June 17, 1941. G. W. HALL ET AL 2,246,042

TRANSFER STRIP FOR MANIFOLDING ASSEMBLY

Filed Dec. 10, 1938 2 Sheets-Sheet 1

Fig. 1.

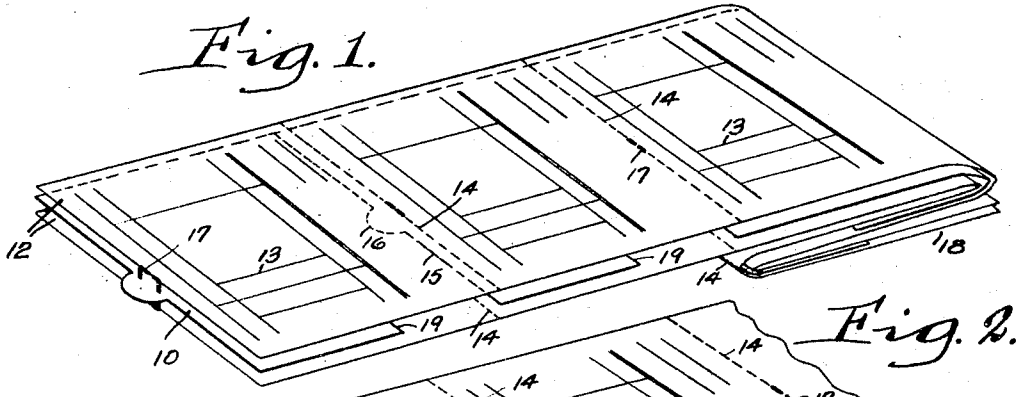


Fig. 2.

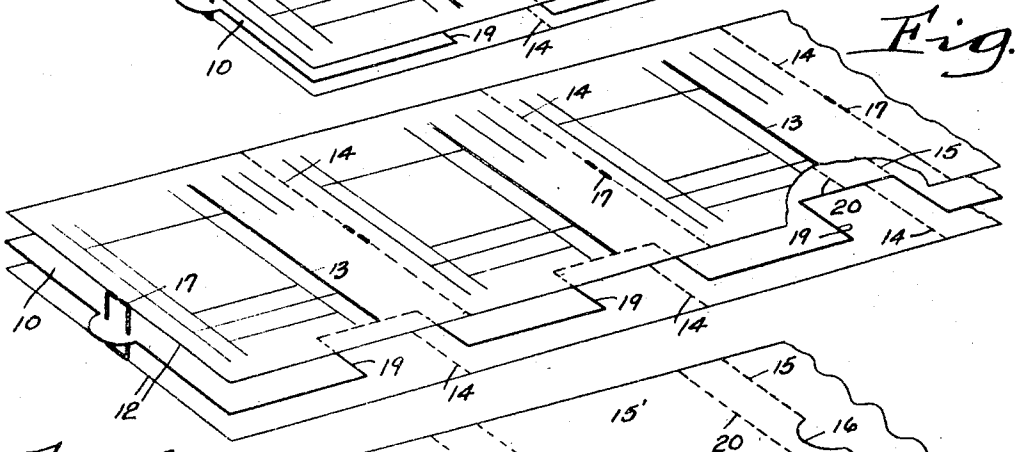


Fig. 3.

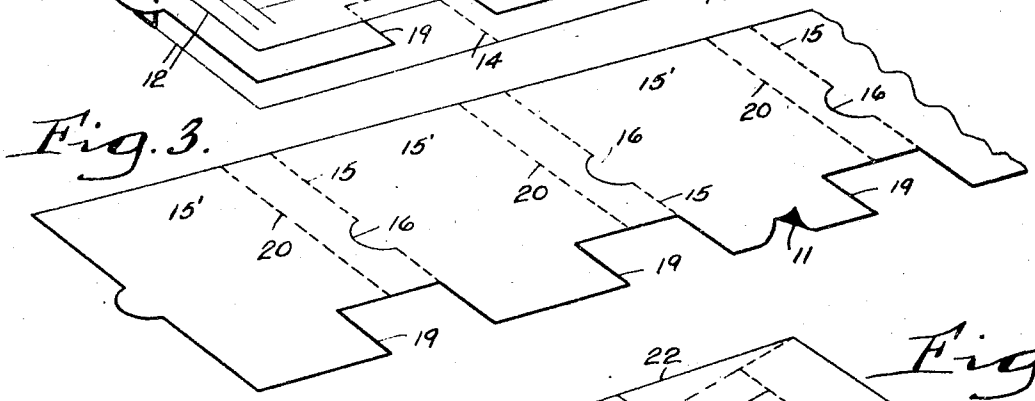
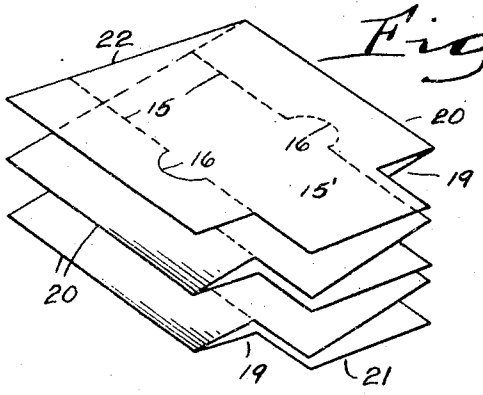


Fig. 5.



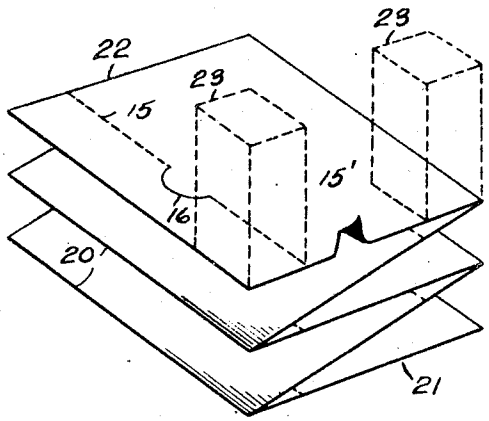


Fig. 4.

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Fig. 6.

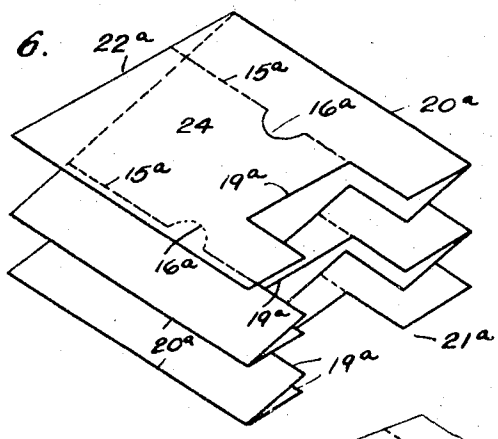


Fig. 4.

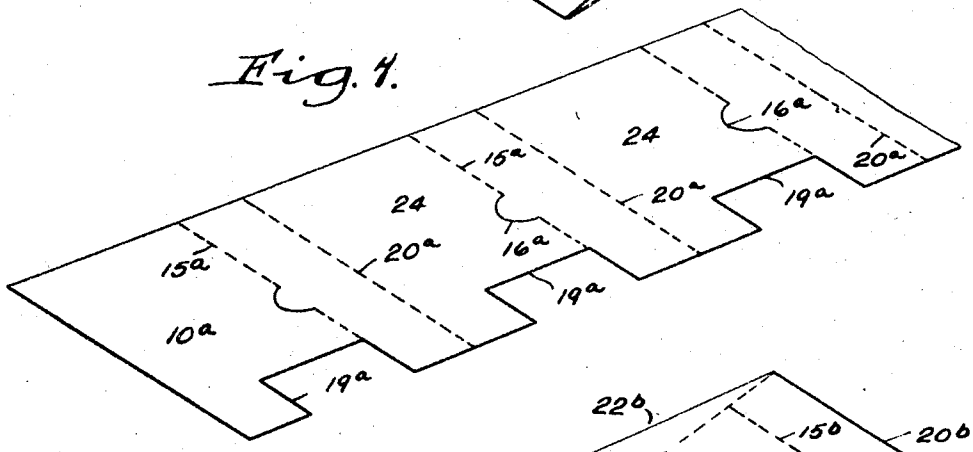


Fig. 8.

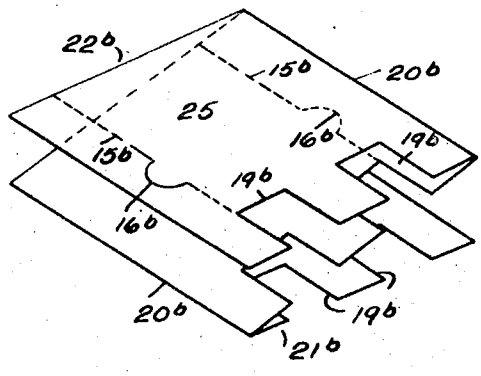
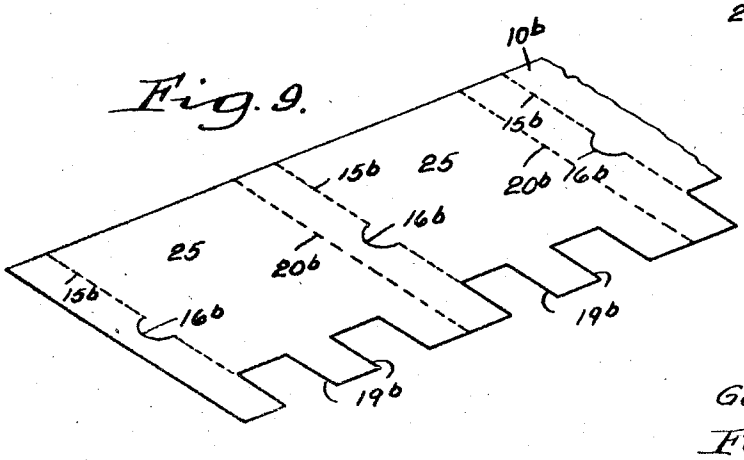


Fig. 9.



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TRANSFER STRIP FOR MANIFOLDING ASSEMBLY

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Application December 10, 1938, Serial No. 245,026

8 Claims. (Cl. 282—12)

This invention relates to improvements in strips for use in manifolding assemblies, and more particularly to an improved carbon or transfer strip for selective transfer inscription, and to an improved method for making the same.

It is a general object of the invention to provide an improved strip such as a transfer strip for use in manifolding assemblies, and having improved features of construction whereby it can be manufactured with a minimum of labor and expense, while at the same time providing for accurate and satisfactory selective transfer inscription.

Another object of the invention is to provide a method for constructing long continuous transfer strips for use in composite manifolding assemblies, including improvements for forming strip cut-outs for selective transfer inscription so as to decrease production costs.

Other objects of the invention will be in part pointed out in the following disclosure of certain illustrative but preferred embodiments of the invention, and will be in part obvious in connection with said disclosure.

The invention accordingly comprises the several steps and the relation and order of one or more of such steps with respect to each of the others, and the article possessing the features, properties, and the relation of elements, which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claims.

For a more comprehensive disclosure of the nature, objects and advantages of the invention, reference is had to the following detailed description and to the accompanying drawings, in which:

Fig. 1 is a partially diagrammatic perspective view of a composite manifolding assembly embodying the invention;

Fig. 2 is a fragmentary view similar to Fig. 1, the strips being shown as separated considerably and parts being broken away in order to disclose the improved structure more clearly;

Fig. 3 is a perspective view of the improved transfer strip separated from the manifolding or record assembly;

Fig. 4 is a partially diagrammatic view illustrating the method of forming the cut-outs of the transfer strip;

Fig. 5 is a partially diagrammatic perspective view showing the transfer strip in zigzag folded condition as it appears after the formation of the cut-outs;

Fig. 6 is a partially diagrammatic view similar to Fig. 5 but illustrating a slightly modified embodiment;

Fig. 7 is a perspective view similar to Fig. 3 but showing the transfer strip modified as in Fig. 6;

Fig. 8 is a perspective view similar to Fig. 5 but illustrating a still further embodiment; and

Fig. 9 is a perspective view similar to Figures 3 and 7 but illustrating the modified strip of Fig. 8.

Referring to the drawings for a detailed disclosure of the invention, the improved strip structure is intended primarily for use in manifolding assemblies of the type disclosed in Figures 1 and 2 of the drawings, but it will be understood that the improvements of the strip structure and method of making the same may be utilized for other purposes. As herein disclosed, the improved strip is shown in the form of a long continuous transfer strip 10, sometimes having transfer material such as carbon on the upper and lower surfaces thereof for transferring inscriptions, but preferably being coated as shown at 11 only on its lower surface. This transfer strip 10 is ordinarily employed in a manifolding or record assembly embodying long continuous record strips 12, each preferably provided with blank forms 13 adapted to receive the inscriptions. These blank forms as seen in Fig. 1 are arranged in a longitudinal series along each record strip so as to make a longitudinal series of attached record areas or form sheets positioned one after another along each strip. There may be as many record strips as desired including an original strip and one or more copy strips, and a transfer strip 10 for transferring the inscriptions to each copy strip, the record and transfer strips being arranged in interleaved or superposed manifolding relation with each other.

Each record strip 12 is preferably provided with transverse weakened severance lines 14 longitudinally spaced at equal intervals so as to divide the strips into series of attached record leaves or sheets. In the embodiment shown the record sheets and the form sheets mentioned above occupy the same strip lengths respectively. The severance lines 14 may be formed by perforating, scoring or otherwise weakening the paper in any well known manner so that the strips may be readily torn along the lines. The carbon strip or strips 10 may be similarly provided with transverse lines 15 which may, if desired, be weakened for severance in a manner similar to that of the record strip weakened lines 14. The weakened lines 15 of the transfer strip may, as shown, be provided with deviating parts 16 so as to provide upon severance along these lines, selective grip

formations for selectively separating or stripping the carbon sheets from the record sheets of a set of sheets after they have been severed from the complete assembly. The arrangement and operation of these selective grip formations are fully disclosed in the Conklin Patent No. 2,083,295 dated June 8, 1937, to which reference is made for a complete disclosure.

Attaching devices such as staples 17 positioned directly upon the groups of weakened severance lines 14 and 15 are preferably utilized for attaching the strips together in the complete assembly. As shown in Fig. 1, the assembly of record and transfer strips is ordinarily reversely folded along the successive groups of lines 14 and 15 in zigzag formation so as to form a zigzag pack 18. This zigzag folded pack is very convenient for packaging, handling and loading into supply compartments of manifolding machines, transportation etc.

In manifolding assemblies of the type referred to, it is often required that a part of the inscriptions written upon the original record strip be omitted from the underlying or copy record strips. For this purpose portions of the transfer strips, or of the transfer material only, have been omitted at areas thereof in alignment with the space bearing the inscription of the original record strip that it is desired to omit from the copy strips. In manifolding sets of single record and transfer sheets, it is a simple matter thus to cut out areas of the transfer sheets as required. However, in the long continuous strip of the type herein referred to the removal of the required area from each transfer sheet of the continuous strip has been quite laborious and expensive due to the fact that it is often necessary to cut out the required areas separately on each individual transfer sheet of the long strip, due to the fact that the cut-out areas must be in the same relative positions in all of the record sheets in order that the inscriptions may be omitted at the same places on all of the sheet sets as required. The improvements herein are designed to avoid the disadvantages mentioned.

Such omitted portions of the carbon strip for the purpose of selective transfer of the inscriptions are shown in Fig. 3 in the form of the cut-outs 19. These cut-outs may be of any desired shape or size and positioned in the respective transfer sheets so as to omit transfer of inscriptions made upon the original record sheets. The nature of the omitted inscriptions varies widely for different classes of business and may be totals, prices, and various confidential data. The size, shape, and relative positioning of the cut-outs may be correspondingly varied. If the part of the inscription to be omitted is located at points spaced inwardly from the transfer sheet edges, the cut-outs will be correspondingly spaced inwardly from the sheet edges.

As mentioned above, the improved transfer strip is provided with transverse lines 15 dividing the strip into a longitudinal series of strip sections that form the transfer leaves as indicated at 15', and the strip, as shown, may be folded in the supply pack 18 in zigzag condition along these lines 15. This improved strip which is in fact a blank of sheet material from which the complete transfer strip is made, is also provided with transverse lines 20 which may be formed in any well known manner such as perforating, scoring, creasing, or merely folding the strip along the lines. In order to distinguish the lines 20 from the other weakened lines 15 of the transefr strip or blank, they are herein referred to as construction lines and they are utilized as aids in forming the cut-outs 19 as more fully described below.

Ordinarily, the construction lines 20 are longitudinally spaced apart the same distances as the severance lines 15, and they are also longitudinally spaced from the respective adjacent severance lines thus positioning them within the bodies of the respective strip sections that form the transfer leaves. These construction lines 20 thus provide auxiliary fold lines along which the complete strip may be reversely folded in zigzag formation to form an auxiliary zigzag pack 21, as indicated diagrammatically in Figures 4 and 5. It will be understood that the transfer strip and the blank therefor may be as long as desired, and frequently is of considerable length so as to be suitable for a supply pack 18 having a great number of sets of record and transfer sheets. When the strip is thus zigzag folded along the construction fold lines 20, the auxiliary or construction zigzag pack will be provided, being made up of a large number of superposed plies or construction sheets 22 defined at their ends by the construction lines 20. These plies of the blank, it will be noted, are not the same as the transfer sheets 15' of the strip which are respectively defined at their ends by the severance lines 15.

When the transfer strip or blank is thus folded in the zigzag pack, as shown in Fig. 4, it is a very simple matter to cut out the corner portions of all of the plies by a single operation, thus to provide the cut-outs 19 for effecting the selective transfer inscriptions. The removal of these portions may be made in various ways but it is convenient to do it by a punching operation, using punches 23, as shown diagrammatically in Fig. 4. It will be understood that such punches for effecting this operation may be embodied in appropriate punching apparatus, either power or manually operated.

In order to provide the cut-outs 19, as indicated in Fig. 3, the opposite end marginal portions of the plies will be punched out as indicated in Fig. 4, the punches extending outwardly to cut the fold lines 20 so that the corner sections of the auxiliary zigzag pack are removed, as shown in Fig. 5. Therefore, it will be seen that a portion of each of the construction fold lines 20 will be cut out by the punching operation, and that the part of the line cut out is positioned centrally of the removed strip portions. When the zigzag strip or blank of Fig. 5 is extended the cut-out portions appear as shown in Fig. 3, with the line of the auxiliary fold lines 20 bisecting the respective cut-outs. The blank may remain folded as shown in Fig. 5 until further processing is to be effected and it can be stored or transported in this form if desired.

It will thus be clearly seen that all of the cut-outs of a very long continuous transfer strip may be quickly and easily made at a single operation. It will be noted also that all of the cut-outs 19 are symmetrically positioned with reference to the respective construction fold lines 20 and that they are similarly positioned in each of the transfer sheets 15', as defined by the transverse severance lines 15. Thus the same written matter of each original record sheet will be omitted from the underlying copy sheets. Also in the form shown in Fig. 3, it is noted that each cut-out 19 is bisected by the line of the construction fold line 20 or, in other words, each line 20 extended is positioned along the center of the cut-out portion. When constructed as described, the im-

proved transfer strip is ready for inserting into interleaved transfer relation with the record strips of the assembly, and zigzag folded therein along the lines 15.

The modified embodiment of the transfer strip shown in Figures 6 and 7 is the same in general aspects as the form above described, and corresponding parts are designated by the same reference numerals with the addition of the index *a*. In this embodiment the cut-outs 19*a* are positioned midway between the adjacent construction lines 20*a* instead of at the opposite end marginal portions as in Fig. 5. These cut-outs 19*a* are centrally positioned in the respective plies 22*a* of the construction pack 21*a*, so that the longitudinal edges of the cut-outs are spaced at equal distances from the respective adjacent lines 20*a*. It will thus be seen that the cut-outs 19*a*, as in the prior embodiment, are symmetrically positioned with reference to the construction lines 20*a*, and also with reference to the transverse center lines of the plies 22*a*. It will be understood that the cut-outs 19*a* will be formed in a manner similar to that above described for the cut-outs 19, when the strip or blank 10*a* is folded into the zigzag construction pack 21*a* of Fig. 6. When the strip shown in Fig. 6 is extended it appears as shown in Fig. 7, the cut-outs 19*a* occupying the same relative position in each of the transfer sheets 24 which correspond to the transfer sheets 15' of Fig. 3.

In the embodiment of Figures 8 and 9 the general arrangement is similar to that described in connection with Figures 1 to 5 inclusive, and corresponding parts are designated by the same reference numerals with the addition of the index *b*. As shown in Fig. 8 there are two cut-out portions 19*b* in each of the plies 22*b* of the auxiliary zigzag pack 21*b*. These cut-outs 19*b* will be punched out in the manner described above in connection with Fig. 4, when the strip or blank is folded into the zigzag construction pack 21*b*. Also, it will be noted that the cut-outs 19*b* are symmetrically arranged in each ply 22*b* with reference to the construction lines 20*b*, and with reference to the transverse center lines of the plies 22*b*. When the strip or blank is extended it appears as shown in Fig. 9, and the cut-outs 19*b* are similarly positioned in all of the transfer sheets 25 of this strip which correspond to the transfer sheets 15' of Fig. 3. When placed in the complete record assembly, this strip will have its transverse severance lines 15*b* in alignment with the weakened severance lines of the record strips the same as in the prior embodiments of Figures 1 to 5, and Figures 6 and 7.

It will be understood that in all of the different embodiments, the interleaved record and transfer strips will be folded into a zigzag supply pack similar to the pack 18 shown in Fig. 1. It will be further noted that in all of the different disclosed embodiments, the cut-outs 19, 19*a*, 19*b* are symmetrically positioned with reference to the construction fold lines, and to the transverse center lines of the respective plies of the auxiliary zigzag construction packs 21, 21*a*, 21*b*. But the cut-outs are normally positioned symmetrically with reference to the transverse center lines of the carbon sheets as clearly seen in Figures 3, 7 and 9. It will be understood that the size, shape, positioning, etc. of the cut-outs may vary for different selective transfer inscription in different kinds of business, and that said cut-outs need not necessarily open through the strip edges.

Since certain changes in carrying out the above process, and certain modifications in the article which embody the invention may be made without departing from its scope, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A method of making a transfer strip for manifolding assemblies, including: providing transverse severance lines in a long continuous transfer strip dividing said strip into a series of transfer sheets of substantially equal length, folding the strip along transverse construction fold lines respectively longitudinally spaced from said severance lines, to form an auxiliary zigzag folded pack, and then removing strip areas from the plies of the pack while in zigzag folded condition, so as to form cut-outs for selective transfer.

2. A method of making a transfer strip for manifolding assemblies, including: providing transverse severance lines in a long continuous transfer strip dividing said strip into a series of transfer sheets of substantially equal length, folding the strip along transverse construction lines respectively longitudinally spaced from said severance lines, to form an auxiliary zigzag folded pack, and then removing strip areas from the plies of the pack at parts of said plies symmetrically positioned with reference to said construction fold lines while the strip is in zigzag folded condition so as to form cut-outs for selective transfer.

3. A method of making a transfer strip for manifolding assemblies, including: providing transverse severance lines in a long continuous transfer strip dividing said strip into a series of transfer sheets of substantially equal length, folding the strip along transverse construction fold lines respectively longitudinally spaced from said severance lines, to form an auxiliary zigzag folded pack, and then removing strip areas from the plies of the pack at parts of said plies positioned at said construction fold lines and at opposite marginal portions of the pack, while the strip is in zigzag folded condition so as to form cut-outs for selective transfer.

4. A transfer strip blank of sheet material for making a long continuous transfer strip for use in manifolding assemblies, said blank having longitudinally spaced transverse fold lines providing for folding it into a zigzag pack and dividing the blank into a longitudinal series of leaves, said blank also having longitudinally spaced transverse construction fold lines respectively spaced from said first mentioned fold lines, said blank being folded on said construction fold lines into a zigzag pack and having cut-outs in the plies of the pack aligned with each other depthwise of the pack.

5. A transfer strip blank of sheet material for making a long continuous transfer strip for use in manifolding assemblies, said blank having longitudinally spaced transverse fold lines providing for folding it into a zigzag pack and dividing the blank into a longitudinal series of leaves, said blank also having longitudinally spaced transverse construction fold lines respectively spaced from said first mentioned fold lines, and longitudinally spaced from each other substantially the same as the spacing of said first mentioned fold lines, said blank being folded on said construction fold lines into a zigzag pack

and having similar cut-outs in the plies of the pack aligned with each other depthwise of the pack.

6. A method of making a record assembly of record and transfer strips, including: zigzag folding a long continuous strip for carrying transfer material along transverse fold lines to form a zigzag pack of superposed strip plies, removing areas from the superposed plies when thus folded to provide cut-outs for selective transfer inscription, and inserting the strip thus formed into interleaved relation with one or more record strips with the cut-outs respectively overlapping parts of the record strips, and zigzag folding the resulting assembly along transverse lines spaced longitudinally of the strips respectively from said first mentioned fold lines.

7. A method of making a record assembly of record and transfer strips, the record strip or strips having longitudinally spaced transverse lines dividing each strip into record sheets, said method including: zigzag folding a long continuous strip for carrying transfer material along transverse fold lines longitudinally spaced similarly to the spacing of the transverse lines of the record strip, so as to form a zigzag pack of superposed strip plies, removing areas from the superposed plies when thus folded to provide cut-outs for selective transfer inscription, and inserting the strip thus formed into interleaved relation with one or more said record strips with the cut-outs respectively overlapping parts of the record strips, and positioning the fold lines of said transfer strip in longitudinally offset relation with reference to the respective transverse lines of the record strip.

8. A method of making a manifolding assembly including: zigzag folding, along longitudinally spaced transverse fold lines, a long continuous strip for carrying transfer material to form a transfer strip, thus forming a zigzag pack of superposed strip plies, removing areas from the superposed plies when thus folded to provide cut-outs for selective transfer inscription, inserting the strip thus formed into interleaved transfer relation with one or more long continuous record strips each formed to provide a series of attached form sheets arranged one after another along each strip, and positioning the strip having the cut-outs with the fold lines thereof intermediate the ends of the respective form sheets of the record strips and with the cut-outs overlapping parts of the form sheets.

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