

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 959 008 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
24.11.1999 Bulletin 1999/47

(51) Int. Cl.⁶: B65B 59/04

(21) Application number: 99109728.8

(22) Date of filing: 18.05.1999

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: Spada, Valter
40043 Marzobotto (BO) (IT)

(74) Representative:
Karaghiosoff, Giorgio Alessandro, Dipl.-Phys.
Via Pecorile 27/B
17015 Celle Ligure (Savona) (IT)

(30) Priority: 22.05.1998 IT SV980033

(71) Applicant: SASIB TOBACCO S.p.A.
40128 Bologna (IT)

(54) Modular manufacturing machine

(57) The invention relates to a manufacturing machine, in particular a machine for processing tobacco or for packaging cigarettes or similar, of the modular type, in which a bed (1) is provided in shape of a table that is formed by a plurality of support frame modules (101, 201, 301) made in shape of a table with dimensions substantially the same or of the same order of magnitude and that can be fixed in a movable manner to

each other, while a plurality of operating, control, drive and supply and guide units (2, 3, 102, 103, 202, 203, 302, 303) are provided for the supply and control installations that are made in form of prefabricated modular units and that have couplings prearranged to mate with connecting means these also prearranged on support frame modules (101, 201, 301).

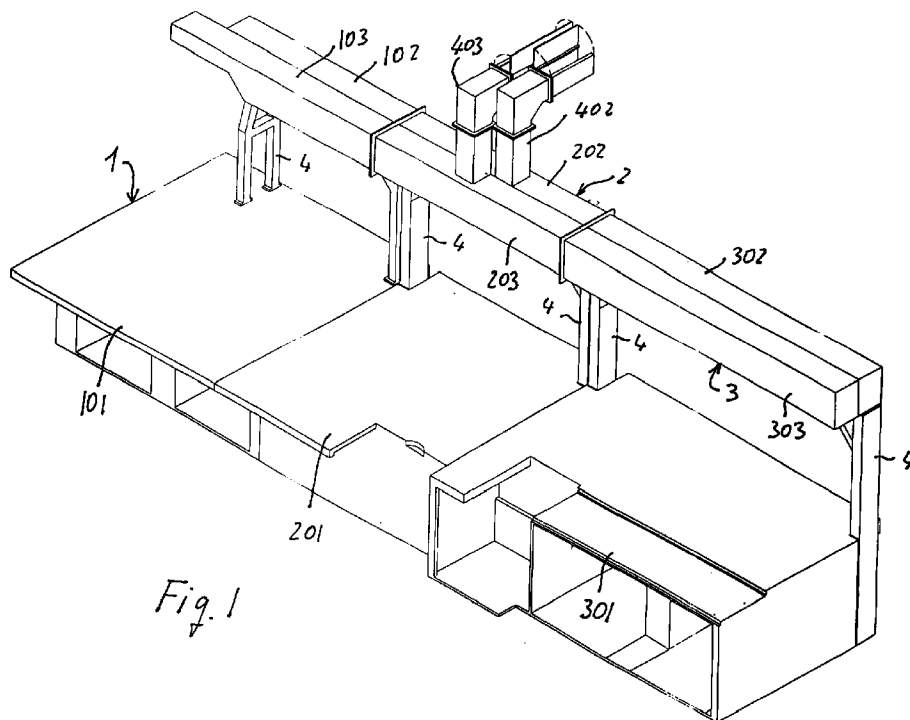


Fig. 1

EP 0 959 008 A1

Description

[0001] The invention relates to a manufacturing machine, in particular a machine for the processing of tobacco or for the packaging of cigarettes or similar, of the modular type.

[0002] The aim of the invention is the one to create a machine of the above-mentioned type with features of modularity such that take into consideration diverse operational units that are foreseen in the same machine allowing for a subdivision in modules according to a logic that covers at least in substance the operational plans and that allow to load the manufacturing machine with ease into containers, allowing to minimize the number of the same thanks thanks to a better use of the loading volume available.

[0003] The invention aims at obtaining the above-mentioned purposes thanks to a modular construction that at the same time makes the manufacture and assembly of the machine less costly and more flexible.

[0004] From the patent application EP 816714 of the same holder is known to realize a modular machine in such a manner that the same be formed by a bed in shape of a table with prearranged couplings for the operating, drive and control units, made in form of small boxes, the couplings of the small boxes being prearranged between each other and the table.

[0005] The invention aims at perfecting this type of construction.

[0006] The invention attains the above-mentioned purposes with a manufacturing machine of the type described at the beginning in which the bed is formed by a plurality of modular support frames made in shape of a table with dimensions substantially equal or of the same order of magnitude and that can be fixed in a movable manner to each other, while a plurality of operating, control, drive and supply and guide units for the feeding and control installations are provided that are made in form of modular prefabricated units and that have couplings prearranged to mate with coupling means these also prearranged on modular support structures.

[0007] Each modular support structure in form of a table is associated with preset modular prefabricated units that can be at least for the majority of the said modular units assembled beforehand on their corresponding modules in their substantially final position before the positioning and coupling of the frame modules to each other, the operating units being connected to one other and supported by adjacent frame modules in form of a table positioned in the correct working position, so that upon the relative positioning and connection of the framework modules to each other the operating units come to be in their relative substantially correct working position, with exception for possible positioning tolerances. These will have to be eventually corrected during the phase of assembly to each of the individual modular frameworks in shape of a table.

[0008] According to one perfecting, the dimensions of the individual framework modules equipped with the modular units fitted on the same are commensurate to the volumetrics of the containers, in order to be able to house the maximum possible number of the said frame modules with the pre-assembled modular units in the smallest number of containers.

[0009] Advantageously the machine is equipped with at least one channel for housing the cables, conduits or other link-up parts of the supply, control installations and of other type that extends itself in direction of the longitudinal extension of the machine and that at least one channel is made in modular segments each of which is connected to a modular framework in shape of a table, as the individual channel segments can be connected in a movable manner to each other upon their assembly to each other of the bed frame modules in shape of a table.

[0010] Advantageously for this purpose, the channel is made in form of a longitudinal tubular part suspended in the rear top section of the total dimension in height of the machine, each segment of the channel being supported by a pair of vertical risers connected on the sides of the frame modules in shape of a table of reciprocal connection and on the end sides of the external modules.

[0011] Advantageously the channel extends itself along the entire rear side of the machine, while a cabinet containing the control and drive modules is provided that is also modular and with a longitudinal extension parallel to the one of the framework in shape of a table in the assembled condition.

[0012] The cables and conduits and the other lines of supply, control and for the execution of sending or the transmission and reception of other signals or fluids, advantageously branch out from a distribution module that is foreseen in a segment of a channel connected to an intermediate framework module in shape of a table.

[0013] Preferably the distribution box itself is formed by said segment of channel from which depart the branching conduits to the cabinet.

[0014] According to a further feature, the housing of the cables, conduits or other supply, control lines, etc. is foreseen in the disassembled condition of the individual framework modules in shape of a table and that is formed by the distribution segment of the guide channel of the conduits, the cables and of the lines, and inside of which during transport are folded in the sections of the cables, of the conduits and other lines designed to run in the additional segments of the channel associated with the additional modules of the frame in shape of a table to connect themselves to the modular units assembled on the same.

[0015] This realization has the remarkable advantage of not having to provide for branching out the lines during the assembly of the machine after transport. The branches can be made in a fixed manner during the manufacture and assembly of the intermediate module

the channel segment of which forms the distribution box. During the assembly of the machine, after having connected the individual frame modules in shape of a table to each other and the associated segments of the channel, it is only necessary to fold back the parts of the cables and conduits designed to reach the modular units associated with the additional frame modules in shape of a table, that is to other modules of the machine passing them through into the additional segments of the channel and connecting the plugs or the couplings to the operating units provided.

[0016] According to a further perfecting, the machine has a framework for the protection screens and parts or for possible other guards that is itself also made in a modular manner, the individual modules being subdivided correspondingly to the frame modules in shape of a table, analogous to the channel for the cables and conduits.

[0017] A particular form of execution foresees that each framework module in form of a table has a support frame for the screens, the guards or similar means of protection and that the support frames of said screens or similar of protection and/or the screens themselves modularly complete each other, in the assembled condition one to the other of the frame modules in shape of a table.

[0018] Each modular support frame of the protection screens or similar associated with each modular framework in shape of a table has furthermore its own hinged means to move into open or closed position part of the screens, or similar in shape of a wing or door.

[0019] According to an advantageous realization the protection screens or similar are made in the shape of a part suspended projecting on the frame in shape of a table and have such a span as to cover the top side and the service one on the front associated with the corresponding frame module in shape of a table.

[0020] In this case, each screen associated with each modular frame in shape of a table is made with transversal sections substantially in shape of an L with a substantially horizontal top branch and a front branch substantially vertical that join together in a rounded manner, while the free end of the top horizontal branch is hinged to a mechanism of articulation supported by a segment of a beam substantially parallel to the segment of the channel for the cables and conduits and the lines or to the said segment of the channel itself.

[0021] The mechanism of articulation, furthermore is formed in shape of an articulated parallelogram of such dimensions, that the lifting of the screen from the closed position to the open one takes place substantially in the vertical direction, or else substantially parallel to the vertical branch of the said screen for a section corresponding to the mean height of a human being, while in the remaining part it also move additionally transversally rearward to also free the top part of the units associated with the corresponding modular frame in shape of a table.

[0022] The invention has additional features that are subject of the claims below.

[0023] The features of the invention and the advantages deriving therefrom are better evidenced in the following description of a non limiting executive example illustrated in the attached drawings, in which:

The Figs 1 and 2 show two perspective views from different angles one on the front side and the other on the rear side of a machine formed by a plurality of modular bed frames in shape of a table according to the invention.

The Fig. 3 is a view analogous to the Fig. 1 but with a protection part in shape of a screen or similar associated with a modular frame in shape of a table, while the adjacent modular frames have only the means of articulation of the protection screen.

The Figs 4 to 6 illustrate a lateral view on a machine according to the Fig. 3 with the protection screen in closed position in an intermediate position of opening and in open position.

[0024] With reference to Fig. 1 a machine according to the invention, in particular a machine for processing tobacco and more specifically a machine for packaging of cigarettes has a support bed of the individual operating units made in form of a table 1. This frame in shape of a table 1 is of the type as for example described in the patent EP816714 of the same holder. In this construction, the operating units, the transmission units and the drive units are realized prefabricated each in shape of an independent modular assembly with its own support frame or box, that is provided with prearranged mounting means to, on or in housings of the frame in shape of a table.

[0025] In this case, in the example illustrated the modular operating, transmission and drive units are not illustrated in detail, as these are not part of the present invention. The frame in shape of a table is instead subdivided into individual modular sections 101, 201, 301. The subdivisions are made transversally to the longitudinal extension of the machine, but this is only an example and does not constitute a limiting feature, as according to the topology of the machine it is possible to foresee also other types of subdivisions.

[0026] Each module 101, 201, 301, of the framework in shape of a table is therefore designed to be secured in a movable manner to the adjacent module. The clamping can be made thanks to any means as screw type means and can be provided also with truing means such as truing dowels cooperating with truing holes, eventually the dowels and holes being partially conical and provided with automatic truing surfaces such as inclined planes, or similar.

[0027] The lines of subdivision between the individual modules 101, 201, 301 of the frame in shape of a table 1 are preferably made in such a manner to allow the assembly on said module of the major part of the mod-

ular operating, transmission and supply units and eventually also following a certain logic of the manufacturing process the machine has to carry out. Furthermore, the subdivisions between the modules 101, 201, 301 of the frame in shape of a table are chosen in such a manner, that the dimensions of the same are suited to the dimensions of the loading volume of the containers, in that it is possible to load the machine in the smallest number of containers possible and to exploit in full the volumetric load capacity.

[0028] Thanks to these features, each module 101, 201, 301 of the frame in shape of a table 1 can be prefabricated in the factory of the major part of the modular operating, transmission and drive units and can find place in a container as a placement and loading of the same is possible independently from the remaining modules of the frame in shape of a table.

[0029] Generally the standard dimensions in height and width of the different packagings for the different means of the transport are in the order of magnitude of approximately 200 cm to approximately 240 cm, while in order to allow a sufficient ease of handling the packagings can not exceed 500 cm in length. In this case, for example according to the different requirements it is possible to foresee modules with a depth of approximately 200 cm and that in length are a submultiple of approximately 500 cm dependent upon the number of modules.

[0030] The loading or packaging of the modules of frame in shape of a table 101, 201, 301 separately of each other is certainly facilitated, while the assembly of the machine in the stationing of utilization is facilitated by the fact that the same is prefabricated. Apart from these simple reasons, also to be considered should be that parts of smaller dimensions and mechanically separated from each other are less subject to deformations and mechanical stresses during transport. Therefore with a single and rigid frame the parts preassembled before transport, upon arrival, may be found to have shifted or not to be suitably adjusted. In the machine with a structure according to the invention, the individual operating units on the individual modules of the frame in shape of a table have to be adjusted in any case relative to each other and in each case the structure itself not in one piece considerably simplifies these operations.

[0031] With reference to a further feature of the invention, as well as the frame in shape of a table subdivided into modules 101, 201, 301, the machine according to the invention has at least one channel, in particular two channels of distribution of the cables, conduits or other lines of supply, control or for other functions. This channel or channels 2, 3 extend themselves advantageously in a position of non interference and in a preferential manner along the rear longitudinal side of the machine, especially in an upper position, or in any case in the area of the maximum top dimensions of the machine.

[0032] The distribution channels 2, 3, are supported in

this case by risers 4 that are provided in pairs on the opposite end sides of each module 101, 201, 301 of the frame in shape of a table 1. Therefore adjacent modules 101, 201, 301 have also adjacent risers 4. The risers 4 on the adjacent end sides of reciprocal clamping of the modules of the frame in shape of a table 101, 201, 301, are furthermore made in such a manner to form together one column. The distribution channels 2, 3 are themselves also made modular as they are formed by individual segments 102, 103, 202, 203, 302, 303 of a length corresponding to the dimensions of the associated module 101, 201, 301 of the frame in shape of a table 1. Therefore each module of the frame in shape of a table 101, 201, 301 has preassembled on the same in addition to the modular operating units of transmission and of drive also its own section of the channel or channels of distribution.

[0033] The branchings 402, 403 from the channel or channels 2, 3 to a cabinet containing the control electronics and other drive and control units, as well as eventually the generators are provided in correspondence to one of the modular segments 202, 203 of the channels 2, 3, preferably in correspondence to a modular segment of the channel 202, 302 associated with a module 201 of the frame in shape of a table in intermediate position. The volume of the internal space of the channels or in particular eventually only of the segments 202, 302 equipped with the branchings 402, 403 is such to house in disassembled condition of the modules 101, 201, 301 of the frame in shape of a table 1 and therefore of the segments of the channel 102, 202, 302, 103, 203, 303 in a position folded back on themselves also the cables and the eventual control supply lines and/or for other purposes that in the assembled condition of the channels 2, 3 extend themselves into the segments 102, 302, 103, 303 of the modules 101, 301 of the frame 1 in shape of a table adjacent to the intermediate one 201 of which the channel segments 202, 302 have the branchings 402, 403. In this manner, it is possible to reduce to a minimum the sectioning of the cables and of the conduits and furthermore to prearrange the same in the channel segments 202, 302 associated with the intermediate module 201 of the frame in shape of a table 1. During assembly, therefore it is sufficient to fold out of the segments 202, 302 of the channel 2, 3 the parts of the cables and of the conduits that have to extend themselves into the adjacent segments 102, 103, 302, 303, to house these in said segments and connect the end connectors of the cables and/or conduits to the corresponding operating units and/or of control. The channels 2, 3 or rather the modular segments that form them can be open on top or equipped with top covers both whole as well as segmented corresponding to the modular segments of the channel 2, 3 and that can be movable, for example foldable, or in any case removable.

[0034] A movable cover 6 is fixed to a longitudinal beam that is substantially segmented corresponding to

the modular segments of the channel 2, 3 and is parallel to the channel or channels 2, 3 itself and substantially extends itself at the level of said channels, or is advantageously formed by the same channels 2, 3. Also this cover 6 is made modular, or rather is formed by individual covering segments that complete each other in order to form a single cover and that are divided between each other in a manner corresponding to the modules 101, 201, 301 of the frame in shape of a table 1. Each module 101, 201, 301 of the frame in shape of a table 1 has therefore its own cover section 205. This one can also be fixed beforehand to the corresponding part of the beam of the channel 201, 301, 202, 302, 103, 303, before the reciprocal assembly of the modules 101, 201, 301 of the frame in shape of a table 1.

[0035] With regards to the rear and top position of the support beam of the segments 205 of the cover 5, the said cover 5 and the corresponding modules are made in a shape substantially in form of an L with a branch 305 substantially horizontal and on top that covers the machine on the top and a vertical branch 405 that covers the front part and that can extend itself up to the edge of the plane of the modules 101, 201, 301 of the frame in shape of a table 1 or if necessary down to the floor.

[0036] Advantageously at least part of the segment of the cover, preferably the entire cover segment is fixed to the corresponding segment of the beam or channel 103, 203, 303, in an upwards turnable manner. In particular, the cover segments 205 are supported projecting from the front side of the segment of the beam or of the channel 103, 203, 303 and are articulated in an oscillating manner around a horizontal axis.

[0037] To be noted is that in the closed position, the cover segments 205 do not exceed the total dimension in height defined by the top side of the channel 2, 3. Advantageously the cover segments 205 are further articulated projecting on the front side of the segment of the beam or of the modular segment of the channel 103, 203, 303 thanks to a device of articulation in form of an articulated parallelogram overall indicated with 7 and that has a mounting plate 107 carried projecting by a pair of arms of articulation 207, 307 provided on each head of the plate and articulated respectively in correspondence to the front edge and the rear one of the said plate 107, while the opposite extremities of the arms 207, 307 are articulated in vertically distanced points 407, 507 on the front side of the corresponding segment of the beam of the channel 103, 203, 303. The motion of opening and closing can be obtained in different ways, for example by means of linear actuators 8 positioned as indicated in Fig. 3 and that act between the plane of the corresponding module 101, 201, 301 of the frame in shape of a table 1 and the horizontal internal branch of the cover segment 205 or thanks to motors that drive one of the axis of articulation of the device of articulation 7. It is possible to also provide opening and closing shock absorbers.

[0038] The mounting plate 107 extends itself for substantially the entire length of the cover segment 205 and is substantially horizontal in the position of closure of the cover 5. The cover segments 205 can be mounted in a movable manner on the said plate 107 in any which way.

[0039] In the Figs 4 to 6, a transversal section of a module 101, 201, 301 of the frame in shape of a table 1 is illustrated, with the columns 4, the channel 2, 3 or a generic beam and with the corresponding cover module 205. As is evidenced the total dimension in height of the machine is calibrated on the mean height of a man with his arm raised and furthermore, the fulcra of the device of articulation 7 are illustrated and with dotted lines the arms 207, 307 of the same. The length of the arms and the position of the fulcra is such, that during the upward angular movement of the cover module 205, the vertical branch of the same carries out at least for part of the motion a movement substantially rectilinear or vertical or in any case substantially parallel to itself, or with a very much reduced component of movement outward in the direction of the front of the machine. The outward movement takes place only and in a limited dimension at the end part of the angular motion in direction of opening of the cover segment 205. To limit the front dimension towards the outside, besides, the long section of the free bottom edge of the cover segments 205 is slightly folded back inward for a certain length of the vertical extension of said vertical branch of the cover 5. This type of opening motion of the cover 5, allows to limit the dimension required by the machine, as well as to avoid danger for the servicing personnel.

[0040] Naturally, the invention is not limited to this described and illustrated, aboveall constructively, the whole without abandoning the informative principle described above and claimed below.

Claims

1. Manufacturing machine, in particular a machine for processing tobacco or for packaging of cigarettes or similar, of the modular type, characterized by the fact that it has a bed (1) in form of a table that is formed by a plurality of modules of a support frame (101, 201, 301) made in shape of a table with dimensions substantially equal or of the same order of magnitude and that can be clamped in a movable manner to each other, while a plurality of operating, control, drive and supply and guide units (2, 3, 102, 103, 202, 203, 302, 303) are provided for the supply and control installations that are made in form of prefabricated modular units and that have couplings preset to mate with clamping means these also preset on modular support frames (101, 201, 301).
2. Machine according to the claim 1, characterized by the fact that each module (101, 201, 301) of the

support frame in shape of a table (1) is connected to prearranged prefabricated modular units that can be at least for the majority of the said modular units assembled beforehand on the corresponding module (101, 201, 301) of the frame (1) in their substantially final position before placement and connection of the frames to each other, the operating units being cooperating with each other and supported by adjacent frame modules (101, 201, 301) positioned in their correct work positioning, whereby upon the relative placement and connection of said modules (101, 201, 301) of the frame (1) to each other, the operating units will be in the substantially correct relative working position, with exception of possible tolerances of positioning.

3. Machine according to the claims 1 and 2, characterized by the fact that the dimension of the individual modules (101, 201, 301) of the frame (1) equipped with modular units assembled on the same are commensurate to the volumetric dimensions of the containers, in order to be able to house the greatest possible number of said modules (101, 201, 301) of the frame (1) with the preassembled modular units in the smallest number of containers.
4. Machine according to one or more of the preceding claims, characterized by the fact that it is provided with at least one channel (2, 3) for housing the cables, conduits and other parts connecting the supply, control or other kind of installations that extends itself in the direction of the longitudinal extension of the machine and the same at least single channel (2, 3) is made in modular sections (101, 103, 202, 203, 302, 303) each of which is associated with a module (101, 201, 301) of the frame (1) in shape of a table, the individual segments of (102, 103, 202, 203, 302, 303) being connectable in a movable manner to each other upon assembly to each other of the modules (101, 201, 301) of the frame (1) in shape of a table.
5. Machine according to one or more of the preceding claims, characterized by the fact that the channel or channels (2, 3) are made in form of a longitudinal tubular part suspended at the top rear area of the total dimension in height of the machine, each segment (102, 103, 202, 203, 302, 303) being supported by a pair of vertical risers (4) associated on the sides of reciprocal contact or clamping and at the free ends opposite to these of the modules (101, 201, 301) of the frame (1) in shape of a table.
6. Machine according to one or more of the preceding claims, characterized by the fact that the channel or channels (2, 3) extend themselves along the entire rear side of the machine, while a cabinet is provided containing the control and drive devices and that is

itself made modular and with a longitudinal extension parallel to the one of the frame (1) in shape of a table.

7. Machine according to one or more of the preceding claims, characterized by the fact that the cables and the conduits and the other lines of supply, of control and for execution of the sending or transmission and reception of other signals or fluids, branch out (402, 403) from a branching that is provided in the area of a of a channel segment (202, 203) associated with an intermediate module (201) of the frame (1) in form of a table.
8. Machine according to the claim 7, characterized by the fact that the distribution box is formed by the said segment (202, 302) of the channel from which depart the branching conduits (402, 403) to the cabinet.
9. Machine according to one or more of the preceding claims, characterized by the fact that it foresees the housing of the cables, conduits or other lines of supply, control, etc. in the disassembled condition of the individual modules (101, 201, 301) of the frame (1) in shape of a table and that is constituted by the branching segment (202, 302) of the guide channel (2, 3) of the conduits, of the cables and of the lines, and inside which are folded back the sections of the cable, of the conduit and the other lines designed to run into additional segments of the channel (102, 103, 302, 303) associated with the additional adjacent modules (101, 301) of the frame (1) in shape of a table to connect to other modular units assembled on the same.
10. Machine according to one or more of the preceding claims, characterized by the fact that the cable, conduits, or similar are flexible and without solution of continuity and can be turned back or folded back or wrapped in the branching segment (202, 302) of the channel or channel (2, 3).
11. Machine according to one or more of the preceding claims, characterized by the fact that it has a framework (2, 3, 4) for the screening and guarding sections (5, 205) or for possible other guarding that is also made modular, the individual modules being subdivided correspondingly to the modules (101, 201, 301) of the frame (1) in shape of a table, analogous to the channel or channels (2, 3) for the cables and conduits.
12. Machine according to one or more of the preceding claims, characterized by the fact that each module (101, 201, 301) of the frame (1) in shape of a table has a support frame (102, 103, 202, 203, 302, 303) for the screens, guardings or similar means of pro-

tection (205) and that the support frames (102, 103, 202, 203, 302, 303) of the said screens or similar protections (205) and/or the screens themselves complete each other in a modular manner the condition of the modules (101, 201, 301) of the frame (1) in shape of a table assembled one to the other.

13. Machine according to one or more of the preceding claims, characterized by the fact that each modular support frame (102, 103, 202, 203, 302, 303) of the protection screens or similar (205) associated with each module (101, 201, 301) of the frame (1) in shape of a table furthermore has its own hinged means (7) for moving part of the screen, or similar in shape of a wing or door (205) into open or closed position.
14. Machine according to one or more of the preceding claims, characterized by the fact that the protection screens or similar (5, 205) are made in form of sections suspended projecting on the modules (101, 201, 301) of the frame (1) in shape of a table and have a dimension such to cover the top part and the service one on the front associated with the corresponding module (101, 201, 301) of the frame (1) in shape of a table.
15. Machine according to one or more of the preceding claims, characterized by the fact that each screen (205) associated with each module (101, 201, 301) of the frame in shape of a table (1) is realized with transversal sections substantially in form of an L and with a top branch substantially horizontal and a front branch substantially vertical that connect to each other in a rounded manner, while the free extremity of the top horizontal branch is articulated to a mechanism of articulation (7) supported by a segment of the beam substantially parallel to the channel segment (102, 103, 202, 203, 302, 303) for the cables and conduits and the lines or to the said channel segment itself 102, 103, 202, 203, 302, 303)
16. Machine according to one or more of the preceding claims, characterized by the fact that the mechanism of articulation (7) is formed in shape of an articulated parallelogram with dimensions such, that the lifting of the screen (5, 205) from the closed position to the open one takes place substantially in the vertical direction, or rather substantially parallel to the vertical branch of the said screen and with a very limited travel outward beyond the dimensions of the machines in the closed position of of the screen (5, 205) itself, at least for a section corresponding to the medium height of a human being, while the remaining part additionally also moves transversally rearward to free also the top part of the units associated with the corresponding module of

the frame (1) in shape of a table.

17. Machine according to one or more of the preceding claims, characterized by the fact that the entire guard (5) is formed by guard modules (205) of a dimension corresponding to the module (101, 201, 301) of the frame (1) in shape of a table from one end to the other in direction of coupling of the said modules (101, 201, 301) to each other and is entirely movable into opened and closed position.
18. Machine according to one or more of the preceding claims, characterized by the fact that the top horizontal branch of the guarding (5, 205) remains in the closed position within the total dimension in height of the machine, the mechanism of articulation (7) being supported projecting from the front face of the beam or of the channel (2, 3).

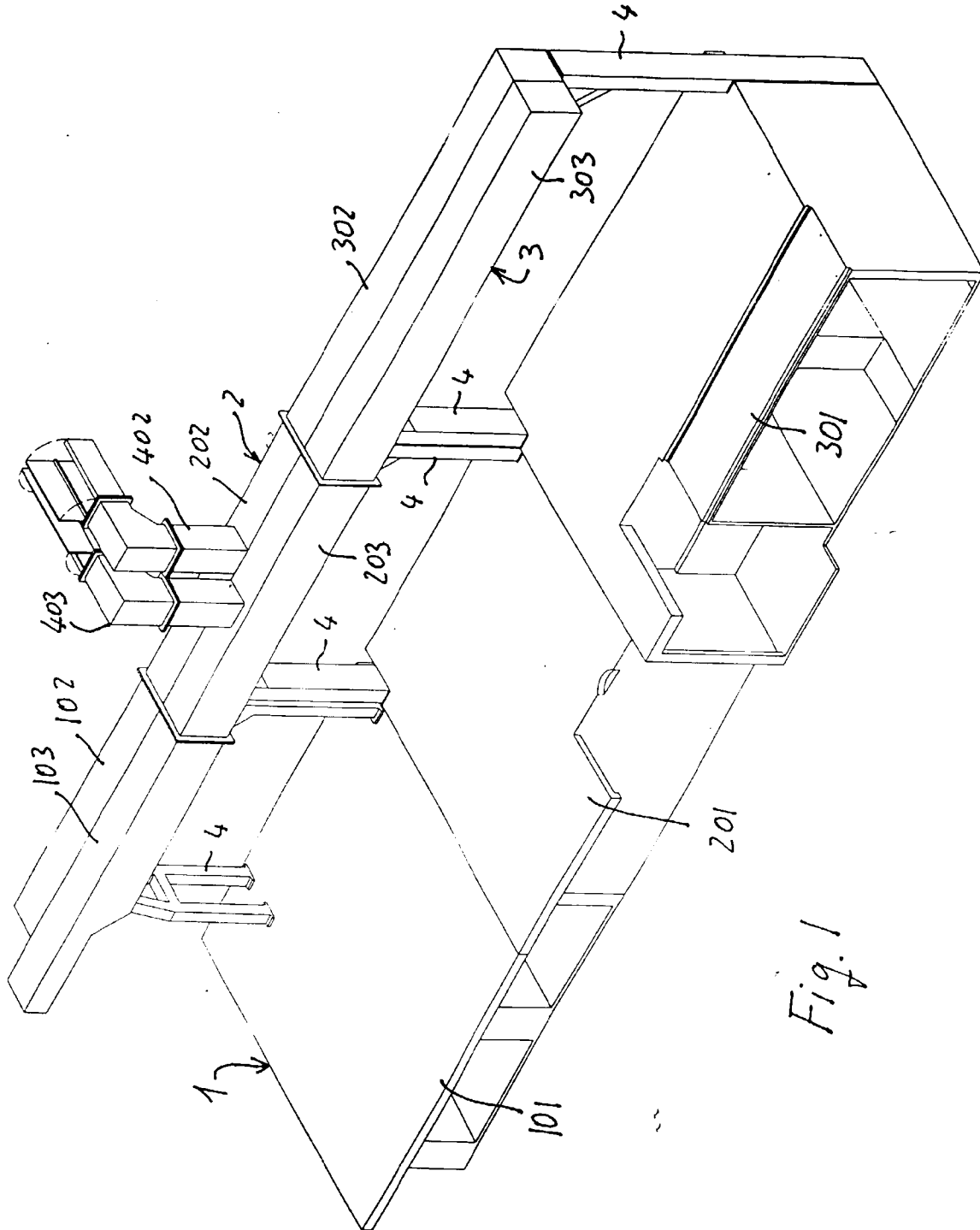


Fig. 1

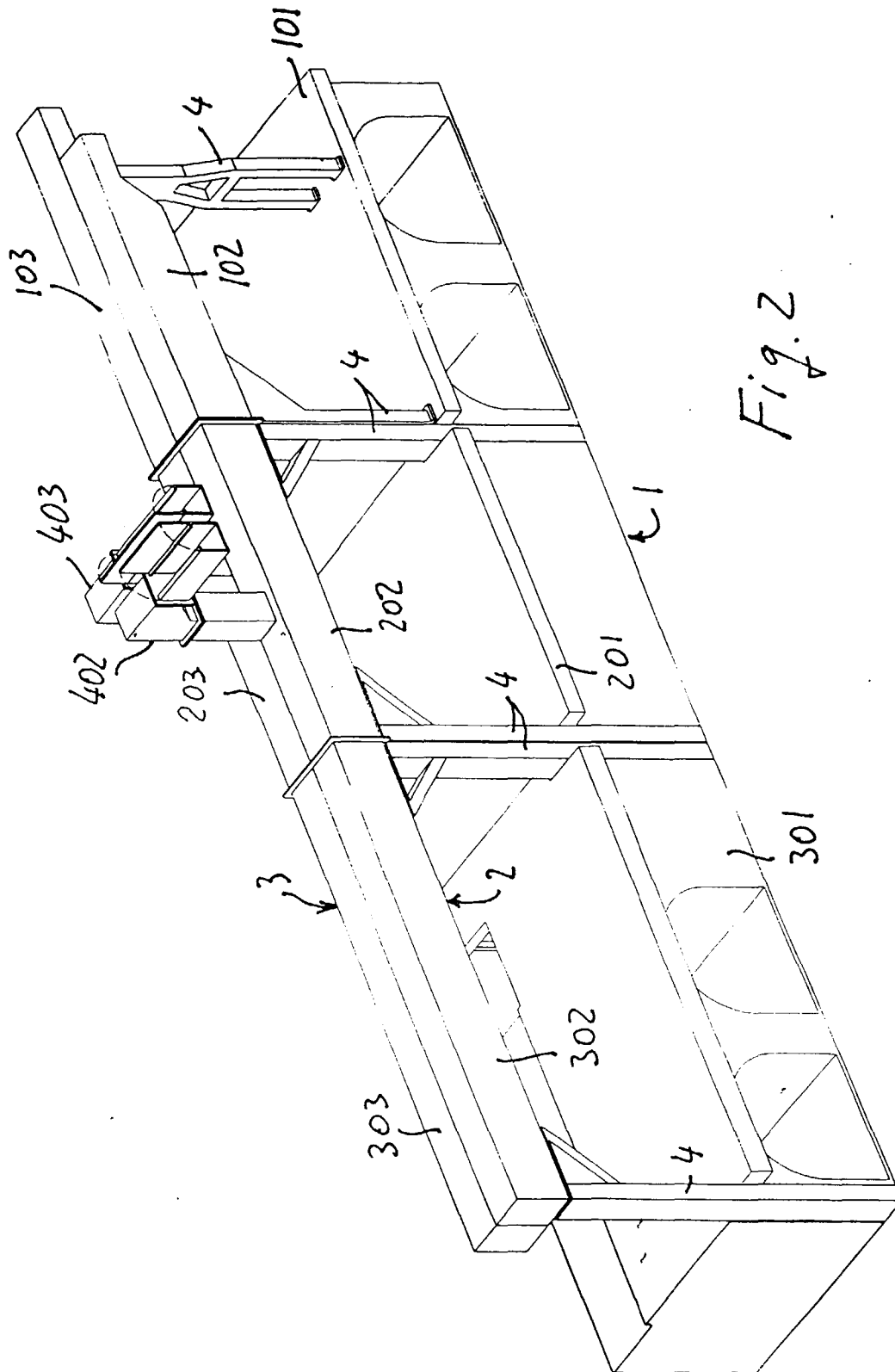
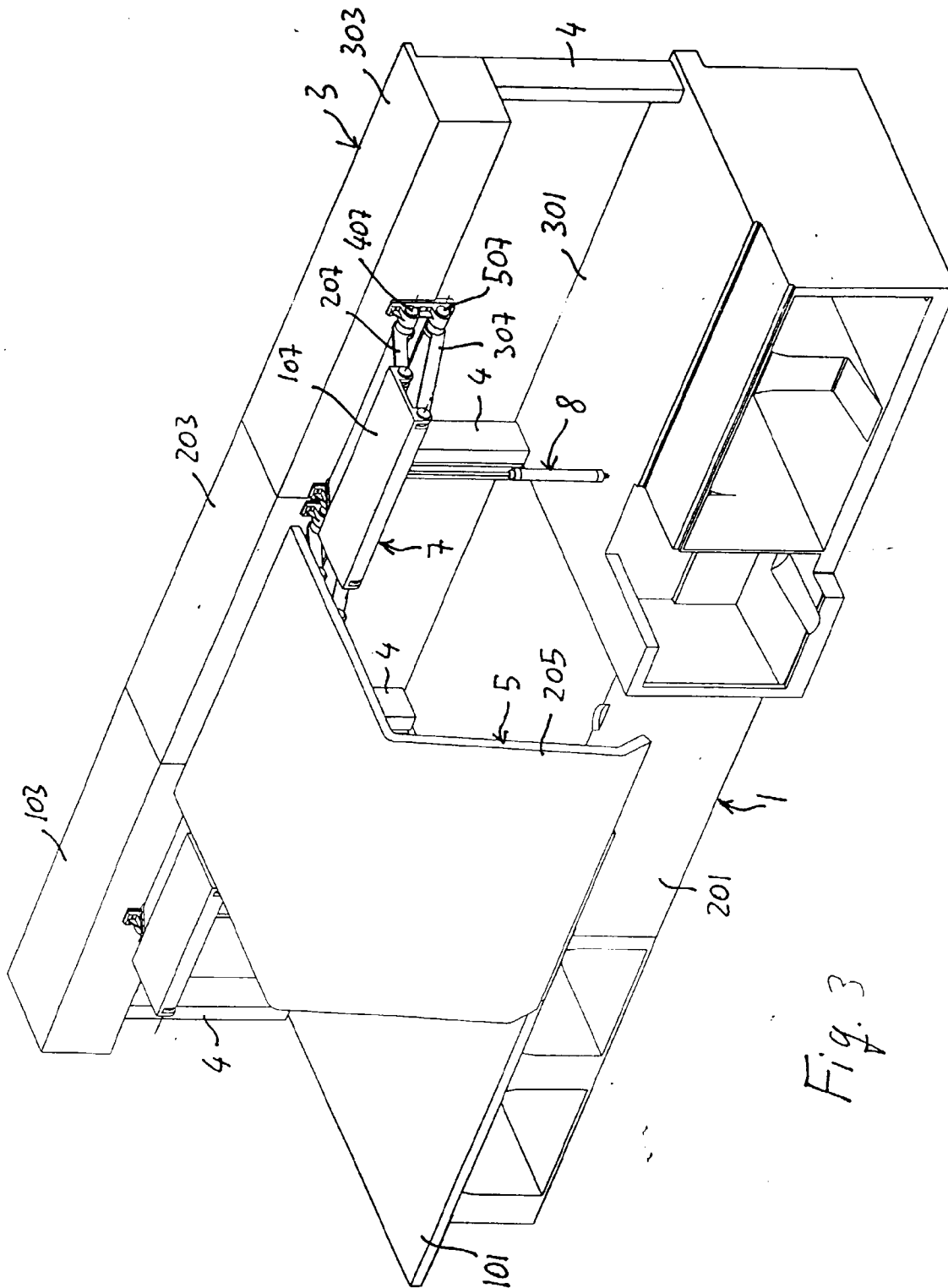


Fig. 2



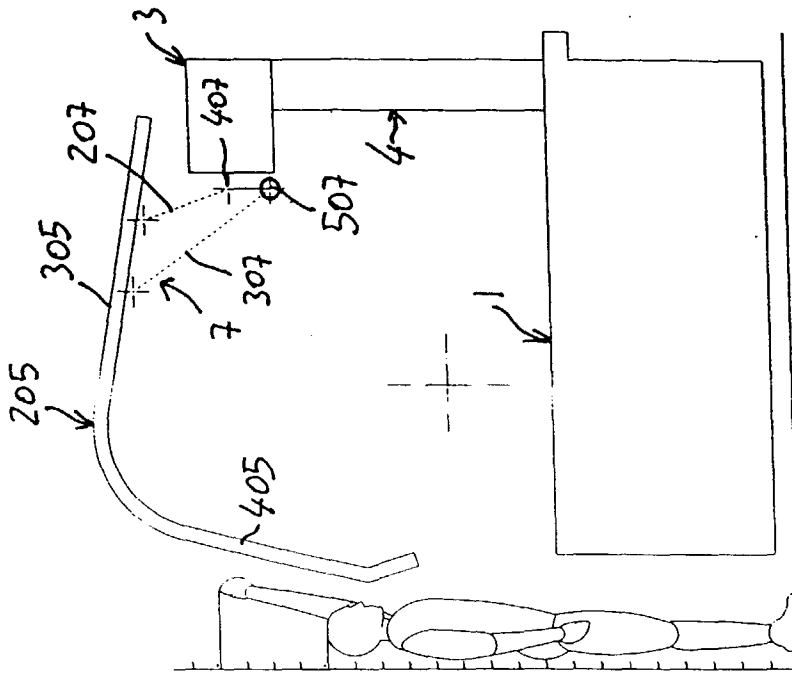


Fig. 5

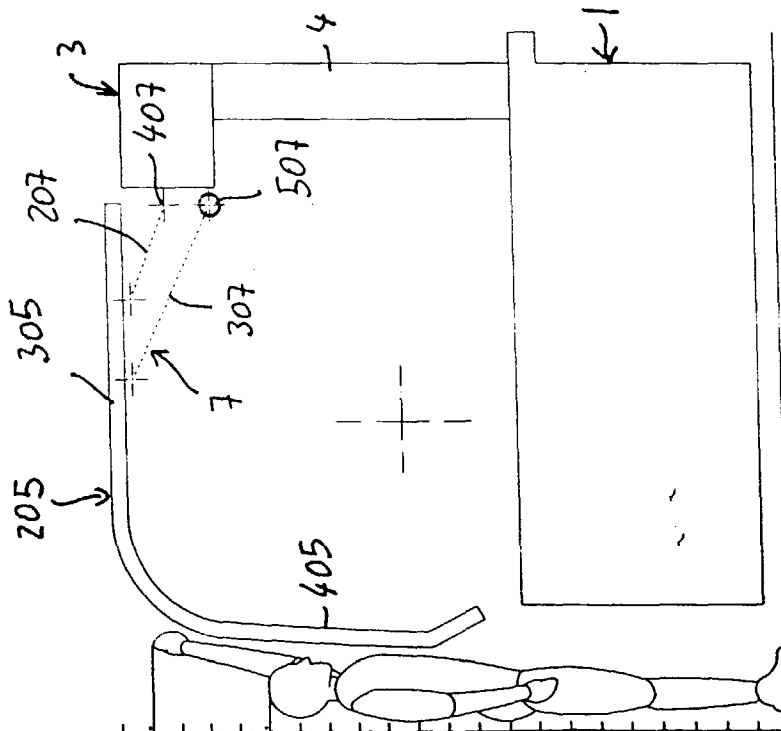


Fig. 4

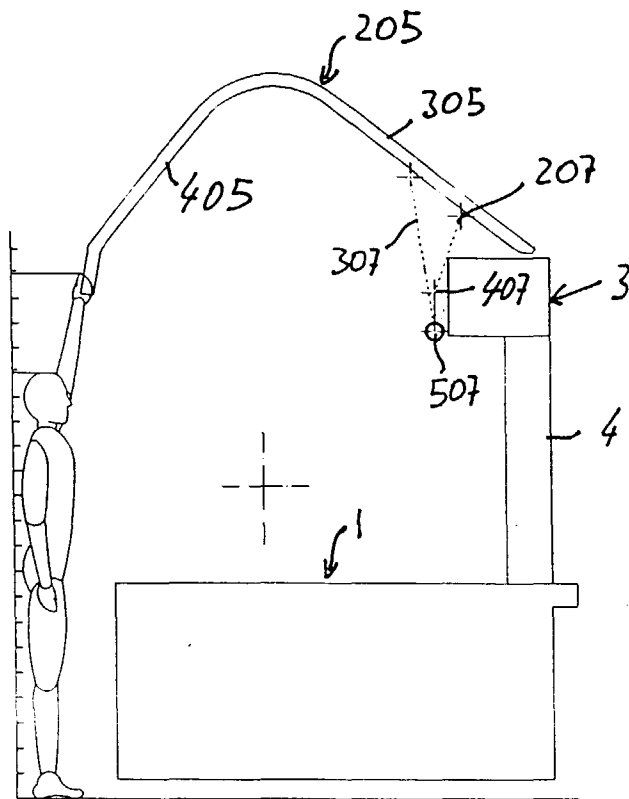


Fig. 6



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 10 9728

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.6)
X	EP 0 756 996 A (SASIB SPA) 5 February 1997 (1997-02-05)	1-3	B65B59/04
Y	* column 11, line 44 - column 15, line 52; figures *	4-13,17, 18	
Y	DE 41 31 800 A (KREMPEL AUGUST SOEHNE) 25 March 1993 (1993-03-25) * column 3, line 5 - column 4, line 10; figures *	4,5,9,10	
Y	EP 0 826 602 A (SCHUBERT GERHARD GMBH) 4 March 1998 (1998-03-04) * column 5, line 56 - column 8, line 9; figures *	6,11-13, 17,18 9,10	
A	DE 27 28 759 A (BENZ & HILGERS GMBH) 18 January 1979 (1979-01-18) * page 7, line 29 - page 8, line 18; claims; figures *	7,8	
A	EP 0 294 251 A (REMY & CIE E P) 7 December 1988 (1988-12-07)		
A	EP 0 645 307 A (FOCKE & CO) 29 March 1995 (1995-03-29)		B65B
A	US 4 569 180 A (RUSSO LUIGI ET AL) 11 February 1986 (1986-02-11)		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30 August 1999	Examiner Jagusiak, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

1

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 10 9728

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-08-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0756996 A	05-02-1997	IT GE950086 A US 5701718 A	03-02-1997 30-12-1997
DE 4131800 A	25-03-1993	NONE	
EP 0826602 A	04-03-1998	NONE	
DE 2728759 A	18-01-1979	NONE	
EP 0294251 A	07-12-1988	FR 2615170 A AT 64720 T CA 1294257 A DK 255088 A,B, FI 882200 A,B, JP 63294323 A PT 87458 A,B US 4860519 A	18-11-1988 15-07-1991 14-01-1992 13-11-1988 13-11-1988 01-12-1988 31-05-1989 29-08-1989
EP 0645307 A	29-03-1995	DE 4332810 A BR 9403868 A CN 1118324 A,B DE 59403100 D JP 7149312 A US 5678385 A	30-03-1995 30-05-1995 13-03-1996 17-07-1997 13-06-1995 21-10-1997
US 4569180 A	11-02-1986	NONE	