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(71) Applicant: **Namita, Masahide**
Oonojou-shi, Fukuoka 816-0964 (JP)

(72) Inventor: **Namita, Masahide**
Oonojou-shi, Fukuoka 816-0964 (JP)

(74) Representative:
Müller-Boré & Partner
Patentanwälte
Grafinger Strasse 2
81671 München (DE)

(54) Newspaper distribution method, newspaper distribution system, and assembly type box for newspaper distributions

(57) To establish a newspaper distribution system which incorporates no consumable at the time of distributing newspapers thereby to eliminate the fear of break of a naked stack of newspapers or the collapse of a packaged stack.

A newspaper distribution system 10 comprises an assembly type box 13 capable of being assembled/developed a plurality of times; an automatic assembler 12 for assembling a box 13 in a developed state; a newspaper loader 17 for loading the assembled box 13 with a desired number of newspapers 18; an information display 25 arranged on the surface of the box 13 and capable of erasing/printing information a plurality of times; an address printer 24 for printing the surface of the information display 25 with information necessary for transferring the box 13; and means for sorting and transporting the box 13 to a necessary truck gate.

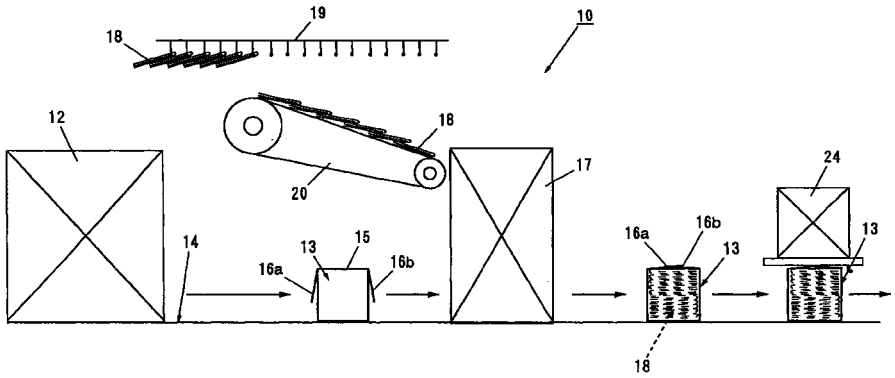


FIG 1

EP 0 992 432 A1

Description

[0001] The present invention relates to a newspaper distribution technique and, more particularly, to a newspaper distribution technique for making a working process efficient and sparing resources in a procedure for distributing the newspapers printed by a rotary press to numerous distributors.

[0002] For the newspaper distributions, it is necessary to print numerous copies within a short time period and to complete the distributions to the numerous distributors by a predetermined time. For this necessity, the newspaper distribution procedure has been highly systemized for a long time.

[0003] Figs. 15 and 16 schematically show a portion of a newspaper distribution system 60 of the prior art. Loose newspapers 18, which have been printed by the rotary press and folded in four by a newspaper folder, are transferred by the gripper of a newspaper transfer gripper conveyor 19 and loaded in an imbricated pattern in a counter/stacker 62 through a belt conveyor 20 or the like.

[0004] The counter/stacker 62 counts the number of the loaded newspapers 18 with a sensor and forms a stack 63 of a predetermined number of newspapers.

[0005] The stack 63 thus formed by the counter/stacker 62 is transferred to a bottom wrapper 64 by a transfer line 14 constructed of a belt conveyor or the like.

[0006] In this bottom wrapper 64, an underlay sheet 65 made of craft paper is inserted to the lowermost face of the stack 63 so as to prevent the lower face of the stack from becoming dirty.

[0007] The stack 63 thus fed with the underlay sheet 65 is then transferred to an address printing/attaching machine 66. This address printing/attaching machine 66 performs, on the basis of an instruction of a host computer administering the entire control of the newspaper distribution system 60, functions to print an address sheet 67 with necessary information such as the number of newspapers 18 contained in said stack 63, the name of a destination distributor or a truck gate number in characters and bar codes and to attach the address sheet 67 to the uppermost face of the stack 63.

[0008] Next, the stack 63 is transferred to a vinyl packager 68, in which it is packaged with a vinyl bag 69 (Fig. 16), and is bound in a cross with a vinyl band 71 in a vinyl band binder 70 and transferred to an address reader 26.

[0009] In this address reader 26, the truck gate number (in the bar codes), as printed on the address sheet 67 on the upper face of the stack 63, is read by a sensor such as a bar code reader so that the truck gate number to which said stack 63 is to be transported is recognized.

[0010] On the basis of this recognition result, the packaged stack 63 is sorted and transported to the corresponding truck gate by using suitable sorting means such as a belt conveyor, a curve conveyor, a shunting conveyor or a pusher.

[0011] The packaged stack 63 having reached the truck gate is loaded/carried as it is on the bed of the truck 27 through the belt conveyor 20, a truck loader or the like and is then transported to the destination (or each newspaper distributor).

[0012] In the newspaper distribution system 60 thus far described, a series of works are substantially automatically processed by the computer control. When a vacant truck 27 reaches the truck gate so that the driver inserts his ID card into a predetermined card reader, for example, this insertion is recognized by the host computer connected online with said card reader and calculates the destination and the necessary number of copies of said driver by referring to a master file which is stored with the allocation (or charge) of each driver.

[0013] On the basis of this calculation result: the rotary press instantly prints the newspapers 18 for said driver; the counter/stacker 62 forms the stack 63 provided with the necessary copies; and the address printing/attaching machine 66 prints the necessary information.

[0014] Since the newspaper printing/distributing system is highly systemized, as has been described hereinbefore, the stack 63 can be formed by printing a necessary number of newspapers 18 at a necessary time, and can be processed at the unit of itself by attaching the address sheet 67 to each stack 63 so that the distribution works can be made efficient.

[0015] In the newspaper distribution system 60 of the prior art, however, it is necessary, as described above, not only to insert the underlay sheet 65, print/mount the address sheet 67, package with the vinyl bag 69 and bind with the vinyl band 71 for each stack 63 thereby to provide the apparatus individually dedicated to those works, but also to prepare consumables such as the underlay sheet 65, the address sheet 67, the vinyl bag 69 and the vinyl band 71. These consumables are disposed after delivery as the ordinary wastes at each distributor without being effectively used.

[0016] In short, the newspaper distribution system 60 of the prior art is troubled not only by a raised cost for purchasing the various consumables accompanying the transfer of the stack 63 but also by a contradiction to the demand of the era, i.e., the spare of resources and the reduction in the load on the environment. Although the cost for and the amount of the consumables necessary for each stack 63 are low, the newspapers are published several hundreds copies in the morning and evening every day throughout the country so that their yearly total is not at a negligible level in the least.

[0017] Since the naked stack 63 (i.e., the stack 63 in the unpackaged/unbound state) has to be transferred between the individual apparatus by the belt conveyor or the like, as has been described hereinbefore, the stack 63 may break in the transfer course. In order to

prevent this breakage, the transfer speed of the stack 63 has to be suppressed to raise another obstruction to a better improvement in the distribution efficiency.

[0018] On the other hand, there has been pointed out another problem that even the stack 63 having been packaged with vinyl or bound in a cross is liable to collapse when it is carried on the bed of the truck 27, because its contour is not stable.

[0019] The present invention has been conceived to solve the aforementioned problems which were owned by the newspaper distribution system of the prior art, and has an object to establish a newspaper distribution system which incorporates no consumable at the time of distributing newspapers thereby to eliminate the fear of break of a naked stack of newspapers or the collapse of a packaged stack.

[0020] In order to achieve the aforementioned object, a newspaper distribution method according to the invention is characterized by comprising: the step of assembling a reusable assembly type box; the step of loading said assembled box with a necessary number of printed newspapers; and the step of sorting and transporting said box to a necessary truck gate. After said step of loading said assembled box with a necessary number of printed newspapers, it is arbitrary to add either the step of printing the surface of said box with information necessary for distributing said newspapers, or the step of printing an information display, which is arranged on the surface of said box and can erase/print information a plurality of times, with information necessary for distributing said newspapers. Moreover, after said information display was printed with the information necessary for distributing said newspapers, there may be added the step of reading said information to recognize the arrival gate of a truck in charge of transportation of said box so that the box may be sorted and transported on the basis of the recognition result.

[0021] Moreover, it is desirable to add, after said sorting/transporting step: the step of transporting said box loaded with the newspapers to a destination or a newspaper distributor; the step of developing said box when the inside newspapers are to be taken out; and the step of recovering said developed box.

[0022] On the other hand, a newspaper distribution system according to the invention is characterized by comprising: a reusable assembly type box; an automatic assembler for assembling said box in the state before assembly; a newspaper loader for loading said assembled box with a necessary number of printed newspapers; and means for shorting and transporting said box to a necessary truck gate.

[0023] Here may be further comprised: an information display arranged on the surface of said box and capable of erasing/printing information a plurality of times; or an address printer for printing the surface of said information display with information necessary for distributing said box.

[0024] On the other hand, there may be further comprised an address reader for reading the information printed by said address printer, so that said transport means may sort and transport the box to the necessary truck gate on the basis of the read result.

[0025] In the newspaper distribution method or the newspaper distribution system according to the invention, as has been described hereinbefore, the newspapers are transported while being loaded in the box, and the information such as an address is printed in the information display. This makes it unnecessary to attach the underlay sheet or to make a package with the vinyl bag or the vinyl bag and to mount the address sheet.

[0026] On the other hand, this box is not disposable but can be used a plurality of times, and the information display of the address or the like can be rewritten.

[0027] As a result, it is possible to avoid the waste of the consumables such as the underlay sheet, the vinyl bag, the vinyl band or the address sheet unlike the prior art.

[0028] The number of uses of the box can be considerably increased if a strong, light synthetic resin is selected as the material for the box. If the box is made of an easily recycled synthetic resin, on the other hand, it is more preferable for keeping the environment.

[0029] The newspapers are distributed while being carried in the box having a stable contour so that they can be prevented from collapsing during the distribution.

[0030] The assembly type is adopted so that the box can be easily transported and stocked when it is not used.

[0031] The aforementioned assembly type box is exemplified either by an assembly type box for newspaper distributions, comprising: a rectangular bottom plate member; a first side wall member, a second side wall member, a third side wall member and a fourth side wall member made individually engageable with the four sides of said bottom plate member and each having at least one side turnably engaging with one side of said adjoining member; assembly state holding means for fixing said individual side wall members in a state assembled vertically with respect to the bottom plate member; and a cover member for shutting an opening which is formed when said individual side wall members are assembled, or by an assembly type box for newspaper distributions, comprising: a rectangular bottom plate member; a first side wall member, a second side wall member, a third side wall member and a fourth side wall member turnably engaging individually with the four sides of said bottom plate member; assembly state holding means for fixing said individual side wall members in a state assembled vertically with respect to the bottom plate member; a cover member for shutting an opening which is formed when said individual side wall members are vertically assembled; and an information display for erasing/printing information a plurality of times.

[0032] Any of said first side wall member, said sec-

ond side wall member, said third side wall member and said fourth side wall member has rail portions extended, when said side wall members are assembled vertically with respect to said bottom plate member, from the side of said opening to the side of the bottom plate member and provided with a push-fixing member.

[0033] Said push-fixing member includes a body portion engaging slidably with said rail portions, a push bar hinged to said body portion, and a stopper portion for fixing said body portion at an arbitrary position of the rail portions.

[0034] Said push bar plays a role to push down the upper face of the newspapers and is so hinged to said body portion as to turn downward from a state vertical with respect to said side wall members but not upward. On the other hand, said push bar is provided with bias means for biasing said push bar vertically with respect to said side wall members.

[0035] By providing this push-fixing member, the newspaper loaded in the box can be held on their upper face with the push bar so that they can be positionally stabilized.

[0036] Specifically, the push bar can turn downward to raise no obstruction to the loading of the newspapers. Since the push bar does not turn upward, it can hold the upper face of the newspapers effectively. The body portion of the push-fixing member is fixed at an arbitrary position on the rail portions by the stopper portion so that it can match the newspapers even if varied in the mass (or height).

[0037] Said cover member may include a first cover plate hinged turnably to the leading edge of the first side wall member, and a second cover plate hinged turnably to the leading edge of the second side wall member arranged to confront said first side wall member. In this case, there is desirably comprised shut state holding means for fixing the opening in a shut state with the first cover plate and the second cover plate.

[0038] On the other hand, said information display is desirably arranged on the outer face of one of said first cover plate and said second cover plate.

[0039] In the following some examples are described in relation to the accompanying drawings in which shows:

Fig. 1 a schematic diagram showing a summary of a newspaper distribution system according to the invention.

Fig. 2 a schematic diagram showing a summary of the newspaper distribution system according to the invention.

Fig. 3 a schematic diagram showing the behavior of loading a box with the newspapers.

Fig. 4 a top plan view showing an information display.

Fig. 5 a perspective view showing the state in which the box is developed.

Fig. 6 a perspective view showing the state in which the box is assembled.

Fig. 7 a schematic side elevation showing an automatic assembler for the boxes.

Fig. 8 a schematic top plan view showing the automatic assembler for the boxes.

Fig. 9 a schematic diagram showing a procedure for assembling the box.

Fig. 10 a schematic diagram showing the procedure for assembling the box.

Fig. 11 a schematic diagram showing the procedure for assembling the box.

Fig. 12 a perspective view showing an example in which the side wall member of the box is arranged with a push-fixing member.

Fig. 13 a schematic section showing an example in which the side wall member of the box is arranged with the push-fixing member.

Fig. 14 a schematic section showing an example in which the side wall member of the box is arranged with the push-fixing member.

Fig. 15 a schematic diagram showing a summary of a newspaper distribution system of the prior art.

Fig. 16 a schematic diagram showing a summary of the newspaper distribution system of the prior art.

[0040] Fig. 1 and 2 schematically show an essential portion of a newspaper distribution system 10 according to the invention. First of all, an assembled box 13 is supplied from an automatic box assembler 12 onto a transfer line 14.

[0041] This box 13 is provided with an opening 15 in its upper face, and cover plates 16a and 16b for shutting the opening 15 are arranged to be opened and closed.

[0042] The aforementioned transfer line 14 is constructed of transport means such as a belt conveyor to transfer the box 13 to a newspaper loader 17 disposed at a subsequent stage.

[0043] Newspapers 18, which have been printed by a not-shown rotary press and folded in four by a newspaper folder, are supplied in an imbricated pattern to the upper portion of the newspaper loader 17 through transport means including a newspaper transfer gripper conveyor 19 and a belt conveyor 20.

[0044] Fig. 3 shows the inside of the aforementioned newspaper loader 17, and the aforementioned box 13 is stopped on the transfer line 14 with its upper face being opened.

[0045] Over the opening 15 of this box 13, there is arranged a turntable 21, on the surface of which the newspapers 18 are sequentially stacked along guide walls 22. At this time, the turntable 21 is supplied with at a small unit of a predetermined small number (e.g., twenty five) of newspapers.

[0046] At upstream stages of this turntable 21, although not shown, there are provided a counter for counting the number of newspapers erroneously stacked, and a stopper for stopping the newspapers at a unit of a predetermined number, or a plurality of stages

of buffers for making an adjustment to supply the newspapers reliably at the predetermined number unit onto the turntable 21.

[0047] Here, this turntable 21 is periodically turned by 180 degrees to arrange the folds (bindings) 18a of the stacked individual newspapers 18 alternately at every predetermined numbers.

[0048] After the necessary number of newspapers 18 were stacked, as described above, a shutter portion 23, as provided at the center of the turntable 21, is opened to load the box 13 with the newspapers 18 from the opening 15.

[0049] After this, the transport means such as a belt conveyor is activated again to transport the box 13 along the transfer line 14 to an address printer 24 at a subsequent stage.

[0050] In this meanwhile, on the other hand, the cover plates 16a and 16b of the box 13 are popped up by suitable drive means to shut the opening 15 automatically.

[0051] On the surface of the cover plate 16a, as shown in Fig. 4, there is formed an information display 25 which is made of a magnetic material. This information display 25 is printed with arbitrary characters, symbols and graphic information by applying magnetic signals to it by the aforementioned address printer 24.

[0052] Even after the information was once printed, on the other hand, it can be rewritten any times through the address printer 24.

[0053] At the instant when the address printer 24 is reached, the information, which was printed when the box 13 was used before, is displayed on the surface of the information display 25. There, the address printer 24 reprints new information on the basis of an instruction from a high order host computer.

[0054] This address information includes the name of a distributor to which the corresponding box 13 is to be distributed, the number of newspapers 18 received, the truck gate (No. 3) parked by a truck in charge, and the number of the truck. On the other hand, there are also printed the bar codes corresponding to that character information.

[0055] The box 13, as printed with new address information by the address printer 24, is transferred along the transfer line 14 to reach an address reader 26 at a subsequent stage. In this address reader 26, the truck gate number (in the bar codes) displayed on the information display 25 on the upper surface of the box 13 is read by a reading sensor such as a bar code reader.

[0056] Next, the box 13 is so sorted through suitable sorting means to reach a necessary truck gate and is loaded on the bed of the corresponding truck 27 through the belt conveyor 20 and a truck loader so that it is transported to a destination (each newspaper distributor).

[0057] At the instant when the aforementioned box 13 reaches the newspaper distributor, the inside newspapers 18 can be easily taken out by developing the box 13 again.

[0058] At the newspaper distributor, the boxes 13 returned to the state before assembly are stacked and stocked. When the truck 27 arrives at the next time, it is loaded with the stocked boxes 13 in place of the boxes 13 accommodating the newspapers 18 so that the boxes 13 are reused at the newspaper printing/distributing factory.

[0059] According to this newspaper distribution system 10, as described hereinbefore, the reusable box 13 is used for distributing the newspapers 18 so that any of consumables such as underlay sheets, address sheets, vinyl bags or vinyl bands is not incorporated unlike the prior art. This makes it possible to omit the cost for purchasing those consumables and to suppress an outbreak of useless wastes thereby to lighten the load on the environment.

[0060] Since the newspapers 18 are received in the box 13 having a fixed contour, on the other hand, there occurs no danger that the stack breaks on the belt conveyor, unlike the case in which the naked stack is transferred. As a result, the transfer rate can be raised to enhance the efficiency. Of course, the box 13 can be stably carried on the bed of the truck 27 so that it can be prevented from collapsing while being carried.

[0061] Unlike the prior art, it is unnecessary to arrange the bottom wrapper 64, the vinyl packager 68 or the vinyl band binder 70 so that the transfer line 14 per se can be drastically simplified.

[0062] Especially the stack 63 of the prior art is once carried, after having the address sheet 67 attached thereto by the address printing/attaching machine 66, on the common line (or consolidation line) and is then packaged with a vinyl sheet or bound in a cross. This makes a sorting/transporting step inevitably necessary for reading the truck gate number from the address sheet 67 by the address reader 26 to guide the stack 63 to a necessary truck gate on the basis of the reading result.

[0063] In the case of the newspaper distribution system 10 according to the invention, on the contrary, it is unnecessary to make the carriage on the common line after the address information was printed on the information display 25 by the address printer 24. If each truck gate is arranged at the subsequent stage of the address printer 24, therefore, it is possible to omit the sorting/transporting step at which the truck gate number is read from the information display 25 by the address reader 26 to effect the sorting/transporting operations according to the read number. In this case, the printing of the address information by the address printer 24 has a meaning of confirmation.

[0064] In the prior art, the address reading and sorting/transporting steps could also be omitted by arranging the vinyl packager 68 and the vinyl band binder 70 at each truck gate. However, it is not practical to arrange each truck gate with those machines which have rela-

tively high prices and occupy large spaces.

[0065] In the foregoing description, there has been proposed an example, in which the information display 25 is printed with the necessary information by the address printer 24 after the box 13 was loaded with the newspapers 18 by the newspaper loader 17. Despite of this proposal, however, the timing for printing the address should not be limited thereto. For example, the printing could also be completed by the address printer 24 when the box 13 is assembled in the automatic box assembler 12 or loaded with the newspapers 18 at the newspaper loader 17. On the other hand, the address printer 24 could also be disposed at another place to execute the printing operation.

[0066] The box 13 may be constructed to have a surface color different for the areas of destinations.

[0067] Next, a specific construction of the box 13 will be described with reference to Figs. 5 and 6.

[0068] Fig. 5 shows a state in which this box 13 is developed. To the individual sides of a bottom plate member 28 having a generally rectangular shape, there are swingably jointed a first side wall member 29, a second side wall member 30, a third side wall member 31 and a fourth side wall member 32 through hinge members 33a to 33d.

[0069] On the inner face of the bottom plate member 28, there is formed a ridge 34 for raising the received newspapers. The bottom plate member 28 and the individual side wall members 29 to 32 are made at their essential portions of a synthetic resin material having a predetermined strength.

[0070] Retaining members 35 are protruded from the two sides of the first and second ones 29 and 30 of the individual side wall members 29 to 32.

[0071] On the other hand, the individual hinge members 33c and 33d hinging the third and fourth side wall members 31 and 32 to the bottom plate member 28 are individually provided therein with springs, which act to bias the individual side wall members 31 and 32 always in the developing directions.

[0072] The box 13 is assembled, as shown in Fig. 6, by erecting the third side wall member 31 and the fourth side wall member 32 in advance into generally vertical positions against the biasing forces of the aforementioned coil springs and then by erecting the first side wall member 29 and the second side wall member 30 to bring their individual retaining members 35 into engagement with the outer faces of the third side wall member 31 and the fourth side wall member 32.

[0073] The third side wall member 31 and the fourth side wall member 32 are individually biased outward by the coil springs mounted in their hinge members 33c and 33d and are forced to contact with the retaining members 35 of the first side wall member 29 and the second side wall member 30 so that the box shape can be kept without providing any other special fixing means.

[0074] In this case, the aforementioned coil springs and retaining members 35 correspond to assembly state holding means.

[0075] When this box 13 is to be developed, the first side wall member 29 and the second side wall member 30 may be pushed outward by a predetermined force to release the engagements between the individual retaining members 35 and the third and fourth side wall members 31 and 32. Then, these third and fourth side wall members 31 and 32 are automatically fell down by the actions of the coil springs to restore the state of Fig. 5.

[0076] As shown in Fig. 6, the cover plates 16a and 16b are swingably attached through hinge members 36 to the leading edges of the first side wall member 29 and the second side wall member 30, respectively.

[0077] On the other hand, a magnet sheet 37 is adhered to the inner face of the cover plate 16a. To the outer face of the other cover plate 16b, there is adhered an iron member which is located (although not shown) at a position corresponding to that magnet sheet 37.

[0078] Moreover, the cover plate 16b is preferentially turned in the closing direction, and the cover plate 16a is then turned in the closing direction. Then, the magnet plate 37 is attracted by the aforementioned iron member to shut/fix the opening 15 of the box 13. In short, the magnet plate 37 and the iron member correspond to shut state holding means.

[0079] The aforementioned information display 25 is formed on the surface of the cover plate 16a so that it is exposed to the surface when the box 13 is shut.

[0080] For handling conveniences, the free turning motions of the individual cover plates 16a and 16b are desirably regulated by using any retaining means when the box 13 is in the developed state.

[0081] For example, it is conceivable to fix the outer faces of the individual cover plates 16a and 16b and the outer faces of the individual side wall members 29 and 30 temporarily by making use of the attraction of a magnet. Of course, it is arbitrary to provide other suitable retaining means such as the general latch mechanism.

[0082] After the box 13 thus assembled was loaded with the newspapers 18, moreover, there may be adopted a device which uses a suitable cam mechanism for popping up the individual cover plates 16a and 16b against the aforementioned retaining means (such as the magnetic) so that the opening 15 may be automatically shut. For smoothing this shutting actions of the cover plates 16a and 16b, the construction may be modified such that the individual hinge members 36 are arranged therein with coil springs for biasing the cover plates 16a and 16b always in the shutting directions.

[0083] Each of the side wall members 29 to 32 is provided on its two sides excepting the central portion with a pair of ridges 38 having a predetermined thickness. These ridges 38 leave a recess 39 at the central portion defined thereby. These recesses 39 function as air vents when the newspapers 18 are to be loaded.

[0084] On the other hand, each ridge 38 is provided at its leading edge with a tapered face 38a for smooth

loading of the newspapers 18.

[0085] Next, a method of assembling the aforementioned box 13 efficiently will be described with reference to Figs. 7 to 11.

[0086] In the aforementioned automatic box assembler 12, as shown in Figs. 7 and 8, there are arranged a pair of stockers 40a and 40b, and the boxes 13 in the developed state are stacked and arranged on shelves 41 of the individual stockers 40a and 40b.

[0087] Between the two stokers 40a and 40b, on the other hand, there is formed an assembly space 43 which is surrounded by four rollers (i.e., a first roller 42a, a second roller 42b, a third roller 42c and a fourth roller 42d). At the center of this assembly space 43, there is arranged a suction member 44.

[0088] This suction member 44 is connected to communicate with a suction duct 47 which is freely extended from an evacuator 46 arranged under a floor 45.

[0089] Of the aforementioned four rollers 42a to 42d, the first roller 42a and the second roller 42b arranged to confront each other are arranged at a higher position than that of the third roller 42c and the fourth roller 42d arranged to confront each other.

[0090] Now, the box 13, as arranged at the highest stage of one stocker 40a, is pushed to the assembly space 43 by using the (not-shown) push means such as a pusher, and the third side wall member 31 and the fourth side wall member 32 are placed on the first roller 42a and the second roller 42b (as shown in Fig. 7).

[0091] In this state, the suction duct 47 is extended from the side of the evacuator 46 so that the suction member 44 comes into contact with the outer face of the bottom plate member 28. Next, the evacuator 46 is activated to cause the suction member 44 to suck the bottom plate member 28, and the suction duct 47 is shrunken.

[0092] As a result, the third side wall member 31 and the fourth side wall member 32 in abutting contact with the first roller 42a and the second roller 42b are erected first of all along the individual rollers 42a and 42b, as shown in Fig. 9.

[0093] At the instant when the third side wall member 31 and the fourth side wall member 32 are erected to the generally vertical positions, moreover, the first side wall member 29 and the second side wall member 30 come into abutting contact with the third roller 42c and the fourth roller 42d so that they are erected along the rollers 42c and 42d, respectively (Fig. 10).

[0094] By thus making use of the step between the rollers, a time difference can be made between the erections of the third and fourth side wall members 31 and 32 and the erections of the first and second side wall members 29 and 30 so that the third side wall member 31 and the fourth side wall member 32 can be retained without fail by the retaining members 35 of the first side wall member 29 and the second side wall member 30.

[0095] The automatic assembly of the box 13 is completed so that the bottom plate member 28 of the box 13 comes into contact with the floor 45 as shown in Fig. 11, and at this instant, the evacuator 46 interrupts its sucking action to release the box 13.

[0096] The assembled box 13 thus arranged on the floor 45 is transferred to the transfer line 14 having a belt conveyor or the like by using suitable push means such as a pusher.

[0097] After the assembly process of one box 13 was thus completed, the developed box 13, as set at the highest stage of the second stocker 40b, is delivered to the assembly space 43 so that it is subjected to a similar automatic assembling process.

[0098] In this meanwhile, the first stocker 40a is raised by one step so that it arranges the box 13 of the next step at the highest stage for the next assembling process.

[0099] By repeating the processes thus far described, the numerous boxes 13 can be automatically assembled in the consecutive manner so that the transfer line 14 is consecutively supplied with the boxes 13 assembled.

[0100] Figs. 12 to 14 show a modification of the box 13. Specifically, this modification is made by forming a longitudinal slot 48 extending in the height direction of the box 13, in a suitable portion of the recess 39 of each of some side wall members such as the third side wall member 31 and the fourth side wall member 32, by forming rail portions 48a and 48b on the two side faces of the longitudinal slot 48, and by attaching a push-fixing member 49 to those rail portions 48a and 48b.

[0101] This push-fixing member 49 is provided with a body portion 50 slidably engaging with the rail portions 48a and 48b, a push bar 51 hinged to the body portion 50, and a stopper portion 52.

[0102] The aforementioned push bar 51 is so attached to the body portion 50 that when the third side wall member 31 and the fourth side wall member 32 are erected vertically with respect to the bottom plate member 28, it can turn on a pin 53 downward within a range of about 90 degrees from a generally horizontal state (perpendicular to the third side wall member 31) but not upward from the horizontal state.

[0103] In the vicinity of the pin 53, on the other hand, there is arranged a not-shown coil spring which always biases the push bar 51 horizontally.

[0104] Thus, when the box 13 is to be loaded with the newspapers, the push-fixing member 49 is arranged at a relatively upper position of the side wall member, as shown in Fig. 13.

[0105] When the newspapers 18 are loaded from the opening 15 of the box 13 in this state, the push bar 51 is turned downward while yielding to the weight of the newspapers 18 so that it raises no bar to the fall of the newspapers 18.

[0106] After a desired number of newspapers 18 were loaded, moreover, the knob 52a of the stopper

portion 52 protruded to the outside of the side wall member is depressed downward. Then, the surface of the newspaper 18 in the uppermost layer is pushed by the push bar 51. In this state, the knob 52a of the stopper is turned by 90 degrees to fix the body portion 50 on the rail portions 48 (Fig. 14).

[0107] By providing such push-fixing member 49 on the side wall member of the box 13, the position of the newspapers 18 in the box 13 can be stabilized to provide an advantage that the inside positional displacement can be effectively prevented. This advantage is prominent especially when the box 13 is loaded with a fraction of newspapers 18.

[0108] The push bar 51 of this push-fixing member 49 has a length sufficient for pushing the upper face of the newspapers loaded in the box 13, but it turns to fall down when the developed boxes 13 are to be stacked, so that it raises no obstruction to their stock.

[0109] Here, it is desirable to make a construction in which the push-down and turning actions of the aforementioned knob 52a are automated after the loading of the newspapers.

[0110] According to the newspaper distribution method or newspaper distribution system of the invention, the newspapers are distributed while being loaded in the repeatedly usable assembly type box, and the necessary information such as the address is also printed in the rewritable information display. As a result, any of consumables such as underlay sheets, address sheets, vinyl bags or vinyl bands is not incorporated so that the cost for purchasing those consumables can be reduced.

[0111] On the other hand, the newspaper distributor can be relieved from troubles or costs for disposing the aforementioned consumables at each distribution to lighten the load on the environment.

[0112] Since the newspapers are transferred while being received in the box 13 having the stable contour, on the other hand, there occurs no danger that the stack breaks on while being transferred, so that a danger of the newspapers being damaged can be avoided.

[0113] The adoption of the assembly type for the boxes raises advantage that their transportation and stock are facilitated.

10	newspaper distribution system
12	automatic box assembler
13	box
15	opening
16a, 16b	cover plate
17	newspaper loader
18	newspapers
24	address printer
25	information display
26	address reader
27	truck
28	bottom plate member
29	first side wall member
30	second side wall member
31	third side wall member
32	fourth side wall member
35	retaining members
42a	first roller
42b	second roller
42c	third roller
42d	fourth roller
48	rail portions
49	push-fixing member
50	body portion
51	push bar
52	stopper portion
53	pin

Claims

1. A newspaper distribution method comprising:

the step of assembling a reusable assembly type box;
the step of loading said assembled box with a necessary number of printed newspapers; and
the step of sorting and transporting said box to a necessary truck gate.

2. A newspaper distribution method according to claim 1 comprising:

the step of printing the surface of said box with information necessary for distributing said newspapers.

3. A newspaper distribution method according to claim 1 or 2 comprising:

the step of printing an information display, which is arranged on the surface of said box and can erase/print information a plurality of times, with information necessary for distributing said newspapers.

4. A newspaper distribution method as set forth in Claim 1, 2 or 3, comprising:

the step of transporting said box loaded with the newspapers to a destination or a newspaper distributor;
the step of developing at least one side of said box when the inside newspapers are to be taken out; and
the step of returning said developed box to the state before the assembly and recovering the returned box.

5. A newspaper distribution system comprising:

a reusable assembly type box;

an automatic assembler for assembling said box;

a newspaper loader for loading said assembled box with a necessary number of printed newspapers; and

means for sorting and transporting said box to a necessary truck gate.

6. A newspaper distribution system according to claim 5 comprising:

an address printer for displaying information necessary for distributing said box, on the surface of said box.

7. A newspaper distribution system according to claim 5 comprising:

an information display arranged on the surface of said box and capable of erasing/printing information a plurality of times; and

an address printer for printing the surface of said information display with information necessary for distributing said box.

8. An assembly type box for newspaper distributions, comprising:

a rectangular bottom plate member;

a first side wall member, a second side wall member, a third side wall member and a fourth side wall member made individually engageable with the four sides of said bottom plate member and each having at least one side turnably engaging with one side of said adjoining member;

assembly state holding means for fixing said individual side wall members in a state assembled vertically with respect to the bottom plate member; and a cover member for shutting an opening which is formed when said individual side wall members are assembled.

9. An assembly type box for newspaper distributions according to claim 8, comprising:

an information display for erasing/printing information a plurality of times.

10. An assembly type box for newspaper distributions as set forth in Claim 8 or 9, wherein it is made of an easily recycled synthetic resin.

11. An assembly type box as set forth in Claim 8, 9 or 10,

wherein any of said first side wall member, said second side wall member, said third side wall member and said fourth side wall member has rail portions extended, when said side well members are assembled vertically with respect to said bottom plate member, from the side of said opening to the side of the bottom plate member and provided with a push-fixing member,

wherein said push-fixing member includes a body portion engaging slidably with said rail portions, a push bar hinged to said body portion, and a stopper portion for fixing said body portion at an arbitrary position of the rail portions, and

wherein said push bar is so hinged to said body portion as to turn downward from a state vertical with respect to said side wall members but not upward and provided with bias means for biasing said push bar vertically with respect to said side wall members.

12. An assembly type box for newspaper distributions as set forth in Claim 8, 9, 10 or 11,

wherein said cover member includes a first cover plate hinged turnably to the leading edge of the first side wall member, and a second cover plate hinged turnably to the leading edge of the second side wall member arranged to confront said first side wall member,

further comprising shut state holding means for fixing the opening in a shut state with the first cover plate and the second cover plate.

13. An assembly type box for newspaper distributions as set forth in Claim 12, wherein said information display is arranged on the outer face of one of said first cover plate and said second cover plate.

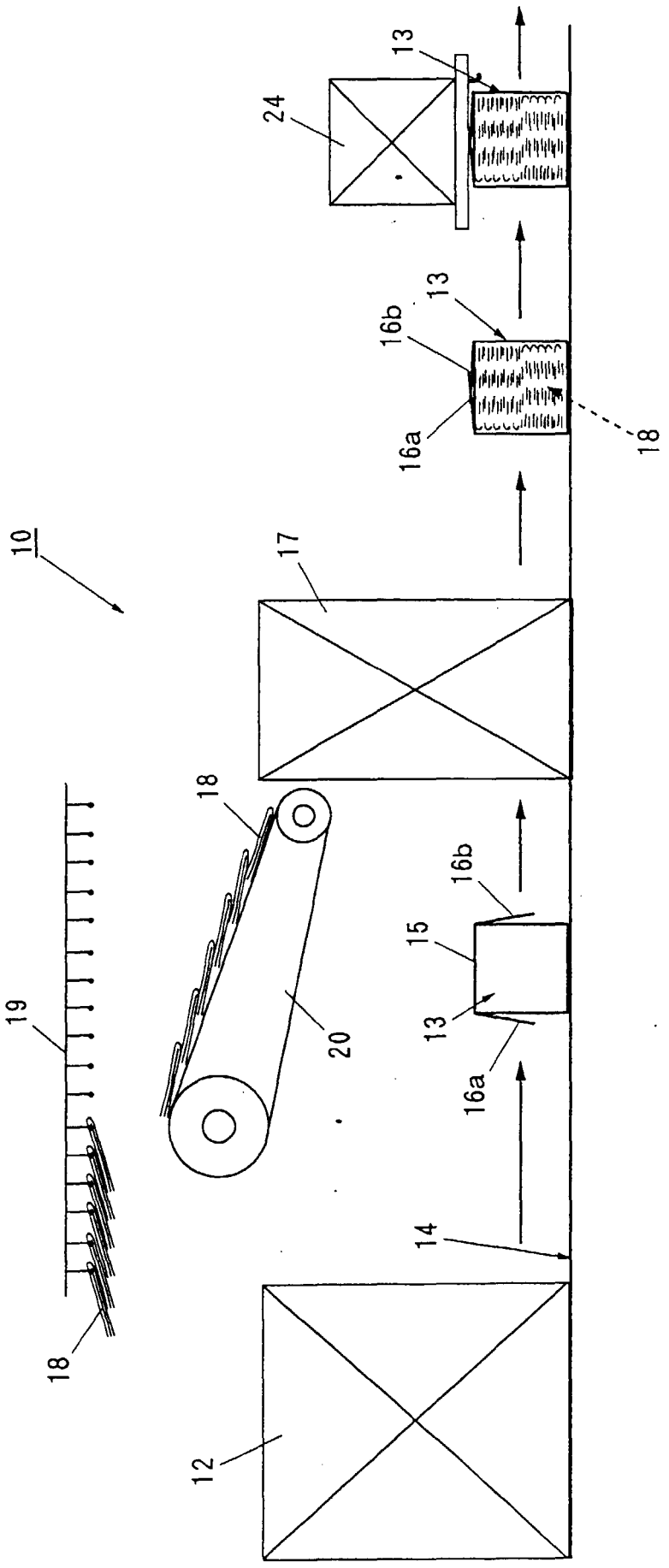


FIG 1

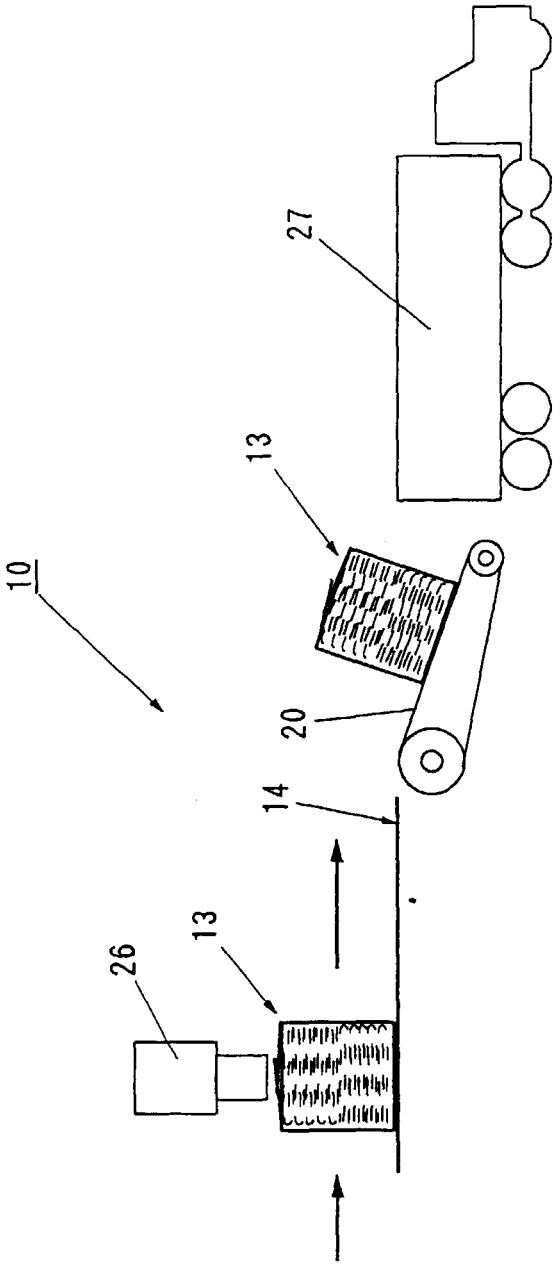


FIG 2

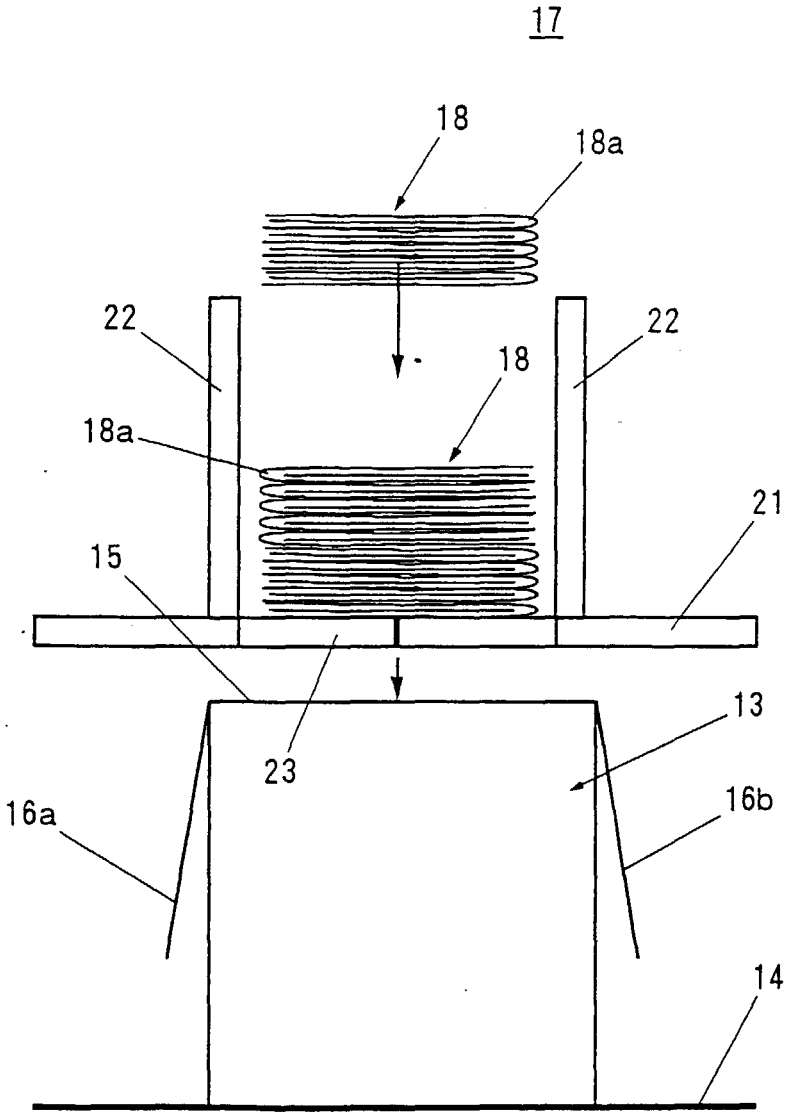


FIG 3

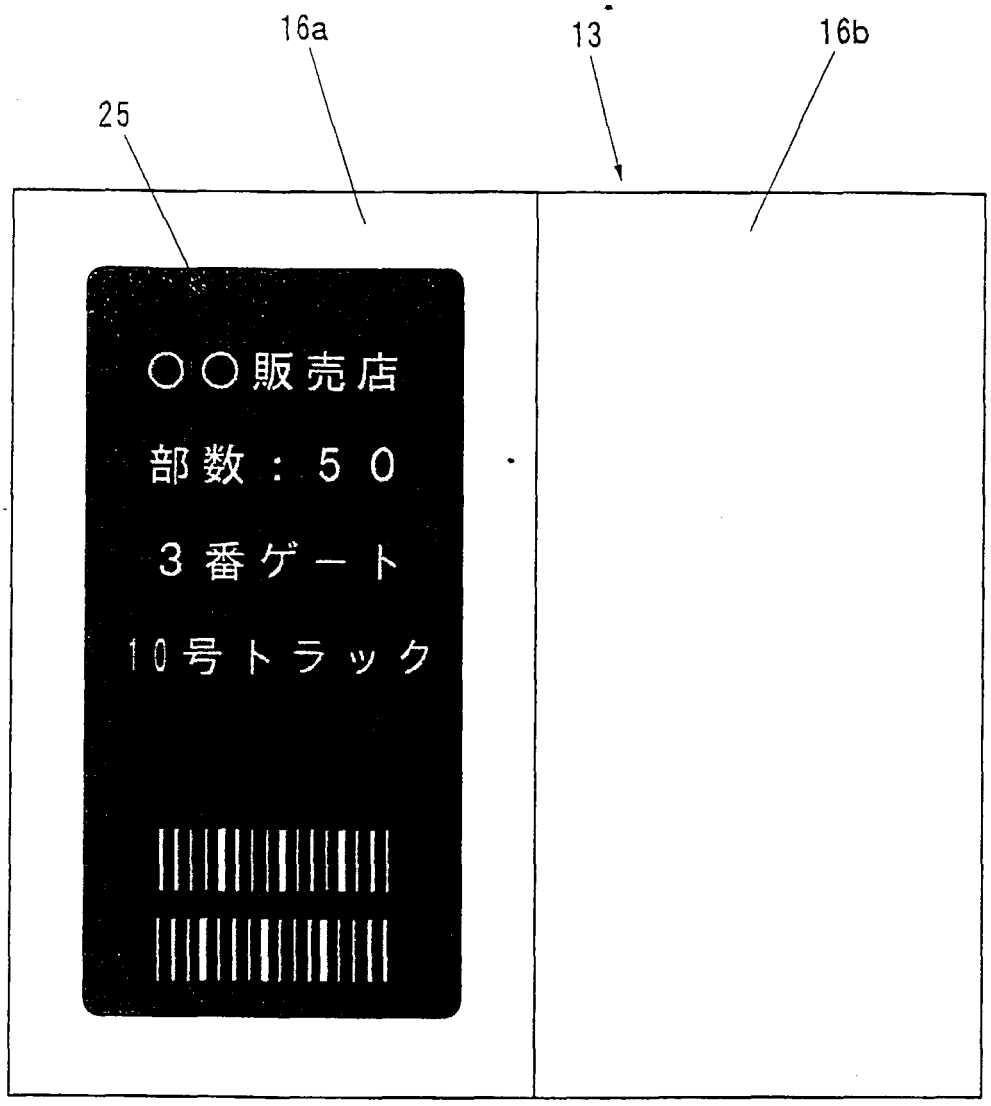


FIG 4

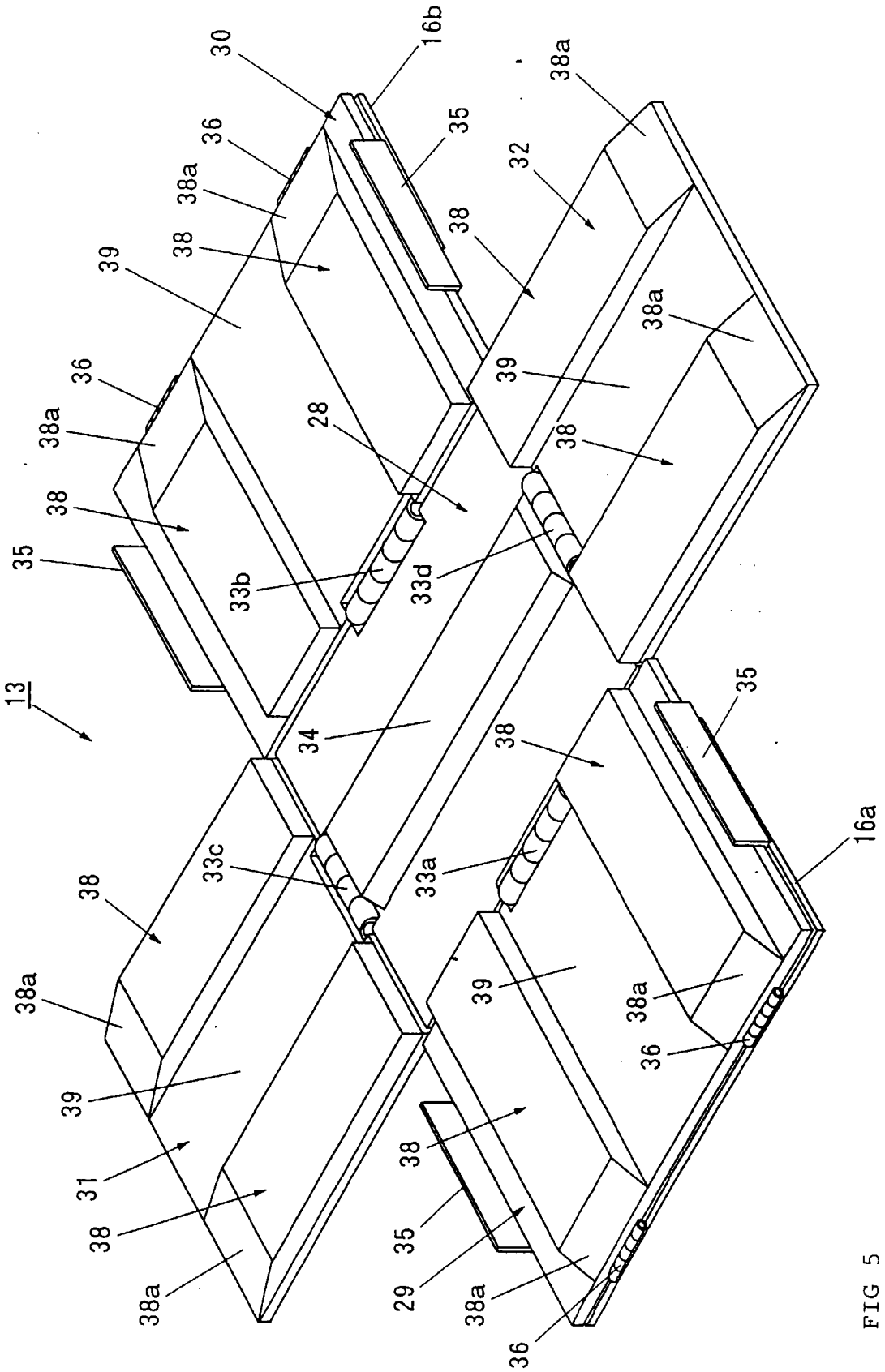

13
30
16b
38a
36
38a
38
35
32
38
39
38a
36
38a
39
28
38
38
35
33b
33d
34
38
35
38
33c
33a
16a
38
38a
39
39
38a
36
31
38
35
38
38a
29
38a
36

FIG 5

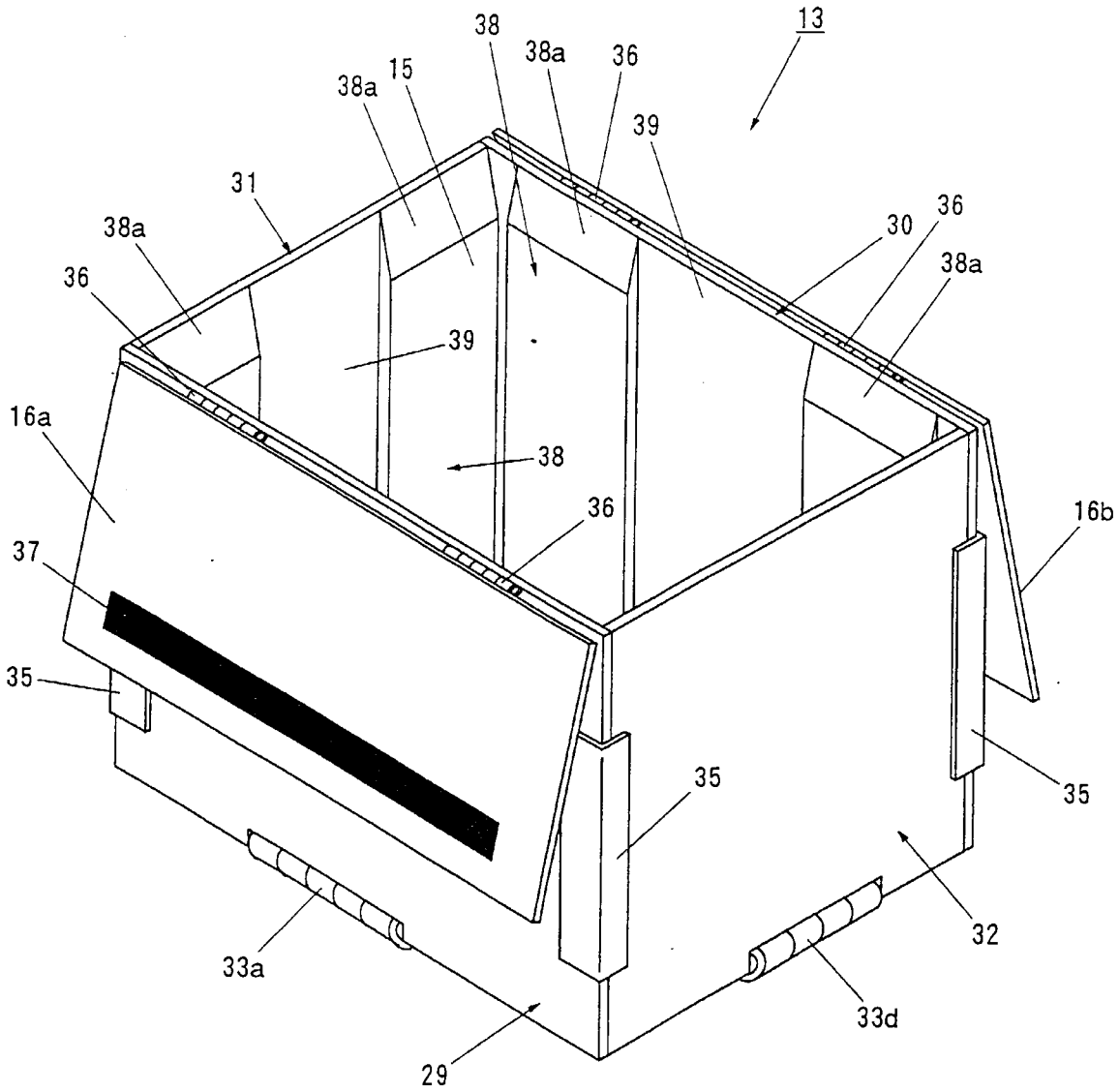

13
38
38a
36
15
38a
39
31
38a
36
30
36
38a
39
16a
38
36
16b
37
35
35
35
33a
32
33d
29

FIG 6

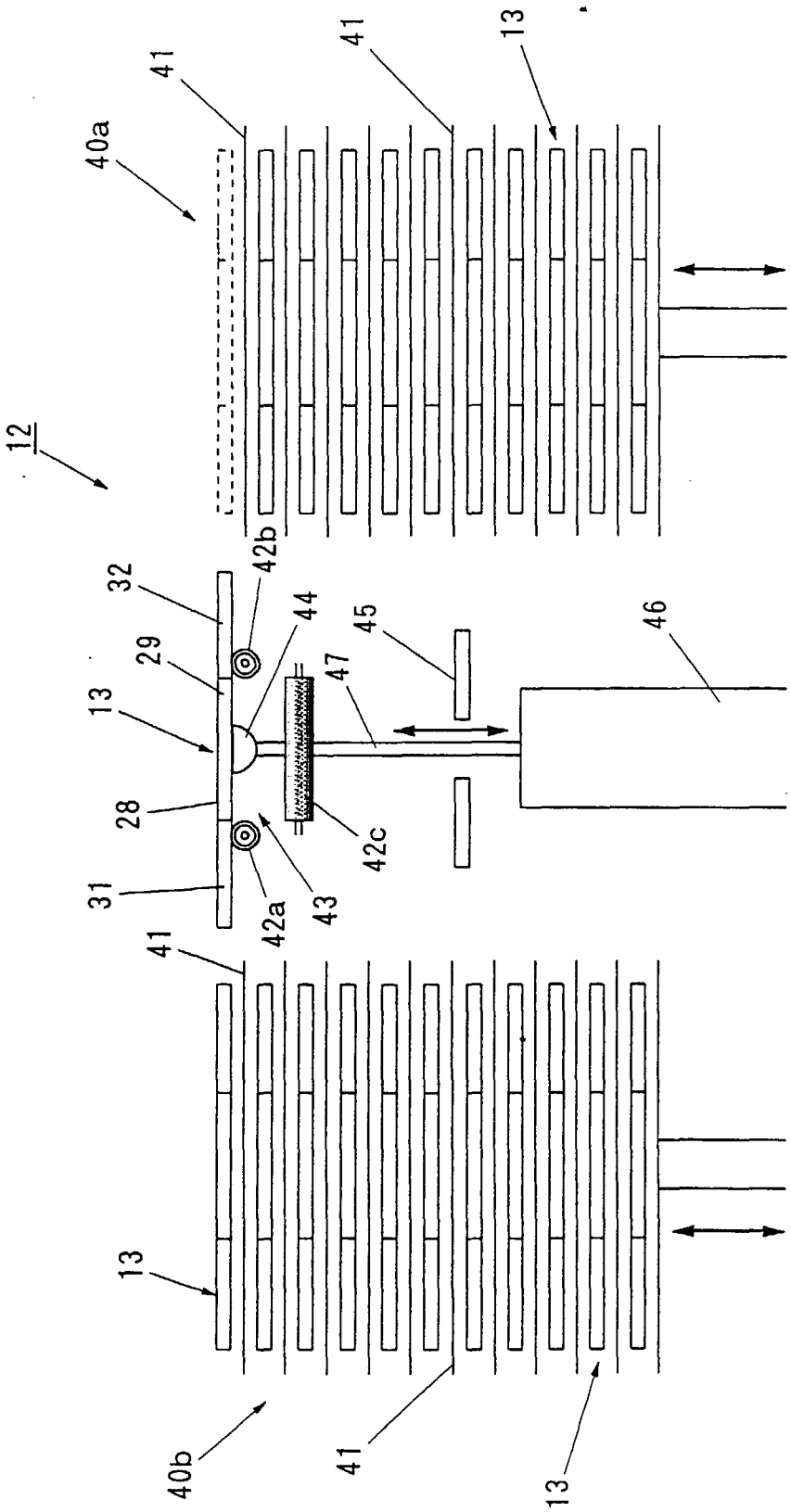
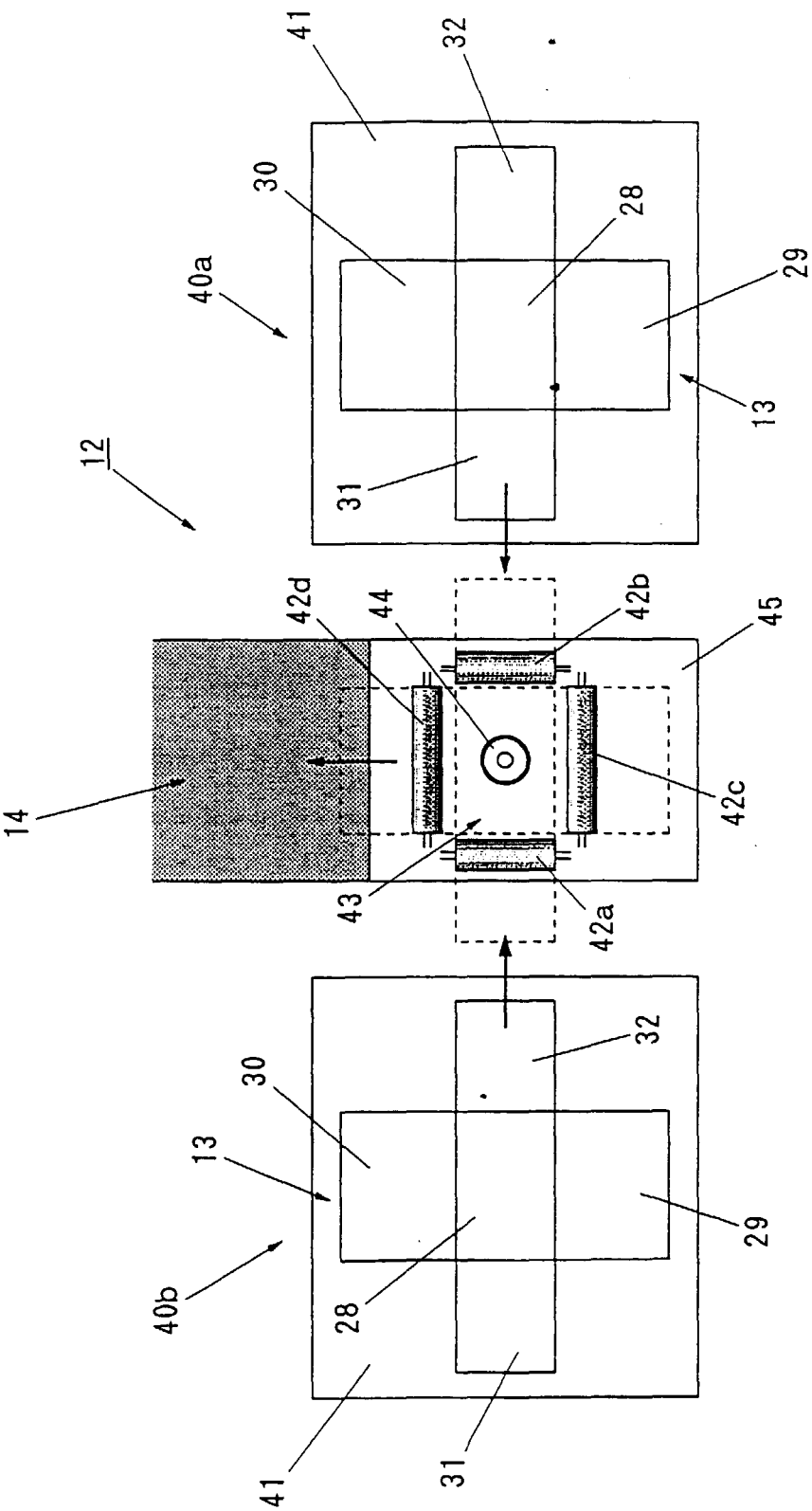

12
40a
41
41
13
42b
32
44
45
46
29
47
13
28
42c
31
42a
43
41
13
40b
41
13

FIG 7


41
32
30
28
40a
29
13
12
31
42d
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42b
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14
42c
43
42a
32
30
13
29
40b
28
41
31

FIG 8

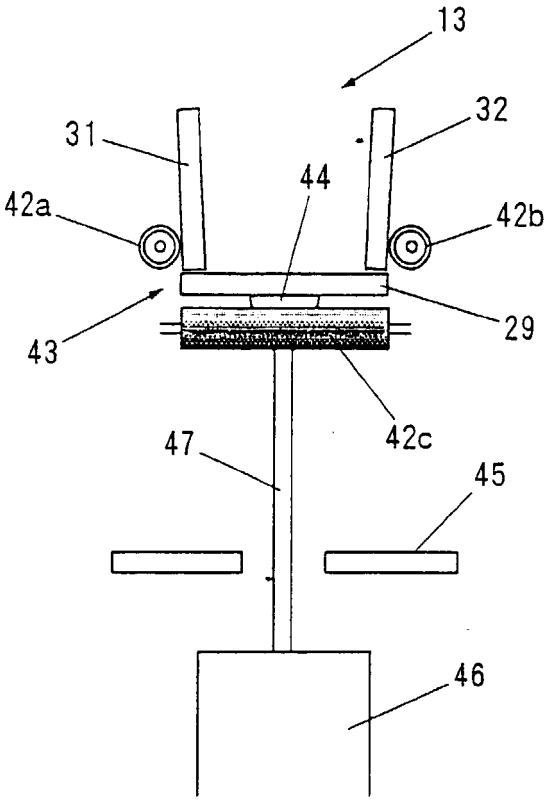
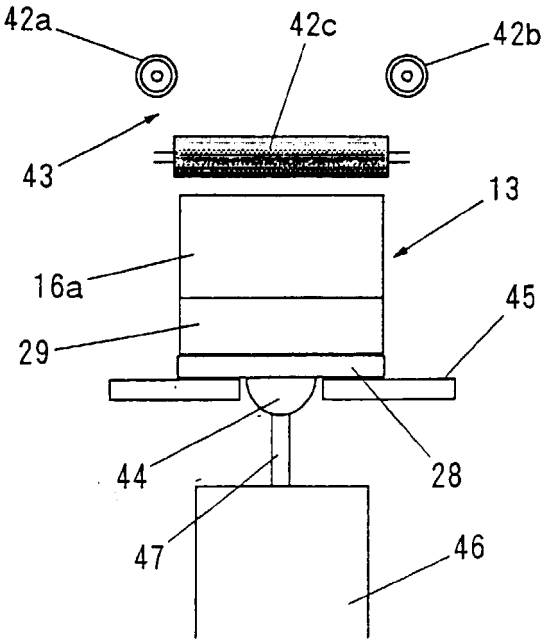

13
31
32
44
42a
42b
43
29
42c
47
45
46

FIG 9


42a
42c
42b
43
13
16a
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29
44
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47
46

FIG 11

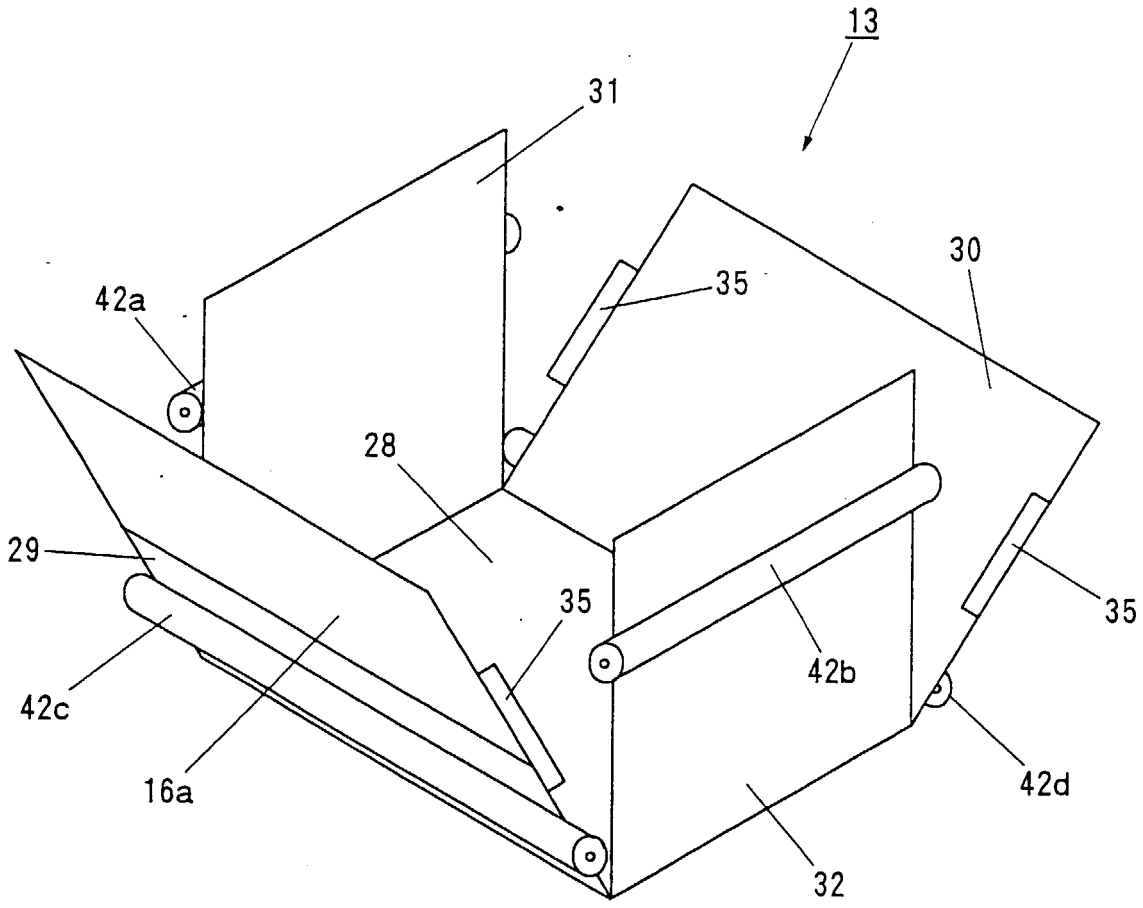

FIG 10

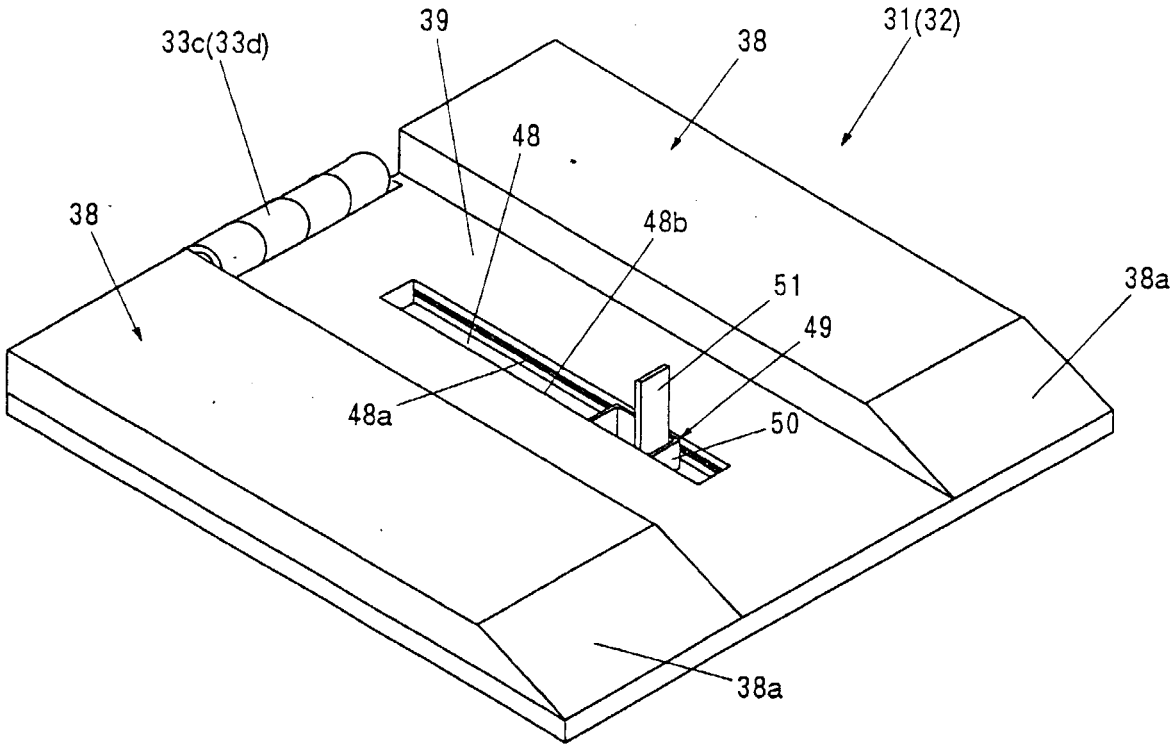

FIG 12

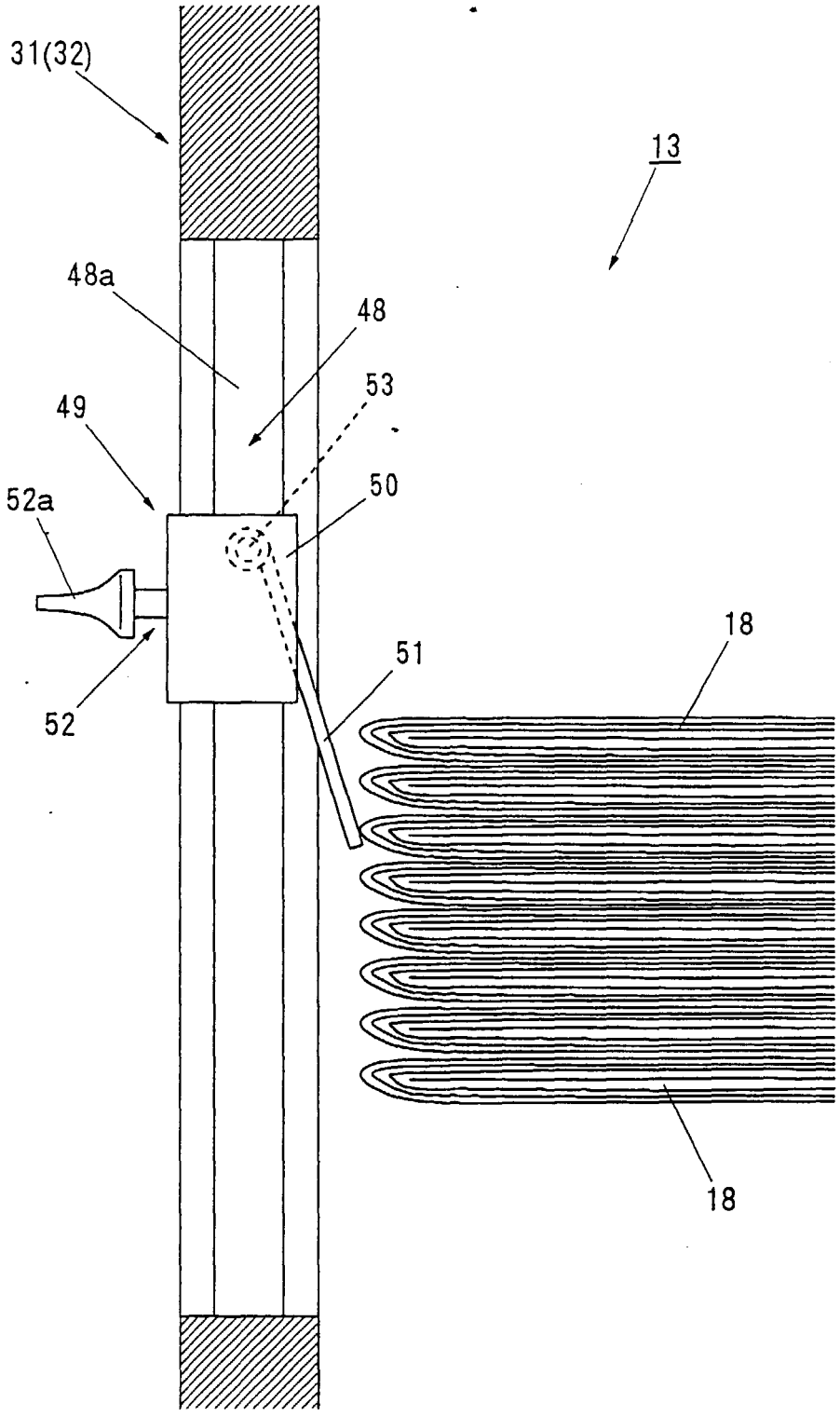

FIG 13

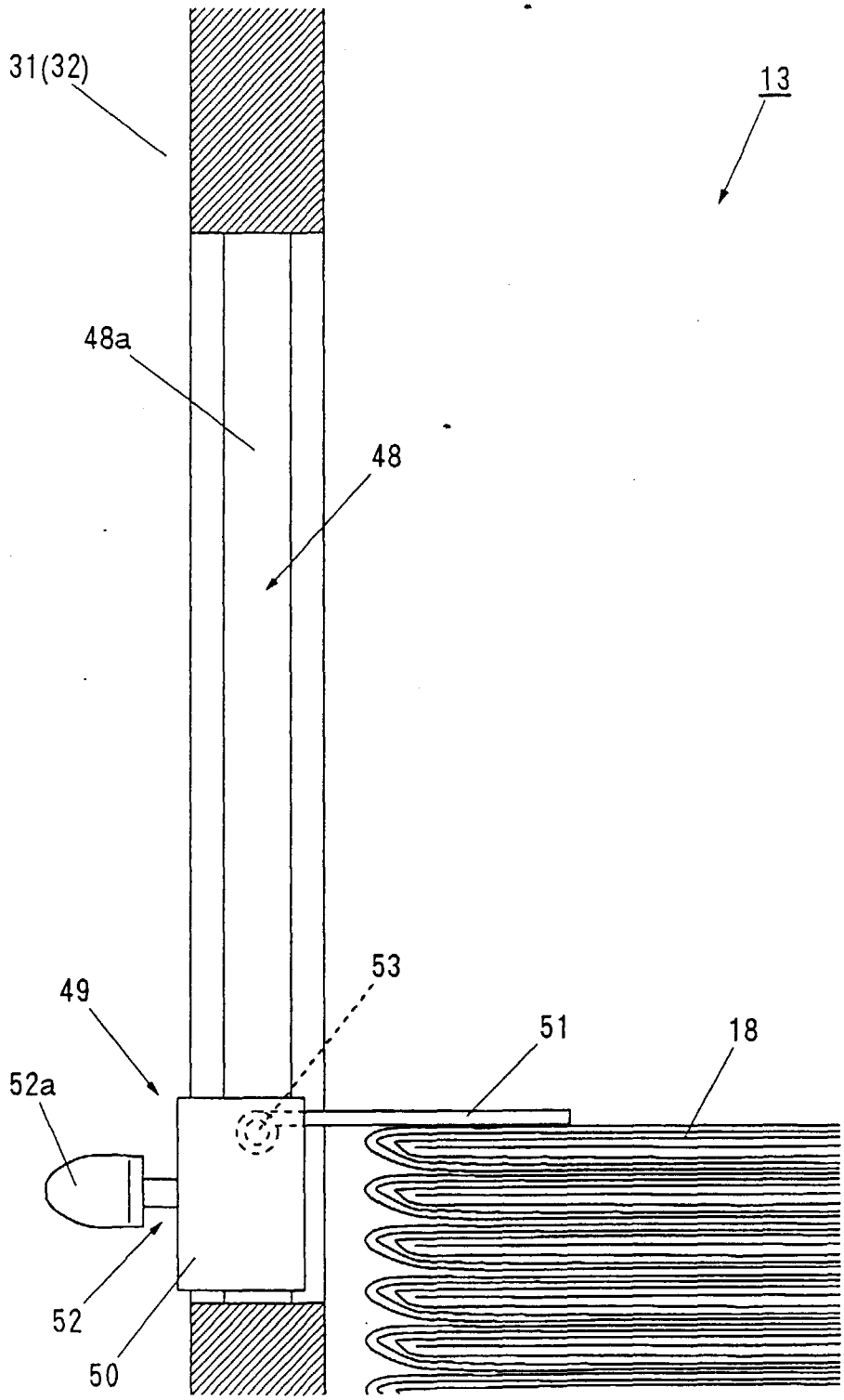

FIG 14

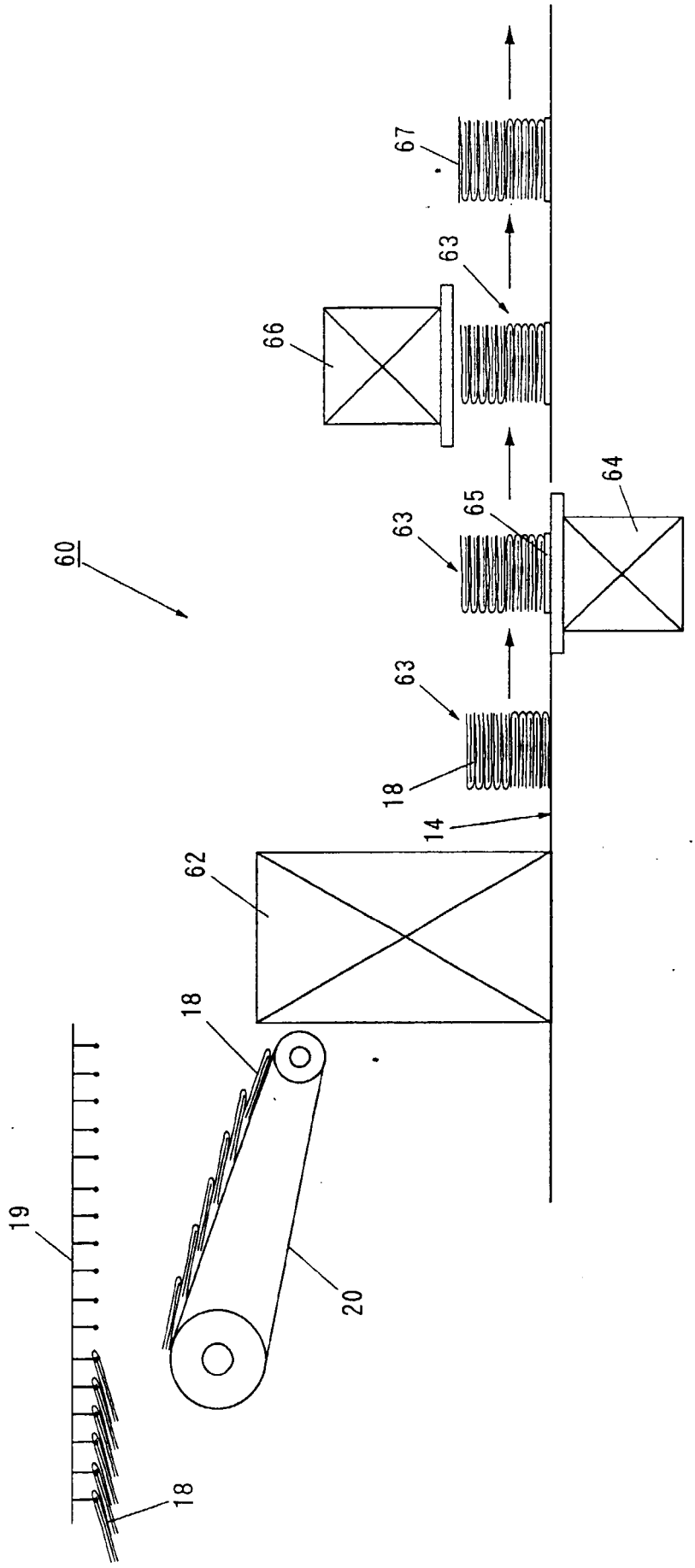

FIG 15

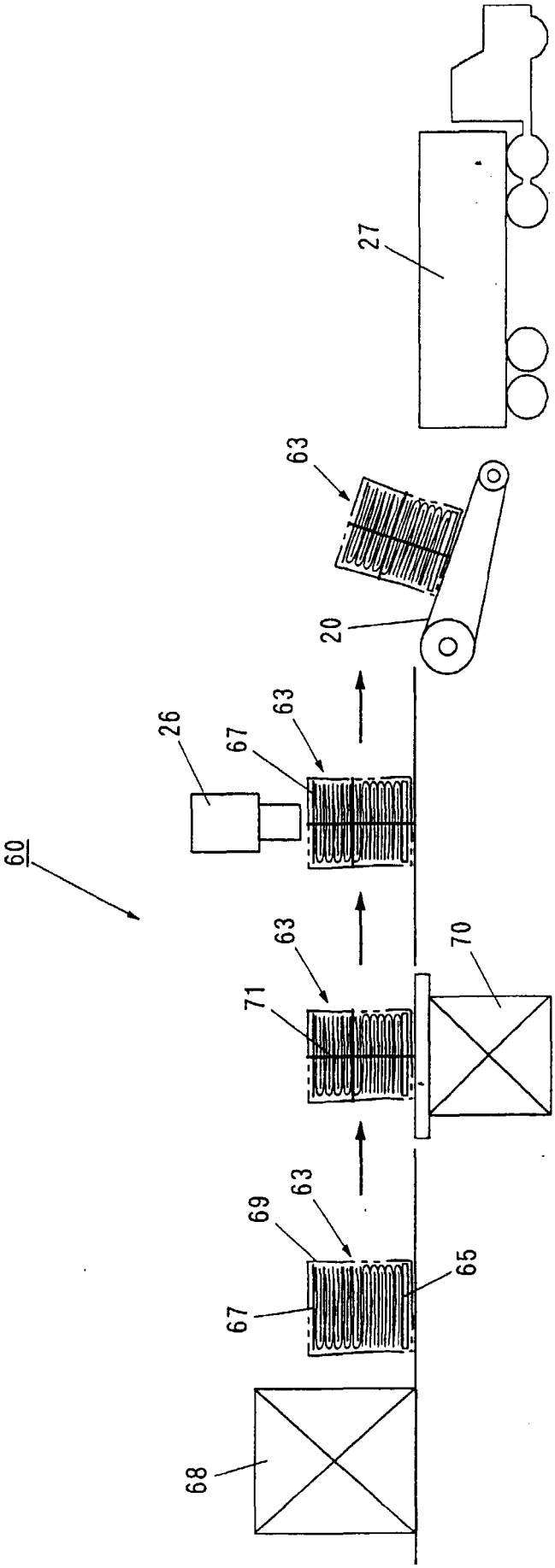

FIG 16

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 11 9909

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 4 015 404 A (ANIKANOV) 5 April 1977 (1977-04-05) * abstract; figures 1,2 *	1,5	B65B25/14 B65D6/18
X	FR 1 350 053 A (WEXLER) 22 April 1964 (1964-04-22) * the whole document *	8	
Y	US 3 148 822 A (YOCHUM) 15 September 1964 (1964-09-15) * the whole document *	8	
Y	FR 2 279 629 A (FRIEDRICH) 20 February 1976 (1976-02-20) * the whole document *	8	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65B
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	10 January 2000	Claeys, H

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 99 11 9909

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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10-01-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4015404 A	05-04-1977	CH 552511 A	15-08-1974
		DD 121905 A	05-09-1976
		DE 2416916 A	31-10-1974
		FR 2225339 A	08-11-1974
		GB 1465610 A	23-02-1977
		IT 1054165 B	10-11-1981
		SE 388400 B	04-10-1976
FR 1350053 A	22-04-1964	NONE	
US 3148822 A	15-09-1964	NONE	
FR 2279629 A	20-02-1976	DE 2436254 A	12-02-1976
		BE 831710 A	17-11-1975
		CA 1009996 A	10-05-1977
		IT 1040088 B	20-12-1979
		JP 1167996 C	30-09-1983
		JP 51036374 A	27-03-1976
		JP 57055492 B	24-11-1982
		NL 7508695 A,B,	29-01-1976
		NL 8006800 A,B,	31-03-1981
		US 4062467 A	13-12-1977

EPO FORM P0459

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