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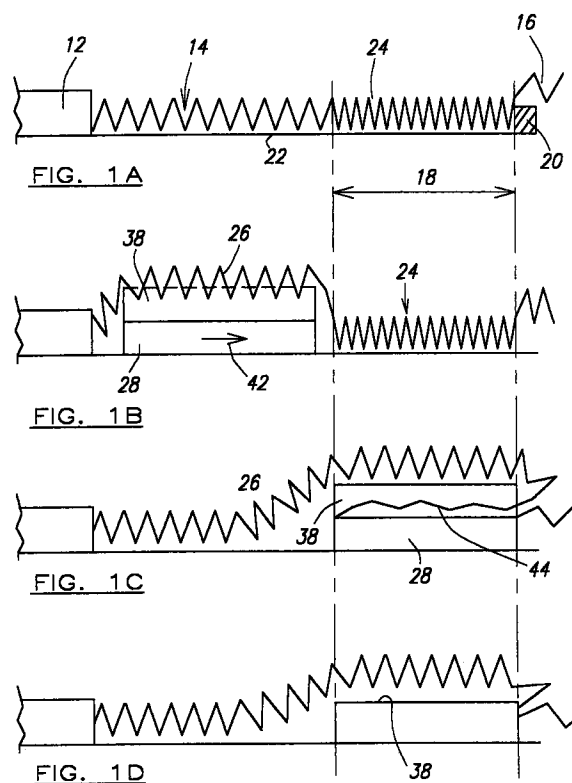
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(54) **Method for packaging fan folded material, and packaged material**

(57) This invention concerns the packaging of continuous fan folded documents, specifically pre-printed cards which are to be inserted in for example magazines which are themselves being produced on a continuous basis. The cards are grouped in stacks, and each stack is packed in a sleeve to form an assembly. The assemblies are continuously produced, and are connected to each other by the cards, so that in fact the cards remain continuous from assembly to assembly. The invention concerns a method of putting the assemblies into side by side rows to form a large body, so that throughout the body, all of the cards remain continuously connected, and all of the cards can be run off from the assemblies to a processing machine where they are put into magazines or the like.



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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates generally to a method for packaging fan folded material. More particularly, but not exclusively, the present invention relates to a method for packaging preprinted fan folded documents specifically cards, in a manner rendering them suitable for continuous feeding to a processing or an attaching machine.

2. Discussion

[0002] Preprinted fan folded continuous feed cards in amounts of 15,000 to 16,000 have been packaged in cartons for over twenty years. A typical use for these cards is for insertion into magazines and newspapers as advertisements or order forms. The current procedures for feeding the preprinted cards into a processing or attaching machine require a considerable amount of attendant time as well as physical strength.

[0003] The preprinted cards are generally folded into stacks. These stacks of cards are then packaged in the cartons. The cartons weigh approximately sixty pounds when filled with the stacks of cards. An employee must be constantly available to splice the end of the last card in a stack to the beginning of the first card of the next stack in the same carton or the first stack in the next carton to ensure the continuous feeding of the fan folded cards. This procedure creates additional handling and manpower needs by the customer, as well as at the packaging facility.

[0004] A recently proposed method, disclosed in European Patent Application No. EP 0 763 491 A2, for the handling and packaging of fan folded material generally addresses the mentioned difficulty, and proposes the storage of a number of rows of stacks of preprinted stacked cards on a pallet or skid. All the cards in one row are continuous. That is to say, the last card in each stack is connected to the first card in the next stack. The last card in the last stack of each row is spliced to the first card in the first stack in the next row.

[0005] Once the first row of cards has been withdrawn by being fed to the application or processing machine, the second row of cards begins its path of travel. There are advantages in providing that the cards making up the second row and every alternate subsequent row are offset fan folded by turning over the stacks of cards in the second and every alternate rows. To facilitate the proper feeding from the first row to the second row, the last card of the first row is spliced to the first card of the second row but because of the reverse fan folded arrangement, the section of connecting cards as well as having a splice, also has a twist. Subsequent odd number rows will be formed as described for the first

row, while subsequent even number rows will be formed as described for the second row.

[0006] Although workable, this recent method is time consuming and is also labor intensive requiring manual splicing and twisting of material between the rows, and manual turning of stacks. These steps require a considerable amount of attendant time, promote mistakes and increase costly excess waste. The additional required splices further jeopardize the overall integrity of the fan folded cards while promoting possible mistakes and excess waste.

SUMMARY OF THE INVENTION

[0007] The general object of the invention is to address the concerns mentioned above. The invention is adaptable for any fan folded material including preprinted cards, labels, envelopes, fragrance strips, information sheets, statements and the like used for insertion and attachment. Particularly, but not exclusively, the material may also have file hole punches along one or both of its sides.

[0008] One specific object of the preferred form of the invention is to store a number of assemblies of preprinted, fan folded stacked documents in a container. These assemblies will be formed as the documents are processed through a fan folding device, such that when the assemblies are put into the container, there will be no need to turn over the preprinted fan folded document assemblies every alternate row or perform splicing together at the end and beginning of each row. It is the intent of this process to provide a container containing as much as 350,000 fan folded documents for delivery to a processing or attaching machine in one delivery without jeopardizing the overall integrity of the documents which can happen if the documents have to be continuously spliced together at the end and beginning of each row.

[0009] The invention relates to a document packaging process which includes placing assemblies containing stacks of continuously connected fan folded documents in a container. The assemblies are linearly arranged in rows so that the documents in one assembly are connected to the documents in the next assembly. Once the documents of one row of assemblies has been fed into a processing or attaching machine, the packaging method provides that, automatically, the documents of the assemblies of the subsequent rows are fed into the processing machine. The fan folded documents are packaged in an orientation that allows them to feed continuously with any preprinted matter facing the same direction so that the documents will be inserted at the distribution site in accordance with the specific needs of a project.

[0010] This continuous feeding is accomplished without the need to turn stacks of documents over, or the need to splice the documents together at the end and beginning of each row, thereby eliminating many expen-

sive and potentially wasteful manual steps required in the methods described above.

[0011] This invention simplifies the steps of the method discussed in said European Application by a method of packaging the preprinted fan folded documents into individual assemblies as they are being delivered from a fan folder, keeping the fan folded documents connected in a continuous stream and then, preferably placing the assemblies into a container.

[0012] It is a principle object of the present invention to provide a method which overcomes the numerous drawbacks associated with the current methods including, but not limited to, those discussed above.

[0013] The above and other objects are achieved in accordance with the present invention which provides a method of packaging continuous stationery in the form of pre-printed documents, comprising the steps of fan folding the documents into stacks, holding each stack in an elongated packaging sleeve to form an assembly from the top of which both the leading end and the trailing end of the stack emerge, arranging the assemblies in parallel side by side rows, and arranging the rows in parallel, side by side relationship to define a body of assemblies in a first to last sequence, whilst maintaining throughout the body of assemblies that the documents of each of the first to last but one assembly, remain continuously connected.

[0014] Also according to the invention there is provided packaged pre-printed documents which are fan folded into stacks and each stack is held in an elongated packaging sleeve to form an assembly from the top of which both the leading end and the trailing end of the stack emerge, and wherein the assemblies are arranged in parallel side by side rows to define a body of assemblies positioned in or suitable for positioning in a container in a first to last sequence, characterised in that throughout the body of assemblies the trailing end of the documents of each of the first to last but one assembly, is continuously connected to the leading end of the next assembly in the sequence.

[0015] Other objects, advantages and applications of the present invention will become apparent to those skilled in the art when the following description of the best mode contemplated for practicing the invention is read in conjunction with the accompanying drawings.

[0016] Embodiments of the invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings, wherein:-

Fig. 1 is a perspective view showing how continuous stationery is fan folded and packaged in sleeves to form assemblies;

Figs 1A to 1D show in detail and in a series of steps how stacks of documents are encased in sleeves to form assemblies;

Fig. 2 is a perspective view of a row of assemblies;

Fig. 3 is a perspective view showing how two consecutive rows of assemblies are connected;

Fig. 4 is a plan showing one method of the invention for arranging the rows of assemblies;

Figs. 5 and 6 are two plan views showing the stages of arranging the rows of assemblies according to another method of the invention;

Figs 7 to 10 show, in a series of steps, how the rows are arranged according to another method of the invention;

Figs 11, 12 and 13 show respectively in plan view, the bodies which result from carrying out the respective methods of the invention; and

Fig. 14 shows how rows of assemblies are connected according to the prior art.

Referring to the drawings, and firstly to Fig. 1 and Figs. 1a to 1b, these figures show how continuous fan folded and pre-printed documents are stacked and wrapped in sleeves to form assemblies.

[0017] In Fig. 1, continuous stationery 10 is fed to a fan folding machine 12 from whence the material emerges fan folded at 14 as best shown in Fig. 1a. In Fig. 1a, the leading end of the material is shown at 16, and in order to form a stack, the fan folded material is compressed in region 18 against for example a length measurement so that the person forming the stack will know at least approximately that the correct number has been placed in the stack, although having regard to the use to which the documents are to be put, it is not essential that this number be exact. The stack may be compressed against for example an end stop 20 on the surface 22 on which the stack is formed. In Fig. 1, this surface 22 is in fact provided by a conveyor 24, but it could be a static working table.

[0018] When the stack has been so formed, the stack being indicated by reference numeral 24 in the drawings the trailing section 26 of the documents is lifted as shown in Fig. 1b, and then a sleeve 28 is placed behind the stack on the surface 22. The sleeve is a box having an open side, and it comprises side panels 30, 32, a front panel 34, a base panel 36 and a rear panel 38 which is hinged open as shown in Fig. 1 and Fig. 1b. The top 40 of the sleeve is open. This construction enables the sleeve to be pushed along the surface 22 in the direction of arrow 42 whilst the rear end of the stack 24 is raised slightly, and thereby the stack 24 can be inserted in the sleeve 28, the position being shown in Fig. 1c. Before closing the sleeve by hinging down the panel 38, the trailing portion of documents is laid over the stack as shown at 44 so that the trailing end and leading end of the documents as regards the assembly of stack and sleeve emerge from the open top of the

sleeve.

[0019] Finally as shown in Fig. 1d, the top panel 38 is closed on the stack and the tail portion 44, completing the assembly.

[0020] The assembly is now removed from the surface 22 and eventually it will be placed in a container 46 as shown in Fig. 1, the assembly in the container being indicated by reference numeral A1. The container in fact will be filled with assemblies A1, A2, A3 and so on in a sequence to form a body of assemblies in the container 46. That body of assemblies and more particularly the documents contained therein form a consignment to be dispatched to a consumer who will then pull the documents from the stacks and use them in a processing and inserting plan as described herein.

[0021] The process of forming assemblies described in relation to Fig. 1 and Figs. 1a to 1d is repeated, but without forming any break in the continuous stationery documents, and initially the assemblies A1, A2, A3 etc are arranged to form rows. Fig. 2 shows one such row having being formed, and it will be seen that the trailing ends of the documents of each stack which extend up alongside the stack are connected to the documents of the next stack and so on. Fig. 2 also shows that conveniently the assemblies of each row may be held in a tray 48 of cardboard of the like material. This is convenient, because in accordance with the invention rows of assemblies are manipulated for gripping them into bodies as described hereinbefore. The methods of handling the rows are described hereinafter.

[0022] The method and packaging arrangement according to the present invention envisages that the continuous stationery will remain continuous throughout all of the rows in a body of assemblies, and referring to Fig. 3, this figure shows two rows R1 and R2 which have been produced sequentially by the steps hereinbefore described in relation to the earlier figures. The rows are shown as being continuously connected by the document as at reference 50, and although row R2 is not shown as being provided with a tray 48, this is only for convenience of illustration.

[0023] The rows now have to be placed in the side by side parallel arrangement in which there will be arranged container 46, and in accordance with the invention a number of possible methods are adopted for arranging for this parallel side by side positioning.

[0024] In a first method as shown in Fig. 4, row 2 is simply swung through 180° as indicated by arrow 52 in Fig. 3 so that the rows R1 and R2 lie side by side and parallel as shown in Fig. 4. This means that the rows will be connected by section 50 which takes up a fan shape as shown in Fig. 4. Subsequent rows R3, R4 and R5 are positioned similarly, but are swung through 180° in alternate directions, as indicated diagrammatically in Fig. 4 and by arrows 54 and 56.

[0025] It can be seen therefore that the rows are built up to form the body, and the assemblies A1, A2, A3 etc will be positioned in sequence, and will lie in a sinuous

path when in the container 46. Fig. 11 shows a final arrangement of such a method of arranging the rows.

[0026] It is also to be mentioned that the bridging section 50 of documents can be initially of any length, and surplus documents can be folded back into the top of the stack of the adjacent assembly.

[0027] The invention provides other methods for arrangement of the rows rather than that shown in Fig. 4, and Figs. 5 and 6 show another method.

[0028] Fig. 5 shows the rows R1 and R2 in alignment similarly to the arrangement of Fig. 3, but to position the rows in side by side parallel arrangement, rows R1 and R2 are laterally displaced one relative to the other as indicated by arrow 58 in Fig. 5, and when the rows are laterally displaced equal to a row width, the rows are then moved together as shown in Fig. 6 by movement in a direction parallel to the rows. This means that the bridging section 50 as shown in Fig. 6 requires a twist 60, and the section 50 extends from the last assembly of row R1 to the first assembly of row R2 which lies adjacent the first assembly of row R1. The section 50 therefore extends from front to rear of the rows but bridges between adjacent rows.

[0029] Fig. 12 shows a completed arrangement. The twist in each of sections 50 is not harmful to the subsequent processing of the stacks of documents because as the documents are pulled out from the assemblies in turn, and are fed to a distant processing and inserting equipment, the twist is unravelled.

[0030] A third method of handling the rows is shown in Figs. 7 to 10. Fig. 7 is a view similar to Fig. 5 showing rows R1 and R2 aligned and connected by the bridging section 50 of documents. The rows R1 and R2 are placed side by side as shown in Fig. 10 by firstly as shown in Fig. 8 rotating the row R1 as indicated by arrow 62 until end A of row 1 previously remote from end C of row 2 lies adjacent end C and end B becomes remote. This is the effect of imparting a twist to the section 50 which remains connected between end B and end C of the respective rows. Additionally, the row R1 again as shown in Fig. 8 is displaced laterally of row R2 which is now moved as indicated by arrow 64 to a position alongside row R1 as shown in Fig. 9. This is the effect of bringing the end of Section 60 connected to row R2 adjacent the other end of section 50 connected to row R1 as shown in Fig. 9, and section 50 becomes a twisted connected portion as shown in Fig. 9.

[0031] To add the row R3, the two rows R1 and R2 are rotated as shown by arrow 66, but in the opposite direction from arrow 62 to bring end C of row R2 adjacent end A of row R3 as shown in Fig. 10. Finally, row R3 is moved into position in the direction of arrow 64 alongside row R2, and so the process is repeated until the body is built up as shown in Fig. 13.

[0032] The advantage of the invention is that the continuous stationery remains continuous ie with breaks or splices throughout the entire body, and the body can be made as large practicable or as desired so that vast

amounts of continuously connected stationery can be presented in bodies of assemblies.

[0033] The provision of the twists in the connecting portions 50 as shown in Figs. 12 and 13 is not detrimental, as the processing and inserting equipment will be located sufficiently remote for the twist to be of no effect, and in any case the twists will unravel eventually.

[0034] Fig. 14 shows the prior art arrangement, and illustrates the disadvantage thereof. The figure shows two assemblies 70 and 72 each comprising a stack of documents and a sleeve with the trailing portion of the documents along one side of the stack. The assemblies 70 and 72 are the last and first assemblies of adjacent rows, and the stack of assemblies 72 is reverse fan folded compared to the stack of assembly 70. This means that the drive apertures 74 of the documents of the stacks are arranged at the same side when viewed in Fig. 14, but to connect trailing leading ends of the documents of the assemblies 70 and 72, as shown by arrow 76, there has to be a twist 78 in the documents as well as a splice. Such an operation is carried out by hand and this makes the process labour intensive. Furthermore, splicing of documents such as these is extremely difficult, and invariably results in the misalignment of the printing on the documents and/or a thickened region in the continuous stationery which can cause problems in the processing and inserting equipment.

[0035] No such disadvantages arise in connection with the present invention.

Claims

1. A method of packaging continuous stationery in the form of pre-printed documents, comprising the steps of fan folding the documents into stacks, holding each stack in an elongated packaging sleeve to form an assembly from the top of which both the leading end and the trailing end of the stack emerge, arranging the assemblies in parallel side by side rows, and arranging the rows in parallel, side by side relationship to define a body of assemblies in a first to last sequence, whilst maintaining throughout the body of assemblies that the documents of each of the first to last but one assembly, remain continuously connected.
2. A method according to claim 1, wherein the rows are arranged in a sinuous path, so that the first assembly of the second and each subsequent row is adjacent the last assembly of the previous row, and the rows are connected by sections of documents which define a fan shape.
3. A method according to claim 1, wherein the rows are arranged so side by side by rotating the first row or the previously positioned rows relative to the second or next row, followed by sliding the second row or the next row alongside the first or previous row, so that the rows define a sinuous path, and the sections of documents connecting adjacent rows has a twist therein.
4. A method according to claim 1, wherein the rows are arranged by positioning the second and each subsequent row parallel but offset in relation to the first or previous row, followed by sliding the second or subsequent row alongside the first or previous row, so that the sequence is rows starting from the same end of the body, and the section of documents connecting each last assembly of a row to the first assembly of the next row, extends from one end of the body to the other, and has a twist therein.
5. A method according to any of claims 1 to 4, wherein each row is placed in a tray, enabling simplified movement of the row.
6. A method according to any of claims 1 to 5, wherein the body of assemblies is placed in a transporting container.
7. Packaged pre-printed documents which are fan folded into stacks and each stack is held in an elongated packaging sleeve to form an assembly from the top of which both the leading end and the trailing end of the stack emerge, and wherein the assemblies are arranged in parallel side by side rows to define a body of assemblies positioned in or suitable for positioning in a container in a first to last sequence, characterised in that throughout the body of assemblies the trailing end of the documents of each of the first to last but one assembly, is continuously connected to the leading end of the next assembly in the sequence.
8. Packaged pre-printed documents according to claim 7, wherein the assemblies are arranged in a sequence which defines a sinuous path, so that the last assembly in each row but the last, is adjacent the first assembly of the next row.
9. Packaged pre-printed documents according to claim 8, wherein each section of the documents connecting a last assembly of one row to the first assembly of the next row has a twist therein.
10. Packaged pre-printed documents according to claim 8, wherein each section of the documents connecting a last assembly of one row to the first assembly of the next row defines a fan shape.
11. Packaged pre-printed documents according to claim 7, wherein the assemblies are arranged in a sequence in which the first assembly of each row is at the same end of the body.

12. Packaged pre-printed documents according to claim 11, wherein each section of the documents connecting a last assembly of one row to the first assembly of the next row has a twist therein.

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13. Packaged pre-printed documents according to any one of claims 7 to 12, wherein the assemblies are placed in a transport container.

14. Packaged pre-printed documents according to any one of claims 7 to 13, wherein each row of assemblies is held in a tray.

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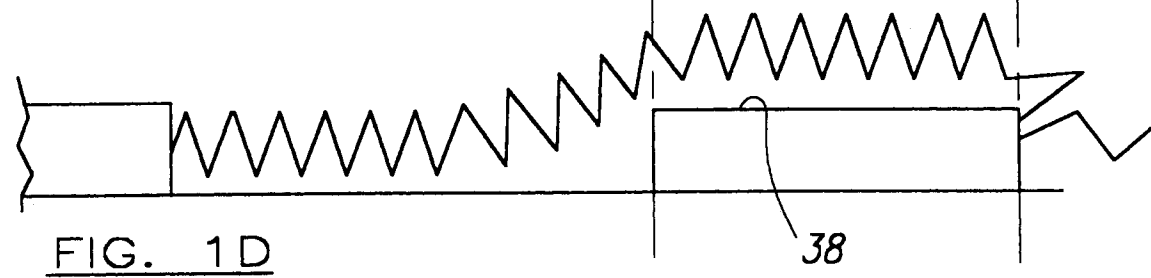
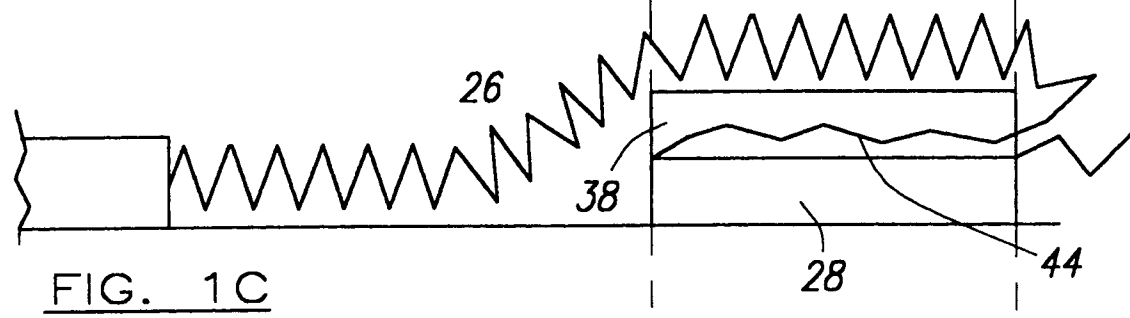
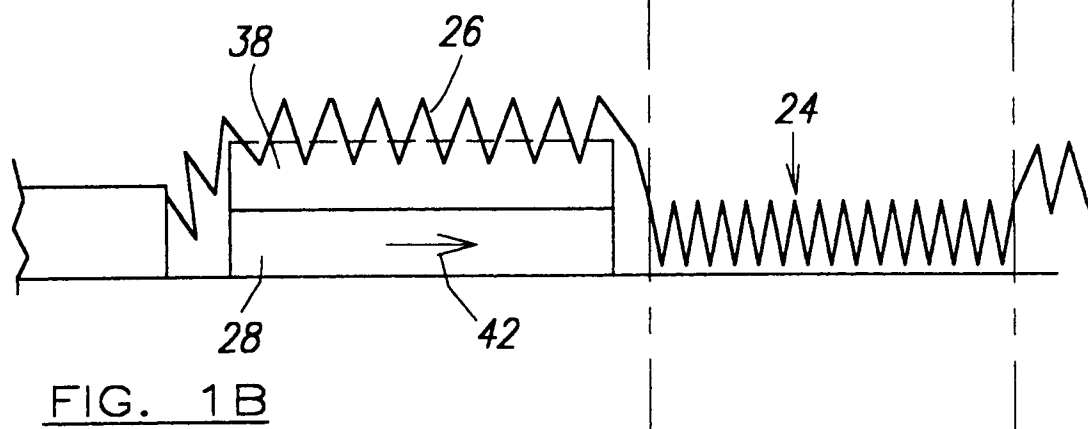
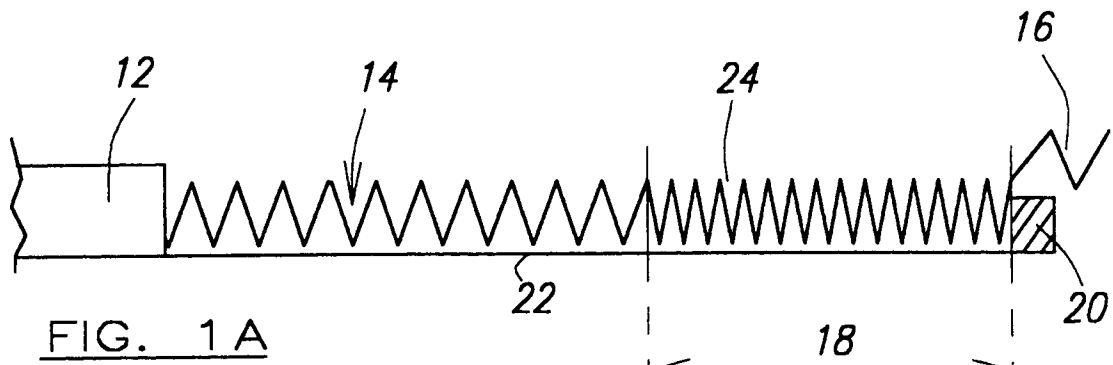
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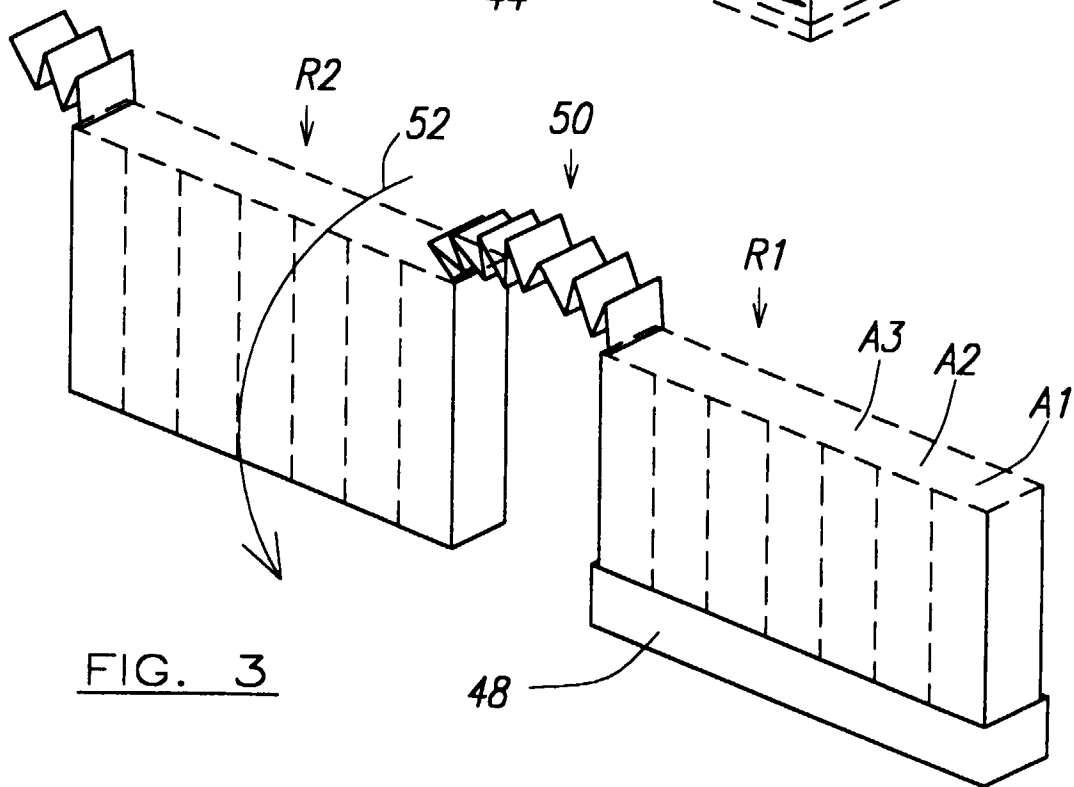
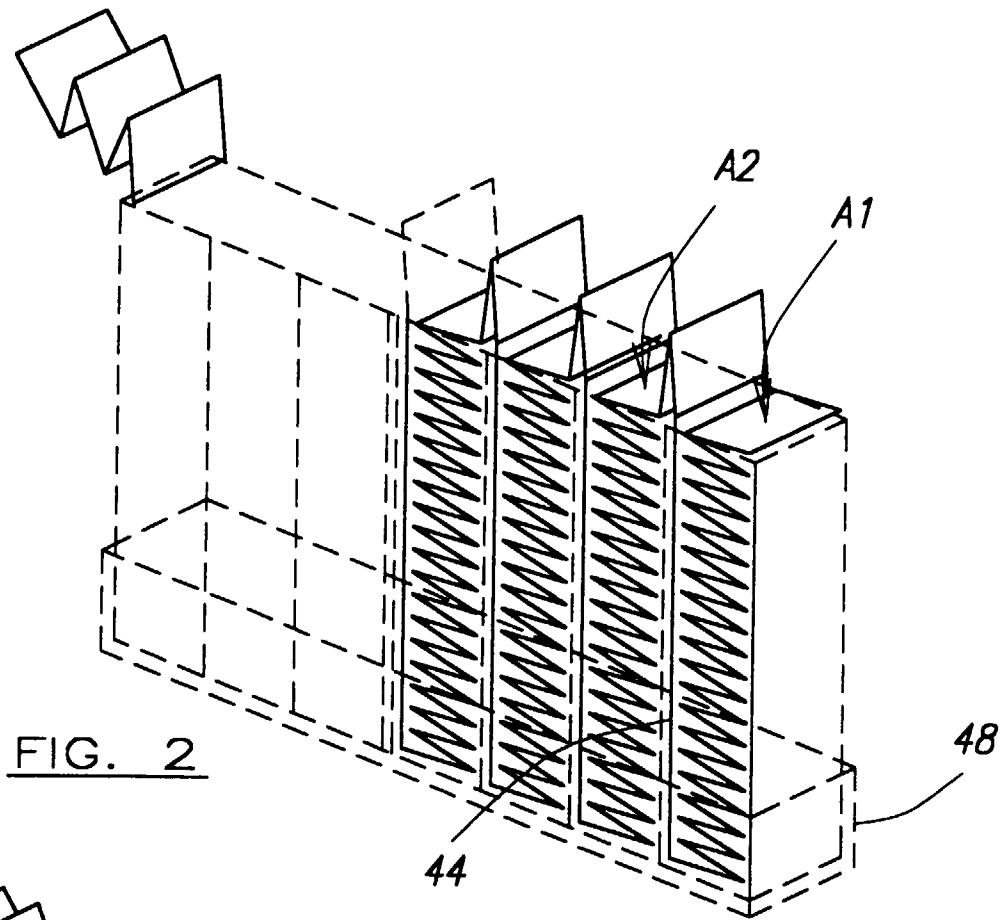
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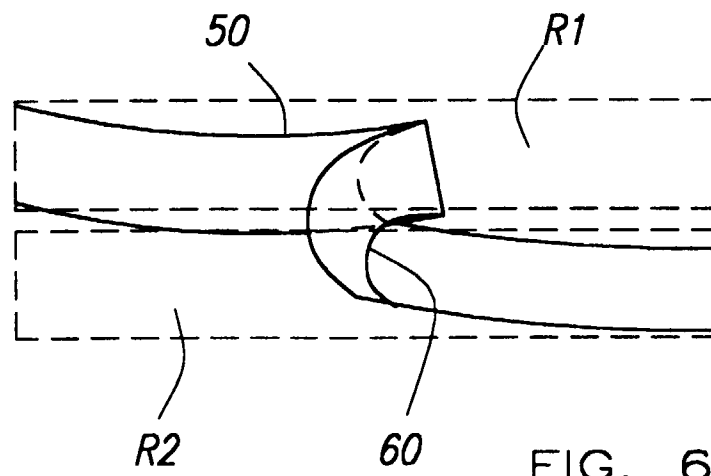
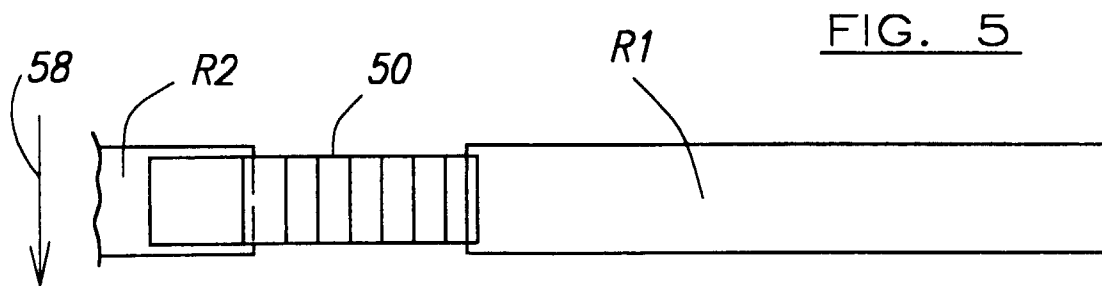
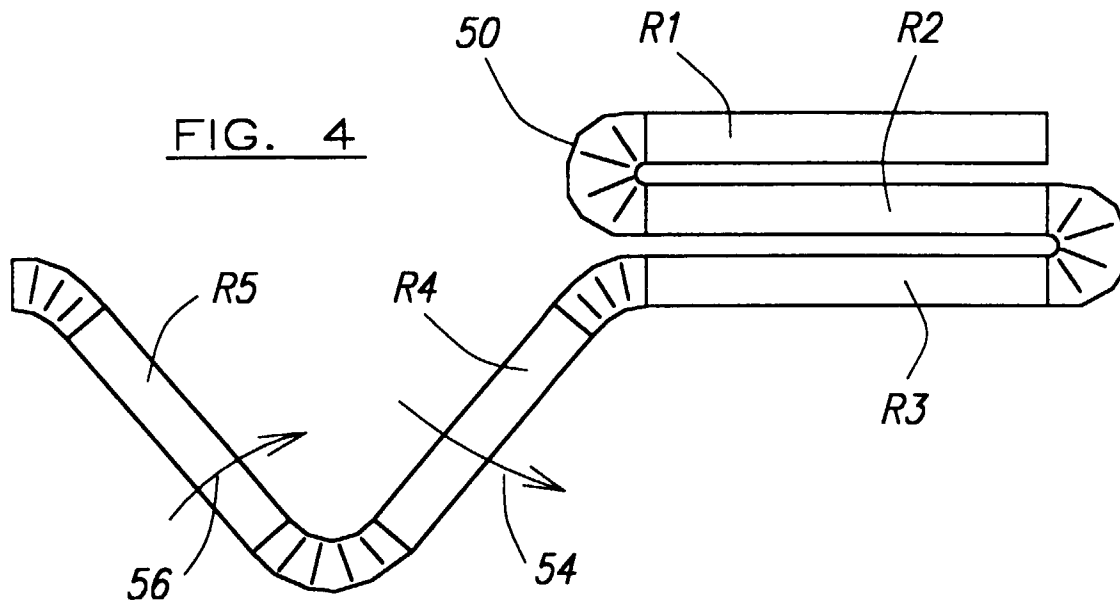
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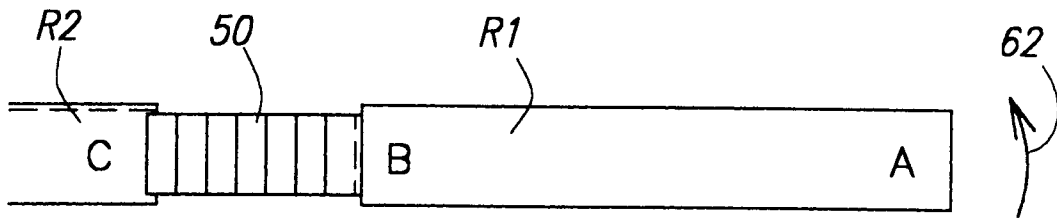


FIG. 7

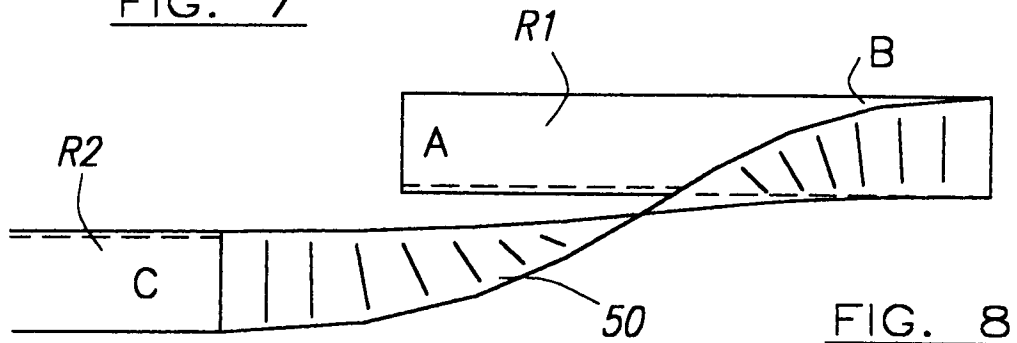


FIG. 8

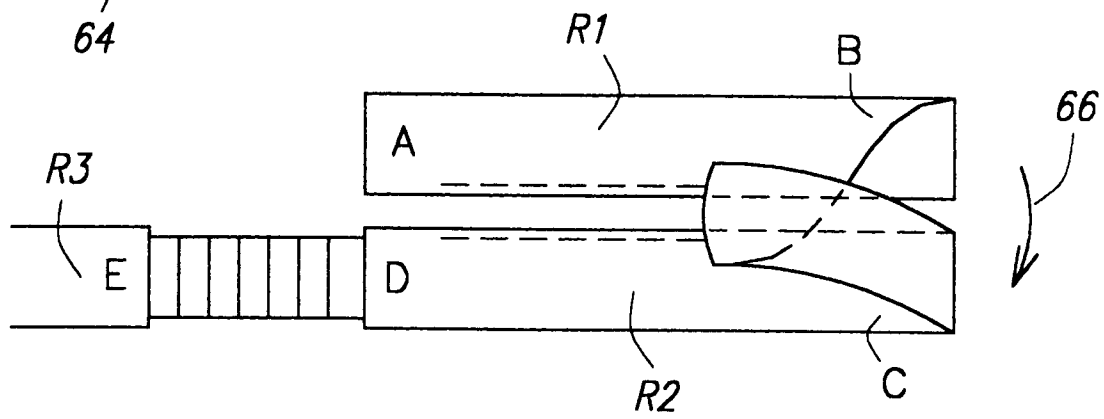
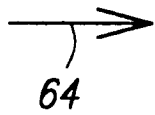


FIG. 9

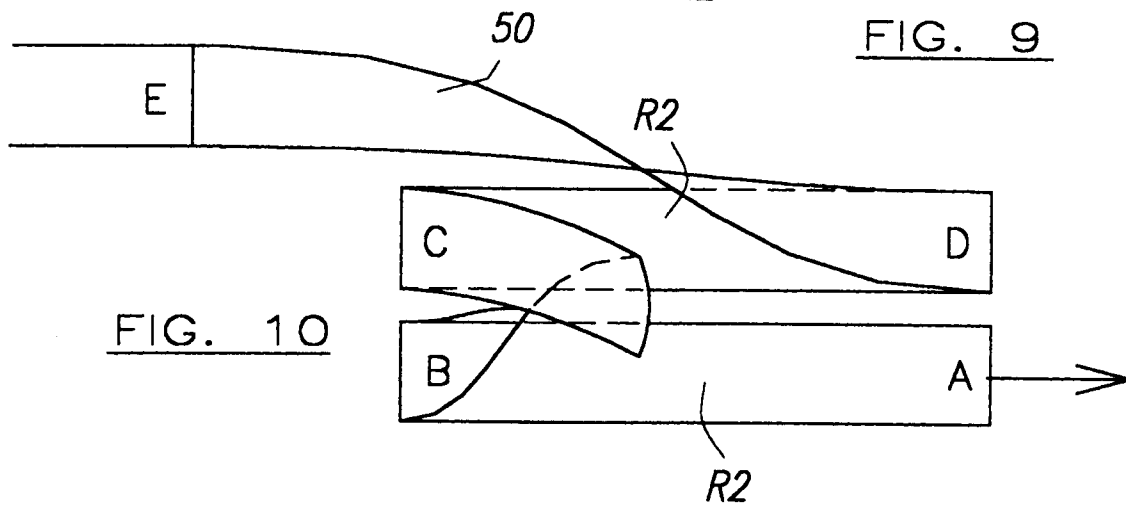


FIG. 10

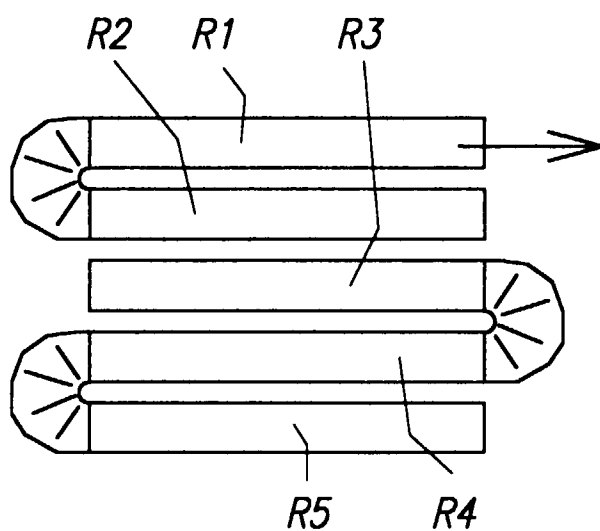


FIG. 11

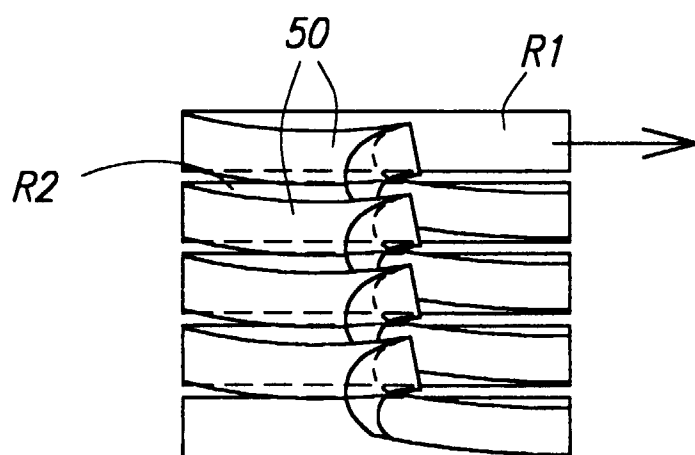


FIG. 12

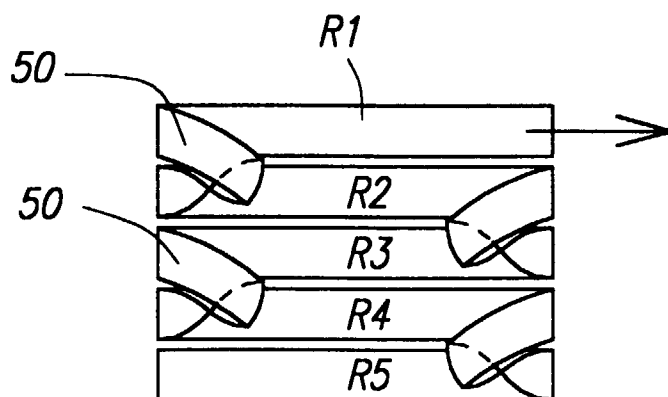


FIG. 13

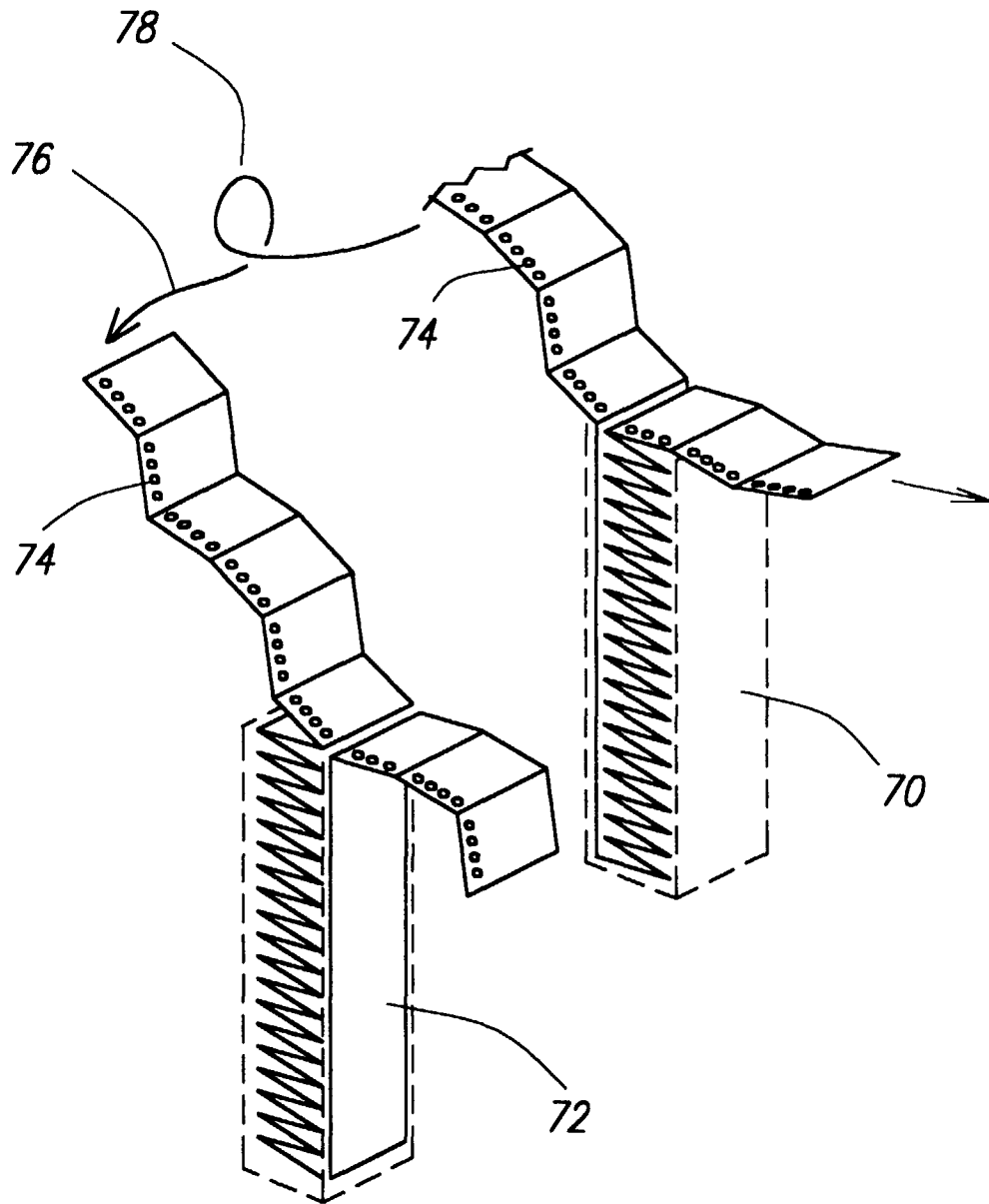


FIG. 14