

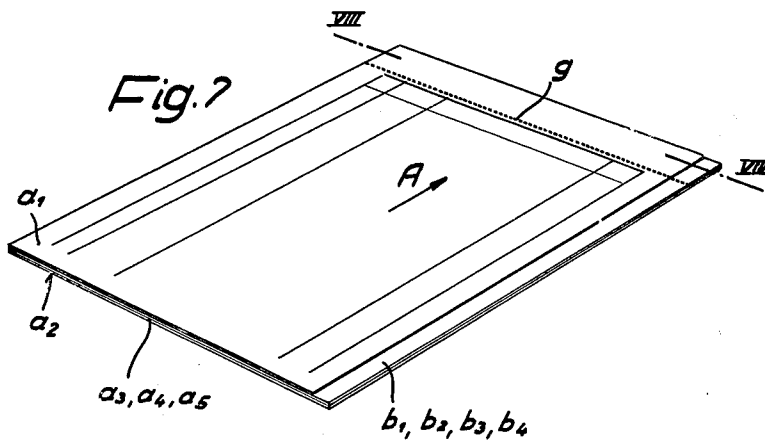
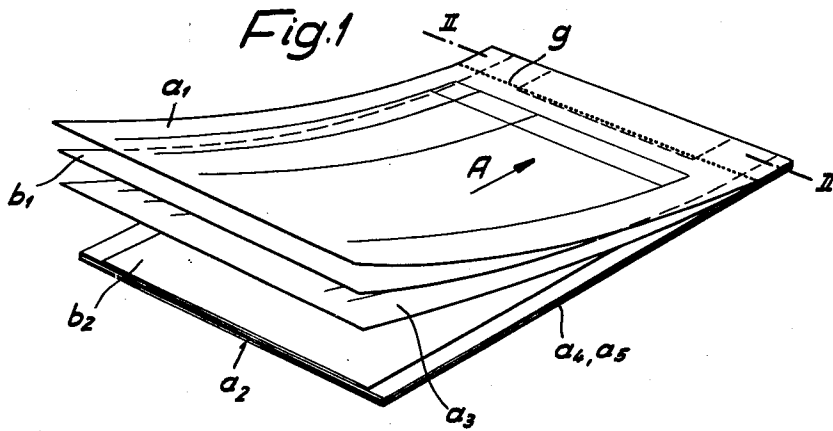
May 7, 1963

J. BURGMER
MANIFOLDING WRITING SET WITH SHEETS GLUED
TOGETHER AT THE HEADS THEREOF

3,088,754

Filed Oct. 26, 1960

4 Sheets-Sheet 1



INVENTOR

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Agt.

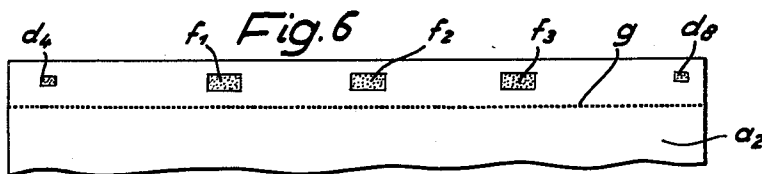
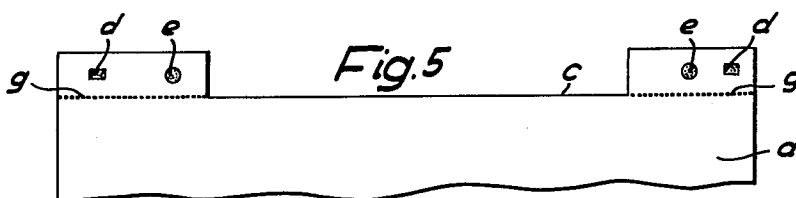
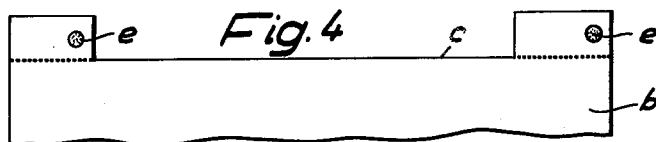
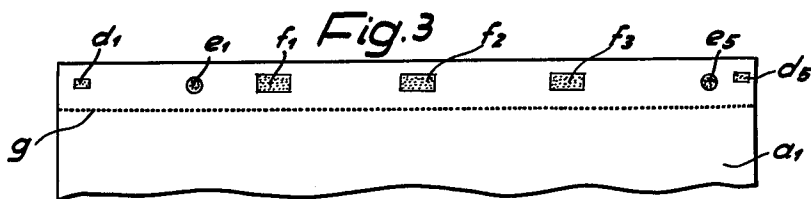
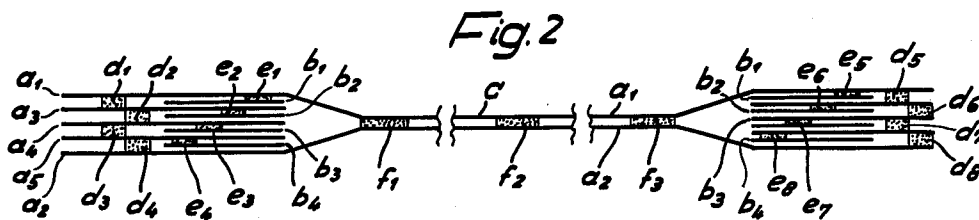
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4 Sheets-Sheet 2



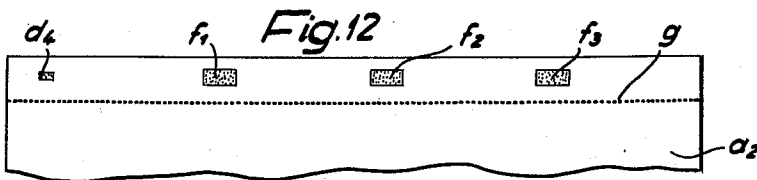
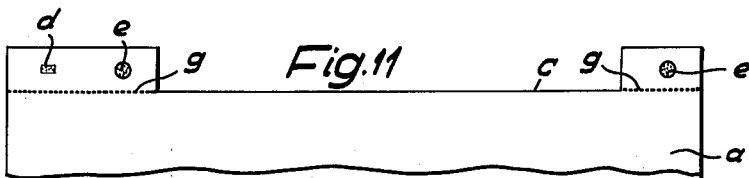
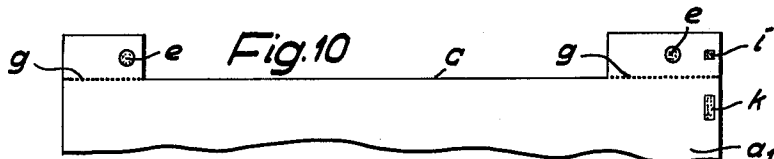
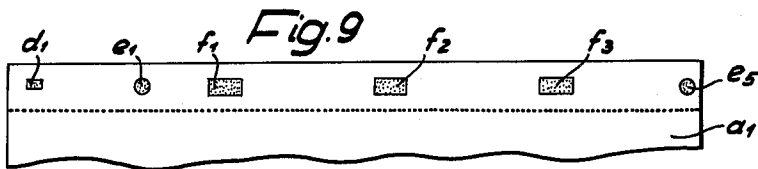
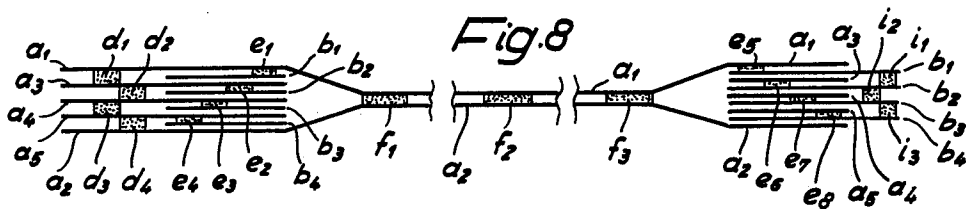
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4 Sheets-Sheet 3



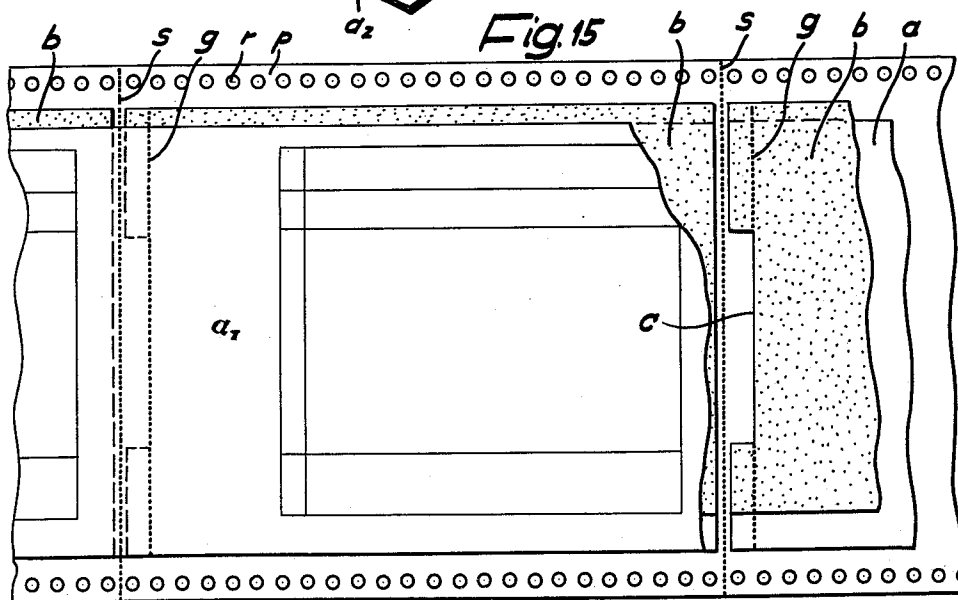
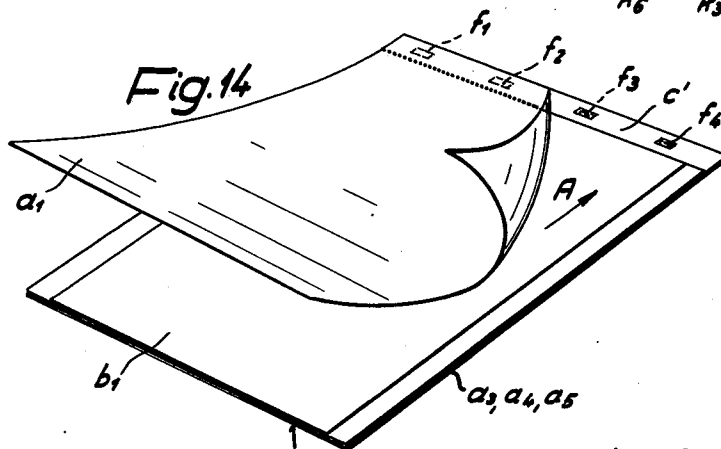
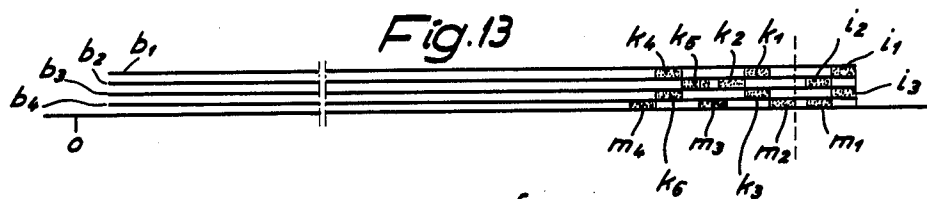
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4 Sheets-Sheet 4



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3,088,754
**MANIFOLDING WRITING SET WITH SHEETS
GLUED TOGETHER AT THE HEADS THEREOF**

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12 Claims. (Cl. 282-22)

In manifolding writing sets composed of a set of writing sheets interleaved with sheets of carbon paper, it has proved to be of particular advantage to secure together all the sheets at the head of the writing set.

Typewriting office machines are preferably provided with small rollers for guiding the paper. As the paper is being guided about the rollers, differences in the feed of the paper will arise between the top sheet and the sheets lying therebehind, the top sheet having to travel on a longer path than the other sheets. When the sheets are secured together at the marginal edges or the bottom thereof, this would result in bulging of those sheets which travel on a shorter path. When, however, the sheets are fastened at the head of the writing set, these differences in feed will not cause any trouble because the sheets cannot bulge.

Carbon papers are manufactured from thin tissue papers which either have fine pores or, in case they are not provided with pores, have the tendency of curling up. The writing sheets, if they are copies, are mostly manufactured from flimsy papers which also have pores. These two kinds of paper are unfavorable for the automatic assembly of the sheets. It has been found to be of particular advantage to reel off the sheets from large rolls of writing paper and carbon paper, respectively, then to secure together the collected webs of paper and finally to feed them to a transverse cutter which cuts them to the desired lengths. In this working method it would be most favorable to assemble the manifolding writing sets in the same direction as the paper is reeled off the rolls, thus ensuring by simple means the greatest precision in aligning the longitudinal columns. Moreover, the margin of the paper is permitted to be spaced very accurately from the printed columns. In this process of manufacture, the attachment strip for securing the sheets one behind the other is arranged transversely of the feed direction of the paper if the securing is to be effected at the head of the sheets. This process, however, involves the following difficulties:

Carbon papers can be manufactured economically only if the ink is applied over the full length of the sheets. Clear or noninked spaces extending transversely of the feed direction of the paper cannot be produced on conventional carbon paper inking machines but with considerable technical difficulties.

The carbon paper ink possesses the disagreeable property that it does not absorb any glue or adhesive and forms no adhesive bond with them.

Therefore, the paper sheets had to be fastened together by means of wire clamps. These clamps, however, are very unpopular with the users as they are frequently apprehended to cause damage to typewriters and give rise to troubles in electrically-operated machine parts.

Attempts have been made to provide the carbon paper sheets, in the zone of the attachment strip, with transversely extending spaces free from ink or to punch holes into the carbon paper at this place. Both attempts, however, were bound to fail because the manufacture of carbon papers with transversely extending spaces free from ink or with punched holes therein entailed a considerable increase of the cost in the manufacture of such carbon papers as, in addition, the carbon papers had to be

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brought forward to the attachment strips with the non-inked spaces or the holes being in accurate register. A web of carbon paper, however, which is inked in its full length can be assembled without the aid of any registering means.

In order to make use of a carbon paper web inked in full length, in other conventional methods of manufacturing manifolding writing sets, the sheets of which are adhesively secured together at the heads thereof, the head strip is positioned parallel to the feed direction of the paper and the individual sets are severed from the web by means of a transverse cutter, the cutting lines defining the longitudinal edges of the manifolding writing set. By leaving a portion uninked at one or both marginal edges of the carbon paper web, which portion will in this case be disposed at the head strip and/or the bottom strip, the method enables to obtain, without particular technical difficulties, marginal edges which are free from carbon paper ink and extend transversely of the manifolding writing set. This method, however, involves considerable disadvantages particularly in the case of such sets of forms which are provided with vertical lines intended to replace in accounts the point between the amount of dollars and the amount of cents or to divide other groups of items which have to be specified separately. Up to date, however, it has not been possible to construct transverse cutters in such a manner as to conform them to the spacing of such lines in the desired degree of accuracy.

Moreover, the use of the aforescribed known method is of disadvantage because of the continuous inking from the right-hand edge to the left-hand edge if for instance the price columns on various inner sheets of the set of forms are to be left blank as is frequently the case. This would require the carbon paper sheets to be punched at these places or otherwise carbon paper provided with a transverse field free from ink must be used, which would be very expensive.

It is the object of the present invention to overcome these drawbacks and to provide a manifolding writing set which can be manufactured from endless webs, the feed direction of the paper being parallel to the longitudinal marginal edges of the set so that the attachment strip or head strip extends transversely of the feed direction of the paper.

This object is achieved by providing a manifolding writing set comprising outer and inner sheets of writing paper, sheets of carbon paper inked in full length and prearranged in interleaving relationship with said writing sheets, an attachment strip provided at the head of each of said writing sheets and said sheets of carbon paper transversely of the feed direction thereof, for connecting said sheets one to the other, said sheets of carbon paper being so formed and arranged that continuous strips free from ink are produced on at least one lateral edge of the writing set, said strips being glued together in the region of said attachment strip, and a cutout at the upper portion of each of said inner writing sheets and said sheets of carbon paper, the attachment strips of said outer writing sheets covering said cutout and being glued together in the region of said cutout and the attachment strips of said sheets of carbon paper being glued to the attachment strips of the respective superposed writing sheet at the rear side thereof free from ink.

The lateral filing margin is generally unsuitable for receiving copies as it has the filing holes provided therein which serve for filing the forms in a folder or the like. The copy cannot be read in the region of the filing margin when being arranged in this manner in the file. Also, these writing sheets often have a blank space of a width of 5 to 10 mms. provided opposite the filing margin.

Therefore, the carbon paper can be reduced in width at either side thereof to the amount corresponding to these blank spaces of the writing sheets and the writing sheets can there be adhesively secured together in the region of the head attachment strip. The non-inked rear side of the carbon paper sheets is adhesively secured to the respective superposed writing sheet. In cases where the set of forms is subjected to heavy stresses, the top and the bottom sheet of the set can be adhesively secured together.

According to a first embodiment of the invention the sheets of carbon paper are set back by the width of the filing margin, whereas the writing sheets are connected on the filing margin in the region of the head strip by glue spots, an uninked marginal edge of the sheets of carbon paper projecting on the opposite side beyond the writing sheets and being connected thereto by further glue spots. Still other glue spots can be arranged below the attachment strip.

By this measure an effect is attained which greatly facilitates the severing and the distribution of the writing sheets of the set. The two different kinds of sheets, namely writing sheets and carbon paper sheets, are prevented from sliding or shifting during and after the severing of the attachment strip from the manifolding writing set. When the attachment strip has been severed, the writing sheets can be jogged and straightened without it having to be feared lest the sheets of carbon paper should lose their laterally projecting position. The attachment strips at the heads of the sheets can be severed individually by means of automatically working cutting machines, whereupon the manifolding writing sets can be stacked or arranged in displaced order and finally the writing sheets be withdrawn. It is also possible to superimpose a plurality of manifolding writing sets to form a stack and then to cut off the attachment strip by means of known paper cutting machines and finally to pull off the writing sheets. Moreover, this gluing together of the carbon paper sheets provides further advantages in the case of manually tearing off with one grip along a perforation arranged below the attachment strip because it is avoided to grip and pull off single sheets of carbon paper together with the writing sheets. In this case, therefore, also the carbon paper sheets can be perforated at the heads thereof thereby to facilitate the manufacturing process since the writing sheets and the carbon paper sheets can be assembled in unperforated state and thereafter perforated altogether.

According to a second embodiment of the invention the sheets of carbon paper can be set back at the two longitudinal edges thereof, the sheets of writing paper being adhesively secured together by glue spots at either side of the attachment strip.

According to an important feature of the invention the two outer sheets are adhesively secured together within a space, free from adhesive, which is formed by cutouts in the region of the attachment strip of each of the inner writing sheets and the carbon paper sheets. This connection can be provided either by cutting strips in full width from the inner sheets at the upper edge of the attachment strip or by recessing the inner sheets in the middle region of the attachment strip and adhesively securing together the two outer sheets at this recessed portion. From a technical point of view this space for the adhesive can be made readily if the head strip extends transversely of the feed direction of the paper, as desired.

When the inner sheets have been assembled, a recess of any desired shape can be made by known means.

By centrally recessing the inner sheets, the cutout middle portion need not be provided with perforations for severing the attachment strip. Moreover, additional space for writing purposes is obtained as the cutout middle portion of the attachment strip is utilized for connecting the top sheet to the bottom sheet. When the sheets of the manifolding writing set have been written upon, the severing

thereof is greatly facilitated because the attachment strip of all inner sheets need be severed only at the two sides.

The webs of writing paper of all inner sheets, as far as they are not printed or are being printed during the assembly thereof, as well as all webs of carbon paper inked in full length can be assembled without any registering device and secured together at the heads thereof in the manner described. Then the space free from adhesive can be cut out or stamped out from the attachment strip in a known manner, whereupon the webs of the two outer sheets can be brought forward. The two outer sheets are adhesively secured not only one to the other but also to the inner part of the manifolding writing set. The assembled and adhesively secured webs are then fed to a transverse cutter which cuts them into individual sets.

According to another feature of the invention the glue spots securing together the sheets of carbon paper and the writing sheets are displaced in relation to each other so that no noticeable swell arises in the region of said glue spots.

It is known to arrange individual manifolding writing sets one behind the other by forming one or both of the outer sheets as a carrier band. The carrier bands can also be used as writing sheets. Also, they may be limited to the object of transporting individual sets. These carrier bands have laterally projecting marginal portions where they are often provided with perforations, openings or the like controlling the transport of the bands in type-writing office machines mechanically, electrically, magnetically or by luminous contacts. For this form of construction the invention is particularly suitable. In the manner described, first the inner sheets are manufactured, then the inner portion of the set is fed to a transverse cutter and cut into predetermined lengths, a recess is cut out in a known manner, if required, then the two outer sheets are brought forward which are adhesively secured one to the other at the recessed portion and, in addition, to the inner portion of the set. Finally, the two outer sheets are folded in zig-zag fashion or wound onto reels.

In case the carrier band is provided with a laterally projecting marginal portion, the carbon paper which has a continuous noninked marginal edge portion projecting beyond the writing sheets can be adhesively secured to the lateral carrier margin either in the region of the attachment head strip alone or, in addition, below said head strip.

Several preferred embodiments of the invention will now be described by way of example, and with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of a first embodiment of a manifolding writing set according to the invention with the sheets of carbon paper set back at either side thereof;

FIG. 2 is a cross section through the head strip taken on line II—II of FIG. 1;

FIG. 3 is an elevational view of the head portion of the top writing sheet in the manifolding writing set of FIG. 1;

FIG. 4 is a similar view of the head portion of a sheet of carbon paper in the manifolding writing set of FIG. 1;

FIG. 5 is a similar view of the head portion of an inner or intermediate writing sheet in the manifolding writing set of FIG. 1;

FIG. 6 is a similar view of the head portion of the bottom writing sheet in the manifolding writing set of FIG. 1;

FIG. 7 is a perspective view of a second embodiment of the manifolding writing set according to the invention, wherein the sheets of carbon paper have a marginal edge portion free from ink and projecting on the right-hand side beyond the writing sheets;

FIG. 8 is a cross section through the head strip taken on line VIII—VIII of FIG. 7;

FIG. 9 is an elevational view of the head portion of the top writing sheet in the manifolding writing set of FIG. 7;

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FIG. 10 is a similar view of the head portion of a sheet of carbon paper in the manifolding set of FIG. 7;

FIG. 11 is a similar view of the head portion of an inner or intermediate sheet of writing paper in the manifolding set of FIG. 7;

FIG. 12 is a similar view of the head portion of the bottom sheet of writing paper in the manifolding set of FIG. 7;

FIG. 13 is a longitudinal section through the projecting marginal edge portions of the carbon paper sheets in the manifolding writing set of FIG. 7, showing the connection of the carbon paper sheets to a carrier band;

FIG. 14 is a perspective view of a third embodiment of the manifolding set according to the invention with the upper portions of the inner sheets thereof set back over the entire width thereof, and

FIG. 15 is a partial plan view, parts broken away, of a writing set chain with several writing sets according to the invention arranged on a carrier band.

With reference now to the drawings, FIG. 1 shows a manifolding writing set composed of a set of writing sheets interleaved with sheets of carbon paper which are reduced in width at either longitudinal side thereof so that continuous strips free of ink are provided at the lateral edges of the writing sheets. As shown in FIG. 2, this manifolding writing set has a top writing sheet *a1* and a bottom writing sheet *a2* as well as inner or intermediate writing sheets *a3*, *a4* and *a5* and sheets of carbon paper *b1*, *b2*, *b3* and *b4* prearranged in interleaving relationship with all these writing sheets. All sheets have an attachment strip at the head portion thereof, the attachment strips of all inner sheets being provided with a central cutout *c*. Glue spots *d1* to *d4* serve for adhesively securing together the writing sheets at the filing margin thereof, whereas glue spots *d5* to *d8* serve for adhesively securing together the writing sheets at the side opposite the filing margin, all glue spots being applied on the attachment strips of the respective writing sheets. Glue spots *e1* to *e8* serve for adhesively securing the rear sides of the sheets of carbon paper to the respective rear sides of the writing sheets and are similarly applied on the attachment strips. The glue spots *e1* to *e8* are laterally displaced in relation to each other so as to prevent the manifolding writing set from swelling too much, which would otherwise result from the application of the adhesive. The glue spots *d1* to *d8* need not be arranged in laterally displaced relationship because there are no sheets of carbon paper at these places and therefore, the thickness of the manifolding set is reduced there. The top and bottom writing sheets *a1* and *a2*, respectively, are adhesively secured to each other by glue spots *f1* to *f3* applied on the attachment strips thereof.

FIG. 3 shows the top writing sheet *a1* having the glue spots *d1*, *d5*, *e1*, *e5*, and *f1* to *f3* all of which are applied on the rear side of the attachment strip of this sheet. A perforation *g* separates the attachment strip from the top writing sheet.

FIG. 4 shows one of the sheets of carbon paper *b1* to *b4* reduced in width with respect to the writing sheets and having the glue spots *e* which serve to adhesively secure the rear side of the sheet of carbon paper to the respective superposed writing sheet.

All sheets which are interposed between the top and the bottom writing sheet are provided with the cutout *c*.

FIG. 5 shows one of the inner writing sheets *a3* to *a5* with the cutout *c* provided in the middle of the attachment strip, and glue spots *d* for adhesively securing the writing sheets together, as well as the glue spots *e* for adhesively securing the sheets of carbon paper to the respective superposed writing sheet. The perforation *g* is provided at either side of the cutout *c*.

FIG. 6 shows the bottom writing sheet *a2* with the glue spots *d4* and *d8* and *f1* to *f3* and with the perforation *g* serving for severing the perforated writing sheets from the unperforated sheets of carbon paper.

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FIGS. 7 to 12 shows a second embodiment of the manifolding writing set according to the invention in which sheets of carbon paper are provided which have at the side opposite the filing margin, continuous noninked marginal edge portions projecting laterally beyond the writing sheets. The top writing sheet *a1* and the bottom writing sheet *a2* have between them the inner or intermediate writing sheets *a3* to *a5* and the sheets of carbon paper *b1* to *b4* prearranged in interleaving relationship with all writing sheets. The inner sheets, i.e. both the inner writing sheets and the sheets of carbon paper, have the common cutout *c* which is provided in the middle portion of the attachment strip arranged at the head of these sheets.

All writing sheets are secured together at the filing margin by the glue spots *d1* to *d4*. At the side opposite thereto the noninked marginal edge portions of the sheets of carbon paper are connected one to the other by means of glue spots *i1* to *i3*. The glue spots *e1* to *e8* serve for adhesively securing the non-inked rear sides of the sheets of carbon paper to the respective superposed writing sheets, whereas the glue spots *f1* to *f3* serve for adhesively securing together the two outer writing sheets *a1* and *a2*.

FIG. 9 shows the top writing sheet *a1* with the glue spots *d1*, *e1*, *e5*, and *f1* to *f3* and the perforation *g*.

FIG. 10 shows one of the sheets of carbon paper *b1* to *b4* with the cutout *c*, the perforation *g*, and the glue spots *e* and *i*. Also shown is a glue spot *k* which is located below the attachment strip at the head of this sheet.

FIG. 11 shows one of the inner writing sheets *a3* to *a5* with the cutout *c*, the glue spots *d* and *e*, and the perforation *g*.

FIG. 12 shows the bottom writing sheet *a2* with the perforation *g* and the glue spots *d4*, *f1*, *f2* and *f3*.

FIG. 13 shows the sheets of carbon paper *b1*, *b2*, *b3* and *b4*. A dot and dash line *L* represents the perforation of these sheets of carbon paper for severing them from their attachment strips.

The sheets of carbon paper are provided at the side where they project beyond the writing sheets with continuous noninked marginal edge portions which have the glue spots *i1* and *i3* arranged at the level of the attachment strips. Below the attachment strips the sheets of carbon paper are adhesively secured together at the noninked marginal edge portions thereof by glue spots *k1* to *k6*. Provided under the sheets of carbon paper is a carrier strip *o* which is likewise adhesively secured to the noninked edge portions of the carbon paper by glue spots *m1* to *m4*.

FIG. 14 shows a further embodiment of the manifolding writing set according to the invention in which the inner sheets, i.e. the writing sheets *a3*, *a4* and *a5* and the sheets of carbon paper *b1*, *b2*, *b3* and *b4*, are set back at the head strip over the entire width thereof relatively to the outer writing sheets *a1* and *a2*. Accordingly, the cutout *c* of the embodiment as shown in FIGS. 1 to 6 is replaced by an upper marginal strip *c'* to which the outer writing sheets *a1* and *a2* are adhesively secured by the glue spots *f1*, *f2*, *f3* and *f4*.

In all embodiments the feed direction of the paper corresponds to the longitudinal direction of the sheets as shown by arrows *A* in FIGS. 1, 7 and 14. This renders possible, as already mentioned, to superpose vertical lines *1* drawn on all writing sheets, such as account columns, accurately one upon the other.

Another embodiment of the invention is shown in FIG. 15, where several writing sets according to FIG. 8 are combined to a writing set chain. The individual writing sets are one behind the other secured to a carrier band *p* in a known manner along their head strips. The carrier band *p* is provided with a marginal perforation *r* which allows to control the advance of the writing sets in office writing machines in the conventional manner by mechanic, electric, or magnetic means, or by light contacts.

The top sheet *a'* is formed as a continuous web, and

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severance lines *s* are provided between the writing sets to facilitate severance of the individual writing sets after inscription.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

I claim:

1. A manifold writing set comprising outer and inner sheets of writing paper, sheets of carbon paper inked in full lengths and prearranged in interleaving relationship with said writing sheets, an attachment strip provided at the head of each of said writing sheets and said sheets of carbon paper transversely of the feed direction thereof, for connecting said sheets one to the other, said sheets of carbon paper being so formed and arranged that continuous strips free from ink are produced on at least one lateral edge of the writing sheets, said strips of said writing sheets being glued together in the region of said attachment strip, and a cutout at the upper portion of each of said inner writing sheets and said sheets of carbon paper, the attachment strips of said outer writing sheets covering said cutout and being glued together in the region of said cutout and the attachment strips of said sheets of carbon paper being glued to the attachment strips of the respective superposed writing sheet at the rear side thereof free from ink.

2. A manifold writing set as claimed in claim 1, wherein the sheets of carbon paper are set back at the side of the filing margin of the writing sheets to the amount corresponding to the filing margin, first glue spots adhesively secure together the writing sheets in the region of the filing margin at the attachment strips thereof, and second and third glue spots secure together continuous marginal edge portions of said sheets of carbon paper at the opposite edge thereof, said continuous marginal edge portions being free from ink and projecting beyond the writing sheets.

3. A manifold writing set as claimed in claim 2, wherein the third glue spots securing together the sheets of carbon paper along the marginal edge portions thereof projecting beyond the writing sheets are arranged below the attachment strips.

4. A manifold writing set as claimed in claim 1, wherein the sheets of carbon paper are set back at either

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longitudinal edge thereof relatively to the writing sheets by the width of a lateral strip, the first glue spots adhesively securing together the writing sheets in the region of said lateral strips at either side of the attachment strips.

5. A manifold writing set as claimed in claim 1, wherein said cutout is located in the central portion of the attachment strip of each of the inner writing sheets and the sheets of carbon paper.

10. 6. A manifold writing set as claimed in claim 1, wherein the cutout extends over the entire width of the inner writing sheets and the sheets of carbon paper.

15. 7. A manifold writing set as claimed in claim 5, wherein lateral webs adjacent said cutout portion and in the region of the attachment strip are provided for the inner writing sheets and the sheets of carbon paper for adhesively joining said inner writing sheets and said carbon paper sheets.

20. 8. A manifold writing set as claimed in claim 1, wherein the writing sheets and the sheets of carbon paper each have a perforation extending along the attachment strip.

25. 9. A manifold writing set as claimed in claim 1, wherein the gluing together of the writing sheets and the sheets of carbon paper is effected by means of fourth glue spots displaced in relation to each other.

10. A manifold writing set as claimed in claim 1, wherein at least one of the outer writing sheets is arranged to serve as a carrier band.

30. 11. A manifold writing set as claimed in claim 10, wherein, in a manner known per se, at least one outer writing sheet is provided on at least one laterally projecting marginal edge portion with perforations or the like for controlling the feed of said outer writing sheet in typewriting office machines mechanically, electrically, magnetically or by luminous contacts.

40. 12. A manifold writing set as claimed in claim 10, wherein the carrier band projects laterally beyond the writing set at one longitudinal edge thereof, fifth glue spots being provided for adhesively securing the marginal edge portions of the sheets of carbon paper, free from ink and projecting laterally beyond the writing sheets, to said carrier band.

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