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(71) Applicant: **Opacmare S.r.l.**
10040 Rivalta (TO) (IT)

(72) Inventor: **FURLAN, Andrea**
I-10045 PIOSSASCO (Torino) (IT)

(74) Representative: **Vanzini, Christian et al**
Jacobacci & Partners S.p.A.
Corso Emilia 8
10152 Torino (IT)

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(54) **STERN PLATFORM ASSEMBLY FOR AN OUTBOARD PROPELLED BOAT**

(57) A stern platform assembly for an outboard propelled boat (B), comprising a pair of side support wings (11), a movable platform (13) arranged adjacent to the side support wings (11), and a motion mechanism (20; 20'; 20'') housed within each of the side support wings (11) and carrying the movable platform (13), wherein the movable platform (13) is movable between a terminal elevation position, in which it is arranged adjacent to the

top of the side support wings (11), and a terminal lowering position, while keeping a predetermined orientation with respect to the side support wings (11) and keeping a closeness relationship with them, and wherein, when viewed in plan view, the assembly encompasses a room (R) circumscribed on three sides by the movable platform (13) and by the side support wings (11).

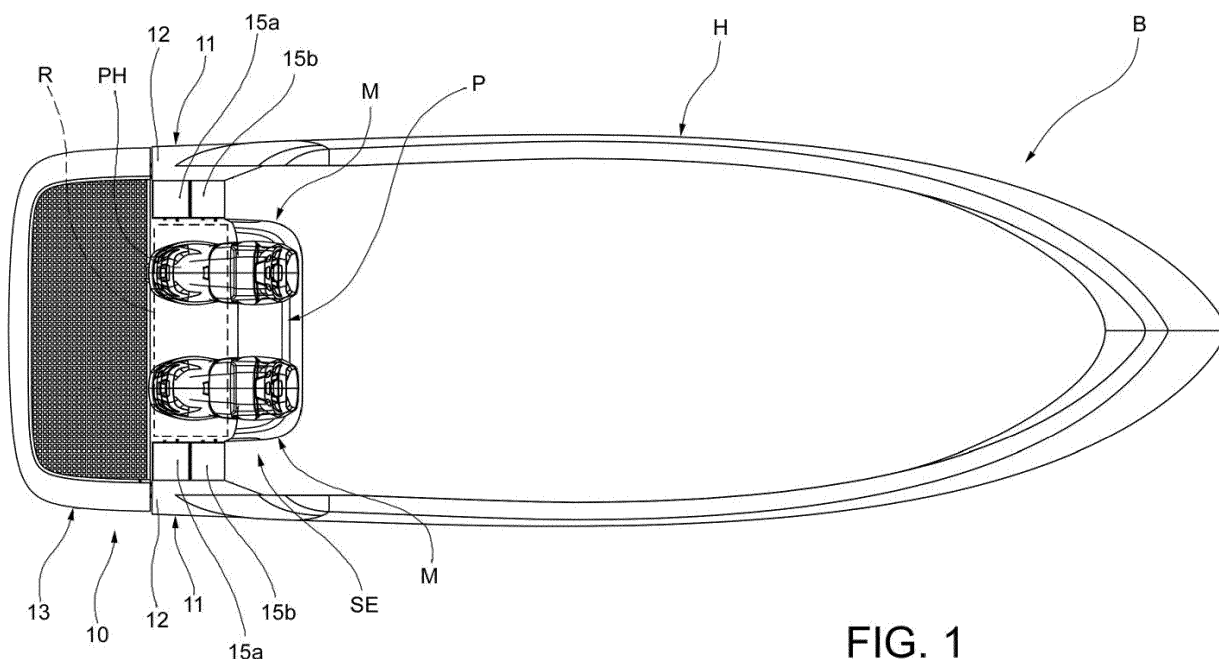


FIG. 1

Description

[0001] The present invention relates to a stern platform assembly for an outboard propelled boat.

[0002] A boat's outboard engine conventionally means a self-contained unit including the actual engine, transmission and propeller, and configured to be mounted outside the boat transom. The outboard motor is installed on the boat so that it can be rotated around a vertical axis, to provide the ability to tack the boat, and also generally has the ability to be flipped around a horizontal axis to allow the lifting of its lower part in which the propeller is arranged.

[0003] There are known stern platform assemblies for boats with inboard propulsion, provided with a mobile platform due to an articulated parallelogram mechanism. These platform assemblies are not suitable for installation on outboard propulsion boats due to the presence of the engines.

[0004] An object of the present invention is provide a stern platform assembly that is suitable for a boat with outboard propulsion.

[0005] For this purpose, the object of the invention is a stern platform assembly for an outboard propelled boat, characterized by comprising a pair of stationary side support wings, a movable platform arranged adjacent to the side support wings, and a motion mechanism housed within each of the side support wings and carrying the movable platform, wherein the movable platform is movable between a terminal elevation position, in which it is arranged adjacent to the top of the side support wings, and a terminal lowering position, while keeping a predetermined orientation with respect to the side support wings and keeping a closeness relationship with them, and wherein, when viewed in plan view, the assembly encompasses a room circumscribed on three sides by the movable platform and by the side support wings.

[0006] With a configuration of this type, it is possible to dimension the platform and the lateral support wings so that the space they circumscribe is sufficient to accommodate the outboard engines and to avoid interference with the latter when the movable platform is lowered or raised.

[0007] At the same time, it is possible to maintain an accessibility to the platform from the boat, at whatever elevation it is. Advantageously, since the platform extends continuously in front of the engines, when it is lowered it also acts as a safety barrier which prevents or at least limits access to the propellers by the swimmers.

[0008] Preferred embodiments of the invention are defined in the dependent claims, which are to be intended as an integral part of the present description.

[0009] Further features and advantages of the assembly according to the invention will become apparent from the following detailed description of an embodiment of the invention, made with reference to the accompanying drawings, provided for illustrative and non-limiting purposes only, in which:

- figure 1 is a plan view of a boat provided with a platform assembly according to the invention;
- figure 2 is a longitudinal section view of the boat in figure 1, in a first operating position;
- 5 - figures 3 and 4 are side elevational views of the boat in figure 1, in two different operating positions;
- figure 5 is a side elevational view of the movement mechanism of the platform assembly, in the position in figure 2;
- 10 - figure 6 is a plan view of the mechanism in figure 5;
- figure 7 is a side elevation view of the mechanism in the position in figure 3;
- figure 8a is a side elevational view of the mechanism in the position in figure 4;
- 15 - figures 8b-8g are various sectional views of the mechanism, in the position in figure 4;
- figures 9a-9c are side elevational views of a second embodiment of the platform assembly motion mechanism, in various operating positions; and
- 20 - figures 10a-10c are side elevational views of a third embodiment of the platform assembly motion mechanism.

[0010] With reference to figures 1 to 4, a boat B provided with outboard propulsion is shown. In figure 2, LG indicates the waterline. H indicates the hull, and M indicates each boat engine. Engines M are arranged in an engine shaft P formed at a stern end SE. Engines M can be one or more of one arranged side by side, and they are of the outboard type, that is, a self-contained unit that includes the real engine, the transmission and the propeller, and configured to be mounted outside of the stern end SE of the boat. PH indicates the engine head and S indicates the shank of each engine M, ending inferiorly with a propeller PR. Each engine M is rotatably mounted around a vertical axis to allow the boat to turn. Furthermore, each engine M can be rotated about a horizontal axis parallel to the stern end SE, to allow the propeller PR to be raised.

[0011] At the stern end SE of the boat, a stern platform assembly is installed, indicated as a whole with 10. The assembly 10 comprises a pair of side support wings 11 extending longitudinally from the stern end SE of the boat, on opposite sides of the engine shaft P, of a size such as to reach at least the maximum extension limit of engines M in the direction of the length of the boat B. Each side support wing comprises a cover 12. The side support wings 11 are fixed to the stern end of the boat.

[0012] The assembly 10 further comprises a movable platform 13 arranged adjacent the side support wings 11. The movable platform 13 can be displaced between an extreme elevation position (shown in figure 2), in which it is arranged adjacent to the top of the side support wings 11, and an extreme lowering position (shown in figure 4), maintaining a predetermined orientation with respect to the side support wings 11 and maintaining a proximity relationship with them. According to the plan view in figure 1, the assembly 10 embraces a space R circum-

scribed on three sides by the movable platform 13 and by the side support wings. When the platform assembly 10 is installed on a boat, the outboard engines M are positioned within a space circumscribed by the movable platform 13, the side support wings 11 and the stern end SE of the hull.

[0013] Alongside at least one of the side support wings 11 there is arranged a plurality of movable steps 15a, 15b, which are movable in a manner coordinated with the movable platform 13, and furthermore configured in such a way as to maintain a parallel relationship with the movable platform 13 during the movement of the latter. The steps 15a, 15b are arranged in such a way that the difference in height between one step and the other is proportional to the difference in height between the movable platform 13 and the pedestrian surface PC of the boat.

[0014] Inside each of the side support wings 11 there is housed a motion mechanism 20, whose part projecting beyond the wings 11 carries the movable platform 13. For illustrative purposes, in figures 2-4, the cover 12 of the support wings 11 is shown in transparency to show the entire motion mechanism 20.

[0015] With reference to figures 5 to 8a-8g, a possible embodiment of the motion mechanism is illustrated.

[0016] This mechanism comprises a stationary frame 201 arranged inside the side support wing 11 and fixed to a bearing structure of the boat, and a pair of rods 202 and 203 having ends hinged to the frame 201, respectively in x1 and x2. The opposite ends of the rods 202 and 203 are hinged, respectively in x3 and x4, to an arm of a square element 204.

[0017] The free end of the rod 202 is also hinged, again in x3, to a first support part 205 of the movable platform 13. The other arm of the square element 204 is hinged, in x5, to one end of an element adjustable in length 204b, the free end of which is hinged, in x6, to the first support part 205.

[0018] The movable platform 13 further comprises a second support part 206 slidably coupled to the first support part 205. A walking surface 207 of the platform 13 is fixed to the second support part 205.

[0019] The second support part 206 is connected, by means of a connecting element 208, to a slider 209, arranged to slide in a guide groove 210 arranged on the frame 201 of the motion mechanism.

[0020] A linear actuator 211, having a hinged end, in x7, to the frame 201 and another hinged end, in x8, to one of the rods 203, is provided for controlling the movement of the mechanism.

[0021] By virtue of the above described mechanism, by actuating the actuator 211 the first support part 205 of the movable platform 13 travels along a curvilinear trajectory maintaining a predetermined orientation with respect to the frame 201, and therefore to the side support wing. The second support part 206 translates vertically due to the dragging by the first support part 205, while the latter slides along the second support part 206.

In this way, the walking surface 207 of the movable platform 13 performs a vertical translation movement, translating along the side support wings 11.

[0022] The frame 201 of the motion mechanism further comprises a pair of uprights 215 and 216, to which sliders 217 and 218 are slidably coupled. The first slider 217 is connected to the rods 202 and 203 through a pair of sliders 218a and 218b integral with it and slidably coupled to guide grooves 219a and 219b formed respectively on the rods 202 and 203. The guide groove 210, which guides the translation movement of the first support part 205, is also made integral to the slider 217.

[0023] The second slider 218 is connected to one of the rods 203 by means of a connecting rod 221 which has one end hinged to the second slider 218 and another end hinged to the rod 203, in x8. A respective step 15a, 15b is fixed to each slider.

[0024] In this way it is possible to obtain that the steps 15a, 15b move in a coordinated manner with the movable platform, in order to make the passage of a person from the walking surface PC of the boat to the movable platform 13, and vice versa, gradual and easy. It is possible to provide that in a specific position the movable platform 13, the steps 15a and 15b and the walking surface of the boat PC lie on the same plane (figures 3 and 7).

[0025] With reference to figures 9a-9c, an alternative embodiment of the motion mechanism, indicated with 20', is now described.

[0026] This mechanism comprises a plurality of rods 202' hinged to each other so as to form a pantograph articulation. The rods 202' of the upper pair have a hinging point x 1' fixed to a stationary frame 201', and the other has a hinging point x2' sliding within a guide groove 203' formed on the frame 201'.

[0027] On the other end of the pantograph articulation, a rod 202' of the lower pair has a hinged point x3' fixed to the movable platform 13, and the other rod 202' has a hinging point x4', sliding within a groove guide 204' obtained on the platform 13.

[0028] The central pivoting point x5' between the rods 202' of the lower pair is also guided in a respective guide groove 205' formed on the movable platform 13.

[0029] A guide 206' is also provided for guiding pivots for pivoting rods 202' along a straight trajectory.

[0030] By means of the configuration described above, it is possible to ensure that the platform moves along a straight trajectory, always maintaining the same orientation.

[0031] With reference to figures 10a-10c, a further embodiment of the motion mechanism, indicated with 20'', is described.

[0032] The mechanism 20'' comprises a linear actuator 202'' arranged integrally with the frame 201'' of the mechanism. The movable end 203'' of the actuator 202'' is fixed to the movable platform 13. In this case, the movement of the movable platform 13 is directly controlled by the actuator 202''. To correctly guide the movable platform 13, a telescopic structure 204'' is provided which

connects this platform to the frame 201".

[0033] The movement of steps 15a, 15b is carried out as follows.

[0034] A pin 205" is associated to the telescopic structure 204" which moves in a coordinated manner with the telescopic structure. A step 15a is rigidly coupled to this pin 205". Said pin 205" is slidably coupled to a first guide groove 206" obtained on a rod 207" hinged to the frame 201', in x1". The rod 207" has a second guide groove 208" to which a second pin 209" is slidably coupled, which is integral with a slider 210", slidingly coupled to a guide 211" arranged on the frame 201", and extending parallel to the direction of movement of the movable platform 13. The slider 210" is fixed to the second step 15b.

[0035] In one embodiment, a control system is also provided which checks the respective positions of the movable platform 13 and of the engines M, and authorizes or not the movement and starting of the engines.

[0036] For example, it is possible to provide that, in the event that an operator actuates a command for lowering the platform, the control system (for example by means of sensors) checks the position of the motors. In the event that the engines are positioned with raised propellers, the control system does not authorize the lowering of the platform to avoid interference with these propellers. In the event that the engines are positioned with the propellers lowered, the control system authorizes the lowering of the platform instead.

[0037] It is also possible to provide that, in the event that the engines are raised and an operator activates a command to start the engines, the control system verifies the position of the platform. If the platform is in the position of maximum elevation, the control system authorizes the lowering of the engines and their starting. If the platform is instead partially or completely lowered, the control system does not authorize the lowering of the engines and their starting.

[0038] It is understood that the invention is not limited to the embodiments described and illustrated herein, but is instead susceptible of modifications relating to the shape and arrangement of parts, constructional and operating details, according to the numerous possible variants which will appear suitable to the man skilled in the art and which are to be understood as included in the scope of the invention, as defined by the following claims. In particular, the embodiments of the motion mechanism are not limited to those described, further configurations being possible, possibly with the application of further kinematic elements such as gears or chain or belt transmissions. Furthermore, it is possible to configure the platform assembly so that the movable platform does not exactly perform a translation movement, but a slightly curvilinear movement, provided that the movable platform does not move too far (for example no more than a few centimeters) from the side support wings.

Claims

1. A stern platform assembly for an outboard propelled boat (B), **characterized by** comprising a pair of stationary side support wings (11), a movable platform (13) arranged adjacent to the side support wings (11), and a motion mechanism (20; 20'; 20'') housed within each of the side support wings (11) and carrying the movable platform (13), wherein the movable platform (13) is movable between a terminal elevation position, in which it is arranged adjacent to the top of the side support wings (11), and a terminal lowering position, while keeping a predetermined orientation with respect to the side support wings (11) and keeping a closeness relationship with them, and wherein, when viewed in plan view, the assembly encompasses a room (R) circumscribed on three sides by the movable platform (13) and by the side support wings (11).
2. An assembly according to claim 1, wherein the platform (13) is rectilinearly translatable between the terminal elevation position and the terminal lowering position.
3. An assembly according to claim 2, comprising a plurality of movable steps (15a, 15b) arranged alongside at least one of the side support wings (11) and connected to the motion mechanism (20; 20'; 20'') in such a way as to keep a parallelism relationship with the movable platform (13) during motion thereof.
4. An assembly according to claim 2 or 3, wherein the movable platform (13) comprises a support structure comprising a first support part (205) and a second support part (206) slidably coupled to each other, wherein the motion mechanism (20) comprises a linkage (202, 203, 204) connected to a frame (201) of the side support wing (11), a slide guide (210) arranged on the side support wing (11), and an actuator (211) for controlling the linkage (202, 203, 204), wherein the first support part (205) is connected to the linkage (202, 203, 204) in such a way as to be capable of travelling along a curvilinear path while keeping a predetermined orientation with respect to the side support wing (11), and wherein the second support part (206) is coupled to the slide guide (210) in such a way as to be capable of translating along it, being driven by the first support part (205).
5. An assembly according to claim 2 or 3, wherein the motion mechanism (20') comprises a pantograph linkage (202'), an upper end (x1', x2') of which is connected to the side support wing (11), and a lower end (x3', x4', x5') of which is connected to the movable platform (13).

6. An assembly according to claim 4 or 5, comprising a plurality of steps (15a, 15b) rigidly connected to respective sliders or slippers (217, 218) coupled to guides (215, 216) arranged in the side support wing (11), and connected to the linkage (202, 203, 204; 202'). 5
7. An assembly according to claim 2 or 3, wherein the motion mechanism (20'') comprises a linear actuator (202''), an upper end of which is connected to the side support wing (11), and a lower end (203'') of which is connected to the movable platform (13), wherein the assembly further comprises a plurality of steps (15a, 15b) rigidly connected to respective sliders or slippers (202'', 210'') coupled to guides (211') arranged in the side support wing (11), and connected to the same rod (207'') hinged to the side support wing (11). 10 15
8. An outboard propelled boat, comprising a hull (H) and at least one outboard motor (M) positioned at a stern end (SE) of the hull, and further comprising a stern platform assembly (10) according to any of the preceding claims, arranged in such a way as that the outboard motor (M) is positioned within a room circumscribed by the movable platform (13), by the side support wings (11) and by the stern end (SE) of the hull. 20 25

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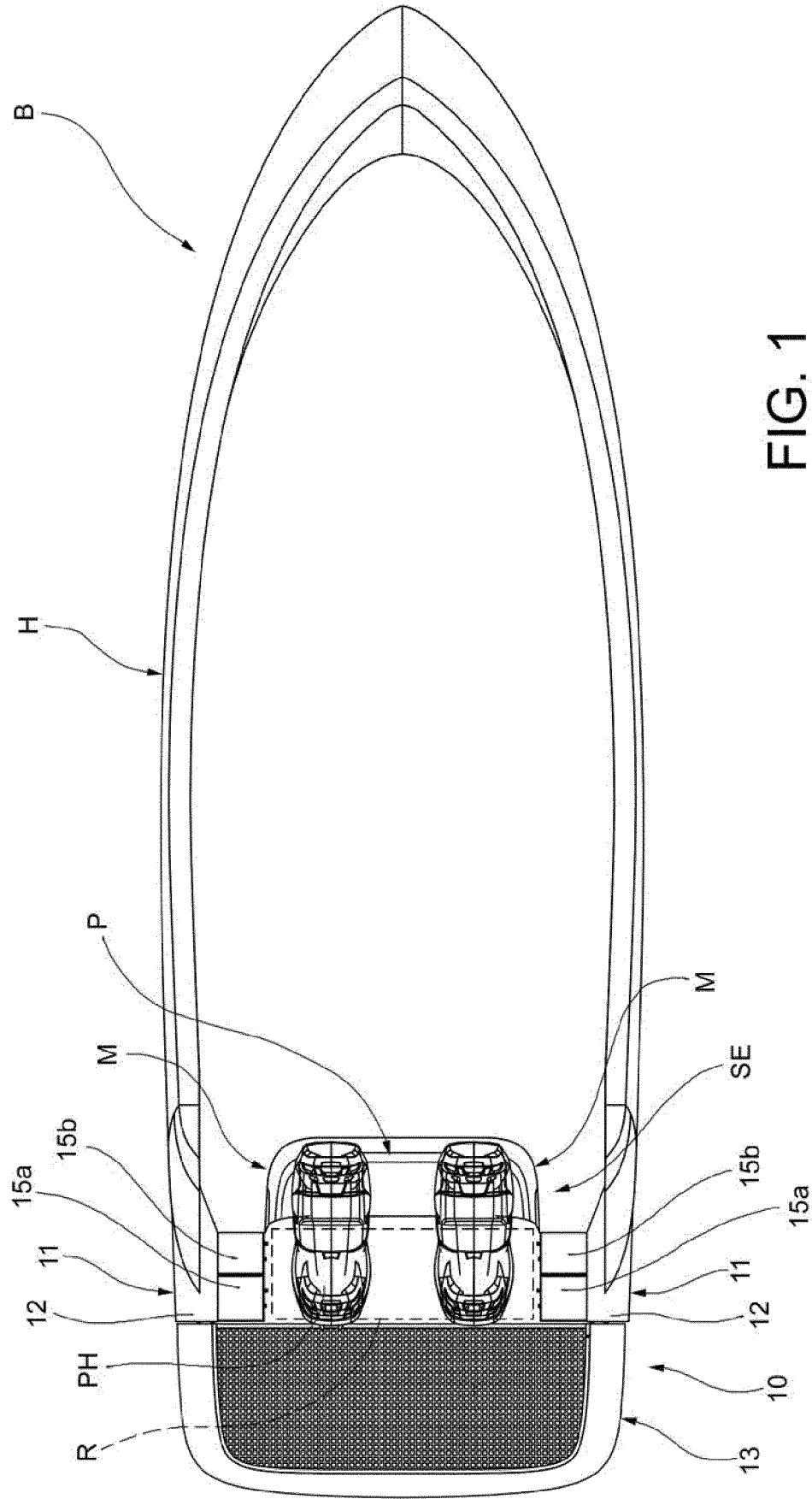


FIG. 1

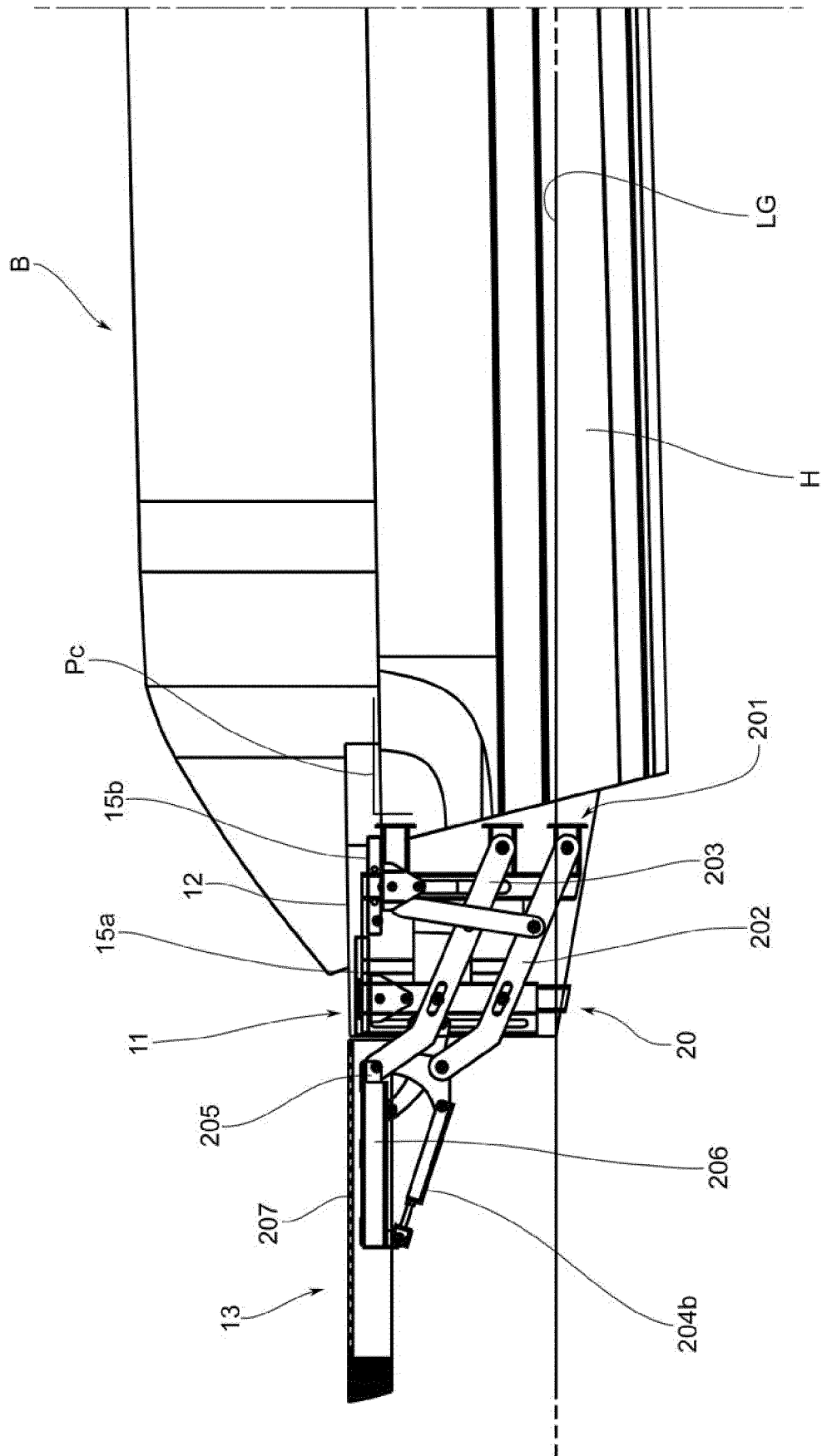


FIG. 2

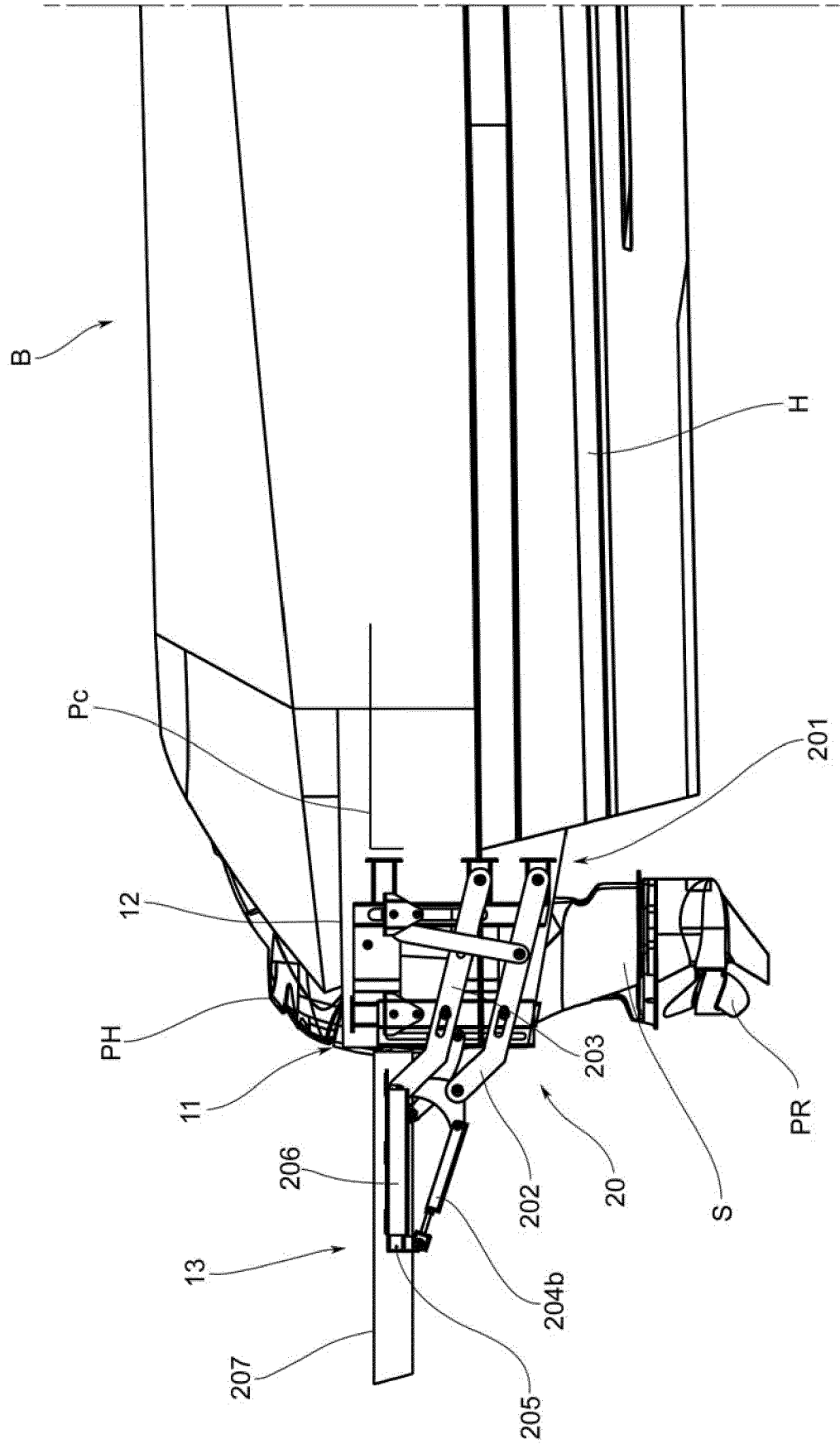
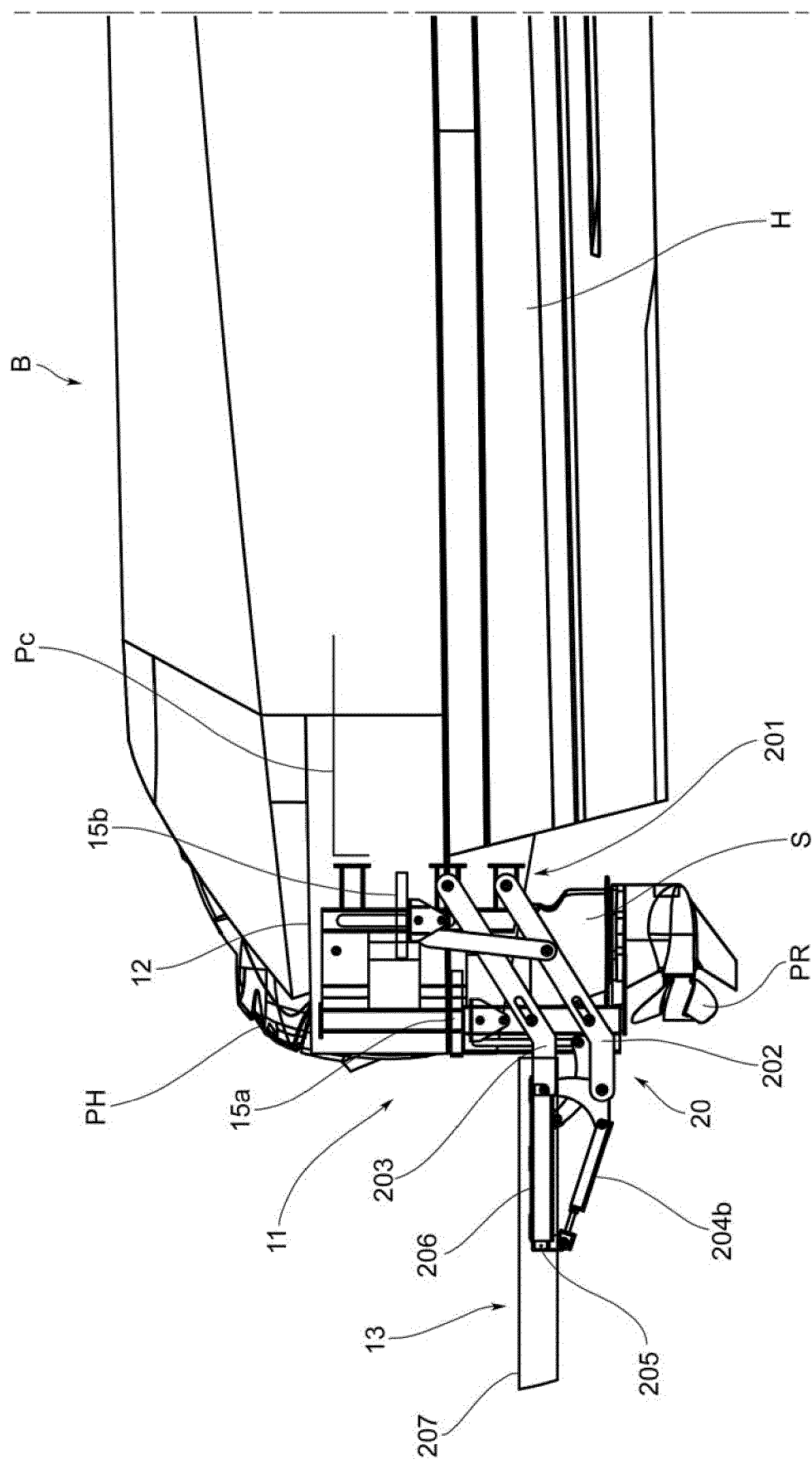
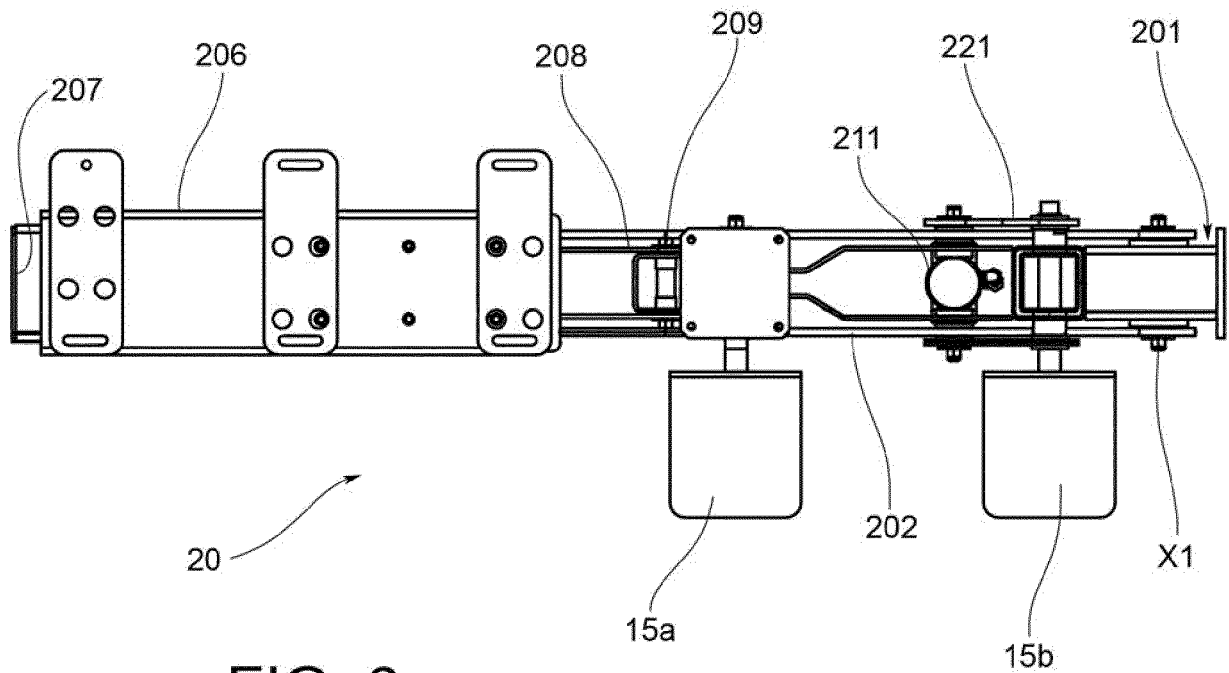
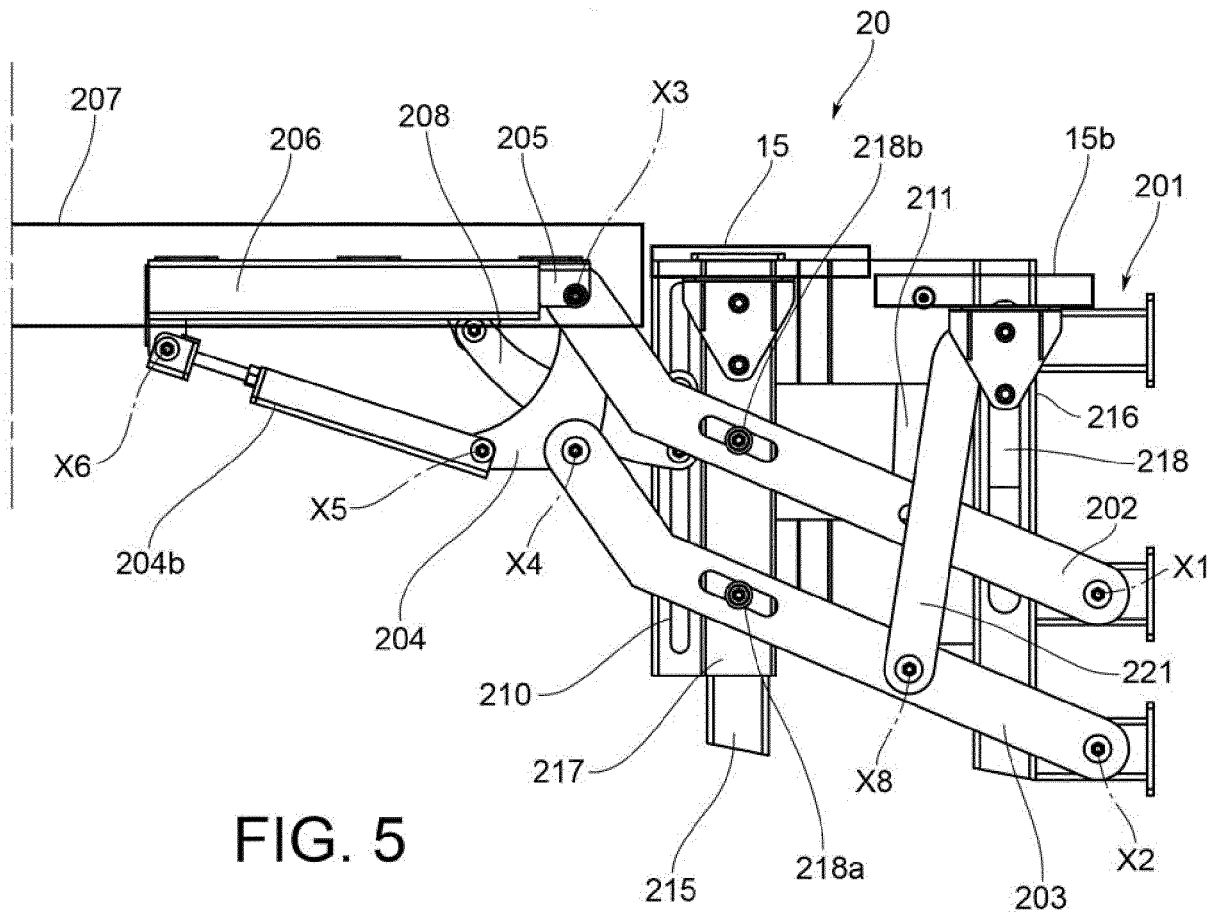
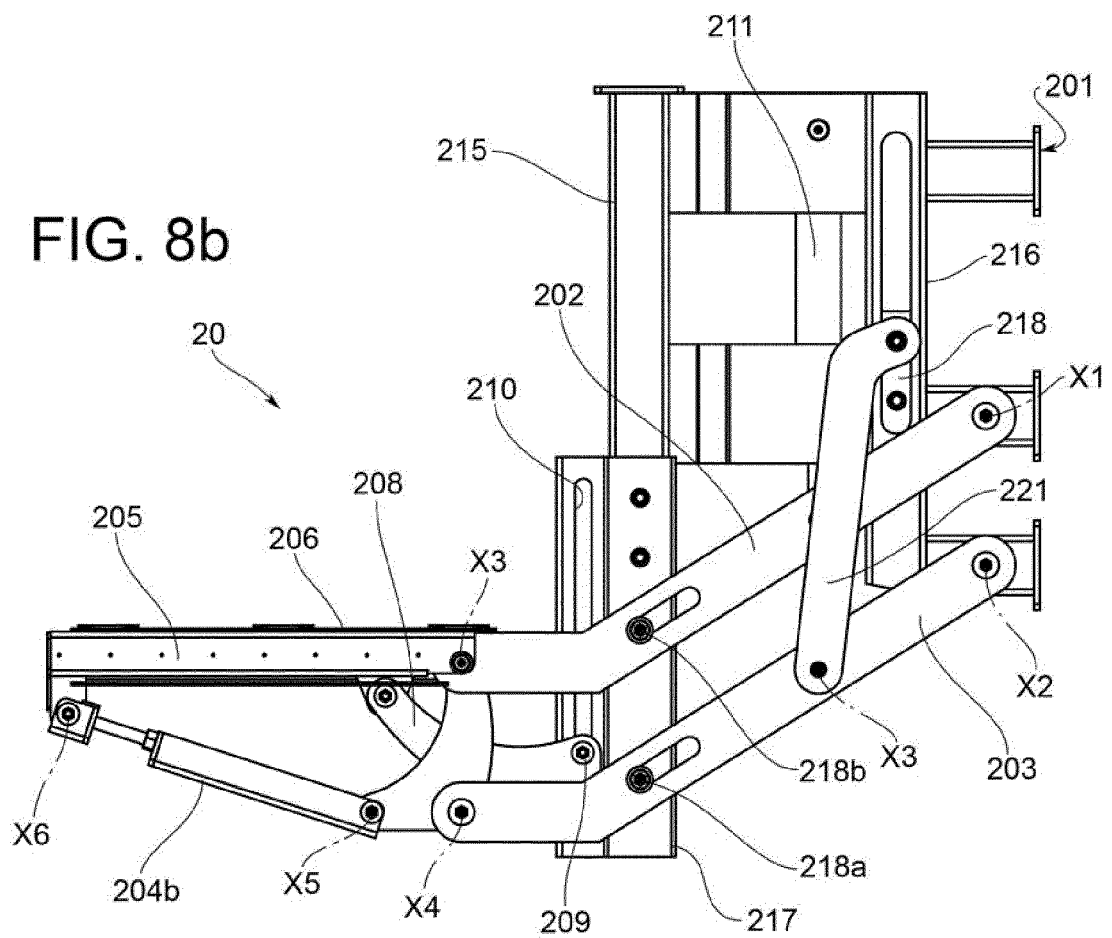
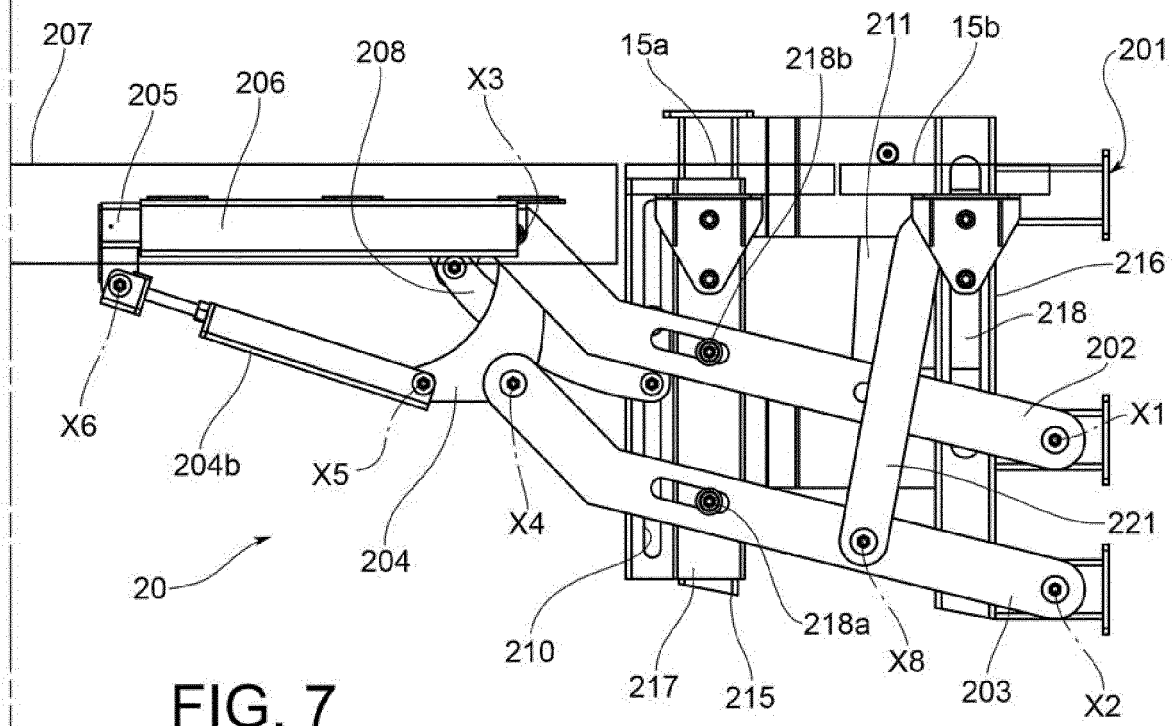


FIG. 3







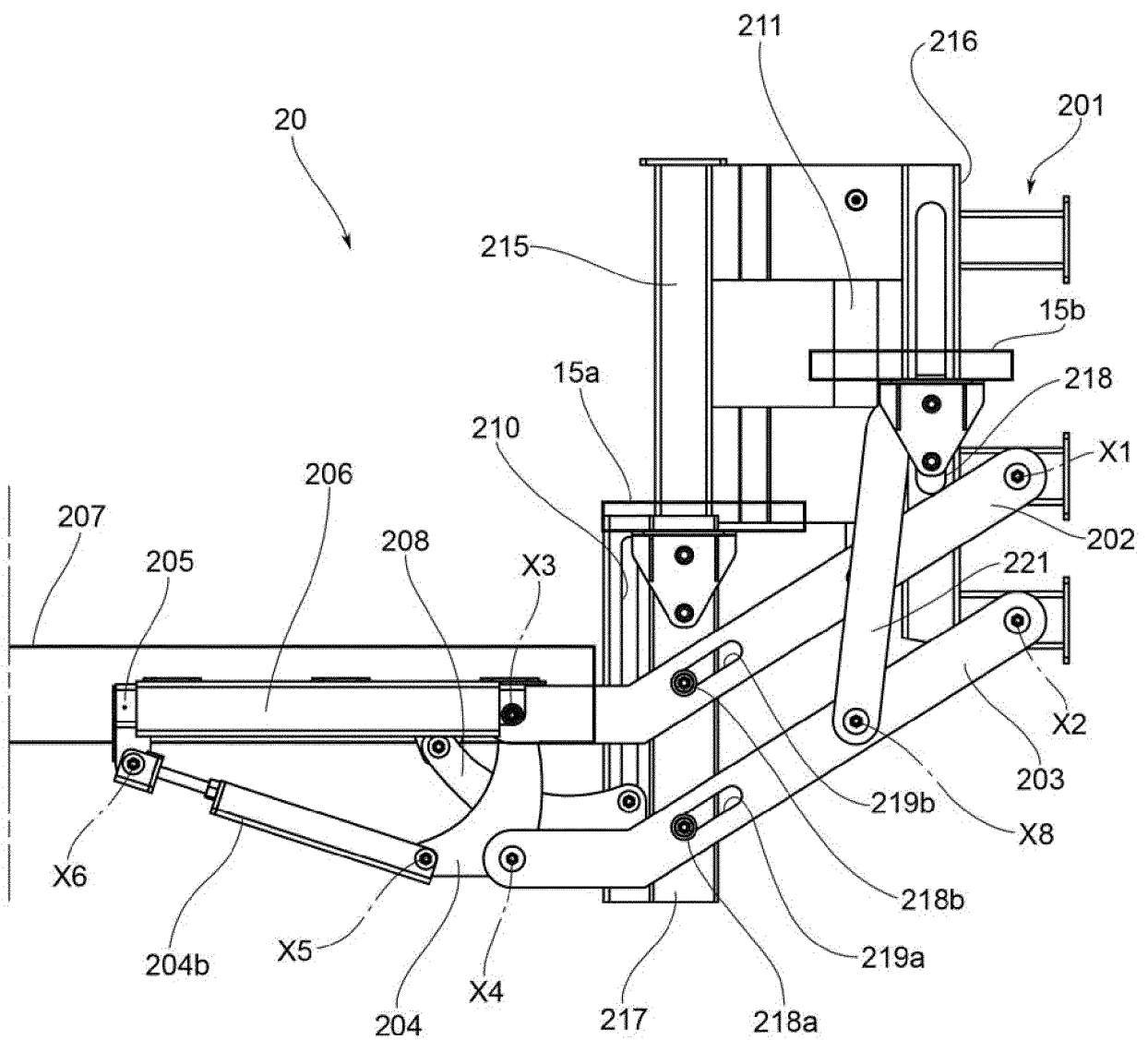


FIG. 8a

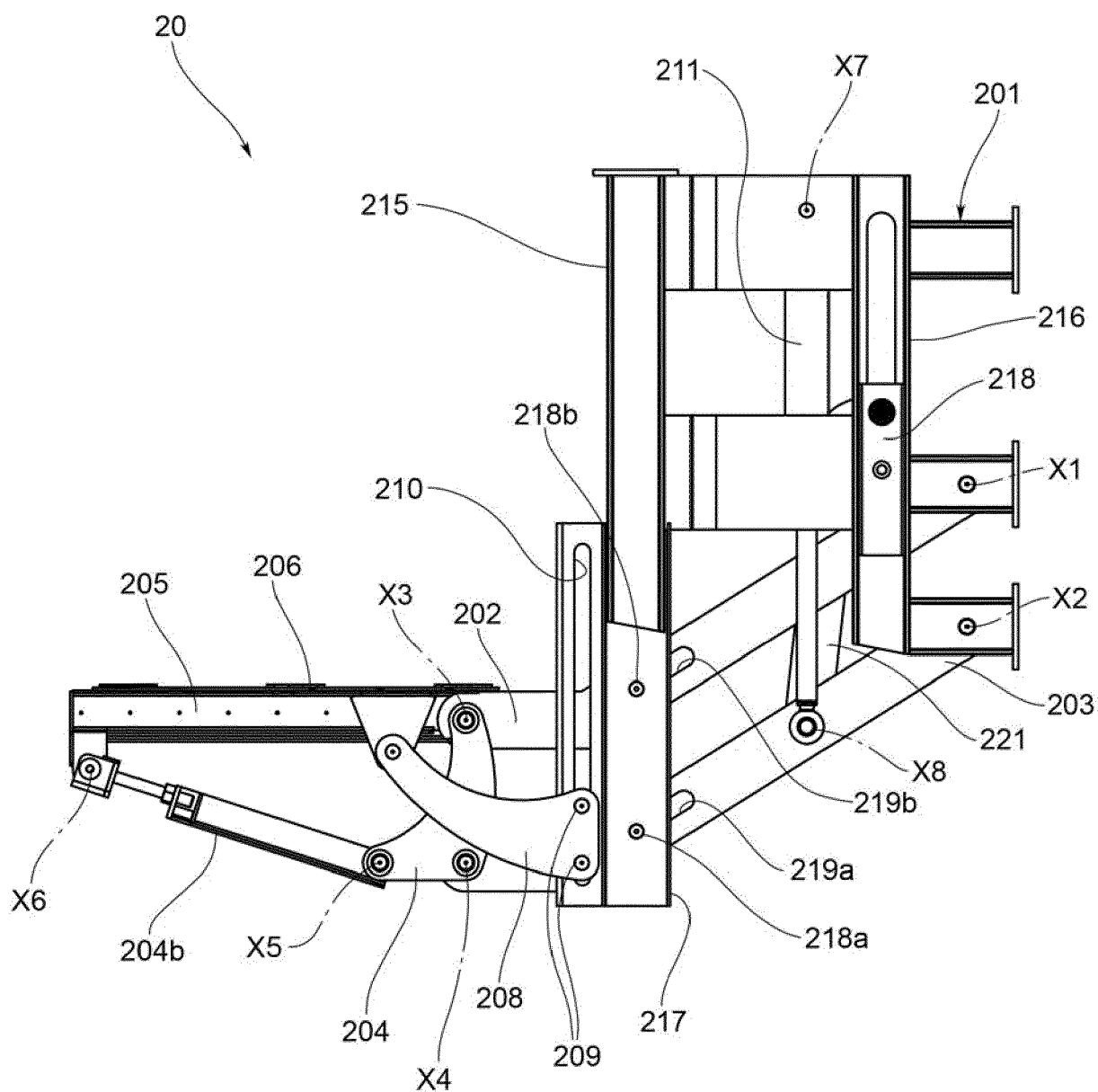


FIG. 8c

FIG. 8d

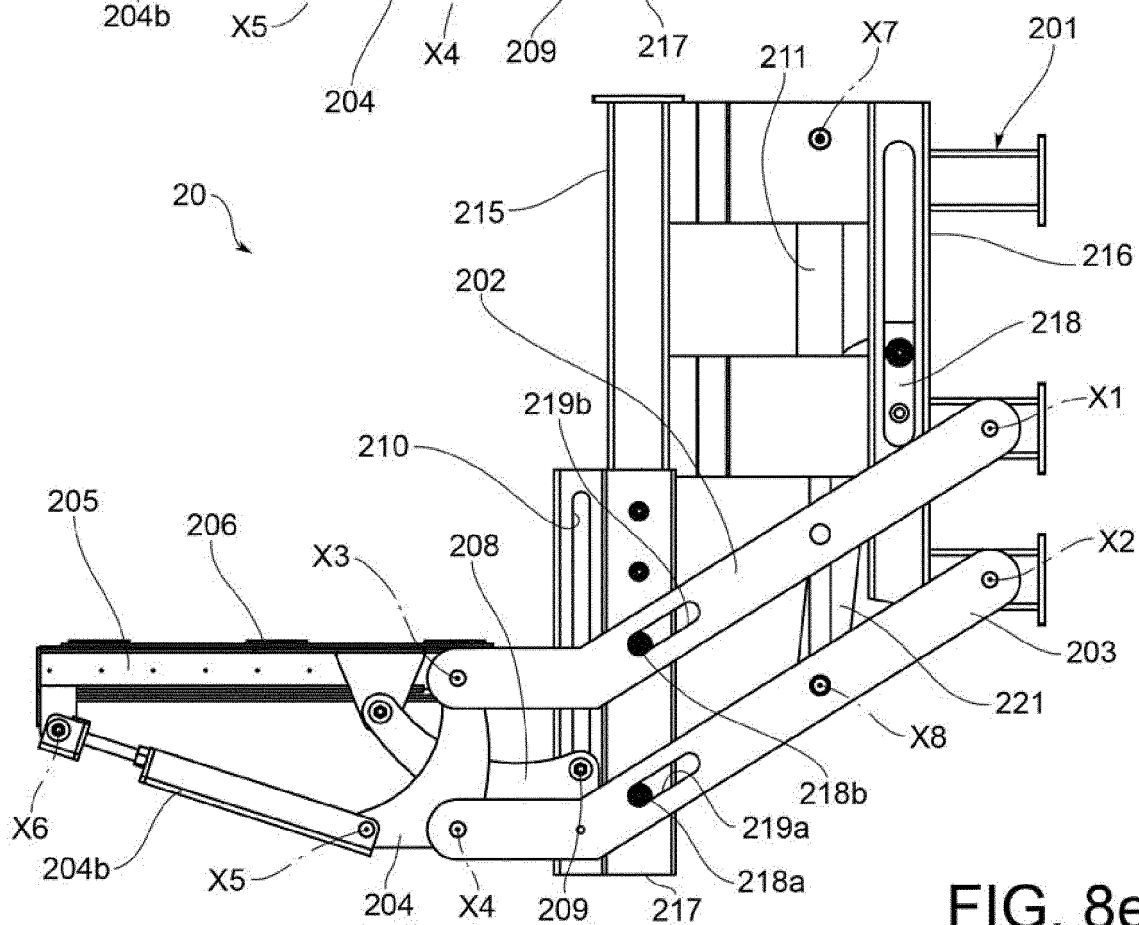
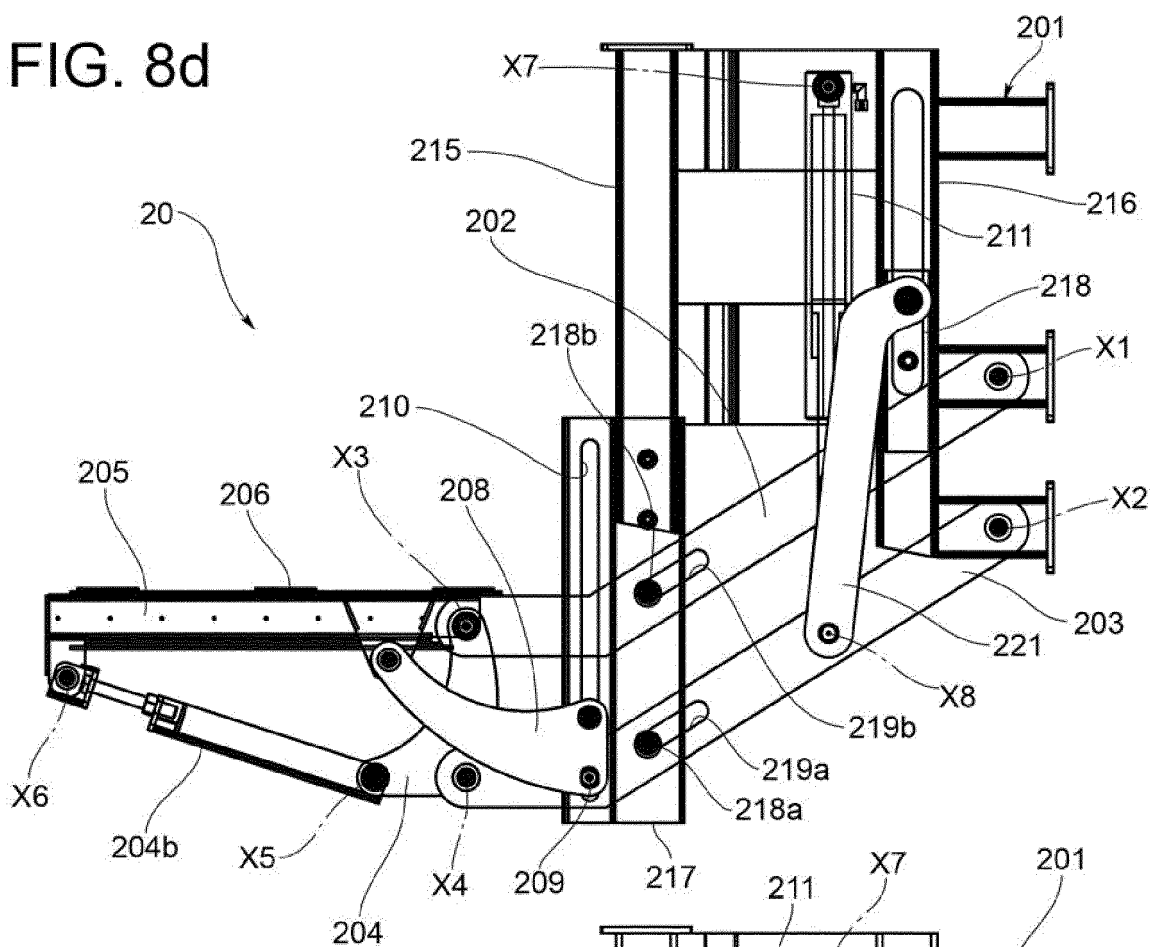


FIG. 8e

FIG. 8f

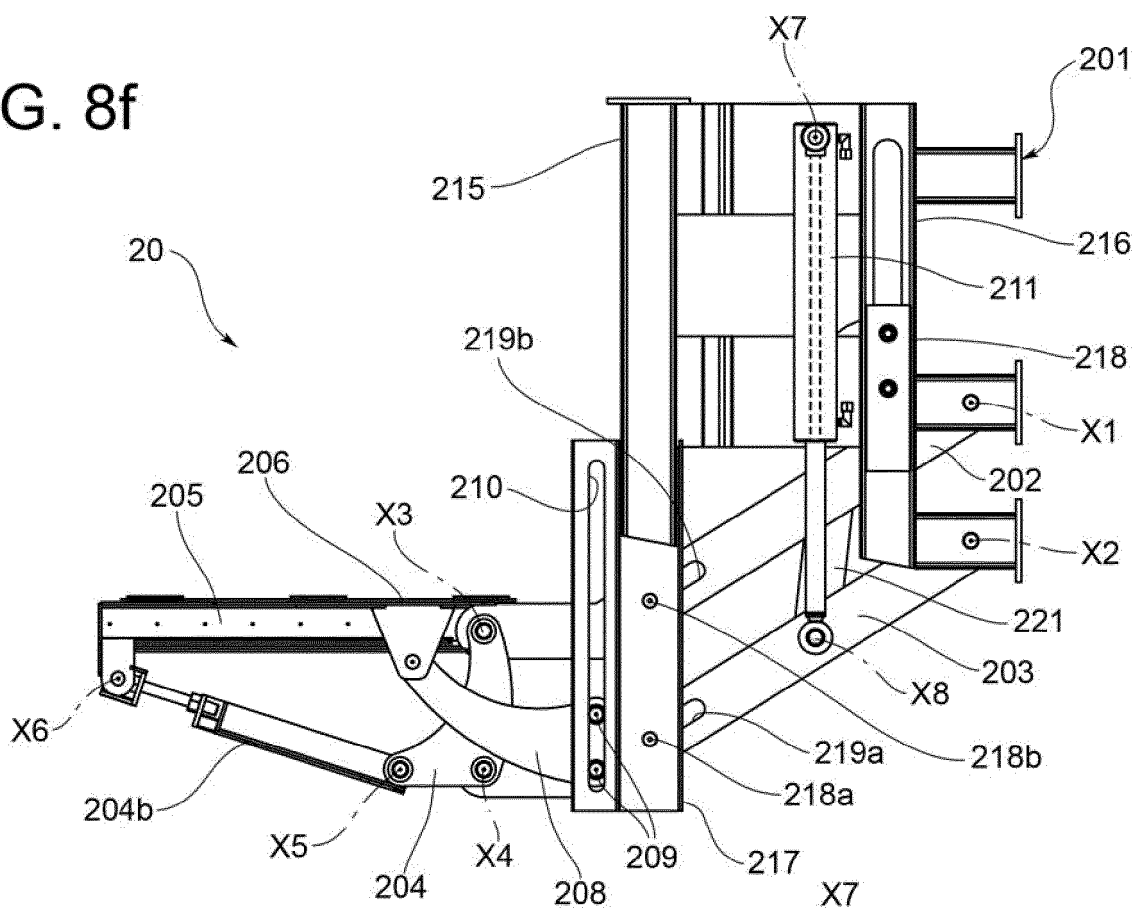
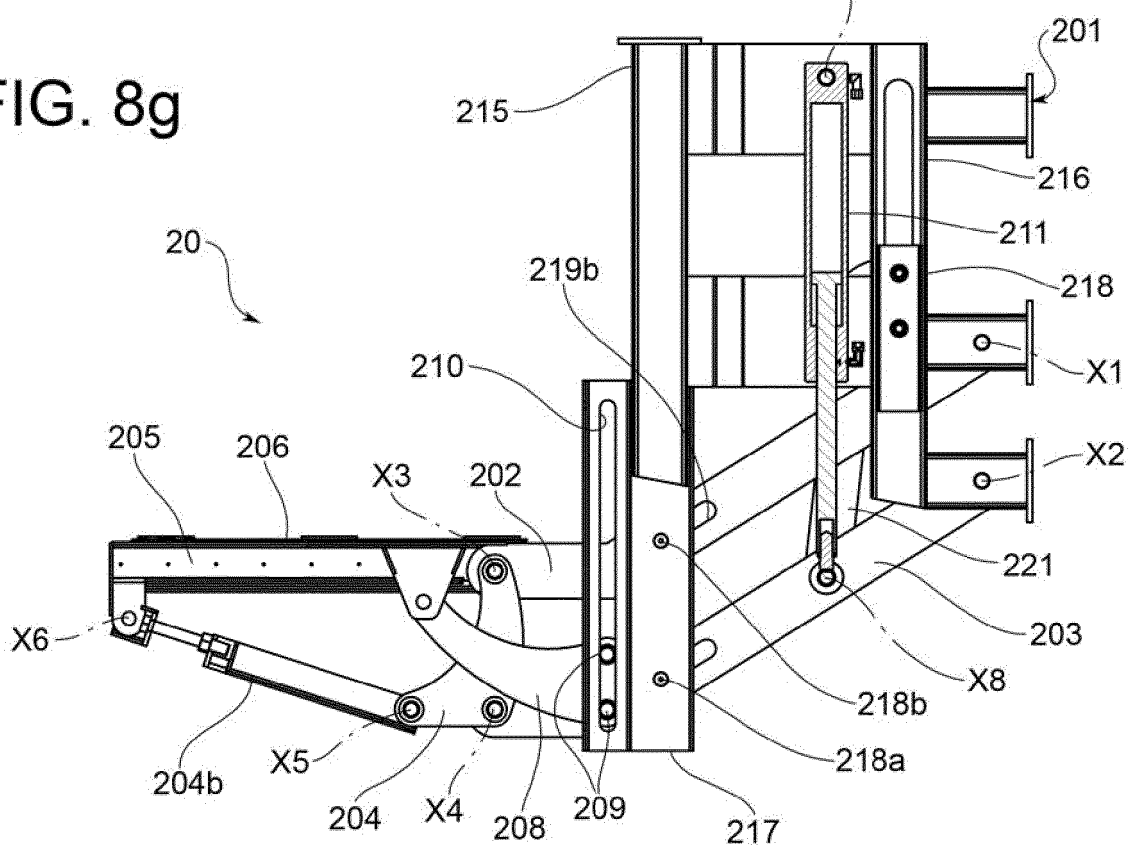
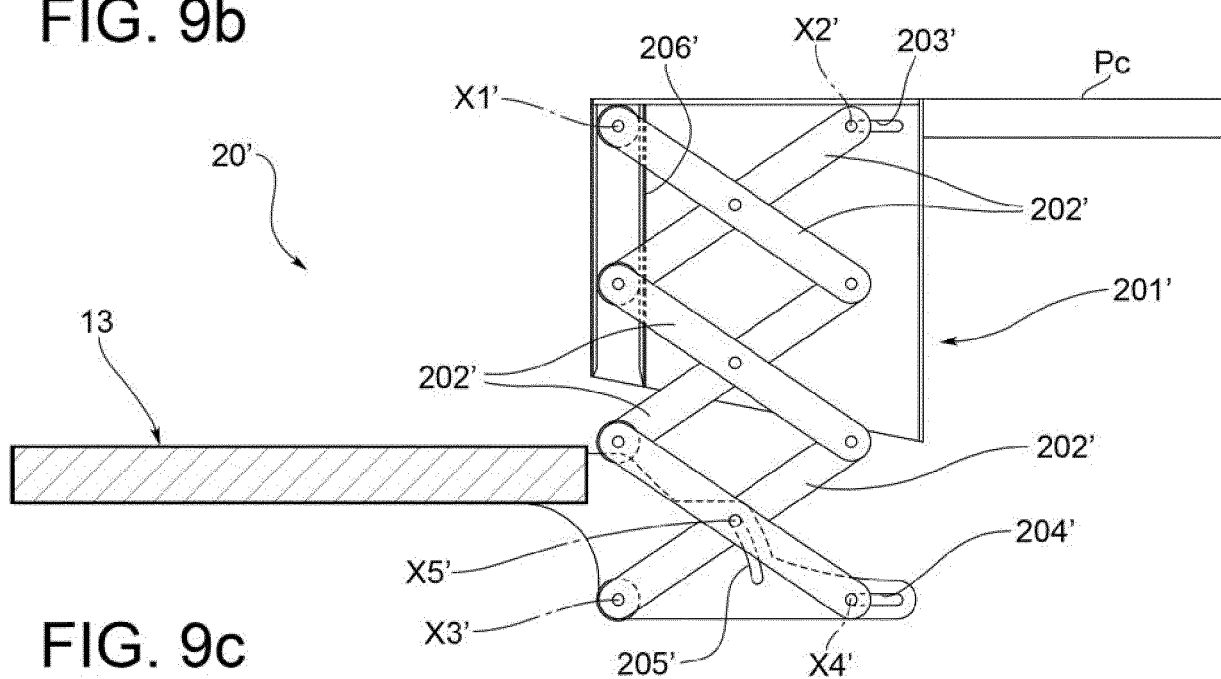
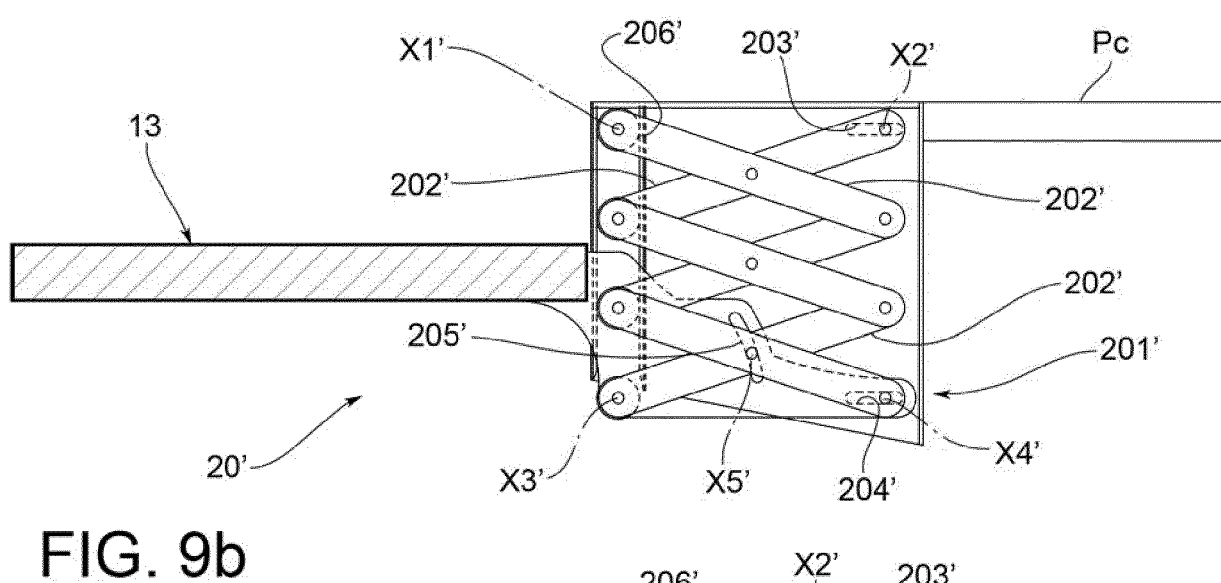
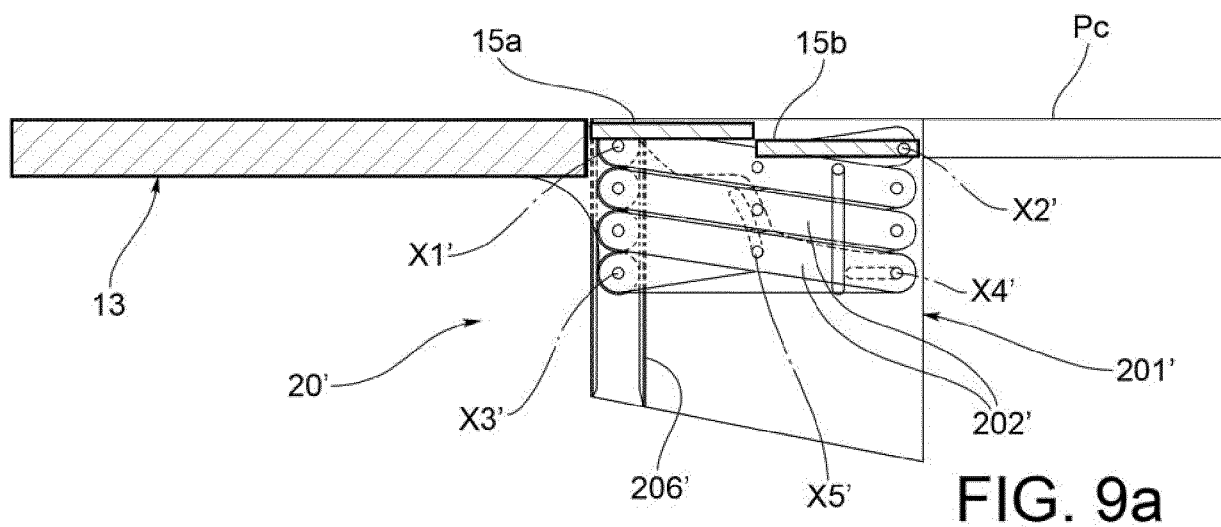


FIG. 8g





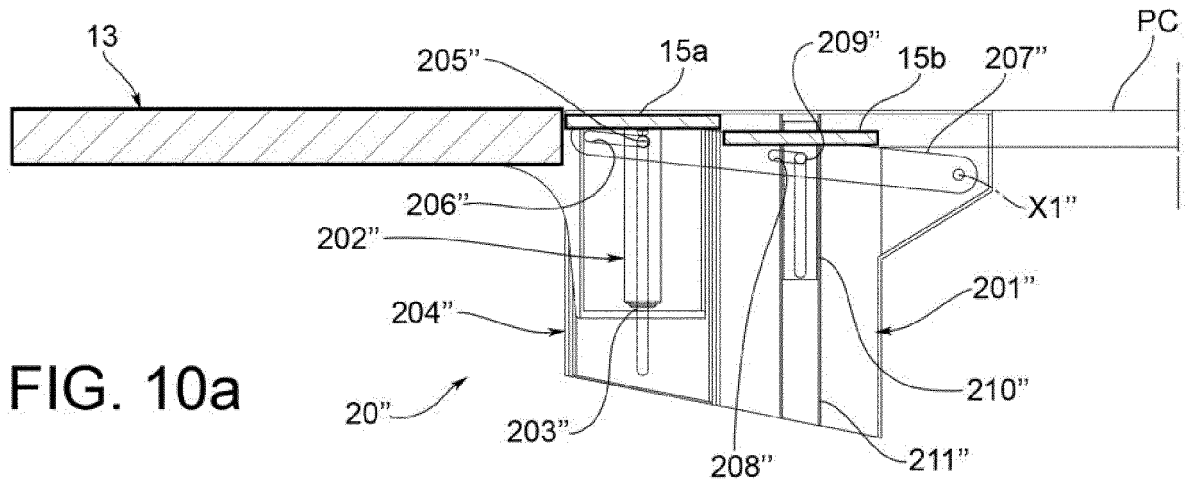


FIG. 10a

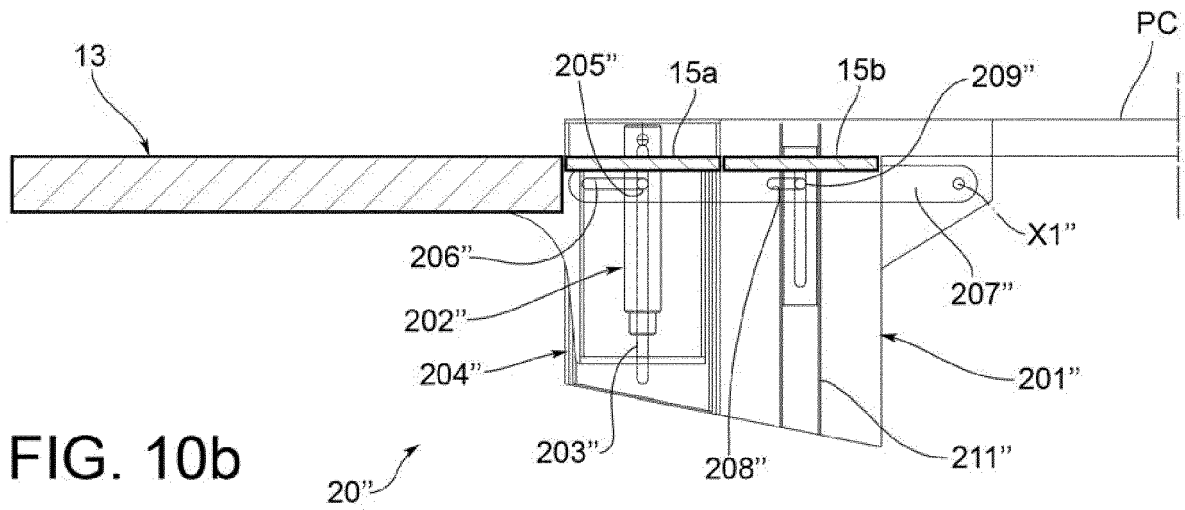


FIG. 10b

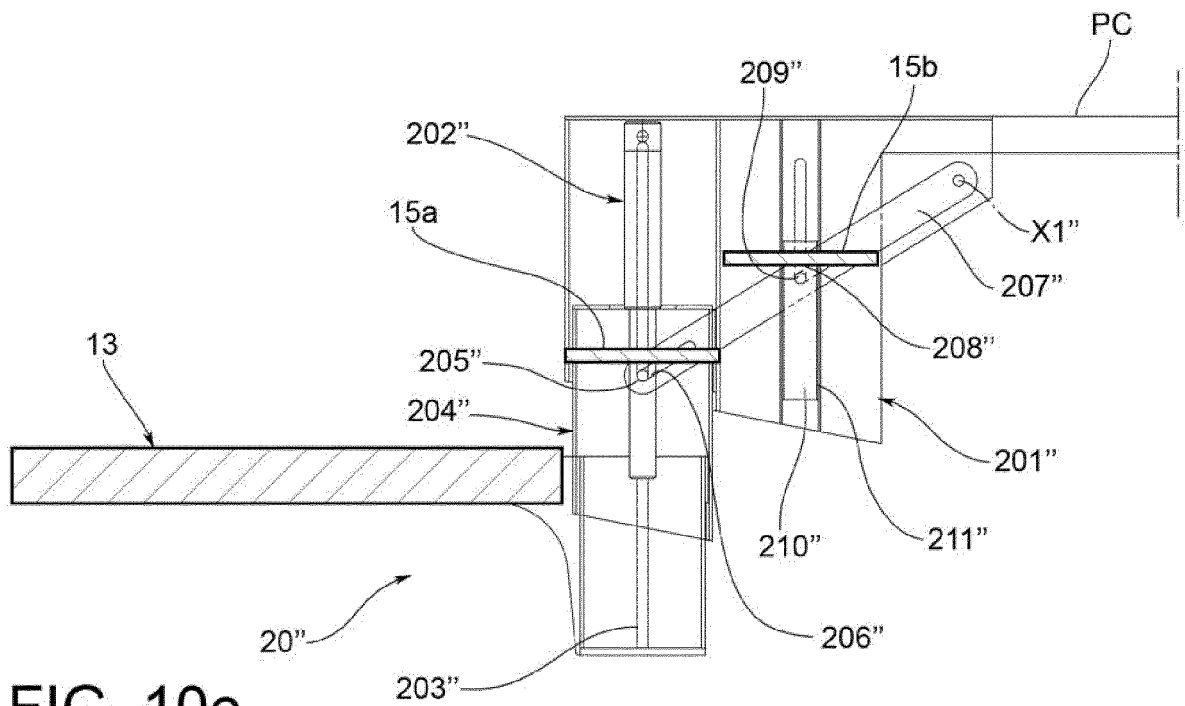


FIG. 10c



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Application Number
EP 18 17 2226

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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