

Aug. 1, 1933.

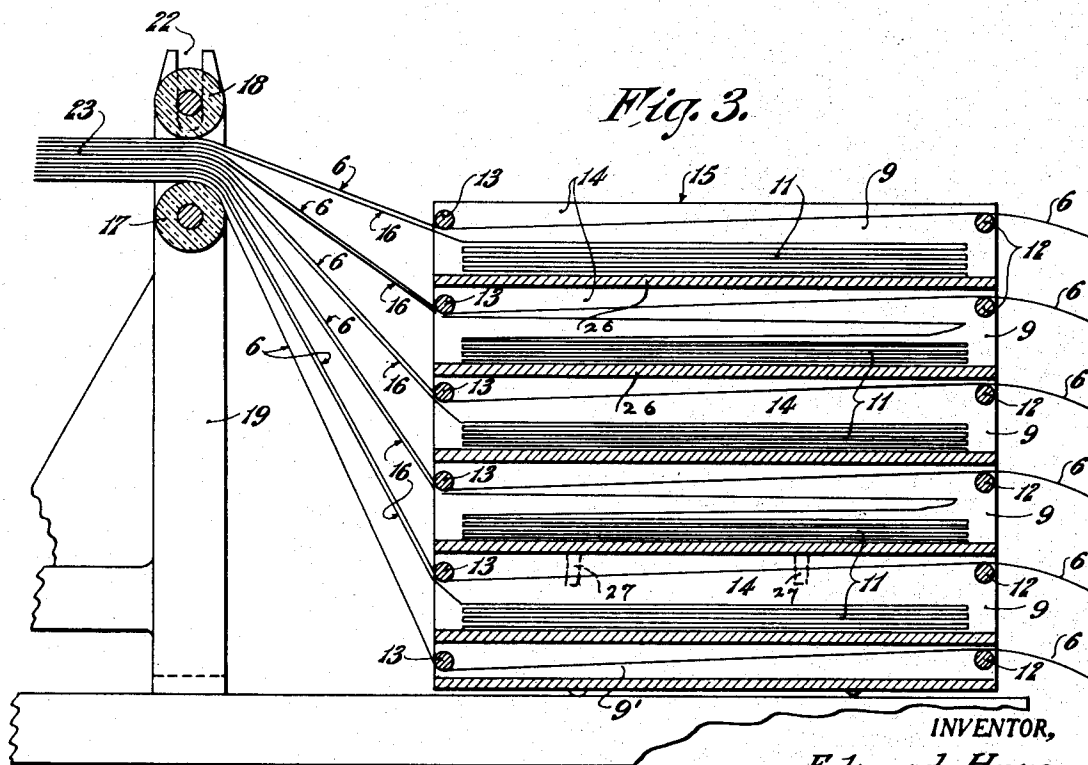
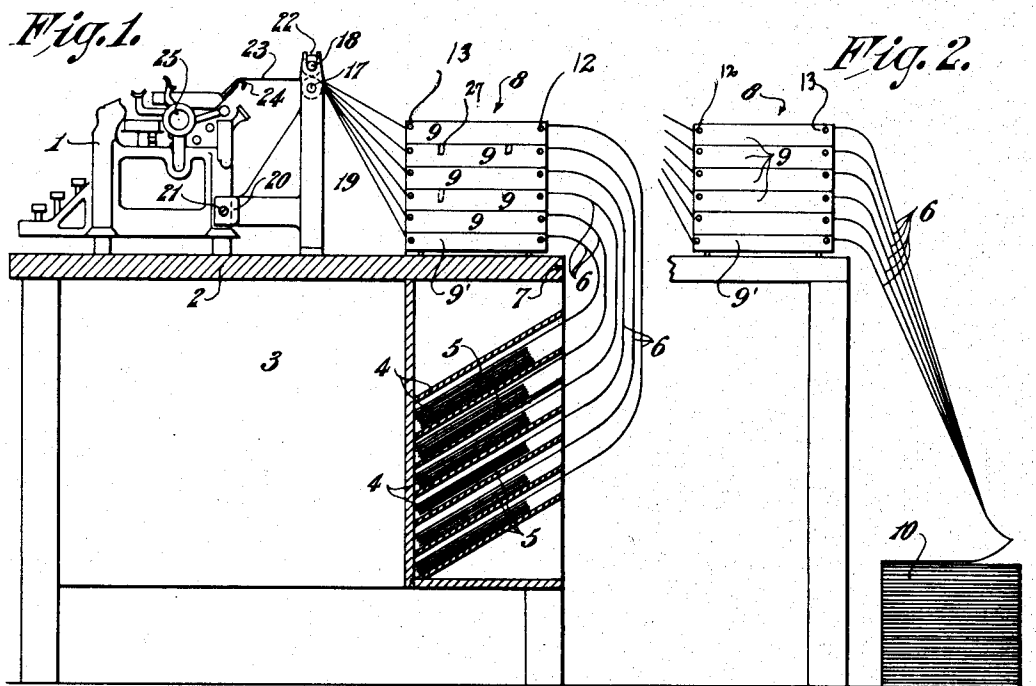
E. HANO

1,920,640

CARBON COPYING SYSTEM

Filed Oct. 22, 1930

2 Sheets-Sheet 1



INVENTOR,

Edward Hano,

BY

Harry W. Bowen,
ATTORNEY.

Aug. 1, 1933.

E. HANO

1,920,640

CARBON COPYING SYSTEM

Filed Oct. 22, 1930

2 Sheets-Sheet 2

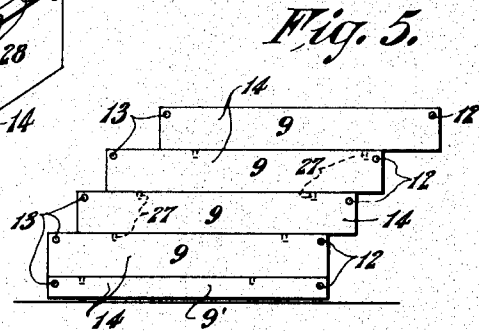
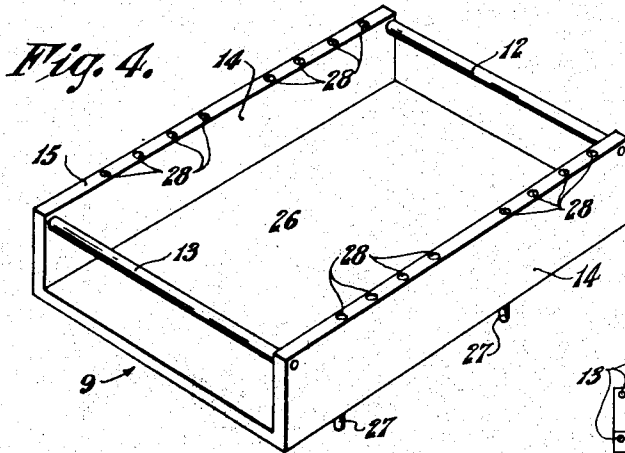


Fig. 6.

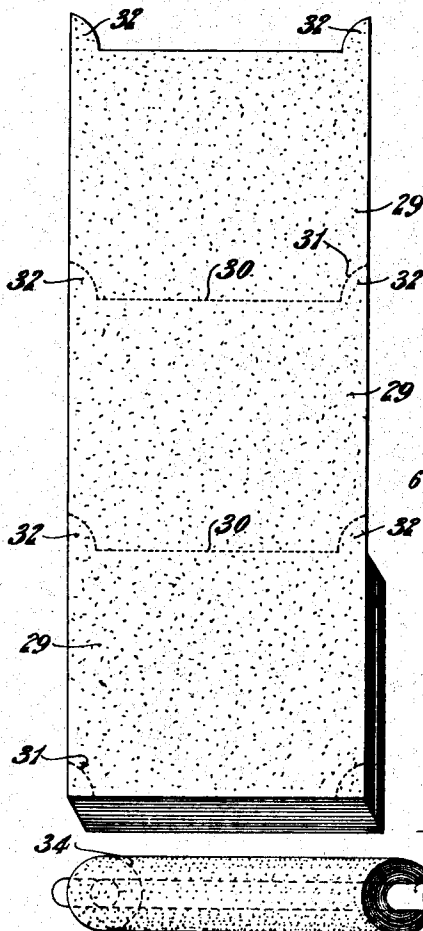


Fig. 7.

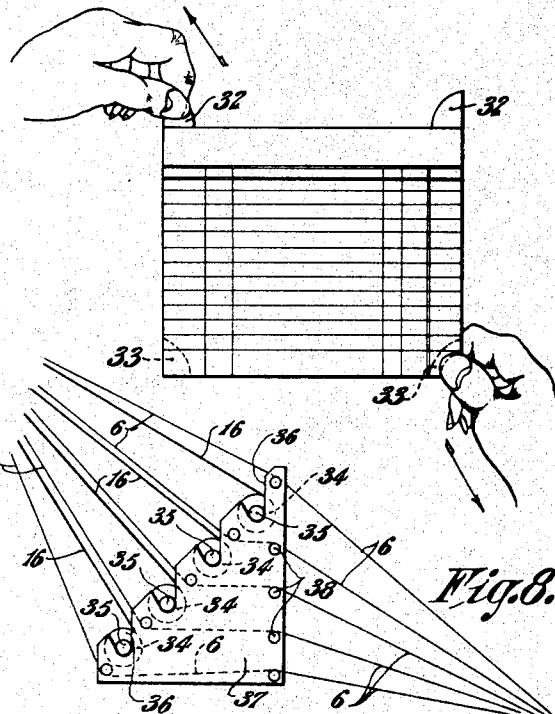


Fig. 8.

Fig. 9.

BY

INVENTOR,
Edward Hano,

Harry W. Bowen,
ATTORNEY.

UNITED STATES PATENT OFFICE

1,920,640

CARBON COPYING SYSTEM

Edward Hano, Holyoke, Mass.

Application October 22, 1930. Serial No. 490,457

2 Claims. (Cl. 197—126)

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, or office recording machines of similar type.

Several different kinds or varieties of printed manifold forms are manufactured at the present time and sold to customers, all of which have sheets of carbon paper inserted between the original and each one of the copy sheets. As each customer uses a series of forms adapted to their 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 carbons arranged separate from the copy forms, whereby the carbon sheets 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 carbon sheets may be used with plain paper, if desired.

A further object of my invention is to provide a simple and practical means for inserting the carbon sheets between the copy sheets and maintaining the proper relation between carbon and copy sheets, while they are in use.

Another object of my invention is to provide a series of carbon sheets so constructed as to be quickly and easily removed from the copy sheets at one operation or movement, after they have served their purpose.

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 continuous sheets of carbon paper, each sheet being folded on lines of weakness spaced to equal any desired length of paper, and the sheets being stacked or folded, in a zig zag manner and placed in a tray; a plurality of these trays are stacked one above another with means for passing plain paper or printed forms through each tray above the folded carbon contained in the trays, and means for gathering the paper and carbon so arranged in alternating layers into a compact pad for insertion and use in a typewriter or similar machine.

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

Fig. 1 is a side elevational view showing a desk, typewriter, bank of carbon trays, a series

of shelves containing paper or printed forms, and the attachment for gathering together the alternate layers of carbon and paper for insertion in the typewriter.

Fig. 2 is a partial view similar to Fig. 1, showing the bank of carbon trays used in connection with any of the zig zag folds of printed forms placed on a shelf or on the floor behind the desk.

Fig. 3 is a detail sectional view through the bank of trays containing carbon sheets and the gathering rolls.

Fig. 4 is a perspective view of one of the carbon containing trays.

Fig. 5 is a side elevational view of a bank of carbon containing trays arranged in staggered relation to each other.

Fig. 6 is a detail view of a pad of carbon such as is used in each tray showing the tabs and lines of weakness.

Fig. 7 is a view illustrating the method of removing the carbon sheets from the copy sheets after typing and tearing off one series of original and copies.

Fig. 8 is a modification showing carbons in roll form, and

Fig. 9 is a detail view of a carbon roll.

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

A typewriter machine 1 is mounted on the flat top 2 of a desk, or other support, 3. Supported in the shelves 4 of the desk 3 are a series of plain paper, or printed business forms 5, which are folded in a zig zag manner. The top layers 6 of each of the folded sheets 5 are carried up around the rear edge 7 of the desk 3, through the bank 8 of individual trays 9. In Fig. 2 a zig zag fold form 10 is shown, with the layers 6 carried up and through the bank 8 of the trays 9 in a similar manner. In each of the trays 9 is placed a pad of folded carbon paper 11, as shown. Roller rods 12 and 13 are secured to the side walls 14, near their top edges 15 which serve to guide the sheets of paper 6, as it passes through the trays 9. The paper 6 is passed over the roller 12 and under the roller 13. The top layers 16 of the carbon pads 11 are drawn out of the trays 9 with the papers 6, and between the press rolls 17 and 18, of live rubber, or similar material. The rolls 17 and 18 are supported by the frame 19, secured for stability to the typewriter 1 by means of the clamps 20 and set screws 21. The upper roll 18 is supported in the slot 22 in the frame 19; thus by its own weight, it will operate to gather the layers of paper 6 and carbon 16 into a compact pad 23, which is then drawn over the

back plate 24 and under the platen 25 of the typewriter 1.

The carton containing trays 9 are formed with the bottom 26, side walls 14, and roller bars 12 and 13. Two dowel pins 27 are secured in the bottom edge of each of the side walls 14 and spaced so as to register with any respective pair of holes 28 in the top edge 15 of a tray below. Thus the trays may be arranged directly over each other, or in staggered relation, as indicated in Fig. 5. A narrow tray 9', containing no carbon sheets, is first placed on the typewriter table to guide the original sheet of paper 6. The carbon pads 11 are formed, as indicated in Fig. 6, from a continuous sheet of carbon which is divided into standard lengths 29 by means of the lines of perforations 30. The sheet is then folded on these lines in a zig zag manner and placed in a tray 9. The lines of perforations or weakness 30 terminate at each side in the perforated arc-shaped lines 31, thus forming the tabs 32, when the carbon sheets are torn off. These tabs 32, it will be noticed, are retained on the carbon sheet next below, thus leaving an arc-shaped area 33 at each end of the bottom edges of the removed pack of forms and carbons in which there is no carbon sheet. By grasping one of these areas 33 between the thumb and finger of one hand, and the tabs 32 between the thumb and finger of the other hand, the carbon sheets are easily and quickly removed from the original and copy sheets in one movement, as indicated by the arrows 34 and 35 in Fig. 7.

In use or operation, the shallow tray 9' is first placed on the table 2, the first, or original, sheet of paper 6 is passed over roller bar 12 and under roller bar 13. A tray 9, containing carbon sheets 11, is now placed on top of tray 9' with dowel pins 27 located in the holes 28. The end of the carbon sheet is now drawn out over the first paper 6, a second sheet of paper 6 is drawn over the roller 12 and under the roller 13 of the tray 9 and so on, until the required number of sheets and carbons are assembled, as desired. The paper and carbon sheets are passed between the press rollers 17 and 18, over the plate 24 and under the platen 25 of the typewriter. After typing, the set of forms and carbon sheets are torn off on the lines of weakness and the carbon removed, as indicated in Fig. 7.

As shown in Fig. 2, it is evident that the multiple copy papers —6— are placed in a single pile and not in separate trays, or receptacles, as indicated by the reference numeral 4 in Fig. 1. The copy papers 6 are folded in a zig zag manner and contain several multiple copies, as clearly shown in Fig. 2. This method does away with the necessity of using separate trays for the several copy sheets. The carbons are placed in separate trays, as shown at 9.

In Fig. 8 is illustrated a plurality of rolls of carbon, as indicated at 34, which are wound on the shafts 35. These shafts are removably supported in the bearings 36 of the base pieces 37, it being understood that two base pieces are employed for supporting both ends of the shafts. The carbons 16, as before, are indicated in Fig. 6 with the lines of perforations 30, tabs 32, and cutout portions 33. These carbons are understood as being wound in continuous rolls on the shafts 35 as being less expensive than arranging them in the zig zag folding manner. The copy sheets 6 are passed over the roller bars similar to the arrangement shown in Fig. 3, when they pass over the roller bars 12 and under the roller bars 13.

What I claim is:

1. As an article of manufacture a tray for the purpose described, comprising bottom and side members secured thereto, rods mounted for rotation in the opposite ends of the side members, the upper edges of the side members having openings, and dowel pins located in the lower edges of the side members, whereby several trays may be stacked one above the other.

2. As an article of manufacture a tray, comprising bottom and side members secured thereto, rods for rotation in the opposite ends of the side members, the upper edges of the side members having openings, dowel pins located in the lower edges of the side members, whereby several trays may be stacked one above the other, said trays being designed to individually receive continuous sheets of plain and copying paper, and said rods being designed to support a plurality of continuous sheets of plain paper for assembling the same between the sheets of carbon, as all of the said sheets are drawn into a typewriting machine, as described.

EDWARD HANO.