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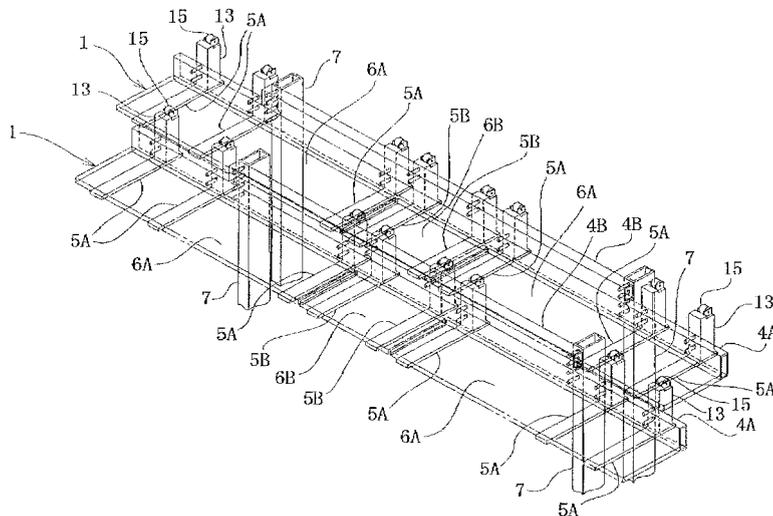
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(54) **MOVING STANDS**

(57) Disclosed is a retractable moving stand wherein the sense of stability of the sitting persons is enhanced by making it possible for the sitting persons not to feel rocking even if a spectator walks on a step-like passage up and down. A retractable moving stand comprising a plurality of tiers of floor bases (1) each including a floor member (6) supported by a beam member (4) through an arm member (5), leg portions (2) supporting each floor base (1) through columns (7) to be movable in a horizontal state, and a plurality of chairs (3) attached to each floor base (1), the plurality of tiers of floor bases (1) being capable of moving in the horizontal state between an advance position where the floor bases are shifted step-

wise from each other and a retracting position where the floor bases are aligned with each other in a vertical direction, and the floor members (6) of the plurality of tiers of floor bases (7.) form a step like passage at the advance position, **characterized in that** each floor base (1) includes seat arm members (5A) and passage arm members (5B) as the arm member (5), and includes seat floor members (6A) and passage floor members (6B) independent of each other as the floor member (6), the seat floor member (6A) is supported on at least one of the beam member (4) and the columns (7) by the seat arm members (5A), and the passage floor member (6B) is supported on at least one of the beam member (4) or the columns (7) by the passage arm members (5B).

FIG. 4



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Description

Technical Field

[0001] The present invention relates to a retractable moving stand configured to move in a horizontal state between an advance position where a plurality of tiers of floor bases, to each of which a plurality of chairs are attached, are shifted stepwise from each other and a retracting position where the floor bases are aligned with each other in a vertical direction and more specifically, to a structure of a step-like passage of the moving stand.

Background Art

[0002] One of conventionally known moving stands as described above is previously disclosed in Japanese Patent Publication No. 3903354 by the present applicant. As two tiers in a middle are shown in Fig. 9, the moving stand includes: a plurality of tiers of floor bases 1, leg portions 2 supporting each floor base 1 such that the floor base 1 is movable in a horizontal state; and a plurality of seat folding-type chairs 3 attached to each floor base 1 in such a manner as to be raised and lowered. Each floor base 1 includes: a beam member 4 horizontally extending in the right-left direction of the chairs 3; a plurality of arm members 5 which are connected at rear ends thereof respectively to a plurality of portions of the beam member 4 arranged at intervals in the longitudinal direction thereof and which horizontally protrude from the beam member 4 toward the front of the chairs 3; and a floor camber 6 laid over the plurality of arm members 5. The leg portion 2 includes: a plurality of columns 7 which are connected at upper ends thereof respectively to a plurality of portions of the beam member 4 arranged at intervals in the longitudinal direction and which extend downward from the beam member 4; a plurality of foot members 8 which are connected around the rear ends thereof respectively to the lower ends of the columns 7 and extend in parallel to the arm members 5; and a plurality of moving rollers 9 which are provided at front and rear ends of the foot members 8. The leg portions 2 at higher tiers include diagonal braces 10 at the rear side of the columns 7 for reinforcement of the columns 7.

[0003] In the moving stand, the length of the plurality of columns 7 for each floor base 1 differs from that of the adjacent floor base 1 by a difference in height between the floor bases 1 adjacent to each other. Moreover, the different floor bases 1 include slightly different intervals of the portions of the beam member 4 to which the upper ends of the plurality of columns 7 are connected. This allows the plurality of tiers of floor bases 1 to move in a horizontal state between the advance position where the floor bases 1 are shifted stepwise from each other and the retracting position where the floor bases 1 are aligned with each other in the vertical direction. To move the floor bases 1 to the retracting position, the chairs 3 are fallen to be accommodate between the floor members 6.

[0004] Furthermore, in the moving stand, all the plurality of arm members 5 are directly connected to the beam members 4 without the columns 7 interposed therebetween. This can facilitate on-site assembly of the moving stand and allow the arm members 5 and the floor members 6 to be shared in the floor bases 1 of different tiers. In other known conventional moving stands, all or some of the plurality of arm members 5 are connected to only the columns 7 or to both the columns 7 and beam members 4.

Disclosure of Invention

Problems to be Solved by Invention

[0005] Meanwhile, the present inventors further studied the above-described conventional moving stands, and found a room for further improvement as follows. To be specific, at the advance position, the plurality of tiers of the floor bases 1 of the above-described conventional moving stand form a step-like passage to allow spectators to move between the floor bases 1. On the other hand, the floor member 6 of each floor base 1 extends between both lateral ends of the floor base 1 along the beam member 4. The seat section of the floor member 6 of each floor base 1 where the chairs 3 are provided and the passage section forming the step-like passage are therefore integrally connected to each other. Accordingly, there is a disadvantage that, when a spectator walks on the passage sections of the floor members 6 up and down the step-like passage and vertically rocks the passage sections, the rocking movement of the passage section is directly transmitted to the seat section of the floor members 6, and persons sitting on the chairs 3 feel the rocking movement.

Means for Solving Problems

[0006] The invention was made to advantageously solve the aforementioned problems of the conventional moving stand. A retractable moving stand includes: a plurality of tiers of floor bases, a leg portion supporting each of the floor bases such that the floor base is movable in a horizontal state; and a plurality of chairs attached to each floor base. Each floor base includes: a beam member horizontally extending in a right-left direction of the chairs; a plurality of arm members which are located at a plurality of portions of the beam member arranged at intervals in a longitudinal direction and horizontally protrude from the beam member toward the front of the chairs; and a floor member laid over the plurality of arm members. The leg portion includes: a plurality of columns which are connected at upper ends thereof respectively to a plurality of portions of the beam member arranged at intervals in the longitudinal direction and extend downward from the beam member; a plurality of foot members which are connected around rear ends thereof respectively to lower ends of the columns and extend in parallel

to the arm members; and a plurality of moving rollers provided at front and rear ends of each foot member. A rear end of each of the plurality of arm members is connected to at least one of the beam member and the columns. A length of the plurality of columns of each floor base is different from that of the next floor base by a difference in height between the floor bases. The intervals of the portions of the beam member of each floor base which are connected to the upper ends of the plurality of columns are different somewhat from those of the other floor bases. The plurality of tiers of floor bases are thereby capable of moving in the horizontal state between an advance position where the floor bases are shifted stepwise from each other and a retracting position where the floor bases are aligned with each other in a vertical direction. The floor members of the plurality of tiers of floor bases at the advance position form a step-like passage. In such a retractable moving stand, each floor base includes seat arm members and passage arm members as the arm members, and includes a seat floor member and a passage floor member independent of each other as the floor members. The seat floor member is supported on at least one of the beam member and the columns by the seat arm members, and the passage floor member is supported on at least one of the beam member and the columns by the passage arm members.

Effects of Invention

[0007] In the aforementioned moving stand of the invention, each of the plurality of tiers of floor bases includes the seat floor member and passage floor member independent of each other as the floor members, and the seat floor member and passage floor members are supported on at least one of the beam member and the columns by the seat arm materials and passage arm materials, respectively. Accordingly, even if, at the advance position where the plurality of tiers of floor bases are shifted stepwise from each other, a spectator walks up and down a step-like passage which is formed by the passage floor members of the floor bases to rock each passage floor member, the rocking motion almost disappears when transmitted to at least one of the beam member and columns through the passage arm members because of high rigidities of the beam member and columns. The rocking motion is hardly or not transmitted to the seat floor member supported on the beam member or the separate columns connected to the beam member through the separate seat arm members.

[0008] According to the moving stand of the invention, even if a spectator walks on the passage floor members up and down the step-like passage, persons sitting on the chairs do not feel the rocking motion of the seat floor members transmitted from the passage floor member. Accordingly, it is possible to enhance the feel of stability of the sitting persons.

[0009] Note that, in the moving stand of the invention, it is preferable that any of the plurality of tiers of floor

bases include a seat beam member and a passage beam member independent of each other as the beam member, the seat floor member be supported on at least one of the seat beam member and the columns, by the seat arm members, and the passage floor member be supported on at least one of the passage beam member and the columns by the passage arm members.

[0010] According to such a configuration, the seat beam members are independent of the passage beam member. Accordingly, at the advance position where the plurality of tiers of floor bases are shifted stepwise from each other, even if a spectator walks up and down the step-like passage formed by the passage floor members of the floor bases to rock each passage floor member and the rocking motion is transmitted to the passage beam member through the passage arm members to rock somewhat the passage beam member, the rocking motion almost disappears when transmitted to the columns and hardly or not transmitted to the seat beam member. Accordingly, the rocking motion is not transmitted to the seat floor member supported on the seat beam member through the separate seat arm members. It is therefore possible to further enhance the sense of stability of persons sitting on the chairs.

[0011] In addition, in the moving stand according to the invention, it is preferable that the seat beam member and passage beam member be aligned with each other in the vertical direction and be connected to front surfaces of upper ends of the columns.

[0012] According to such a configuration, even if each of the leg portions of the upper tiers includes a diagonal brace for reinforcement on the rear side of each column, the columns of the lower tiers can be retracted to the front position of the diagonal brace while the beam members of the lower tiers do not interfere with the diagonal braces. Accordingly, when the plurality of tiers of floor bases are positioned at the retracting position where the floor bases are aligned with each other in the vertical direction, the floor bases are not shifted from each other in the front-back direction. This allows for compact storage of the moving stand.

[0013] On the other hand, in the moving stand according to the invention, it is preferable that one of the seat beam member and passage beam member be connected to front surfaces of upper ends of the columns, and the other one of the seat beam member and passage beam member be connected to rear surfaces of the upper ends of the columns.

[0014] According to such a configuration, since the seat and passage beam members, which are connected to the upper ends of the columns, are not aligned with each other in the vertical direction, it is only necessary to match the length of the upper end of each column to the height of one beam member. Accordingly, the difference in height between the adjacent floor bases can be made small if necessary, and the total height of the moving stand can be made smaller.

[0015] Further, in the moving stand according to the

invention, it is preferable that any of the plurality of tiers of floor bases include only one beam member, and at least one of the seat arm members and passage arm members be connected to the one beam member.

[0016] According to such a configuration, the seat floor members and passage arm members are supported on at least one of the only one beam member and the columns by the seat arm members and passage arm members, respectively. Accordingly, even if, at the advance position where the plurality of tiers of floor bases are shifted stepwise from each other, a spectator walks up and down the step-like passage which is formed by the passage floor members of the floor bases to rock the passage floor members, the rocking motion almost disappears when transmitted to at least one of the beam member and columns through the passage arm members because of high rigidities of the beam member and columns. The rocking motion is hardly or not transmitted to the seat floor members supported on the beam member or separate columns connected to the beam member through the separate seat arm members.

Brief Description of Drawings

[0017]

Fig. 1 is a side view showing an embodiment of a moving stand of the invention in a state that a plurality of tiers of floor bases are located at an advance position where the floor bases are shifted stepwise from each other.

Fig. 2 is a side view showing the embodiment of the moving stand of the invention in a state that the plurality of tiers of floor bases are located at a retracting position where the floor bases are aligned with each other in the vertical direction.

Fig. 3 is a back view showing the entire moving stand of the embodiment with chairs removed.

Fig. 4 is a perspective view showing columns and part thereabove of two tiers in a middle of the moving stand of the embodiment with the chairs removed.

Fig. 5 is a perspective view showing part of a step-like passage of two tiers in a middle of the moving stand of the embodiment.

Parts (a) and (b) of Fig 6 are side views of the tier in a middle of the moving stand of the embodiment, Part (a) showing a state where a seat floor member is supported on a seat beam member by seat arm members, Part (b) showing a state where a passage floor member is supported on a passage beam member by passage arm members.

Parts (a) and (b) of Fig. 7 are side views showing a tier in a middle of another embodiment of the moving stand of the invention, Part (a) showing a state where the seat floor member is supported on the seat beam member by the seat arm members, Part (b) showing a state where the passage floor member is supported on the passage beam member by the passage arm

members.

Fig. 8 is a perspective view showing columns and part thereabove of two tiers in a middle of still another embodiment of the moving stand of the invention.

Fig. 9 is a perspective view showing a configuration of two tiers in a middle of a conventional moving stand.

Explanation of Reference Numerals

[0018]

- 1: FLOOR BASE
- 2: LEG PORTION
- 3: CHAIR
- 4: BEAM MEMBER
- 4A: SEAT BEAM MEMBER
- 4B: PASSAGE BEAM MEMBER
- 5: ARM MEMBER
- 5A: SEAT ARM MEMBER
- 5B: PASSAGE ARM MEMBER
- 6: FLOOR MEMBER
- 6A: SEAT FLOOR MEMBER
- 6B: PASSAGE FLOOR MEMBER
- 6C: EDGING MEMBER
- 7: COLUMN
- 8: FOOT MEMBER
- 9: MOVING ROLLER
- 10: DIAGONAL BRACE
- 11: GUIDE RAIL
- 12: BRACKET
- 13: ARM MEMBER ATTACHMENT
- 14: STOPPER BOLT
- 15: ARM MEMBER SUPPORTING ROLLER
- 16: AUXILIARY STEP
- F: FLOOR SURFACE

Modes for Carrying out Invention

[0019] Hereinafter, a description is given of embodiments of the invention using examples based on the drawings in detail. Herein, Fig. 1 is a side view showing an embodiment of a moving stand of the invention in a state that a plurality of tiers of floor bases are located at an advance position where the floor bases are shifted stepwise from each other. Fig. 2 is a side view showing the embodiment of the moving stand of the invention in a state that a plurality of tiers of floor bases are located at a retracting position where the floor bases are aligned with each other in the vertical direction. Fig. 3 is a back view showing the entire moving stand of the embodiment with chairs removed. Fig. 4 is a perspective view showing columns and part thereabove of two tiers in a middle of the moving stand of the embodiment with the chairs removed. Fig. 5 is a perspective view showing part of a step-like passage of two tiers in a middle of the moving stand of the embodiment. Part (a) and (b) of Fig. 6 are side views of the tier in a middle of the moving stand of

the embodiment, Part (a) showing a state where a seat floor member is supported on a seat beam member by seat arm members, Part (b) showing a state where a passage floor member is supported on a passage beam member by passage arm members.

[0020] The moving stand of this embodiment, similarly to a conventional moving stand shown in Fig. 9, includes: a plurality of tiers of floor bases 1; a leg portion 2 supporting each floor base 1 such that the floor base 1 is movable in a horizontal state; and a plurality of seat folding-type chairs 3 attached to each floor base 1 in such a manner as to be raised and lowered. Each floor base 1 includes: a beam member 4 horizontally extending in a right-left direction of the chairs 3; a plurality of arm members 5 which are connected at rear ends thereof respectively to a plurality of portions arranged at intervals in the longitudinal direction of the beam member 4 and which horizontally protrude from the beam member 4 toward the front of the chairs 3; and a floor member 6 laid over the plurality of arm members 5. Each leg portion 2 includes: a plurality of columns 7 which are connected at upper ends thereof respectively to a plurality of portions arranged at intervals in the longitudinal direction and which extends downward from the beam member 4; a plurality of foot members 8 which are connected to the lower ends of the columns 7 around the rear ends and extend in parallel to the arm members 5; and a plurality of moving rollers 9 provided at front and rear ends of each foot member 8. Moreover, the leg portion 2 includes a diagonal brace 10 on the rear side of each column 7 in the third to fifth upper tiers for reinforcement of the columns 7.

[0021] As shown in Fig. 3, in the moving stand of the embodiment, the length of the plurality of columns 7 of each floor base 1 differs from that of the adjacent floor base 1 by a difference in height of the floor bases 1 adjacent to each other, and the lower the floor base 1, the shorter the columns 7 thereof. Moreover, the intervals of the portions of each beam member 4 connected to the upper ends of the plurality of columns 7 are different from those of the other floor bases 1, and the lower the floor base 1, the shorter the intervals of the columns 7. The plurality of tiers of floor bases 1 are therefore capable of moving with the horizontal state kept between the advance position where the floor bases 1 are shifted stepwise from each other as shown in Fig. 1 and the retracting position where the floor bases 1 are aligned with each other in the vertical direction as shown in Fig. 2. On both outer sides of the foot members 8 of the floor base 1 at the top, two guide rails 11 fixed to a floor surface F and small guide rollers abutting on the guide rails 11 are provided. By the abutment of the guide rollers and the guide rails 11, each floor base 1 can be guided to advance and retract in a predetermined direction. As shown in Fig. 2, to move the floor bases 1 to the retracting position, each chair 3 is fell down forward and is accommodated between the floor members 6.

[0022] Furthermore, also in the moving stand of the

embodiment, all the plurality of arm members 5 are directly connected to each beam member 4 without columns 7 interposed therebetween to facilitate on-site assembly of the moving stand and allow the arm members 5 and floor members 6 to be shared in the floor bases 1 of different tiers. Accordingly, as shown in Fig. 6, also in the moving stand of this embodiment, each beam member 4 is composed of a square steel pipe in order to increase in torsional stiffness and therefore prevent the end of each arm member 5 not integrally connected to the column 7 from dropping down. Moreover, in order to prevent the ends of the arm members 5 from dropping down by increasing the flexural rigidity thereof, each arm member 5 is formed by joining a lower material made of a steel plate bent into a recess and an upper material made of a flat steel plate by welding.

[0023] As shown in Parts (a) and (b) of Fig. 6, each arm member 5 is connected to the beam member 4 in the following manner: a bracket 12 welded to the rear end of the arm member 5 is pivotally supported on an arm member attachment 13 in such a manner as to swing up and down, and the arm member attachment 13 is fixed to the beam member 4 with two bolts. The arm member attachment 13 has a stepped square tubular shape fabricated from a steel plate. At the rear end of the arm member attachment 13, a stopper bolt 14 is provided with the amount of downward protrusion being adjustable in order to regulate the position to which the arm member 5 is allowed to swing and horizontalize the arm member 5. Moreover, in order to movably support the arm member 5 above, an arm member supporting roller 15 is provided at the step portion of the arm member attachment 13 in such a manner as to be adjustable in height.

[0024] In the moving stand of the embodiment, as shown in Fig. 4 to Fig. 6, each floor base 1 includes a seat beam member 4A and a passage beam member 4B independent of each other as the beam members 4, and the passage beam member 4B is placed above the seat beam member 4A. The seat beam member 4A and passage beam member 4B are aligned with each other in the vertical direction and are connected to the front surfaces of the upper ends of the columns 7.

[0025] Each floor base 1 includes seat arm members 5A and passage arm members 5B as the arm members 5 and includes seat floor members 6A and a passage floor member 6B independent of each other as the floor members 6. The seat floor members 6A are supported on the seat beam member 4A by the seat arm members 5A, and the passage floor member 6B is supported on the passage beam member 4B by the seat arm members 5B.

[0026] As shown in Fig. 5 and Part (b) of Fig. 6, an auxiliary step 16 is fixed on the passage floor member 6B. The height of the auxiliary step 16 is half the difference in height between the adjacent floor bases 1. Those passage floor members 6B and the auxiliary steps 16 form a step-like passage as shown in Fig. 5 in the plurality of tiers of floor bases 1 at the advance position where

the floor bases 1 are shifted stepwise from each other. In a gap between each seat floor member 6A and the passage floor member 6B adjacent thereto, a rubber-made edging member 6C is provided to fill up the gap so as not to transmit rocking motion between the seat floor members 6A and passage floor member 6B.

[0027] In the moving stand of the embodiment, each of the plurality of tiers of floor bases 1 includes: the seat floor members 6A and passage floor member 6B independent of each other as the floor members 6; the seat beam member 4A and passage beam member 4B independent of each other as the beam members 4. Moreover, the seat floor members 6A are supported on the seat beam member 4A by the seat arm members 5A, and the passage floor member 6B is supported on the passage beam member 4B by the passage arm members 5B. Accordingly, in the advance position where the plurality of tiers of floor bases 1 are shifted stepwise from each other, even if a spectator walks the step-like passage up and down to rock the passage floor members 6B and the rocking motion is transmitted to the passage beam member 4B through the passage arm members 5B to rock somewhat the passage beam member 4B, the rocking motion almost disappears when transmitted to the columns 7 and is hardly or not transmitted to the seat beam member 4A. Accordingly, the rocking motion is substantially not transmitted to the seat floor members 6A supported on the seat beam member 4A through the seat arm members 5A, which are separate from the passage arm members 5B. It is therefore possible to further enhance a sense of stability of persons sitting on the chairs.

[0028] According to the moving stand of the embodiment, the seat beam member 4A and passage beam member 4B are aligned with each other in the vertical direction and are connected to the front surfaces of the upper ends of the columns 7. Accordingly, even if each of the leg portions 2 of the upper tiers includes the diagonal braces 10 for reinforcement on the rear side of each column 7, the columns 7 of the lower tiers can be retracted to the front position of the diagonal brace 10 while the seat and passage beam members 4A and 4B do not interfere with the diagonal braces 10. Accordingly, when the plurality of tiers of floor bases 1 are positioned at the retracting position where the floor bases 1 are aligned with each other in the vertical direction, the floor bases 1 are not shifted from each other in the front-back direction. This allows for compact storage of the moving stand.

[0029] Parts (a) and (b) of Fig. 7 show a tier in a middle of another embodiment of the moving stand of the invention, Part (a) showing a state where the seat floor member is supported on the seat beam member by the seat arm member, Part (b) showing a state where the passage floor member is supported on the passage beam member by the passage arm member. In Fig. 7, same portions as those of the aforementioned embodiment are indicated by same reference numerals. The moving stand of this embodiment is different from the aforementioned embodiment only in the relative arrangement of the seat beam

member 4A and passage beam member 4B. The other configuration of this embodiment is the same as that of the aforementioned embodiment. The description is mainly given of only the different point.

[0030] Specifically, in this embodiment, the seat beam member 4A is located on the front side of the upper end of each column 7, and the passage beam member 4B is located on the rear side of the upper end of each column 7. The seat and passage beam members 4A and 4B are connected to the upper ends of the columns 7.

[0031] According to the moving stand of this embodiment, the same operational effects as those of the aforementioned embodiment can be provided. In addition, since the seat and passage beam members 4A and 4B, which are connected to the upper ends of the columns 7, are not aligned with each other in the vertical direction, it is only necessary to match the length of the upper end of each column 7 to the height of one beam member 4. Accordingly, the difference in height between the adjacent floor bases 1 can be made small if necessary, and the total height of the moving stand can be kept smaller. Moreover, the seat arm members 5A, which is subjected to the weight of the number of chairs 3 through the seat floor members 6A, are supported by the seat beam member 4A placed on the front side of the upper end of each columns 7. Accordingly, the seat arm members 5A can be made shorter than the passage arm members 5B by the width of the columns 7, so that the supporting rigidity of the seat arm members 5A can be ensured.

[0032] Fig. 8 is a perspective view showing columns and part thereabove of two tiers in a middle of still another embodiment of the moving stand of the invention. In Fig. 8, the same portions as those of the aforementioned embodiment are indicated by the same reference numerals. The moving stand of this embodiment is different from the aforementioned embodiment only in that the beam members 4 are shared by the seats and passage. The other configuration of this embodiment is the same as that of the aforementioned embodiment, and the description is given of only the different point.

[0033] Specifically, in this embodiment, each floor base 1 includes only one beam member 4 connected to the front surface of the upper end of each column 7. Moreover, each floor base 1 includes the seat arm members 5A and passage arm members 5B as the arm members 5 and the seat floor members 6A and passage floor member 6B independent of each other as the floor members 6. The seat floor members 6A are supported on the beam member 4 by the seat arm members 5A, and the passage floor member 6B is supported on the beam member 4 by the passage arm members 5B. The beam member 4 is thus shared by the seats and passage.

[0034] In the moving stand of this embodiment, the seat floor members 6A and passage floor member 6B of each of the plurality of tiers of floor bases 1, which are independent of each other, are supported on the beam member 4 by the seat arm members 5A and passage arm members 5B, respectively. Accordingly, at the ad-

vance position where the plurality of tiers of floor bases 1 are shifted from each other stepwise, even if a spectator walks up and down the step-like passage which is composed of the passage floor members 6 of the floor bases 1 together with the auxiliary steps 16 to rock the passage floor members 6B up and down, the rocking motion almost disappears when transmitted to the beam members 4 through the passage arm members 5B. Accordingly, the rocking motion is hardly or not transmitted to the seat floor members 6A supported on the seat beam member 4 through the seat arm members 5A, which are different from the passage arm members 5B.

[0035] Also according to the moving stand of this embodiment, even if a spectator walks on the passage floor members 6B up and down the step-like passage, persons sitting on the chairs 3 do not feel the rocking motion of the seat floor members 6A transmitted from the passage floor members 6B. Accordingly, it is possible to enhance the feel of stability of the sitting persons. Moreover, according to this embodiment, similarly to the embodiment shown in Parts (a) and (b) of Fig. 7, it is only necessary to match the length of the upper end of each column 8 to the height of one beam member 4. Accordingly, the difference in height between the adjacent floor bases 1 can be made small if necessary, and the total height of the moving stand can be made smaller. Moreover, each floor base 1 includes only one beam member 4, and the moving stand can be therefore fabricated easily at low cost.

[0036] The above description is given based on the examples of the drawings. However, the invention is not limited to the above-described examples and can be properly modified without departing from the scope described in the claims. For example, the relative arrangement of the seat and passage beam members 4A and 4B may be swapped positions in each embodiment. Moreover, in the above embodiments, the seat and passage arm members 5A and 5B are connected to the seat and passage beam members 4A and 4B, respectively, or to only one beam member 4. However, each seat arm member 5A may be connected to the column 7 provided for the arm member or connected to both the column 7 and the seat beam member 4A or beam member 4. Moreover, each passage floor member 6B may be connected to the column 7 provided for the arm member or connected to both the column 7 and the seat beam member 4B or beam member 4. Such a structure can further increase the supporting rigidity of the seat floor members 6A and passage floor members 6B. Furthermore, two or all types of the structures to support the seat and passage arm members 5A and 5B in the aforementioned embodiments may be combined.

Industrial Applicability

[0037] According to the moving stand of the invention, even if a spectator walks on the passage floor members up and down the step-like passage, persons sitting on

the chair do not feel rocking of the passage floor members transmitted to the seat floor members. Accordingly, the sense of stability of the sitting persons can be enhanced.

Claims

1. A retractable moving stand, comprising:

a plurality of tiers of floor bases (1); a leg portion (2) supporting each of the floor bases such that the floor base is movable in a horizontal state; and a plurality of chairs (3) attached to each floor base, in which

each floor base includes: a beam member (4) horizontally extending in a right-left direction of the chairs; a plurality of arm members (5) which are located at a plurality of portions of the beam member arranged at intervals in a longitudinal direction and horizontally protrude from the beam member toward the front of the chairs; and a floor member (6) laid over the plurality of arm members,

the leg portion includes: a plurality of columns (7) which are connected at upper ends thereof respectively to a plurality of portions of the beam member arranged at intervals in the longitudinal direction and extend downward from the beam member; a plurality of foot members (8) which are connected around rear ends thereof respectively to lower ends of the columns and extend in parallel to the arm members; and a plurality of moving rollers (9) provided at front and rear ends of each leg member,

a rear end of each of the plurality of arm members is connected to at least one of the beam member (4) and the columns (7),

a length of the plurality of columns of each floor base is different from that of the next floor base by a difference in height between the floor bases and the intervals of the portions of the beam member of each floor base which are connected to the upper ends of the plurality of columns are somewhat different from those of the other floor bases, and the plurality of tiers of floor bases are thereby capable of moving in the horizontal state between an advance position where the floor bases are shifted stepwise from each other and a retracting position where the floor bases are aligned with each other in a vertical direction, and the floor members of the plurality of tiers of floor bases at the advance position form a step-like passage, wherein

each floor base (1) includes seat arm members (5A) and passage arm members (5B) as the arm members (5), and includes a seat floor member (6A) and a passage floor member (6B) independent of each other as the floor member (6),

the seat floor member (6A) is supported on at least one of the beam member (4) and the columns (7) by the seat arm members (5A), and the passage floor member (6B) is supported on at least one of the beam member (4) and the columns (7) by the passage arm members (5B). 5

2. The moving stand according to claim 1, wherein any of the plurality of tiers of floor bases (1) includes a seat beam member (4A) and a passage beam member (4B) independent of each other as the beam member (4), 10
the seat floor member (6A) is supported on at least one of the seat beam member (4A) and the columns (7) by the seat arm members (5A), and 15
the passage floor member (6B) is supported on at least one of the passage beam member (4B) and the columns (7) by the passage arm members (5B).
3. The moving stand according to claim 2, wherein the seat beam member (4A) and the passage beam member (4B) are aligned with each other in the vertical direction and are connected to front surfaces of upper ends of the columns (7). 20
25
4. The moving stand according to claim 2, wherein one of the seat beam member (4A) and passage beam member (4B) is connected to front surfaces of upper ends of the columns (7), and 30
the other one of the seat beam member (4A) and passage beam member (4B) is connected to rear surfaces of the upper ends of the columns (7).
5. The moving stand according to claim 1, wherein any of the plurality of tiers of floor bases (1) includes only one beam member (4), and 35
at least one of the seat arm members (5A) and passage arm members (5B) is connected to the one beam member (4). 40
45
50
55

FIG. 1

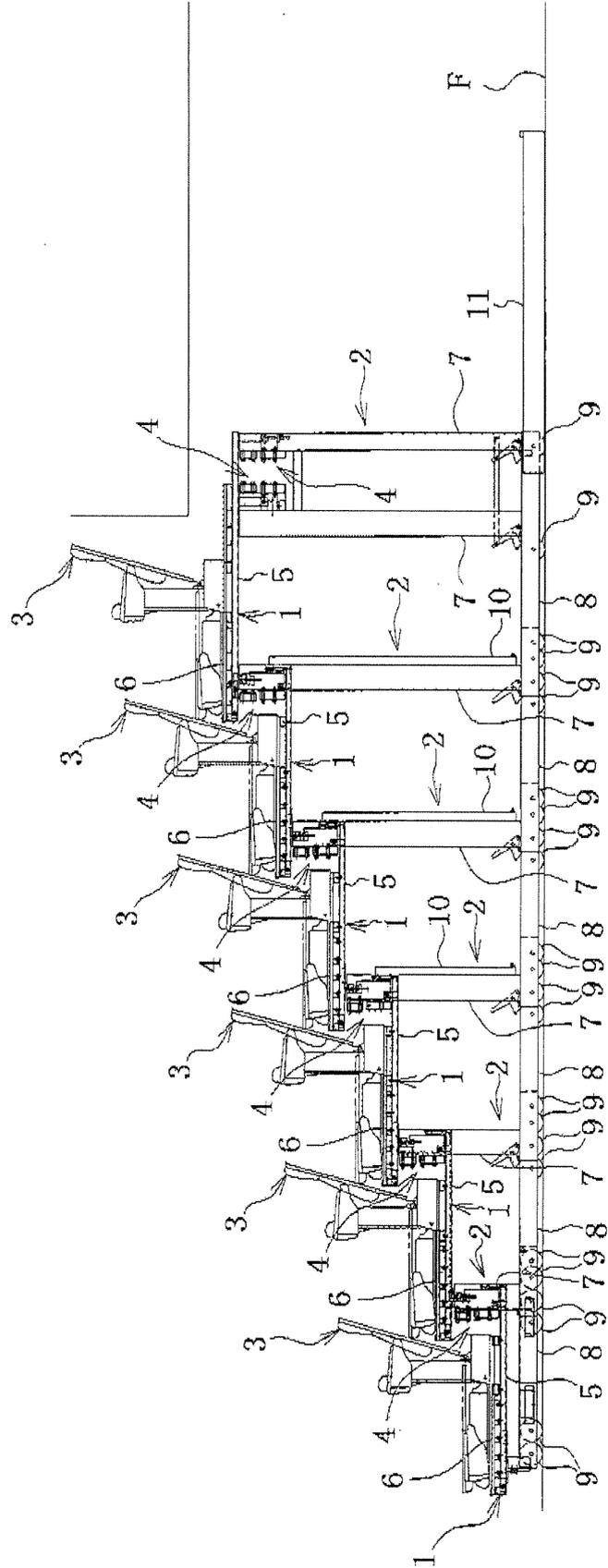


FIG. 2

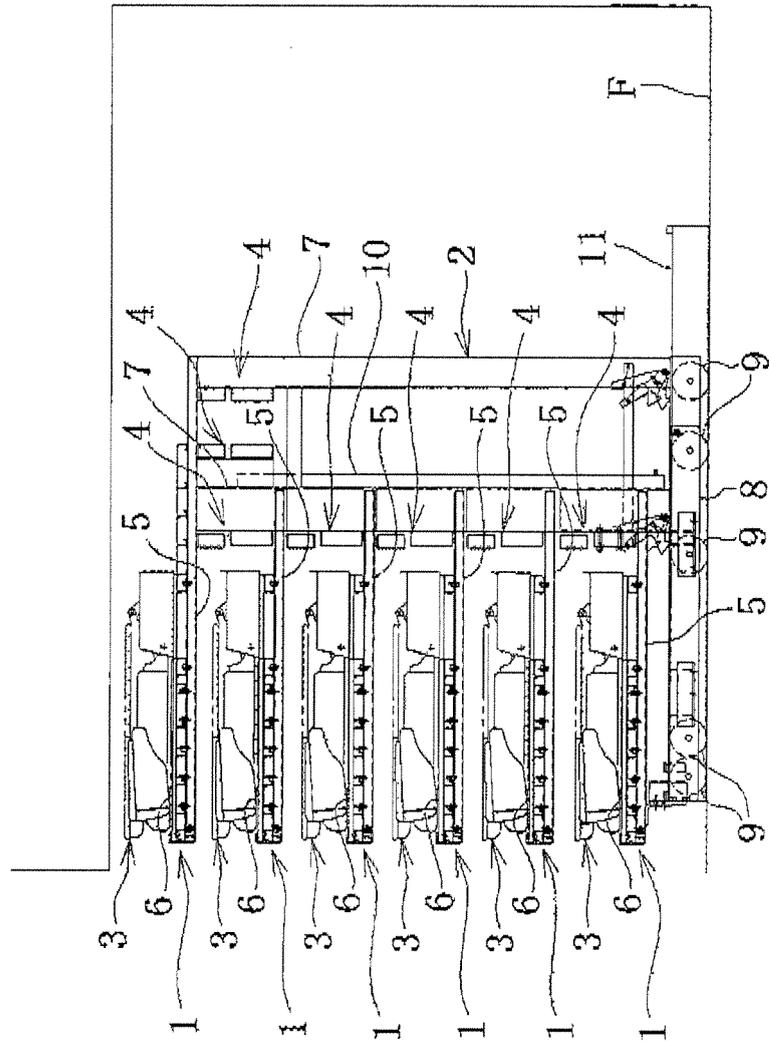


FIG. 3

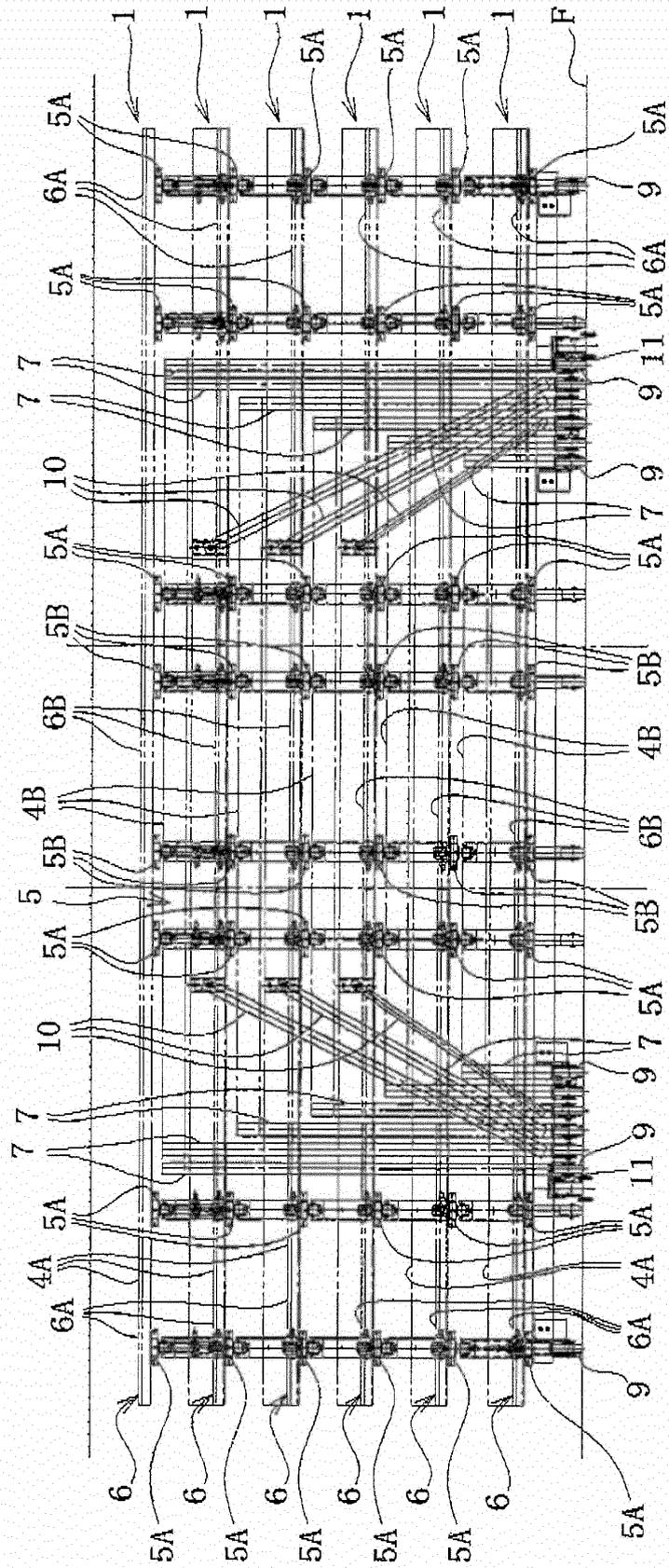


FIG. 4

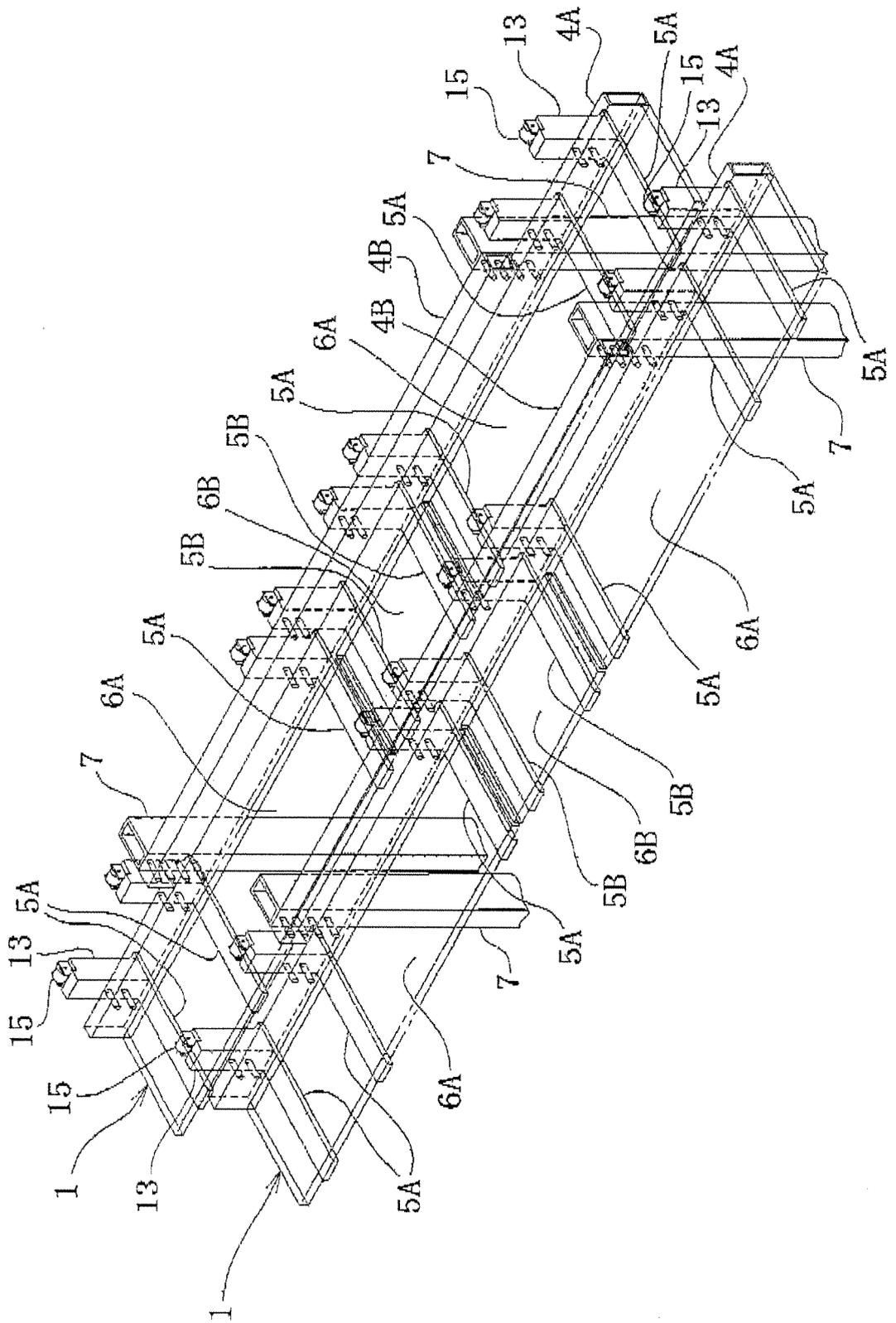


FIG. 5

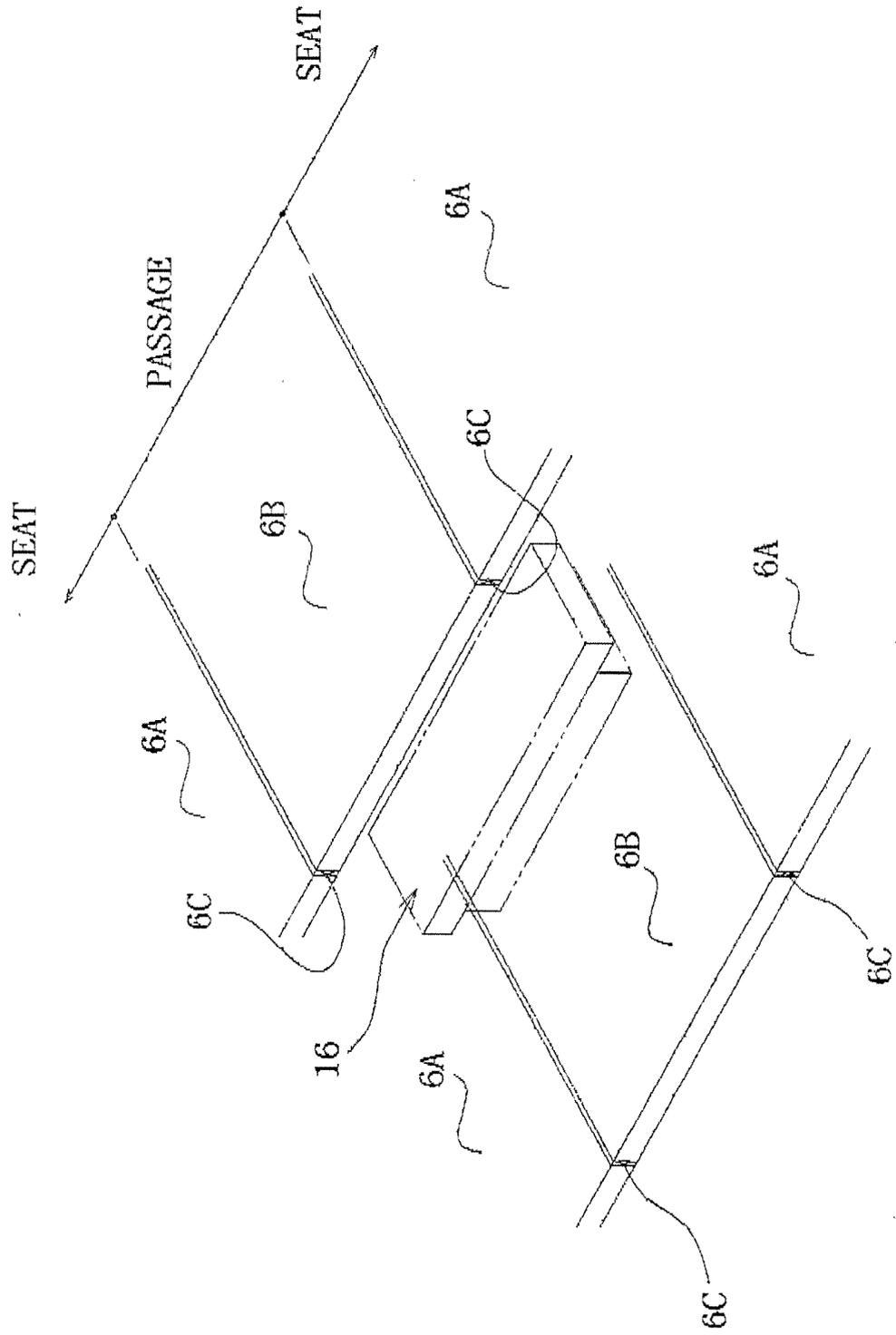
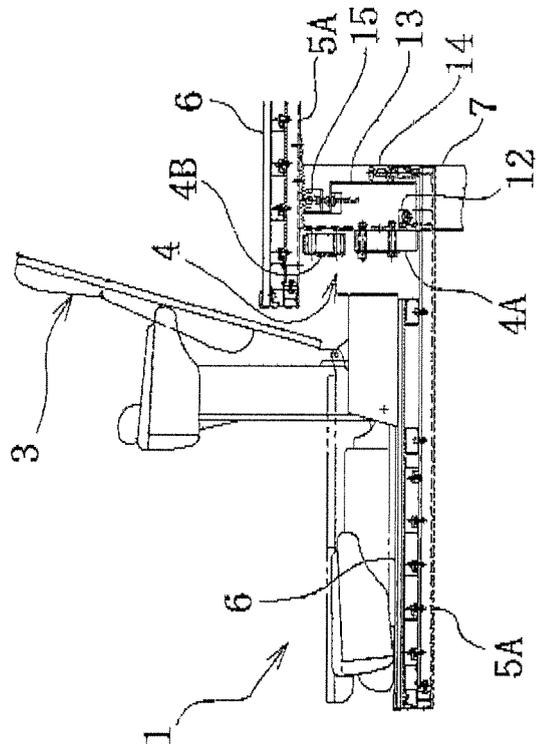


FIG. 6

(a)



(b)

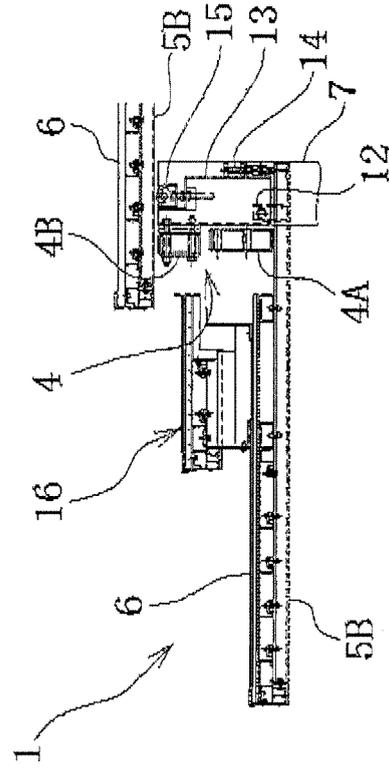
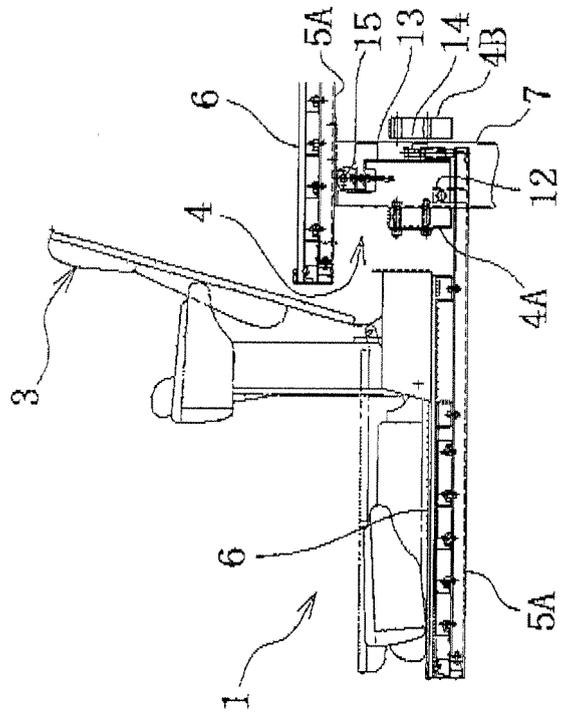


FIG. 7

(a)



(b)

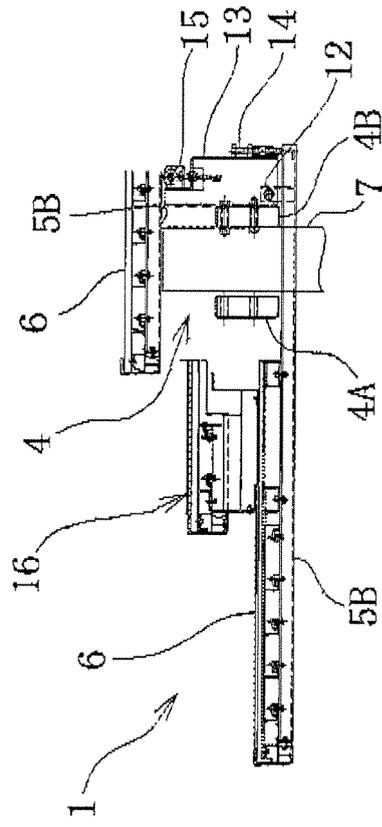


FIG. 8

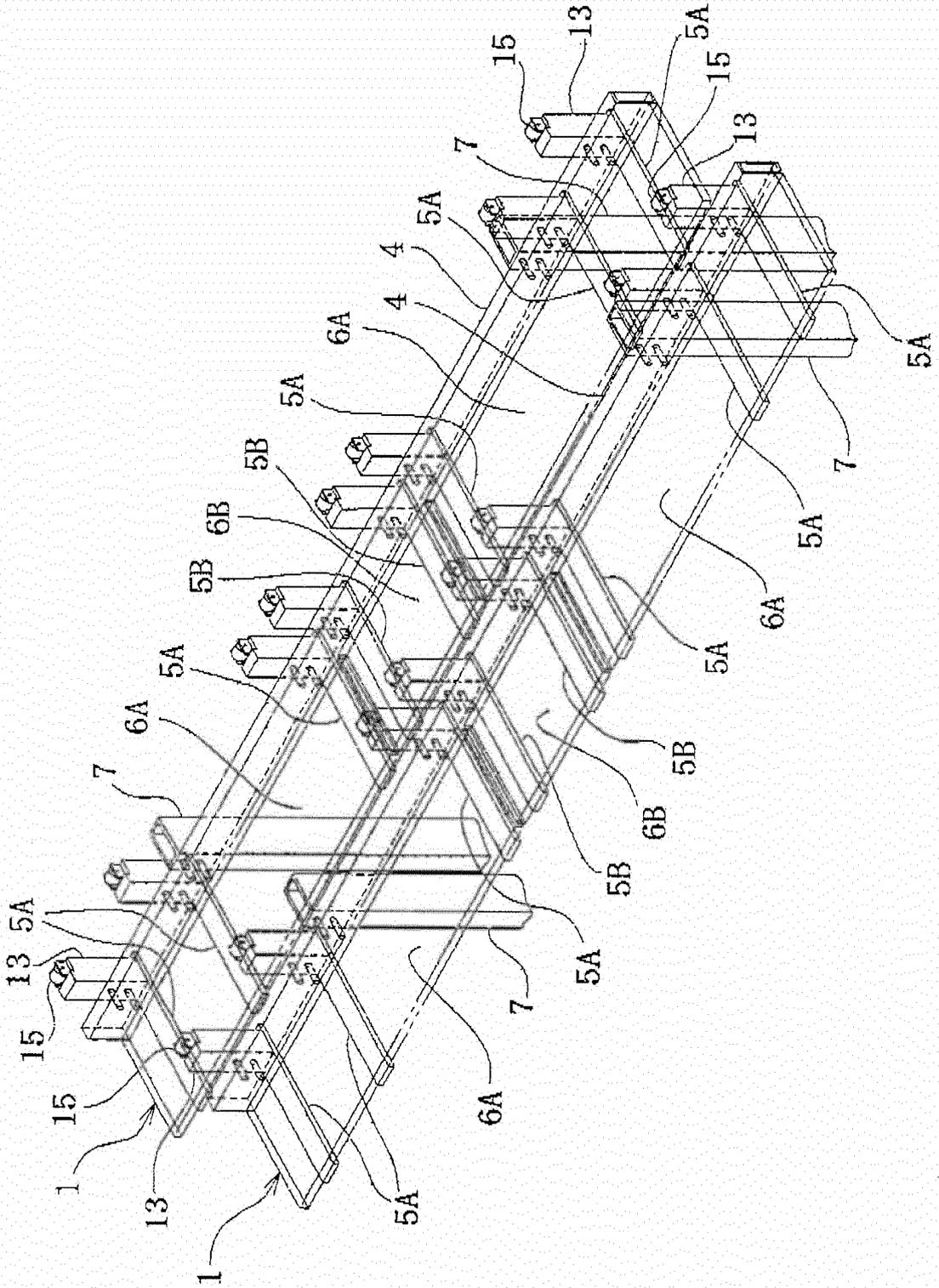
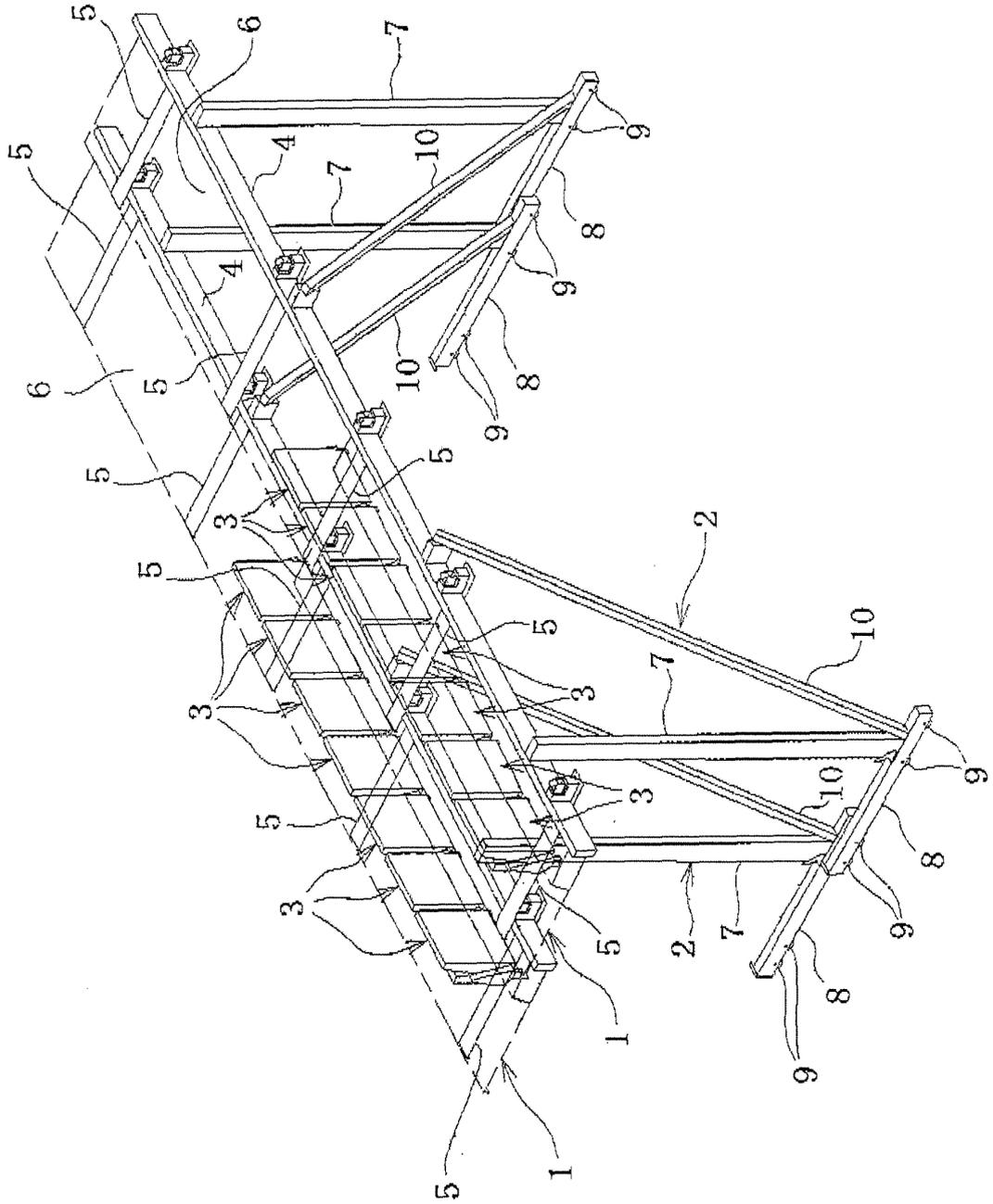


FIG. 9



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2009/062566

| A. CLASSIFICATION OF SUBJECT MATTER E04H3/12(2006.01)i, A47C1/126(2006.01)i | | |
|---|--|--|
| According to International Patent Classification (IPC) or to both national classification and IPC | | |
| B. FIELDS SEARCHED | | |
| Minimum documentation searched (classification system followed by classification symbols) E04H3/12, A47C1/126 | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2009 Kokai Jitsuyo Shinan Koho 1971-2009 Toroku Jitsuyo Shinan Koho 1994-2009 | | |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | |
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| A | Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 036659/1982(Laid-open No. 141060/1983) (Nittetsu Katen Oru Kabushiki Kaisha), 22 September, 1983 (22.09.83), Description, page 3, line 10 to page 4, line 20; Figs. 1 to 11 (Family: none) | 1-5 |
| A | JP 10-252296 A (Kokuyo Co., Ltd.), 22 September, 1998 (22.09.98), Par. Nos. [0013] to [0017]; Figs. 1 to 8 (Family: none) | 1-5 |
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| A | JP 10-102709 A (Kokuyo Co., Ltd.), 21 April, 1998 (21.04.98), Par. Nos. [0008] to [0016]; Figs. 1 to 4 (Family: none) | 1-5 |

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