June 17, 1941. R. H. RITZHAUPT 2,246,065

CARBON INTERLEAVED MANIFOLDING ASSEMBLY

Filed June 29, 1939

Fig. 1.

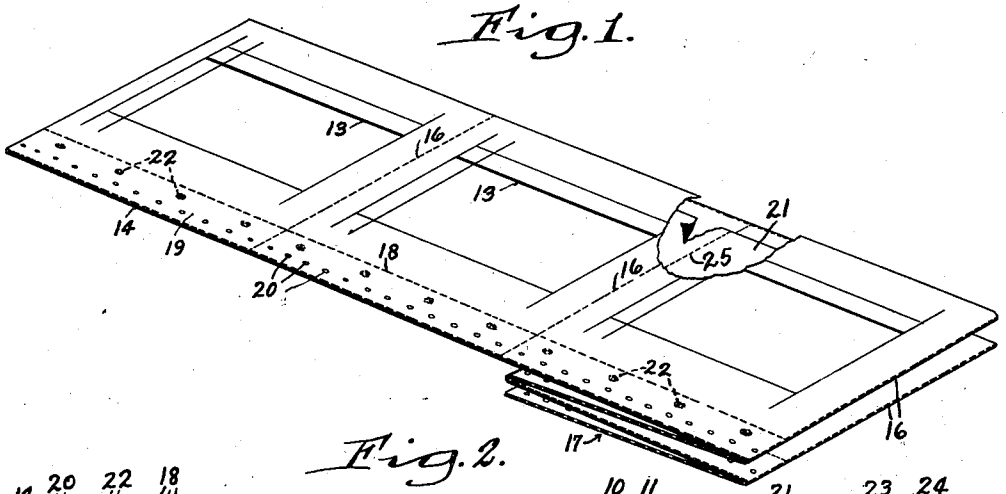


Fig. 2.

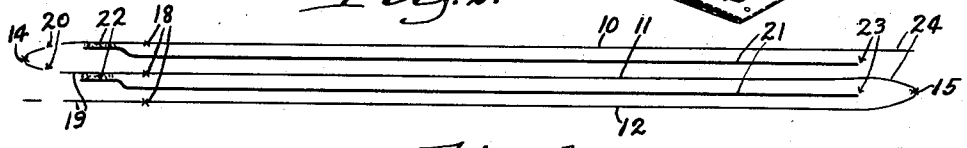


Fig. 3.

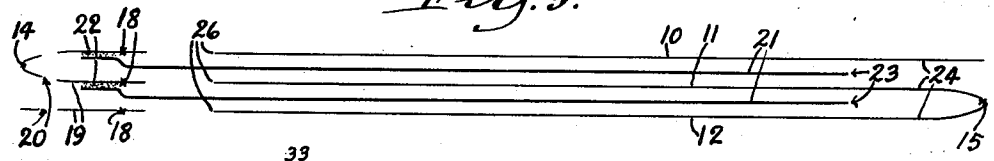


Fig. 4.

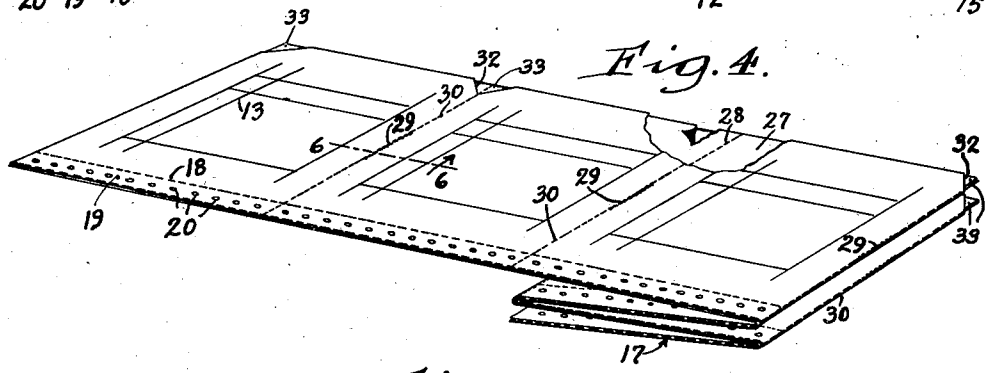


Fig. 5.

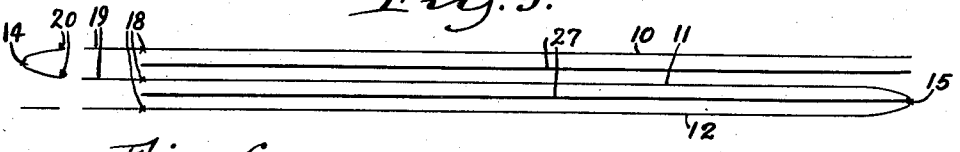
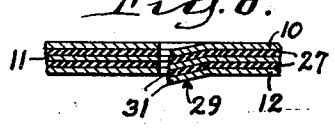


Fig. 6.



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Patented June 17, 1941 2,246,065

UNITED STATES PATENT OFFICE

2,246,065

CARBON INTERLEAVED MANIFOLDING ASSEMBLY

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Application June 29, 1939, Serial No. 281,838

3 Claims. (Cl. 282—12)

This invention relates to improvements in manifolding assemblies of the long continuous traveler type, including long continuous record strips and one or more long continuous carbon or transfer strips of the one-time type. More particularly, the invention relates to improvements in manifolding assemblies of the type mentioned in which the record strips are of the fanfold type having one or more longitudinal folded lines to provide relatively superposed record strips or plies.

It is a general object of the invention to provide in a manifolding assembly of the type mentioned improved means for attaching the one-time transfer or carbon strip in position in the assembly whereby it is retained in its correct transfer relation during transfer inscription, and providing for quick and easy separation of the transfer sheets from the record sheets of a severed set of sheets after the inscriptions have been entered.

A further object of the invention is to provide an improved fanfolded record assembly of the class mentioned, having an improved attaching arrangement for retaining the transfer strip or strips in position, the attachment being arranged adjacent to the folds of the fanfolded record strip so as to protect them from injury and to provide for instant separation of the transfer sheets without marring of the record sheets.

Another object of the invention is to provide in a manifolding assembly of the class mentioned an improved arrangement of a feed band, preferably provided with pin feed apertures and having an improved arrangement for attaching the transfer strip to the feed band for retaining said strip in correct transfer position in the assembly.

A further object of the invention is to provide an improved attaching means for attaching the carbon strip or strips in transfer relation in the assembly so as to effect release of the attaching means when a set of leaves is severed from the assembly along the transverse weakened severance lines, and also to provide for easy separation of the carbon leaf or leaves from the record leaves of a severed set.

Other objects and advantages of the invention will be in part pointed out in the following detailed description of certain illustrative but preferred embodiments of the invention, and will be in part obvious as the disclosure proceeds.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a more comprehensive disclosure of the objects and advantages of the invention reference is had to the following detailed description of the illustrative embodiments and to the accompanying drawing in which:

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

Fig. 2 is a partially diagrammatic enlarged transverse vertical section of the record assembly of Fig. 1, the record and carbon strips separated some distance from each other to show the structure more clearly;

Fig. 3 is a transverse sectional view similar to Fig. 2 but showing a slightly modified embodiment;

Fig. 4 is a perspective view similar to Fig. 1, illustrating a further embodiment of the invention;

Fig. 5 is a partially diagrammatic transverse vertical section similar to Fig. 2, but taken on the modified embodiment of Fig. 4; and

Fig. 6 is a fragmentary enlarged longitudinal vertical section of the strip attaching means of the embodiment of Fig. 4, the section being taken substantially on the line 6—6 of Fig. 4.

Referring first to the embodiment of the invention disclosed in Figures 1 and 2, a manifolding or record assembly is shown including a plurality of long continuous record strips or plies 10, 11 and 12 arranged in interleaved manifolding relation with each other. These record strips are preferably made of paper or similar sheet material adapted to receive inscriptions and are preferably provided with printed blank forms 13 arranged in series along each of the strips. There may be two or more of these record strips in the assembly, three being shown for illustrative purposes. The record strips or plies 10, 11 and 12 are formed by longitudinally folding, as at 14 and 15, a single wide strip or paper so as to bring the plies in superposed relation. This structure is known in the art as a fanfold assembly. The longitudinal fold lines 14 and 15 may be perforated or otherwise weakened to facilitate separation of the record strips from each other along these lines.

The plies of the record assembly are preferably provided with longitudinally spaced transverse weakened severance lines 16 dividing each record strip into a longitudinal series of record sheets or leaves, each provided with one of the blank forms 13. These weakened lines may be formed by any well known weakening means, such as perforating, slitting, scoring or the like. The record assembly is thus divided by these weak-

ening lines into sets of relatively superposed record sheets. The long continuous record assembly is preferably folded along transverse lines into a zigzag folded supply pack 17, the fold lines preferably coinciding with transverse severance lines 16.

Each record ply 10, 11 and 12 is provided with a longitudinally disposed weakened severance line 18, the weakening being effected as in the case of the transverse weakened lines 16 in any well known manner such as perforating, scoring, slitting or the like. These longitudinal weakened lines 18 are spaced inwardly a short distance from the assembly edge so as to form narrow longitudinally disposed strips or bands 19 that may be readily separated from the respective record plies or strips by severing along these weakened lines. These longitudinal bands 19, as later described, provide for attachment in the assembly of the transfer or carbon strips and they may also serve as feed bands for cooperation with the feeding mechanism of various writing or recording machines so as to effect feeding of the record assembly during inscription in such machines. In cases where the bands 19 are utilized for cooperation with pin feed mechanism each band is provided with a series of pin feed apertures 20 arranged in superposed relation in the different plies for receiving in feeding relation the feed pins of the feed mechanism.

Carbon or transfer strips 21 of the long continuous traveler type are interleaved in transfer relation with the record strips 10, 11 and 12 so as to transfer to the underlying record strips the inscriptions made upon the top or original record strip 10. Ordinarily, there will be one of these transfer strips 21 for each of the underlying or copy record strips. When only two record strips are used a single transfer strip 21 will be sufficient. The transfer strips 21 extend throughout the length of the record strips and are of the one-time type that are ordinarily discarded after a single transfer inscription. The transfer strips, therefore, are ordinarily made of light, thin tissue paper with a relatively light coating of transfer material on the transfer surface thereof.

Each of the transfer strips 21 extends outwardly at one longitudinal marginal portion thereof across the longitudinal weakened lines 18 of the record plies, these marginal or edge portions being attached as at 22 to the respective detachable bands 19. While these attachments may assume different forms in practice, such as staples, textile stitching and the like, they are preferably in the form of an adhesive as shown. The adhesive attachments 22 are preferably in the form of spot pasting, as shown, wherein the adhesive is applied in longitudinally spaced spots. Also, the attachments 22 are applied at each leaf set of the assembly so that the carbon sheets remain attached in any set of sheets severed from the assembly along the lines 16. The attaching edge portion of the upper transfer strip is positioned in the fold between the fanfold strips 10 and 11 and is thus protected from injury. In cases where additional fanfolded record plies are used, one or more additional transfer strips will be attached in the fold in this manner. Also, the transfer strips are preferably unweakened along the longitudinally attached margin thereof, along lines corresponding to the weakened longitudinal lines 18 of the record plies.

At the longitudinal marginal portion of the assembly opposite to the attachments 22 of the transfer strips, selective grip formations are provided whereby the edges of the record strips or sheets can be simultaneously gripped to the exclusion of the carbon strips. For providing this selective grip formation at each of the leaf sets of the assembly, the edges 23 of the carbon strips terminate short of the adjacent edges of the record strips, thus providing selective grip portions 24 of the record strips extending outwardly beyond the adjacent edges of the carbon strips. These selective grip formations are provided at each leaf set so that the record leaves of a severed set can be readily detached from and separated from interleaved relation with the carbon leaves or sheets as later described.

As shown, the carbon strips 21 are preferably provided with transverse weakened severance lines 25 longitudinally spaced at intervals corresponding to the spacing of the severance lines 16 and arranged in depthwise groups with the lines 16. The weakening of the lines 25 may be effected by perforating or by other preferred means, thus providing severance lines along which the strips may be severed into sheets.

In accordance with the foregoing disclosure it is noted that each carbon strip 21 has individual attachment with one of the record strips of the assembly. This individual attachment, as shown, is constituted by the adhesive attachment 22 to the underside of each record strip at the longitudinal attaching band 19 thereof, said attaching bands in the case of the two upper record strips being connected together by virtue of the longitudinal fold 14 of the fanfolded strip structure. This structure thus provides for a flexible or adjustable association of the connections 22 of the carbon strips assuring a flat, smooth self-adjusting binding margin that is free from wrinkles, creases, etc. The assembly thus constructed is therefore well adapted for producing clear legible transfer copies when the inscriptions are made in typewriting and similar machines, or when manually made.

After entry of the desired inscriptions on one of the leaf sets by a typewriting machine or by other means, the inscribed leaf set may be readily detached from the complete assembly along the weakened transverse severance lines 16 and 25. The interleaved sheets of the set of record and transfer sheets remain attached together after this severance by virtue of the fold lines 14 and 15 and the attachments 22 so that supplemental inscriptions may be added when desired. Separation of the inscribed record sheets from the interleaved carbon sheets may then be very quickly and easily accomplished by holding one edge of the set at the marginal portion 19 and at the same time gripping the remote marginal portion at the selective grip extensions 24 of the record sheets. A quick pull or jerk, when the set is thus gripped, will at the same time cause severance of the record sheets along the weakened lines 18 and will separate the carbon and record sheets from interleaved relation with each other, the edges of the carbon sheets remaining attached at 22 to the marginal band portions 19. The carbon sheets with the attached band sections will then be discarded and the record leaves distributed as desired.

In the modified embodiment of Fig. 3 the general structure and arrangement are the same as described above in connection with Figures 1 and 2, and corresponding parts are designated by the same reference numerals. However, in the embodiment of Fig. 3 the record strips 10, 11 and

12 are provided along one marginal part thereof with filing apertures 26. Similar apertures can be provided in the carbon strips in alignment with the apertures 26 if desired. There are preferably two filing apertures 26 spaced apart in each of the record sheets of each leaf set, the spacing being convenient so that the apertures may receive the filing posts or other securing means of the file.

In the embodiment shown in Figures 4, 5 and 6 the construction of the fanfolded record strip is substantially the same as described above in connection with Figures 1 and 2. Therefore, the same reference numerals are applied to indicate corresponding parts of this fanfolded record strip. But the arrangement of the transfer strips 27 and their attachment in the assembly vary from the embodiment of Figures 1 and 2.

In the embodiment of Figures 4, 5 and 6 the transfer strips 27 extend continuously throughout the assembly as do the transfer strips 21 above described, and they are also provided with transverse weakened severance lines 28 similar to the severance lines 25 and similarly arranged with reference to the transverse severance lines of the record strips. The carbon strips 27 terminate at their left longitudinal edges substantially in line with the longitudinal weakened lines 18, and at their right-hand edges they are shown as being substantially coterminous with the edges of the record strips.

Attaching means for attaching the carbon strips 27 in position in the assembly are shown diagrammatically at 29 in Fig. 4 and are shown more in detail in Fig. 6. These attachments 29 are positioned directly at the groups of transverse weakened severance lines 30 of the record strips and similar lines 28 of the carbon strips. The weakened severance lines 30 may be made by perforating, slitting, scoring, etc., as described in connection with the weakened lines 16, but the attachments 29 for the assembly strips are formed by providing slits or cuts both in the record and carbon strips to provide the tongues 31 of both the record and carbon strips. These tongues 31 are downwardly deflected slightly through the apertures formed by the slits, and engage in the adjacent apertures formed by the slits so as to attach the strips with relation to each other in the assembly. This attaching means for attaching the strips together is substantially the same as disclosed in Patent No. 2,115,392, C. R. Mabon, for Manifolding record, dated April 26, 1938, particularly as described in said patent with reference to Figures 1 and 2 thereof. Therefore, reference is made to the Mabon patent for a full and complete description of these attachments. Other fastening devices such as light wire staples or textile thread positioned directly at the groups of transverse severance lines, may be substituted for the fastening means 29 in some cases.

Selective grip formations are provided at points along the assembly of Figures 4 and 5 at points remote from the attachments 29, whereby the carbon sheets of a severed set can be quickly and easily separated from the record sheets. For this purpose notches 32 are formed in the margins of the record plies 10, 11 and 12, thus exposing grip sections or tabs 33 of the carbon strips 27. It is preferable to position these notches 32 in transverse alignment with the respective transverse severance lines 30 so that the notches extend into the record strips at both sides of said transverse lines. By means of this arrangement selective grip areas 33 will be provided at two corners of a severed set of leaves.

After a set of interleaved record and transfer leaves has been inscribed the set can be readily detached from the complete assembly by severance along the transverse weakened lines 28 and 30. During such severance the record and carbon strips will be severed along the line of the attachment 29, which, as shown, may extend for only a portion of the length of the lines 30, or if desired the attachment may extend all the way across the assembly. The strips are weakened for severance by the slits forming the tongues 31. During such severance of the strips at the attachment 29 the attaching tongues will be partially released as described in the Mabon patent above referred to. But, there will be some clinging of the tongues at the edges of the apertures in which the tongues are deflected, thus temporarily retaining the carbon sheets of the severed set in their interleaved relation with the record sheets. This clinging attachment is not very strong and may be readily released when the carbon sheets are stripped or separated from interleaved relation with the record sheets. After severance of the inscribed set the carbon sheets may be quickly and easily removed from interleaved relation in the set by holding the set by its corner at the extending marginal portion 19 and at the same time gripping the tabs 33 of the carbon sheets at the diagonally opposite corner of the set and exerting a pull in opposite directions whereupon the carbon sheets are freed from the attachment 29 and, at the same time, separated from interleaved relation with the record sheets. The carbons will thus be removed from the record sheets at one end or another of the set. But in cases where the two record strips and a single carbon strip are employed the severed carbon sheet can be removed at the side or lateral margin of the set. The marginal portions 19 can be easily detached from the set by severance along the weakened lines 18. Selective grip formations of the nature disclosed in Fig. 1 could be used in the embodiments of Figures 4 and 5.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

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

1. In a manifolding assembly, in combination, a long continuous record strip longitudinally folded in fanfold relation and having at least two relatively superposed record plies, each of said record plies having longitudinally spaced transverse weakened severance lines dividing the assembly into sets of relatively superposed record leaves, each of a plurality of said record plies of the fanfolded record strip having a longitudinal weakened severance line forming a longitudinally detachable band extending along each of the leaf sets and being provided with a continuous longitudinal row of longitudinally spaced pin feed apertures, said detachable bands being arranged in superposed relation and two adjacent bands being connected together by a longitudinal fold of the fanfolded strip and being otherwise free from attachment with each other, a long continuous transfer strip extending continuously substantially throughout the assembly length and interleaved in transfer relation with the record

plies and providing transfer leaves between the record leaves for transfer inscription, said transfer strip having direct attachment with one only of said record plies at each of said leaf sets, said attachment of the transfer strip including attachment of a longitudinal marginal portion thereof at each of said leaf set to one of said longitudinal detachable bands that is connected by the longitudinal fold as aforesaid and being free from direct attachment with any other of said longitudinal bands, said attached longitudinal marginal portion of the transfer strip being positioned within said longitudinal fold of the fanfolded strips, and a selective grip formation at each said leaf set whereby one or more of the leaves thereof may be gripped to the exclusion of the others for effecting selective separation thereof.

2. In a manifolding assembly, in combination, a long continuous record strip longitudinally folded in fanfold relation and having at least two relatively superposed record plies, each of said record plies having longitudinally spaced transverse weakened severance lines dividing the assembly into sets of relatively superposed record leaves, each of a plurality of said record plies of the fanfolded record strip having a longitudinal weakened severance line forming a longitudinally detachable band extending along each of the leaf sets and being provided with a continuous longitudinal row of longitudinally spaced pin feed apertures, said detachable bands being arranged in superposed relation and two adjacent bands being connected together by a longitudinal fold of the fanfolded strip and being otherwise free from attachment with each other, a long continuous transfer strip extending continuously substantially throughout the assembly length and interleaved in transfer relation with the record plies and providing transfer leaves between the record leaves for transfer inscription, said transfer strip having direct attachment with one only of said record plies at each of said leaf sets, said attachment of the transfer strip including adhesive attachment of the upper surface of a longitudinal marginal portion thereof at each said leaf set to the under surface of the upper of said longitudinally detachable bands, that is connected by the said longitudinal fold to a lower detachable band, said transfer strip being free from direct attachment with any other of said longitudinal bands, said attached longitudinal marginal portion of the transfer strip being positioned within said longitudinal fold of the fanfolded strips, and a selective grip formation at each said leaf set whereby one or more of the leaves thereof may be gripped to the exclusion of the others for effective separation thereof.

3. In a manifolding assembly, in combination, a long continuous record strip longitudinally folded in fanfold relation and having at least two relatively superposed record plies, each of said record plies having longitudinally spaced transverse weakened severance lines dividing the assembly into sets of relatively superposed record leaves, each of a plurality of said record plies of the fanfolded record strip having a longitudinal weakened severance line forming a longitudinally detachable band extending along each of the leaf sets and being provided with a continuous longitudinal row of longitudinally spaced pin feed apertures, said detachable bands being arranged in superposed relation and two adjacent bands being connected together by a longitudinal fold of the fanfolded strip and being otherwise free from attachment with each other, and a long continuous transfer strip extending continuously substantially throughout the assembly length and interleaved in transfer relation with the record plies and providing transfer leaves between the record leaves for transfer inscription, said transfer strip having direct attachment with one only of said record plies at each of said leaf sets, said attachment of the transfer strip including attachment of a longitudinal marginal portion thereof at each said leaf set to one of said longitudinal detachable bands that is connected by the longitudinal fold as aforesaid and being free from direct attachment with any other of said longitudinal bands, said attached longitudinal marginal portion of the transfer strip being positioned within said longitudinal fold of the fanfolded strips.

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