June 28, 1932. G. U. LACROIX 1,865,115

CARBON COPYING SYSTEM

Filed Nov. 10, 1930 2 Sheets-Sheet 1

Fig. 1.

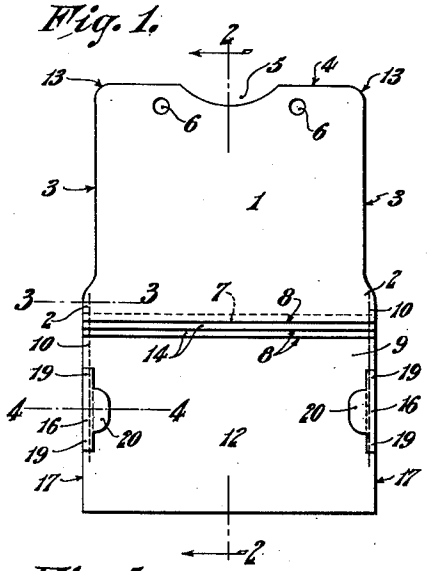


Fig. 3.

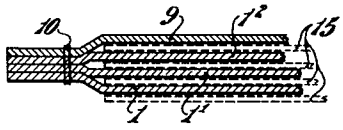


Fig. 2.

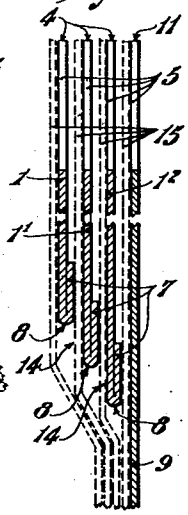


Fig. 4.

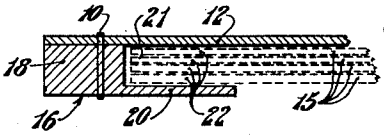


Fig. 5.

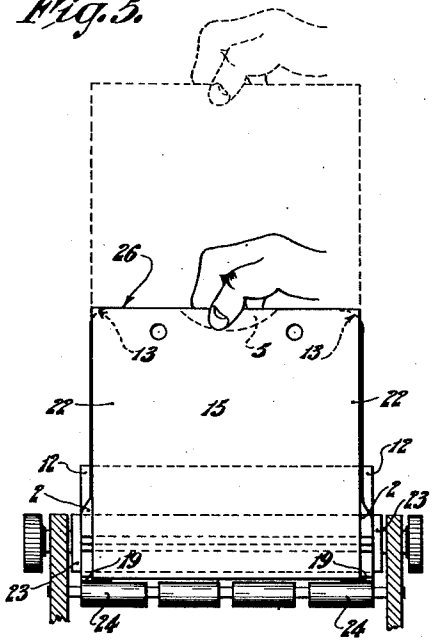


Fig. 6.

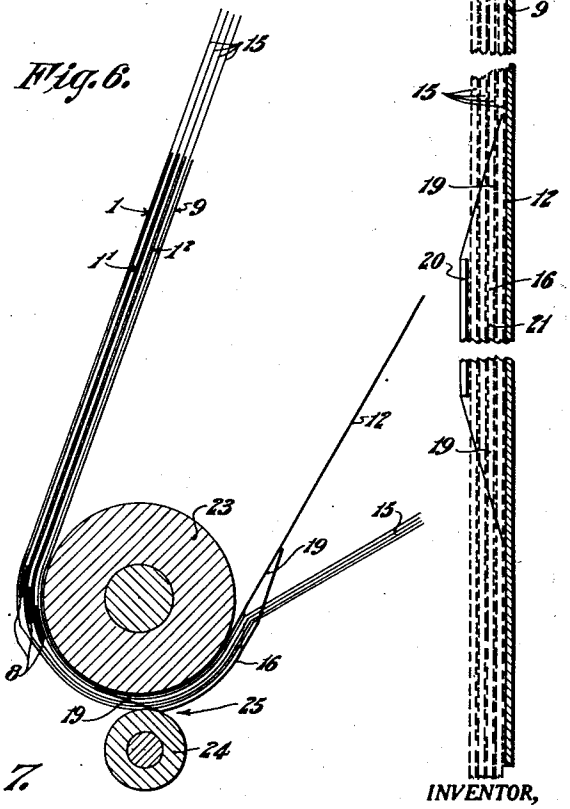
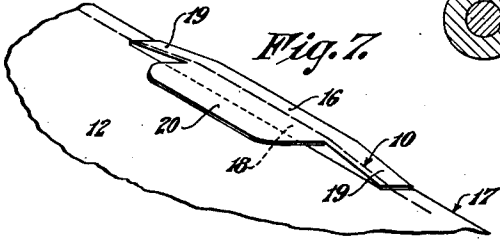


Fig. 7.



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CARBON COPYING SYSTEM

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Fig. 8.

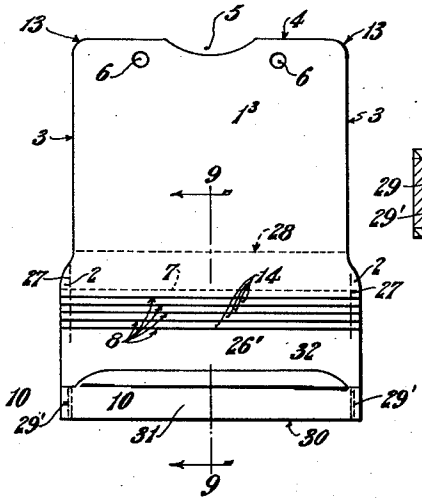


Fig. 10.

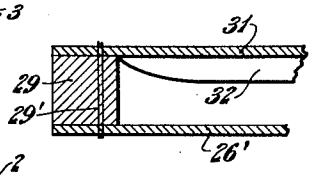


Fig. 9.

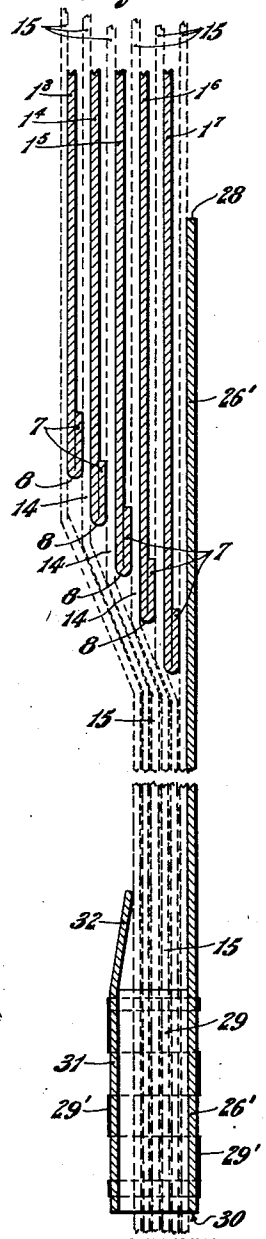
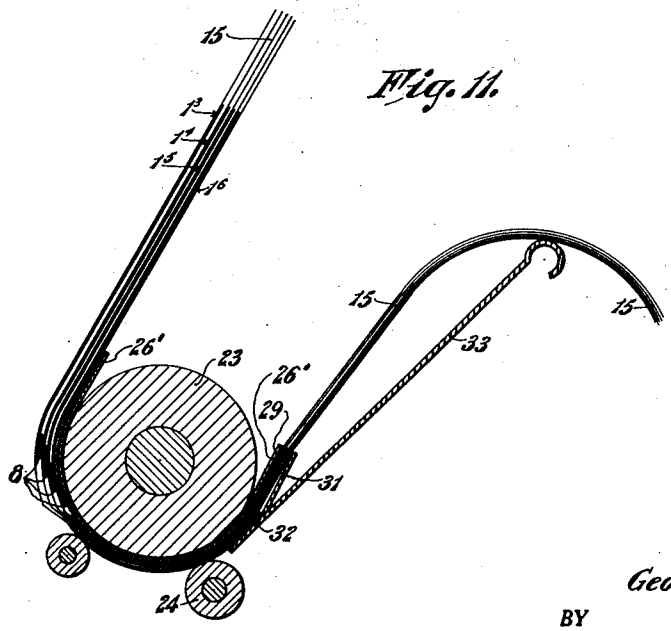


Fig. 11.



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Patented June 28, 1932 1,865,115

UNITED STATES PATENT OFFICE

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CARBON COPYING SYSTEM

Application filed November 10, 1930. Serial No. 494,666.

My invention relates to improvements in carbon copying systems, and more particularly to that type of copying system intended to be used in connection with typewriters, calculating and tabulating machines, and office recording machines of a similar nature.

Several different kinds or varieties of printed manifolding forms are manufactured at the present time and sold to customers, all of which have sheets of carbon paper, or transfer sheets as they are called in the trade, inserted between the original and each one of the copy sheets. As each customer uses a series of forms adapted to his particular line of business, these forms must be printed to order, and thus the business of printing and selling these manifold forms with carbon included is highly specialized and expensive. An object of my invention is to provide a carbon copying system with the carbon or transfer sheets arranged in sets and independent of and separate from the copy forms, whereby these carbon sets become standard, and may be used with any kind of printed forms, for any reasonable number of copies, from one up, and whereby the same set of carbon sheets may be used with plain paper, if desired.

A further object of my invention is to provide a simple and practical set of carbon sheets which will permit the use of manifold and fold-pack forms in the ordinary typewriter or similar machine, without requiring any changes in or addition to the machine itself.

Another object of my invention is to provide a set of transfer sheets secured together in such a way as to allow for easy insertion or removal of the copy sheets, and also to allow the copy sheets to be pulled through the transfer sheets, thus permitting the transfer sheets to be used repeatedly until their utility has been exhausted. With the existing forms of manifolding sheets with transfer sheets included, the transfer sheets are torn off and discarded after being used once. It will be understood that by using the transfer sheets over and over, until exhausted, a large saving in cost is realized.

These and other objects and advantages of my invention will appear in the following specifications with reference to the drawings and appended claims.

Broadly, my invention comprises a plurality of transfer sheets, a reinforcing sheet of plain paper relatively longer than the transfer sheets, means for securing the transfer sheets and reinforcing sheet together in such a manner as to permit the insertion and removal of copy sheets over and between the transfer sheets, means for holding the transfer sheets in a typewriter while the copy sheets are being pulled or drawn through them, means for aligning the copy and transfer sheets, and means for permitting the copy sheets to be grasped for the purpose of pulling them through the set of transfer sheets without at the same time grasping the transfer sheets.

A preferred form of my invention is illustrated in the accompanying drawings, in which:

Fig. 1 is an elevational view of a set of transfer sheets and a reinforcing sheet.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1, exaggerated as to thickness of the paper for the sake of clearness.

Fig. 3 is a sectional view on the line 3—3 of Fig. 1 showing a method of securing the sheets together, at their opposite edges.

Fig. 4 is a sectional view on the line 4—4 of Fig. 1, showing a guide for the copy sheets secured to the reinforcing sheet.

Fig. 5 is a diagrammatic elevational view illustrating the manner in which the copy sheets are drawn or pulled through the transfer sheets while both are inserted as a unit in a typewriter.

Fig. 6 is a diagrammatic sectional view showing the arrangement of copy sheets, transfer sheets, reinforcing sheet, and combined stop and guide strips located around the platen of a typewriter.

Fig. 7 is a perspective view of one of the combined stop and guide strips secured to the reinforcing sheet.

Fig. 8 is an elevational view of a modified form of transfer set, showing a continuous guide strip across the bottom of the backing sheet.

Fig. 9 is a sectional view on the line 9—9 of Fig. 8.

Fig. 10 is a sectional view on the line 10—10 of Fig. 8, and

Fig. 11 is a diagrammatic sectional view indicating the method of stopping and holding the transfer set between the platen and the back plate of a typewriter.

Referring to the drawings in detail, in which like numerals refer to like parts throughout:

A transfer or carbon sheet 1 is formed with the strips or flaps 2 extending beyond the opposite side edges 3. A part of the sheet 1 near the top edge 4 is cut out or removed, as shown at 5. The sheet 1 is formed with spaced openings 6 corresponding to spaced openings in the copy forms, for the purpose of aligning transfer sheets and copy sheets. The reinforced bottom edge of the sheet 1 is for the purpose of strengthening this edge and to facilitate the entrance of the top edge of a copy sheet, and is formed by folding a portion, indicated at 7, of the sheet 1 backward on itself through 180° and creasing it on the line 8. A plurality of carbon transfer sheets 1, 1^1 and 1^2 are secured to each other and to the reinforcing sheet 9 by means of the stitches 10. The reinforcing sheet 9, as shown, is longer than the transfer sheets 1, 1^1, and 1^2, and is secured to the transfer sheets with its top edge 11 flush with the top edges 4 of these sheets, thus leaving a portion 12 of the sheet 9 projecting below the bottom and folded edges 8 of the sheets 1, 1^1, and 1^2. The carbon transfer sheets 1, 1^1, and 1^2, are each made relatively longer than the preceding sheet, and, as they are secured together with their top edges 4 flush with each other, each of these sheets projects slightly below the sheet immediately above, as indicated at 14, thereby greatly aiding or assisting in the operation of inserting the individual copy sheets, 15, of paper.

The transfer sheets 1, 1^1, and 1^2, and the reinforcing sheet 9 are formed with rounded corners 13 at the intersection of the side edges 3 and top edge 4. The purpose of these rounded corners is to permit the square corners of the copy sheets to be visible outside of the round corners 13 for the purpose of accurate alignment of the copy sheets and transfer sheets. Also, to permit the operator to grasp the projecting ends of the copy sheets for their removal combined guide and stop strips 16 (see Fig. 7) are secured at the side edges 17 of the projecting portion 12 of the reinforcing sheet 9 by the threads 10. These strips 16 are formed with the marginal spacing strip 18, wedge-shaped at both ends 19, and the integral and inwardly extending guide flaps 20, thus forming a groove or channel 21, through which the side edges 22 of the copy sheets 15 are drawn as they are pulled through between the transfer sheets.

In operation, the original and copy sheets 15 of a set of manifold or fold-pack forms are passed through the groove or channel 21, under the inwardly extending flaps 20, and inserted in or between the leaves of the set of transfer sheets, as indicated by dotted lines in Figs. 2, 3, and 4. The assembled copy and transfer sheets are then inserted as a unit in a typewriter, or other machine, in the usual manner, and the desired record printed by the typist. When the record has been completed, the typewriter will have fed the copy and transfer sheets upward until their bottom edges are approximately opposite the center of the platen 23, as indicated in Fig. 5 and Fig. 6. In this position, the wedge-shaped end portions 19 of the guide and stop strips 16 have engaged the platen 23 and friction rolls 24, thereby preventing the transfer sheet from being drawn upward any farther by the revolutions of the platen. The tension on the platen is now released, which permits the wedge-shaped portions 19 to enter a little farther into the space 25 between the platen 23 and friction rolls 24, thereby relieving all pressure on the copy sheets 15. In this position, the copy sheets 15 may be easily and quickly pulled around the platen and through the transfer sheets, the latter being held in position by the engagement of the side stop strips 16 between the platen 23 and the friction rolls 24. The copy sheets 15 are grasped in the area 5 and pulled upward, without causing any strain on the transfer sheets, until the line of weakness 26, indicating the bottom of the typed set of copy sheets, clears the top edges 4 and 11 of the transfer set and backing sheet 9. The platen is then revolved in the opposite direction, returning the top of the transfer sheets and new set of copy sheets to a printing position; the typed set of copy sheets are then torn off, and another record typed on the new set of copy sheets.

In the modified form of my invention, illustrated in Figs. 8, 9, 10, and 11, the transfer sheets 1^3, 1^4, 1^5, 1^6, and 1^7 are formed in a similar manner as 1, 1^1, and 1^2, and are secured to a short backing strip 26′ with the threads or staples 27. The top edge 28, shown in dotted lines in Fig. 8, of the backing strip 26′ is located a short distance above the top of the opposite side extensions 2. The spacing and aligning strips 29 are secured at each of the side edges of the backing strip 26′ near the bottom edge 30, and a guide strip 31 is secured to the spacing strips 29 by threads or staples 29^1 and extends across and is spaced from the short backing strip 26′. The upper edge 32 of the guide strip 31 is bent down toward the backing strip 26′, thus forming a resilient member for holding the forms or paper against the backing strip 26′, when they are drawn through. The side edges of

the paper are guided by the strips 29 in a similar manner to the strips 16.

The operation is the same as that described for the device illustrated in Figs. 1 to 7, incl., except the spacing strips 29 engage the platen 23 and back plate 33, thus preventing any further upward movement of the transfer set while the forms are drawn through them.

What I claim is:

1. A carbon transfer set comprising a plurality of transfer sheets, a reinforcing sheet relatively longer than said transfer sheets, and extending below their lower edges, means for securing the transfer sheets and the reinforcing sheet together and all positioned flush at their top edges, and combined guide and stop strips secured to the side portions of said reinforcing sheet which extend below the bottom edge of said transfer sheets.

2. In a transfer set for multiple business forms, means for retaining said set in a predetermined position in a typewriter while said business forms are drawn through said transfer set, said means comprising a backing sheet member longer than the sheets comprising the transfer set and secured to said transfer set with the top edges of both flush with each other, and stop strips secured to the marginal edges of the downwardly extending portion of the backing sheet, the stop strips being for the purpose of engaging between the platen and friction members of a typewriter to arrest the upward movement of said transfer set.

3. As an article of manufacture, a plurality of superimposed sheets of carbon paper of unequal lengths for the insertion of copy sheets therebetween, means for securing said carbon sheets together at their opposite side edges, a backing member secured to the carbon sheets and extending below the bottom edge of the carbon sheets, and stop and guide members comprising longitudinal strips secured to the downwardly extending portion of the backing member for the purpose of guiding said copy sheets while being inserted between the carbon sheets and for holding the carbon sheets in a predetermined position in a typewriter, or other machine, while the copy sheets are being drawn through said carbon sheets, substantially as described.

4. As an article of manufacture, carbon transfer sheets, a backing sheet member attached to the carbon transfer sheets comprising a member secured to and extending below the lower edges of the carbon transfer sheet, spacing strips secured to the backing sheet member at the side edges thereof, and a guide strip secured to said spacing strips and extending across and spaced from said backing sheet to provide a passageway for the insertion of business forms, as described.

5. As an article of manufacture, transfer sheets, a backing sheet member for attachment to carbon transfer sheets comprising a member secured to and extending below the lower edges of the transfer sheet, spacing strips secured to the backing sheet member at the side edges thereof, and a guide strip secured to said spacing strips and extending across and spaced from said backing sheet to provide a passageway for business forms, as described, said guide strip being formed with an inwardly bent resilient edge, for the purpose of holding the paper copy sheets against said backing sheet.

6. A transfer set comprising a plurality of superposed carbon sheets, a backing member, means for securing the carbon sheets and backing member together, means secured to and spaced from the backing member to provide a passageway and guide for inserting copy forms between the carbon sheets, said guide means serving as a stop which engages the platen of a typewriter for limiting the extent of movement of the set when the machine is operated and to permit the forms to be drawn through the carbon sheets.

7. A manifolding device comprising, in combination, a plurality of superposed layers of the manifolding carbon sheets having side or lateral extension portions, a backing member extending from the upper edges of the carbon sheets downward and beyond the lower edges of the sheets, the width of the backing sheet below the lower edges of the carbons being equal to the width of the side or extension portions of the carbon sheets and extending below the lower edges of the carbon sheets a distance substantially equal to the length of the carbon sheets, the carbon sheets and the backing sheet being secured together, and stop devices on the backing sheet comprising a strip transversely secured to the lower edge of the backing sheet which engage the platen for limiting the upward movement of the manifolding device, the stop devices also serving to guide the insertion sheets into and between the carbon sheets.

8. As an article of manufacture, a plurality of carbon transfer sheets, a backing sheet attached to the transfer sheets, and a guide strip attached to the backing sheet, comprising a strip member formed with a stop at one side and a flap portion as a part of said strip extending therefrom.

9. A transfer set comprising a plurality of superimposed carbon sheets, each sheet of which is formed with a folded portion at its bottom edge, the folded edges of which are longitudinally offset from each other, spaced openings formed near its top edge, a portion of its top edge being cut away and each one of the folded sheets being slightly longer than the one next preceding due to the longitudinal offset, a reinforced sheet member longer than said carbon sheets and extending below the same and formed with spaced openings near its top edge and having a portion of its top edge cut away to register with the cutaway

portion of said carbon sheets, means for securing the carbon sheets and reinforcing sheet member permanently together at their opposite side edge portions with their top edges flush with each other, said securing means comprising extended portions on the sides of the carbon sheets and reinforcing sheet member, which are connected together by stitches, and stop means comprising a transverse strip member secured adjacent to the lower edge of the downwardly extending portion of the reinforcing member which may engage the platen part of a typewriter for retaining said set in a predetermined position in a typewriter while the business forms are being drawn through said set.

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