention consists in cutting the forward edge of the holder on lines oblique to the platen of the typewriter in order to prevent buckling of said forward edge against the platen when the device is fed forward. When the forward edge of the holder is cut on a straight transverse line, perpendicular to its side edges, it will sometimes happen that this edge, if it happens to get warped, will buckle against the platen as the forms are fed forward during the type-writing operation, and, in such case, it may result in tearing the carbons loose from the holder, thereby necessitating the insertion of an entirely new manifolding device and delaying the work. When the forward edge of the holder is cut on a curve, or on oblique lines, all possibility of buckling is eliminated.

In the accompanying drawings, there is shown one embodiment of the invention, in which—

Figure 1 is a front plan view of a manifold transfer device constructed in accordance with my invention and assembled with a plurality of copy strips, a corner of the assembly being broken away to disclose the underlying transfer sheets and copy strips;

Fig. 2 is a longitudinal sectional view on line 2—2 in Fig. 1;

Fig. 3 is a transverse sectional view on line 3—3 in Fig. 1;

Fig. 4 is a front plan view of the device showing the holder and transfer sheets in detached relation;

Fig. 5 is a cross-sectional view on line 5—5 in Fig. 4, showing the combined guide and stop member in elevation;

Fig. 6 is a detail plan view of one forward corner of the holder illustrating one method of attaching the transfer sheets to the holder;

Fig. 7 is a longitudinal sectional view on line 7—7 in Fig. 5, showing the construction of the combined guide and stop member;

Figs. 8 to 11 inclusive are sectional, diagrammatic views, showing the different positions of the copy sheets and the manifold transfer device in relation to the platen of a typewriter at different stages of the work; Fig. 8 showing the positions at the beginning of a typing operation; Fig. 9, at the conclusion of a typing operation; Fig. 10, after the copy sheets have been drawn forwardly to bring a new set of forms into typing relation with the transfer sheets; and Fig. 11, when the copy sheets have been turned back to typing position, with the typed forms in position to be torn off along perforated lines; and

Fig. 12 is a side elevation of a portion of a fold pack having a plurality of holders and interleaved transfer sheets arranged at intervals through the pack, ready for use when reached.

Referring to the drawings, my device is shown as comprising a transfer sheet holder 15, a plurality of transfer sheets 16 attached at their rear ends to the forward end of the holder and a combined guide and stop member 17 detachably mounted on the rear end of the holder.

The holder 15, which is of approximately rectangular form, may be made of any suitable thin sheet material, such as treated fabric, paper or composition. Preferably, however, since the holder is discarded after the transfer sheets are used up, it is made of a cheap material, such as thin, tough paper. At the two ends of its forward edge, the holder is provided with a pair of

hook-shaped members 18 for receiving hook-shaped members on the transfer sheets for detachably fastening the latter thereto. These pockets may be formed in any suitable manner, and one form is shown in the drawings, Figure 6, in which the holder is provided with two forwardly extending marginal strips 20 coated with adhesive, the lower end of the adhesive coating being so shaped that when the strip is folded downwardly upon the front face of the holder and fastened thereto, as shown in Figure 4, the uncoated portion of the strip forms the pocket 18.

The forward edge 22 of the holder between the pockets is cut preferably on a curve, but may be cut on two or more oblique lines, in order to present oblique edges to the platen of a typewriter to prevent buckling. The rear edge of the holder is provided with a narrow strip 24 of thin cardboard, or other suitable material, adhesively fastened to the rear face thereof. This strip reinforces the rear edge of the holder and, at the same time, constitutes means whereby the combined guide and stop member 17 may be mounted on and locked to that portion of the holder as hereinafter described.

Each of the transfer sheets 16 is in the form of a rectangular carbon sheet fastened along its rear edge to a strip 26 which reinforces said rear edge and, at the same time, serves as means for attaching it to the holder. Preferably, the strip 26 is folded upon itself along a middle longitudinal line to form a double thickness and the rear edge of the transfer or carbon sheet is secured between the folds by adhesive or other suitable means. The two ends of each strip 26 project beyond the side edges of the transfer sheet and these projecting ends may be in the form of hooks 28 facing rearwardly. The strips 26 are made of very thin, tough paper in order that the combined thickness of a plurality of transfer sheets along their rear edges may be held within reasonable limits for travel between the platen and pressure rolls of a typewriter. Each of the carbon sheets has, centrally disposed in its forward edge, a cutout portion 30 for permitting the copy sheets to be gripped and pulled forward without disturbing the transfer sheets.

The combined guide and stop member may be of any suitable form of construction which will provide guiding means for the copy sheets and stop means adapted to engage the platen of a typewriter and limit any further travel of the holder around said platen, and one form is shown comprising two narrow elongated strips 32 and 34 of metal or other durable material, fastened together adjacent one longitudinal edge (Figs. 5 and 6). The strip 32 is in flat form and the strip 34 is U-shaped in cross-section, having a lateral longitudinal flange 36, whereby it is fastened to the flat strip by rivets 38. The U-shaped portion of strip 34 is of such dimensions that when the two strips are fastened together, the free longitudinal edge of the U-shaped portion is in loose engagement with one face of the flat strip along a longitudinal edge thereof. The distance between the two arms of the U-shaped portion of strip 34 is just sufficient to receive and accommodate the cardboard strip 24 on the rear edge of the holder 15. The member 17 may be mounted on the rear end of the holder by sliding it laterally onto the holder, in such position that the strip 24 is enclosed within the U-shaped portion of strip 34 and the holder sheet is between the strip 32 and the free edge of the U-shaped portion, as shown in Figure 6.

To facilitate this operation and the entrance of the holder sheet 15 between the strip 32 and the free edge of the U-shaped portion, the latter is rounded at 40 at each end.

On its outer face, the flat strip 32 is provided with a pair of edge guides 42 for centering and guiding the copy strips, which may be of any suitable form, but, as shown, are thin plates fastened to the member 32 by rivets, each of the plates having a reversely turned free end for enclosing the edges of the copy sheets.

In use, the operation of a device constructed in accordance with my invention is as follows. In Figure 1, the device is shown as mounted in operative position on the forward end of a multiple continuous strip comprising three copy sheets, of which the top sheet 44 is the original, and the underneath sheets 45 and 46 are carbon copies. The multiple strip may comprise from two to eight or ten, or even more, copy sheets, and the holder 15 is designed to carry the requisite number of transfer sheets for the multiple strip. In Figure 1, the multiple strip comprises three copy sheets and the holder 15 carries two transfer sheets 16.

In arranging the device in the forward end of a multiple strip, the holder is laid upon a flat support and the transfer sheets, if mounted on the holder, are disconnected therefrom on one side by removing the hooked tabs 28 from the pockets 18 and turning the transfer sheets over to one side. The forward ends of the three copy sheets are then laid on the holder and their side edges are inserted in the guides 42. The ends of the two top sheets are then turned back, leaving the bottom sheet on the holder. One of the transfer sheets is then turned over upon the bottom copy sheet and its hooked tab inserted in its respective pocket 18. The second copy sheet is then laid flat over the transfer sheet and the other transfer sheet is fastened to the holder in the same manner as the first sheet, after which the top or original sheet is laid flat upon the underlying sheets, all of the parts then being in the various positions shown in Figure 1, with the forward edges of the transfer sheets in register with the forward edges of the copy sheets.

The assembly is then mounted in the typewriter, with the forward ends of the copy and transfer sheets fed around the platen 50, so as to bring the top copy sheet in position for typing. The parts are then in the positions shown in Figure 8. After the typing has been completed, assuming that it is continued to the bottom of the first set of forms, the parts will then be in the positions shown in Figure 9. The operator then turns the platen by hand to feed the assembled sheets forwardly until the rear ends of the first forms on the copy sheets and transfer sheets are completely clear of the platen. At this time, the stop device 17 will engage the platen and prevent any further travel of the holder around the platen and the back guiding plate 52 of the typewriter will serve to insure the engagement of the stop against the platen.

The only elements of the assembly then extending around the platen are the holder 15 and the copy strips. The paper release lever of the typewriter (not shown) is then operated to release the grip of the platen presser rolls 54, which permits the forward ends of the copy strips at the portions marked by the cut-outs 30 of the transfer sheets to be gripped by the operator and pulled forwardly until the foremost set of copy sheets is completely clear of said

transfer sheets, thereby bringing a second set of copy sheets in registration with the transfer sheets. The positions of the parts at this time are shown in Figure 10 and it will be observed that the transverse lines of perforations 56 between the first and second sets of forms in the copy sheets are in alignment with the forward edges of the transfer sheets.

The paper release lever of the typewriter is then reset and the platen is rotated backwardly to position the assembled transfer and copy sheets for typing on a new set of forms, as shown in Figure 11. The previously typed set of forms may then be torn off along the perforated lines 56. Thereafter, the operation is repeated until the complete fold pack of copy strips is used up. When the individual transfer sheets are used up, they may be easily and quickly replaced on the holder by disconnecting the used transfer sheets from the holder and attaching new sheets thereto; or, if preferred, the combined guide and stop member 17 may be removed from the holder and a new holder and transfer sheets substituted, the member 17 being mounted on the rear end of the new holder.

In the foregoing use as described, the work of arranging my device and interleaving the transfer sheets with the copy sheets is performed by the operator of the typewriter. This work, which has to be performed a number of times for each fold pack of stationery, consumes considerable time and reduces the speed of the typewriting operation and the amount of work which can be accomplished by the operator. It is apt to produce some unsatisfactory copies, because there is tendency on the part of the operator, in order to avoid a stoppage of the work to change the transfer sheets, to use them longer than she should. By the use of my invention, however, the fold packs may be prepared by the manufacturer, each with a plurality of holders and transfer sheets arranged and interleaved at properly spaced intervals in the pack, as shown in Figure 12.

In such preparation, a series of holder 15, each with the requisite number of transfer sheets attached, is arranged at such spaced intervals through the pack as will insure satisfactory copies at all times. The spacing between the holders will depend to some extent upon the number of copy sheets in the multiple strip of the pack. As a rule, the spacing will be closer as the number of copy sheets increases. Since the holders with transfer sheets are not of appreciable thickness, the bulk of the fold pack is not appreciably increased.

In the use of a prepared fold pack, all the operator has to do is to slide the combined guide and stop member onto the rear edge of the first holder in the pack which she starts to use, and when she comes to the next holder in the pack, she removes the member 17 from the first holder and mounts it on the second holder, and proceeds with the work. The operation of changing the member 17 from one holder to another is very simple and may be quickly and easily performed, and does not appreciably delay the progress of the typewriting work. When the transfer sheets on a holder have been used up, these parts are thrown away, and since they are made of inexpensive material, the discarding of the holders does not materially increase the cost of the work.

It will be noted that in the use of my device, the entire area of each set of forms may be

written upon, and, furthermore, the operator may make corrections by turning back the sheets down to the bottom of each set of forms. With many of the devices now in use, this cannot be done.

It is to be understood that my invention is not to be limited to the precise form herein shown and described, since it may be embodied in various other forms within the purview of the following claims.

What I claim is:

1. A manifold transfer device of the character described, comprising, in combination, a flexible sheet holder, a plurality of transfer sheets attached at their rear ends to marginal portions of the forward edge of said holder and a combined stop and guide member, the rear edge of said holder and said member being provided with interlocking means for detachably mounting said member on the rear edge of said holder.

2. A manifold transfer device of the character described, comprising, in combination, a flexible sheet holder, a plurality of transfer sheets attached at their rear ends to marginal portions of the forward edge of said holder, said forward edge between said points of attachment being oblique to prevent buckling of said edge on the platen of a typewriter, and a combined stop and guide member detachably mounted on the rear edge of said holder.

3. A manifold transfer device of the character described, comprising, in combination, a flexible sheet holder, a plurality of transfer sheets attached at their rear ends to marginal portions of the forward edge of said holder and a stop member, the rear edge of said holder and said member being provided with interlocking means for detachably mounting said member on the rear edge of said holder for limiting its forward travel around the platen of a typewriting machine.

4. A manifold transfer device of the character described having in combination a flexible sheet holder and one or more transfer sheets attached at their rear edges to marginal portions of the forward edge of said holder, said holder having its forward edge between said points of attachment oblique to the axis of a typewriter platen for preventing buckling of said edge against said platen.

5. A manifold transfer device comprising a holder of thin flexible sheet material having a tab receiving pocket at each end of its forward edge and having said edge between said pockets cut concavely to prevent buckling on the platen of a typewriter, a plurality of transfer sheets, each of said sheets having a pair of rear end tabs mounted in said pockets for attaching said transfer sheets to said holder and a combined stop and guide member detachably mounted on the rear edge of said holder.

6. A manifold transfer device for use in typewriters, comprising a flexible carbon sheet holder having side marginal double ply portions forming flat pockets to receive tabs or similar elements on the carbon sheets, for securing the latter to the carbon sheet holder, said plies of the marginal portions being secured together at points to form means within the pockets within which hooks or similar securing elements on the tabs of the carbon sheets may be engaged, the material of the carbon sheet holder being sufficiently thin so that the combined thickness of the carbon sheet holder and the tabs or like

elements on the carbon sheets will pass readily between the platen and pressure applying means of the typewriter, the forward edge of said holder being concaved to prevent buckling on said platen.

7. A manifold transfer device of the character described, comprising, in combination, a flexible sheet holder, a plurality of transfer sheets attached at their rear ends to marginal portions of the forward edge of said holder and a combined stop and guide member mounted on the rear edge of said holder, said holder being provided with means interlocking with said member which permits said member to be detached at will from said holder.

8. A manifold transfer device of the character described, comprising, in combination, a flexible sheet holder, a plurality of transfer sheets attached at their rear ends to marginal portions of the forward edge of said holder and a combined stop and guide member mounted on the rear edge of said holder, said holder being provided at its rear edge with means interlocking with said member, said means being adapted to permit said member to be detached from said holder at will so that said member may be used indefinitely with successive holders.

9. A manifold transfer device of the character described, comprising, in combination, a flexible sheet holder having a locking strip fastened to its rear edge, a plurality of transfer sheets attached at their rear ends to marginal portions of the forward edge of said holder and a combined stop and guide member mounted on the rear edge of said holder and comprising an elongated, flat strip in engagement with one face of said holder, and an elongated stop element, U-shaped in cross-section, fastened along one edge to said strip and having its other edge in engagement with the other face of said holder, said locking strip on said holder lying within said element for detachably locking said member to said holder.

10. In a manifold transfer device of the character described, a combined stop and guide member comprising an elongated flat strip and an elongated stop element U-shaped in cross-section, said strip and said element being fastened together along one longitudinal edge of each and said element having its other edge in loose engagement with one face of said strip, the other face of said strip being provided with inwardly turned guides adapted for enclosing and guiding the side edges of continuous strips of paper.

11. A manifold transfer device of the character described comprising, in combination, a flexible sheet holder and one or more transfer sheets attached at their rear edges to the forward portion of said holder, said holder having its forward edge extending obliquely rearward from the side edges of the holder forming a recess in the forward portion of the holder for preventing buckling of said forward edge against the platen of a typewriter.

12. A manifold transfer device of the character described comprising, in combination, a flexible sheet holder and one or more transfer sheets attached at their rear edges to the forward portion of the holder, said holder having its forward edge cut concavely between the sides of the holder for preventing buckling of said forward edge against the platen of a typewriter.

GEORGE U. LACROIX.