May 11, 1943. G. E. SORNBERGER 2,319,165

CONTINUOUS RECORD ASSEMBLY

Filed Nov. 29, 1941 3 Sheets-Sheet 1

Fig. 1.

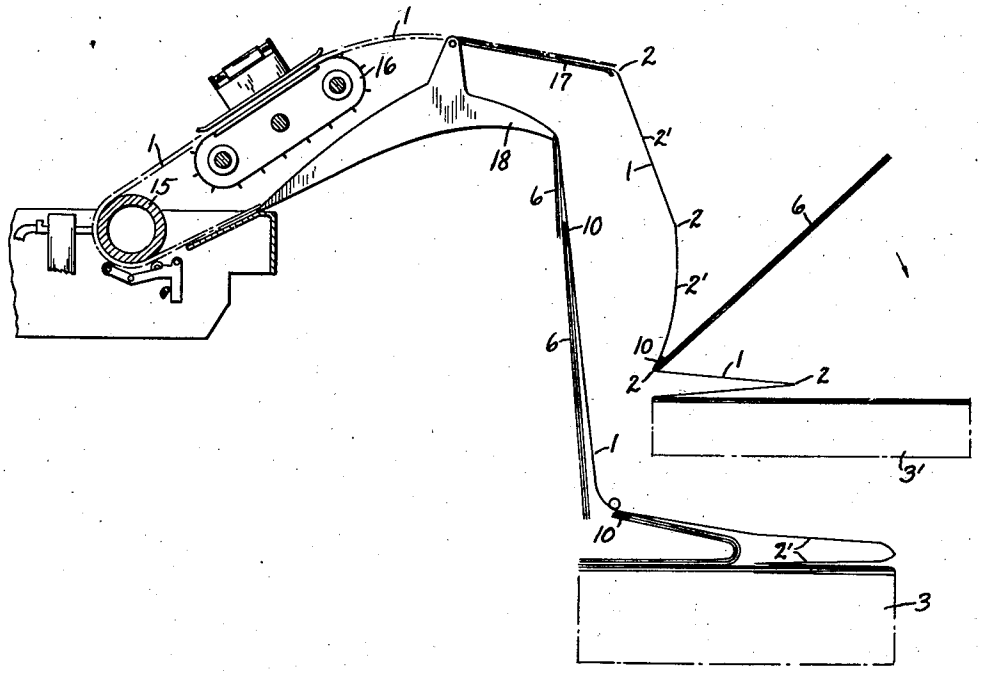
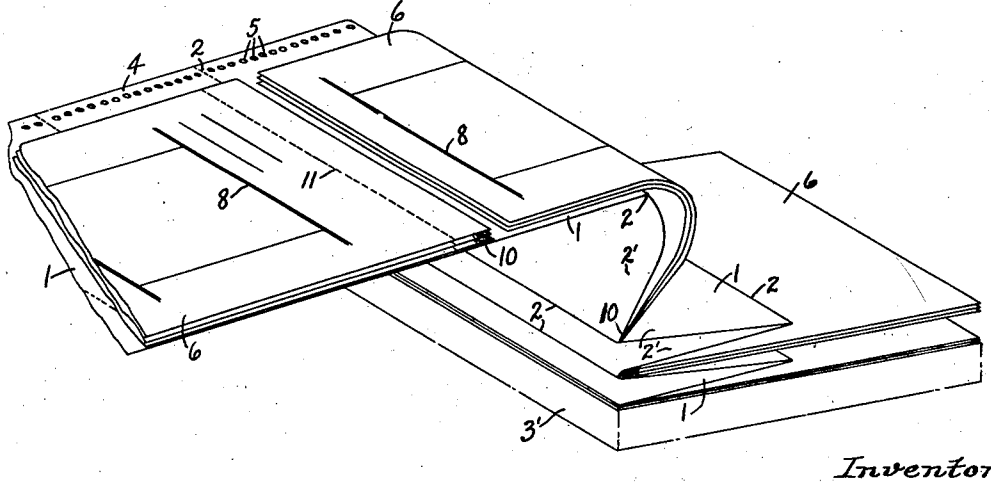


Fig. 4.



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CONTINUOUS RECORD ASSEMBLY

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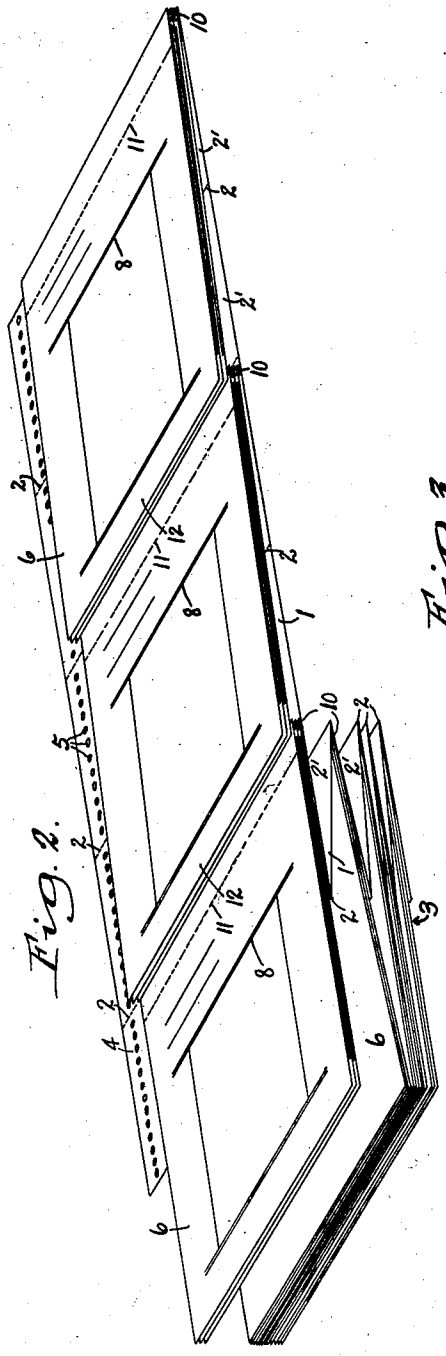


Fig. 2.

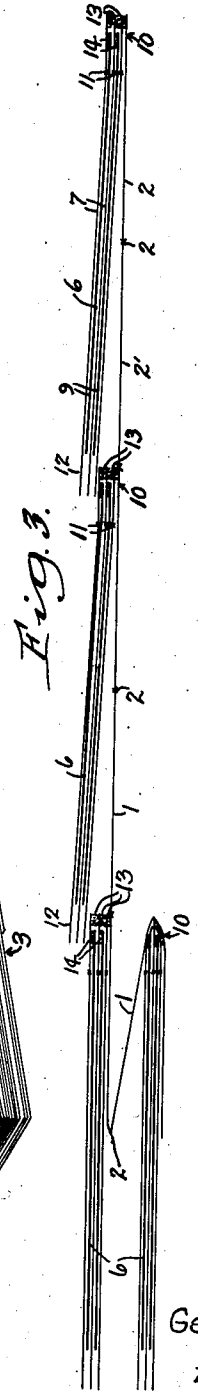


Fig. 3.

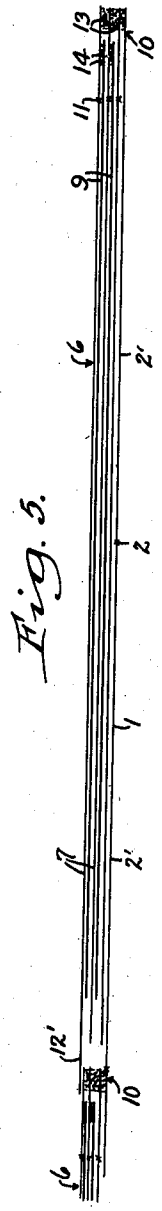


Fig. 5.

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May 11, 1943. G. E. SORNBERGER 2,319,165

CONTINUOUS RECORD ASSEMBLY

Filed Nov. 29, 1941 3 Sheets-Sheet 3

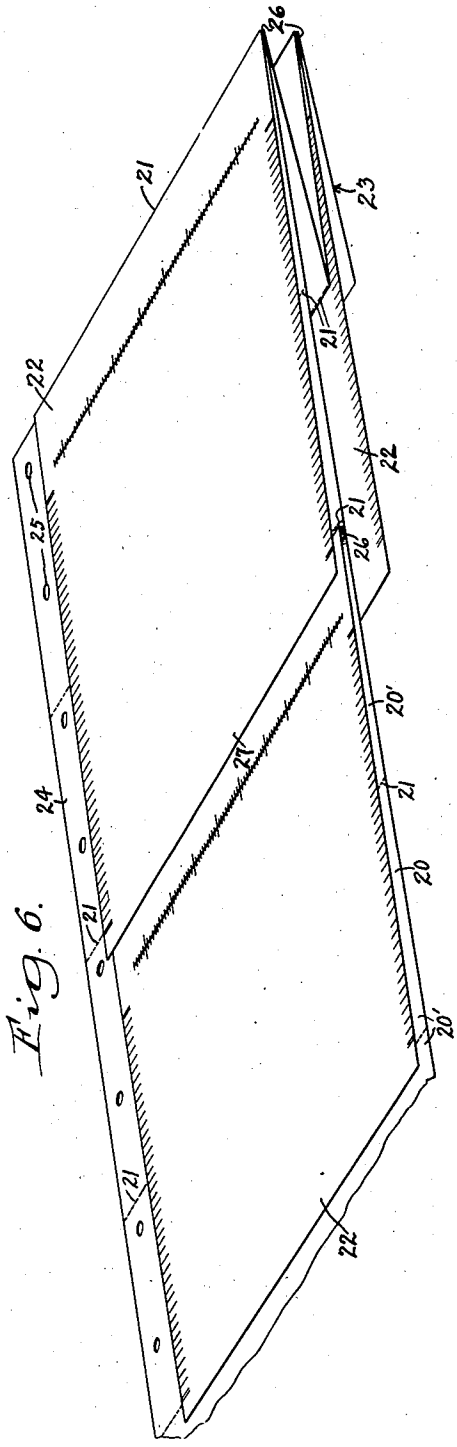


Fig. 6.

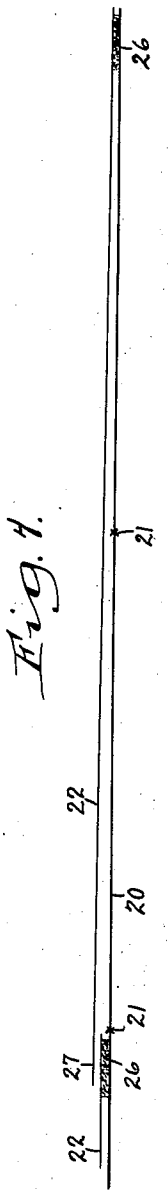


Fig. 4.

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Patented May 11, 1943

2,319,165

UNITED STATES PATENT OFFICE

2,319,165

CONTINUOUS RECORD ASSEMBLY

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Application November 29, 1941, Serial No. 421,011

11 Claims. (Cl. 282—11.5)

This invention relates to improvements in record assemblies for receiving inscriptions either by manual means, by various forms of writing machines, or by printing or duplicating apparatus. More particularly, the invention relates to improvements of record assemblies of the long continuous traveler type wherein a plurality of inscription receiving sheets or units are arranged in a series along the assembly and folded into a compact zigzag pack that is conveniently utilizable as a supply for the various forms of apparatus.

It is a general object of the invention to provide an improved record assembly of the type mentioned that can be handled with greater facility for loading into the inscribing machines and the like, in which the various record units of the assembly are so arranged as to permit quick and easy inspection of the individual units, and in which the improved construction and arrangement promotes greater accuracy and speed in manufacture and in use.

A further object of the invention is to provide a record assembly of the character mentioned in which the record units of the long continuous record assembly are arranged in a novel and improved manner so that they will be automatically refolded in a compact zigzag pack after the assembly has been extended and run through an inscribing machine for receiving the inscriptions.

A further object of the invention is to provide in a record assembly of the character mentioned in which the record units either in the form of single record sheets or of assemblies of superposed record and transfer sheets, are connected and arranged in an improved manner upon a long continuous traveler carrier strip so as to promote the free and unobstructed passage of the assembly as it is being fed in the record machine, and to avoid such projecting parts or irregularities that might interfere with the feeding by engagement with parts of the apparatus, such as guide plates or rollers, inking ribbons, and the like.

A further object of the invention is to provide an improved manner of arrangement and connection of the record units to the continuous carrier strips so as to avoid excess thicknesses, thus providing an assembly that is capable of more accurate feeding movements in the various forms of record machines.

Other objects and advantages of the invention will be in part pointed out in the following detailed disclosure 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 nature, objects and advantages of the invention, reference is had to the following detailed description of the illustrative embodiments of the invention constituting the best forms thereof at present known, and to the accompanying drawings in which:

Fig. 1 is a partially diagrammatic fragmentary side elevation and vertical sectional view showing the improved record assembly as being threaded for use in a recording machine of well-known design;

Fig. 2 is a partially diagrammatic enlarged perspective view of a portion of a record assembly constructed and arranged in accordance with the invention;

Fig. 3 is a partially diagrammatic fragmentary enlarged side elevation of the improved record assembly shown in Fig. 2;

Fig. 4 is an enlarged fragmentary perspective view of the improved assembly illustrating diagrammatically the manner of refolding into a zigzag pack after the assembly has been extended for receiving inscriptions;

Fig. 5 is an enlarged side elevation similar to Fig. 3, but showing a slightly modified embodiment;

Fig. 6 is a perspective view similar to that of Fig. 2, but showing a further modified form of the invention; and

Fig. 7 is a fragmentary enlarged side elevation of the structure shown in Fig. 6.

Referring to the drawings for a detailed description of the illustrative embodiments there shown, and first to the embodiment of Figs. 1 to 4 inclusive, a record assembly of the long continuous traveler type adapted to travel or be fed in various forms of writing machines is shown embodying a long continuous traveler carrier strip 1 preferably made of paper or similar fibrous material of sufficient weight and strength to provide an appropriate support for the record units upon which the inscriptions are made. If desired, the carrier strip 1 may be used as a record strip for receiving inscriptions either by means of appropriate transfer sheets or by other means. The carrier strip 1 is provided with transverse

fold lines 2 longitudinally spaced at substantially equal intervals and upon which the strip is folded in alternately opposite directions into the zigzag folded supply pack 3 that may be utilized as a record supply for the various forms of record or inscribing machines. The carrier strip may be perforated or otherwise weakened along the respective fold lines 2 whereby the strip may be quickly and easily torn or severed along these weakened lines.

For some purposes the carrier strip 1 is provided with a longitudinal feed band 4 extending along one longitudinal margin of the strip and provided with a series of pin feed apertures 5 for cooperation with pin feed mechanism of the record or inscribing machine. Although the feed band is shown only at one longitudinal margin of the carrier strip, it will be understood that a similar feed band may be provided at the other longitudinal margin when desired. Also, any convenient means may be provided to facilitate severing the feed band 4 such, for example, as a longitudinal weakened severance line extending along and just inside of the row of feed apertures 5.

Connected to the carrier strip 1 at longitudinally spaced intervals therealong are a multiplicity of record units 6 adapted to receive record inscriptions. As shown in this embodiment, the record units 6 are separate from each other, each being formed by a plurality of relatively superposed leaves or sheets for the reception of manifold inscriptions. As shown, for example, each record unit 6 has three superposed record sheets 7, each having an appropriate blank form 8, and two interleaved transfer or carbon sheets 9. All of these sheets of each record unit are bound together and bound to the carrier strip 1 by connections or binding attachments indicated generally at 10. Also, as shown, each record sheet or leaf 7 preferably has a weakened severance line 11 adjacent to and just inside of the binding 10. At their end portions opposite to the binding attachments 10 the record leaves preferably extend beyond the adjacent ends of the carbon leaves, as is indicated at 12, thus providing selective grip formations whereby the record and transfer leaves can be quickly and easily detached and separated from each other, as fully described in the Stevens Patent No. 2,120,161, issued June 7, 1938. The carbon leaves may or may not be provided with weakened severance lines corresponding to the weakened lines 11.

For promoting smooth and uninterrupted feeding of the record assembly in the various forms of record machines it is desirable, as shown in Figs. 2 and 3, to have the record units 6 of sufficient length so that the free ends thereof will overlie or overlap the adjacent respective attached ends of adjacent record units. As disclosed in Figs. 2 and 3, all of the free ends of the record leaves 7 are thus positioned in overlapping relation with the attached ends of the adjacent record units, but it is often sufficient to have only one of these ends, or less than the whole number, overlap the adjacent attached ends. This is shown, for example, in the modified embodiment of Fig. 5 wherein only the top or original record leaf 7 is extended at its free end 12' into overlapping relation with the adjacent attached end of the adjacent record unit. With this exception, the embodiment of Fig. 5 is similar to that of Figs. 1, 2, 3 and 4.

While the record units 6 may be attached to the carrier strip 1 by different well-known forms of attaching means, it is preferred to attach them by means of adhesive material. These attachments 10, as best shown in Fig. 3, embody adhesive 13 positioned near the forward ends of the record leaves and attaching all of these leaves to the respective sections 2' of the carrier strip. These adhesive attachments 13 also attach the record sheets to each other. The carbon sheets 9 are also attached by adhesive means 14 to the under sides of the respective record sheets 7, the attachments 13 and 14 being relatively displaced slightly or staggered depthwise of the assembly with reference to each other. By means of this staggered or relatively offset relation, a thinner and much more compact attachment is formed, thus avoiding undue thickness of the assembly at the points of attachment and promoting smooth and accurate feeding of the assembly through the various record machines.

It will be noticed that the longitudinal spacing of the fold lines 2 of the carrier strip 1 is shown as being considerably less than the lengths of the record units 6. In the embodiment shown, this spacing of the fold lines is slightly less than half the length of a complete record unit 6, but it may be more or less than this amount. This shorter spacing of the fold line 2 provides carrier strip sections or sheets 2' that are materially shorter than the record unit 6. The record units are located only at alternate carrier strip sections 2' to which they are attached at 10, thus leaving what may be termed a vacant strip section 2' immediately following each occupied strip section 2' to which a record unit is attached. Each of the vacant sections 2' is free of any record unit attachment thereto whereby automatic refolding of the assembly is effected as later described. Thus, when the complete assembly is folded into the zigzag supply pack 3 shown at the left in Fig. 2, it will be seen that the record units 6 occupy a superposed relation in the zigzag pack in which all of the units are headed in the same direction and all are faced in the same direction. In other words, the head or top ends of the record units are positioned at the forward end of the zigzag supply pack and all face upwardly. Thus, all of the record units are positioned conveniently for inspection and they can be readily and individually examined one after another merely by lifting the free ends thereof so as to expose the underlying units.

This arrangement of the record units with reference to the carrier strip also enables the units to be assembled in manufacture much more rapidly and with greatly decreased probability of placing the units in incorrect position upon the carrier strip. It will be noticed that the attachments 10 of the record units are positioned only at the forward ends of the latter, and adjacent to alternate transverse fold lines 2 in alternate zigzag folds of the carrier strip, thus leaving the opposite end portions of the record units free from direct attachment with the carrier strip. It will be noted also that the record units are connected to corresponding or similar end portions of the carrier sections 2', these similar end portions being the forwardly disposed end portions as herein disclosed. This relationship also promotes accurate positioning of the record units because when they are assembled they can be adjusted to lie adjacent to the zigzag folds positioned at the right or forward end of the zigzag supply pack 3, as appearing in Fig. 2.

It will be understood that the illustration of the drawing for showing the structure and arrangement of the record units and their attachment to the carrier strip is partially diagrammatic. Thus, the thickness of the record units is shown considerably enlarged or exaggerated and the leaves thereof separated slightly in order to disclose the structure and arrangement more clearly. In actual practice the leaves lie closely in contact with each other throughout the extent thereof and the overlapping end portions of the leaves of adjacent record units also lie closely in contact with each other. Hence, the record units are relatively thin and there are no appreciable bulges or projections at the overlapping end portions thereof.

When the assembly is being fed in a record machine such as that indicated diagrammatically in Fig. 1, there will be very little, if any, probability of parts of the record assembly catching or being otherwise obstructed by the assembly guides of the machine or by the inking ribbons, or other parts thereof. Due to the overlapping or shingled relation of the adjacent ends of the record units, the record assembly will be effectually guided past all parts of the record machine lying adjacent to the path of the record assembly.

Manufacture of the improved record assembly, as thus above described, is facilitated and speeded up and errors in placing the record units in the correct position are avoided. This is for the reason that the record units are all headed in the same direction both when the assembly is extended, as indicated at the right in Fig. 2, and when it is folded into the zigzag supply pack 3, as shown at the left in this figure. Also, all of the record units are faced upwardly in the pack 3. Thus, it will be seen that all of the record units are applied to the carrier strip in identically the same manner, and that there is no reversal end for end, or reversal from upwardly facing to downwardly facing, as would be the case in prior assemblies of this general type.

Also, the improved assembly can be handled easier and with greater speed and accuracy when inscriptions are being made thereon because all of the record units are similarly positioned in the zigzag supply pack 3. When thus positioned, it is an easy matter to examine any of the record units included in the supply pack. This is of special importance after the record units have been inscribed and remain attached in the assembly because they can be individually examined and it is an easy matter to refer quickly to any inscribed unit in the pack.

When the improved record assembly is being inscribed in a record machine as, for example, that shown in Fig. 1, there is also another important advantage accomplished by this improved record assembly. This is the advantage of automatic refolding of the long continuous record assembly as it emerges from the machine after being extended or stretched out in the machine for inscription reception. The writing machine shown in Fig. 1 is for illustrative purposes merely and these advantages are attained in other types of writing or inscribing machines. The machine shown is of the type fully disclosed in the Mabon Patent 2,171,003, issued August 29, 1939. This machine embodies a rotary cylindrical platen 15 over which the record assembly passes for inscription reception. Pin feed mechanism 16 embodies traveling feed pins engageable in the feed apertures 5 of the carrier strip 1 so as to feed the assembly forwardly past writing position at the platen 15, over an elevated guide plate 17 beneath the rearward extremity of which is an appropriate support for supporting the refolded zigzag pack 3'. A guide 18 guides the assembly from the zigzag supply pack 3 to the writing platen.

As the assembly is moved past writing position upon the platen, the inscriptions are applied to the respective record units 6 and transferred to the underlying record leaves by means of the carbon or transfer leaves 9. As the inscribed record units pass beyond the upper guide plate 17 with their attached ends 10 forwardly, these attached ends assume a position corresponding to that indicated in Fig. 4. Upon slight further forward movement the rear free end of the record unit 6 swings forwardly by gravity as approximately suggested by the position shown in Fig. 1. From this position the record unit falls downwardly into position upon the refolded zigzag pack 3'. During this movement of the record unit, the carrier strip 2 is caused to fold automatically in zigzag fashion upon the reverse fold lines 2. Thus, as seen in Figs. 1 and 4, the adjacent carrier strip sheet 2' is urged forwardly toward folded position by the downward movement of the record unit. At the same time or immediately thereafter, the automatic folding of the carrier strip is continued on the next succeeding fold line 2. Due to the fact that each carrier strip section 2' immediately following a section to which a record unit is attached is vacant or free from record unit attachment, there is no obstruction or opposition to the refolding of the carrier strip and record units. In this manner the carrier strip and assembled record units are automatically refolded into the zigzag pack 3' which is exactly the same as the supply pack 3 with the exception that it is positioned with the record units facing downwardly, rather than upwardly as in the supply pack 3.

As mentioned above, the advantages of the invention are not limited to the use of individual sets of record and carbon sheets, but each record unit may be composed of a single record sheet, as illustrated in the embodiment shown in Figs. 6 and 7. The general structure and arrangement of the record assembly of this embodiment are similar to those above described in connection with the embodiments of Figs. 1 to 5 inclusive, with the exception that each of the record units has but a single record sheet or leaf.

In the embodiment of Figs. 6 and 7 the carrier strip 20 corresponds to the carrier strip 1 above described, and it is substantially similar in all respects to the carrier strip 1. Thus, the carrier strip 20 is provided with transverse fold lines 21 longitudinally spaced at equal distances so as to divide the strip into a series of carrier sections or sheets 20' of substantially equal length. Also, the longitudinal spacing of the fold lines and the lengths of the strip sections 20' are substantially less than the length of the record units, which in this case are constituted by the single record sheets or leaves 22. When the carrier strip is zigzag folded along the fold lines 21 it forms a zigzag folded record supply pack 23 that is used in identically the same manner as the supply pack 3, above described. The carrier strip is also provided with a longitudinal marginal feed band 24 having pin feed apertures 25.

The record units or leaves 22 are attached by

adhesive attachments **26** at a series of longitudinally spaced points along the carrier strip **20**. These attachments are positioned adjacent to the forward ends of the respective sections or sheets **20'** immediately to the rearward of the fold lines **21**, and substantially at the head or forward marginal portions of the respective record units **22**. The rearward or trailing edge portions of the record leaves or units **22** are free from attachment with the carrier strip and are arranged in overlying or overlapping relation with the forward attached end portions of the respective adjacent record units, as indicated at **27**. This overlapping arrangement provides for a smooth continuous unobstructed upper surface of the assembly, avoiding catching or interruption to feeding movement through the inscribing machines, as above described for the other embodiments.

If desired, the record leaves **22** may be provided with blank forms for the reception of inscriptions by means of writing machines, or the inscription receiving surfaces may be free of such blank forms, thus adapting these surfaces for the reception of inscriptions by the use of various forms of duplicating machines where a master duplicating sheet, or stencil or similar duplicating element, is utilized. The inscriptions could also be applied by means of printing machines.

Thus, it will be seen from the foregoing description that the embodiment of the invention depicted in Figs. 6 and 7 has substantially the same advantages in manufacture, in handling, and in actual use during inscription, as described in detail above in connection with the embodiments of Figs. 1 to 5 inclusive.

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 constained in the above description or shown in the accompanying drawings 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 record assembly, in combination, a long continuous traveler carrier strip adapted for forward travel in a writing or like machine, said carrier strip being zigzag folded into a pack along transverse fold lines forming a series of carrier strip sections, a series of record units having substantially at their forward marginal portions connections respectively with certain of said carrier strip sections, each carrier strip section immediately following each said section with attached record unit being vacant or free of corresponding record unit attachment so as to promote automatic refolding of said carrier strip and record units into a zigzag pack upon emergence thereof from said machine.

2. In an assembly of the character described, in combination, a long continuous traveler carrier strip zigzag folded into a zigzag pack along longitudinally spaced transverse fold lines to form a series of carrier strip sections, a plurality of record units having respective connections to said carrier strip arranged one after another therealong, said connections being positioned only at alternate said carrier strip sections, and the said connections of the record units being respectively adjacent to the forward ends thereof as the assembly is being fed through a writing or like machine and respectively adjacent to similar ends of the said carrier strip sections so as to promote automatic refolding of said carrier strip and record units into a zigzag pack upon emergence thereof from said machine, the opposite end portions of said units being free from direct attachment with the carrier strip, each of said record units including a plurality of leaves in superposed manifolding relation with each other and at least one of which has its free end in overlapping relation with the connected end portion of the respective adjacent record unit when the carrier strip is fully extended.

3. In an assembly of the character described, in combination, a long continuous traveler carrier strip zigzag folded into a zigzag pack along longitudinally spaced transverse fold lines to form a series of carrier strip sections, and a plurality of record units having respective connections substantially at the forward ends thereof and arranged one after another along said carrier strip, said connections being positioned only at alternate said carrier strip sections, said record units having free end portions positioned respectively in overlapping relation with adjacent record units when the carrier strip is fully extended.

4. In an assembly of the character described, in combination, a long continuous traveler carrier strip, a plurality of record units having respective connections positioned one after another along said carrier strip which is zigzag folded into a pack on transverse fold lines spaced longitudinally substantially less than the lengths of the record units, said connections of the record units being respectively adjacent to the forward ends thereof, said connections of the record units being adjacent to and only within alternate zigzag folds of said carrier strip, each of said record units including a plurality of leaves in superposed manifolding relation with each other and at least one of which has its free end in overlapping relation with the connected end portion of the respective adjacent record unit when the carrier strip is fully extended.

5. In a record assembly, in combination, a long continuous carrier strip adapted for forward travel in a writing or like machine, a plurality of record units having substantially at their forward marginal portions respective connections one after another along said carrier strip, said carrier strip being zigzag folded into a pack on transverse fold lines spaced longitudinally substantially less than the lengths of the record units, all of said record units being headed in the same direction in said zigzag pack and facing in the same direction therein.

6. In a record assembly, in combination, a long continuous traveler carrier strip, a plurality of record units having respective connections substantially at the forward ends thereof and arranged one after another along said carrier strip, said carrier strip being zigzag folded into a pack on transverse fold lines spaced longitudinally substantially less than the lengths of the record units, all of said record units being headed in the same direction in said zigzag pack and facing in the same direction therein, said record units having free end portions positioned respectively in overlapping relation with adjacent record units when the carrier strip is fully extended.

7. In a record assembly, in combination, a long continuous traveler carrier strip zigzag folded into a zigzag pack, and a plurality of relatively superposed record units in said zigzag pack,

all of said record units of said assembly being headed in the same direction in said zigzag pack and facing in the same direction therein, all of said record units being respectively connected to said continuous strip at points adjacent to their ends and having opposite free forward ends and substantially at the same end of the zigzag pack.

8. In a record assembly, in combination, a long continuous traveler carrier strip zigzag folded into a zigzag pack, and a plurality of relatively superposed record units in said zigzag pack, all of said units of said assembly being headed in the same direction in said zigzag pack and facing in the same direction therein, all of said record units being respectively connected at points adjacent to the head ends thereof to said continuous strip only at points thereof adjacent to alternate zigzag folds thereof, and having opposite free end portions.

9. In an assembly of the character described, in combination, a long continuous traveler carrier strip zigzag folded into a zigzag pack along longitudinally spaced transverse fold lines, a plurality of separate record units arranged along said carrier strip and in relatively superposed relation in the zigzag pack, all of said record units of said assembly being headed in the same direction in said zigzag pack and facing in the same direction therein, and connecting means individually connecting said record units in series along said carrier strip so as to effect automatic refolding of said carrier strip and record units in a zigzag pack upon emergence from a writing machine after the assembly has been extended in writing position in said machine.

10. In an assembly of the character described, in combination, a long continuous traveler carrier strip zigzag folded into a zigzag pack along longitudinally spaced transverse fold lines, a plurality of separate record units arranged along said carrier strip and in relatively superposed relation in the zigzag pack, and connecting means individually connecting all of the said record units of the assembly in series along said carrier strip only at points respectively adjacent to alternate zigzag fold lines thereof so as to effect automatic refolding of said carrier strip and record units into a zigzag pack upon emergence from a writing machine after the assembly has been extended in writing position in said machine.

11. In a record assembly, in combination, a long continuous traveler carrier strip adapted for forward travel in a writing or like machine, said carrier strip being zigzag folded into a pack along transverse fold lines forming a series of carrier strip sections, a series of record units having substantially at their forward marginal portions connections respectively with certain of said carrier strip sections, each carrier strip section immediately following each said section with attached record unit being vacant or free of corresponding record unit attachment so as to promote automatic refolding of said carrier strip and record units into a zigzag pack upon emergence thereof from said machine, all of said record units in the assembly being longitudinally headed in the same direction in said zigzag pack and facing in the same direction therein.

GEORGE EMERSON SORNBERGER.