Abstract: The invention concerns a support mechanism (101) for vehicle-carrying liftable panels on board ships and having stop members carried in vertical groups on laterally positioned pillars or other carriers on board on fixed levels, wherein movable stop lugs (806), which are distributed along the circumference of the respective panel and arranged in line with the appurtenant group of stop members, are actuable to come into engagement with desired stop members. Said stop lugs (806) are movably mounted to be brought between disengaged position and locked position (LL) by remote actuation, to dispatched position inside the circumference edge of the appurtenant panel and out outside, respectively, the circumference edge of the appurtenant panel for the receipt of a panel (2, 2A-2') on desired stop members (3, 3A...). By the pulling member (5), the stop lugs (806) are brought in the opposite direction. According to the invention, the locking mechanism (14), which is carried by said liftable panel (2-2'), is connected with the appurtenant stop lug (806) via an activation rope (9), as well as that the locking mechanism (14) is situated between said activation rope (9) and the pulling member (5), the stop lug (806) being actuable by dead load and/or by an actuation spring, which is connected with the stop lug (6), to be brought out from retracted storage position internally in the panel (2-2') to receipt position outside the circumference edge of the panel.
Support mechanism for liftable decks inside ships

The present invention concerns a support mechanism for vehicle-carrying liftable, or hoistable, decks or panels on board ships and having stop members carried in vertical groups on laterally positioned pillars or other carriers on board on fixed levels, wherein movable stop lugs, which are distributed along the circumference of the respective panel and arranged in line with the appurtenant group of stop members, are actuatable to come into engagement with desired stop members, and that said stop lugs are movably mounted to be brought between disengaged position and locked position by remote actuation by means of lockable pulling member lockable by locking mechanism, in disengaged position, said respective stop lug having been actuated to be brought to dispatched position inside the circumference edge of the appurtenant panel, and in locked position, said respective stop lug being brought out outside the circumference edge of the appurtenant panel for the receipt of a panel on desired stop members, the stop lugs being arranged to, after the actuation of said pulling member, be brought toward the centre of the panel in question internally in said panel.

Problems are present in known support mechanisms.

The problem may simply be explained by the fact that since many shipowners and shipbuilders desire to have more flexible ships with several alternative heights of their car deck panels, there tends to be many semi-auto stoppers on pillars on board. In that connection, the following problems arise:
* Difficult to physically find room for parts of support mechanisms on the pillar and that there will be many ropes/strings to pull.
* Increased costs because the weight of the components becoming high.
* Time-consuming work for the shipyards to mount involving much welding.
* Risk of the pillar warping due to the heat induction upon welding.
* Heavier construction required.
* Increased sources of error with many ropes and many stoppers which should work.
* Increased build heights of ships.

Particularly, there is a problem as for avoiding the demand of unnecessary height of the ship because of the mechanisms of load-carrying liftable panels and the movements thereof to be possible to be brought between intended positions in order to get movable stop lugs in place for carrying the cargo decks in question at desired heights on board the ship as well as to be able to lift the cargo decks to desired levels after movement actuation of the stop lugs into the cargo decks and out from the cargo decks, respectively.

For instance, in the Japanese patent application no 62-173394, a said mechanism is shown but which requires significant lift movements and room to get the movable stop lugs to be able to move freely without hindrance. In addition, the existing locking mechanism (10) is in that connection in the form a handwheel on a low level. In that connection, there is required a handwheel for each rope, which becomes many handwheels when many liftable panels are present.
Said known mechanism concerns a support mechanism having turnably mounted (31) stop lugs (30), similar to a bird's head and which, by the turnable tip thereof, similar to a beak (30₂), is arranged to abut against a fixed stop member (33) along the vertical path of motion of the panels. See Figs. 1-9.

By means of a handwheel (10), which is situated downstairs on the deck (De), a rope (8, 34, 44) is actuated to turn down the rear end (30₃; 40₃) of the stop lug (5; 30; 40). In the known solution, the motion pattern for folding-in said stop lug shown takes place by rotating the handwheel (10). The locking of the stop lug is carried out by means of the rope and the handwheel or by the weight of the stop lug at its one end. To be able to fold in extended stop lug, the cargo deck first has to be lifted up a considerable distance. At least half the cargo deck thickness the cargo deck has to be lifted in order to be able to pull the rope (34) and fold in the stop lug, according to Figs. 1-3 and 8-10. It will be about 150 mm for each cargo deck, which entails a considerable superstructure of the ship to be able to achieve the desired height to load on all cargo decks. According to Figs. 1-3, the stop lug rests against an anvil (32) in folded in storage position when the cargo deck freely can move in the vertical direction to intended level. See accompanying attachment 1.

In Figs. 4-6, a variant is shown where a stop lug is actuated by a rope (44) to be turned in the counter-clockwise direction for extension into interaction against a stopper (42) and against fixed stop members (33). Also in said embodiment shown, the cargo deck has to be lifted a considerable distance before the stop lugs can
be turned in inside the circumference edge of the cargo deck free from the stop members (33).

As has been discussed in the preamble of the description, an essential reason for the creation of the present invention is that it is desired to be able to decrease the height of ships caused by the space requirement of the cargo space.

The present invention solves said problems thanks to the features defined in the claims. According to the present invention, lifting is now only required between 5 and 30 mm for each cargo deck, which entails a considerable saving of space vertically.

Therefore, the main object of the present invention is primarily to solve at least above said problems reliably and efficiently and by simple means, which can be handled also by non-experienced staff.

Said object is achieved by means of a support mechanism according to the present invention, which essentially is characterized in that the locking mechanism, which is carried by said liftable panel, is connected with the appurtenant stop lug via an activation rope, as well as that the locking mechanism is situated between said activation rope and the pulling member, the stop lug being actuatable by dead load and/or by an actuation spring, which is connected with the stop lug, to be brought out from storage position internally in the panel to receipt position outside the circumference edge of the panel or be pulled into the cargo panel, and by the pulling member be brought to the opposite position.

Thanks to the present support mechanism, the above mentioned problems, among others, are solved and by distributing and placing movable remotely actuatable
stop lugs on board on the panels, it will be, among other things:

* Easier to physically find room for the same and the supports of the pillars decrease.

* It decreases the cost because the weight of fittings diminishes.

* It will be more efficient for the shipyards to weld in fixed supports on levels than large semi-auto stoppers.

* Less heat in the pillars and it decreases the risk of the pillars warping from the heat.

* Less sources of error because less movable parts and a smaller number of ropes/strings.

By placing the actuatable part of the support mechanism for the vehicle decks on board on the movable panels, which are activated on intended desired levels on which it is desired that the panel in question should stop and be reliably retained for carrying considerable load in the form of vehicles of varying kinds, a number of problems are avoided. Still, it has in spite of this tended to grow up a forest of stop lugs, both movable and fixed along the pillars and other parts of the ships at which the liftable vehicle decks are arranged to act.

Therefore, the main object of the present invention is primarily to solve, by simple, reliable, and economically reasonable means, among others, the above mentioned problems in a reliable way according to the above-mentioned features.

The invention is described below by way of a number of preferred embodiment examples, reference being made to the accompanying drawings, in which
Fig. 1 shows known locking of car decks to pillars on board ships and having groups of support mechanisms for cargo panels thereon,

Fig. 2 shows a pillar having support

5 mechanism according to the invention,

Fig. 3 shows a known construction of scissor-shaped vehicle deck lifter in previously arranged support mechanisms but which also may be utilized in the present invention,

Fig. 4 shows the present invention in active position to be operated,

Fig. 5 shows the invention having stop lug included therein in locked position,

Figs. 6-6A show the support mechanism as seen in perspective and in side view, respectively, and with the stop lug in locked position,

Figs. 7-8 show front view and side view, respectively, of the support mechanism with the appurtenant movable stop lugs in disengaged position and allowing the panel to be lifted to the desired position,

Figs. 9-9A show said support mechanism in said disengaged position as seen in perspective and from the side, respectively,

Fig. 10 shows a front view of the support mechanism in locked position,

Fig. 11 shows a side view of the support mechanism in an initial actuation position.

Fig. 12 shows in perspective a stop lug having attachment fitted thereon for a pulling member in the form of a pull and actuation rope,

Fig. 13 shows paired profile pieces for the formation of a holder for the support mechanism and the appurtenant stopper block,
Figs. 14-16 show side, end, and perspective view of the support mechanism having a part of a pull rope therefor.

Figs. 17-18 show examples of a remotely controllable support mechanism for liftable ship panels, wherein Fig. 17 shows a stop lug in active locked position, Fig. 18 shows the stop lug in disengaged position, Fig. 19 shows a planar view of a liftable remotely actutable panel as seen from inside and with the appurtenant cornered stop lugs in locked position, and Figs. 20-26 show further examples of support mechanism and provided with dixplaceable stop lug at support mechanism for liftable vehicle deck, Fig. 20 shows in perspective as seen obliquely from the bottom a stop lug in projected locking position, Figs. 21-23 show the support mechanism in different views, wherein Figs. 24-26 show the support mechanism in different positions, and Figs. 27-28 show the different end positions of stop lug.

A support mechanism 1 for liftable panels 2, 2A..., which are intended to receive vehicles of varying kinds on board ships, and which are provided with stop members 3, 3A..., carried in vertical groups on laterally positioned pillars 4 or on other carriers on board ships and on fixed levels, is arranged to be operated by a pulling member 5. Along the circumference of the respective panel 2, 2A..., arranged movable stop lugs 6 are
distributed and in line with the appurtenant group of accessible stop members 3, 3A..., which stop lugs are actuatble to come into engagement with desired stop members 3, 3A... According to the present invention and which is shown as embodiment examples in Figs. 2 and 4-18, said stop lugs 6 are arranged movably mounted to be possible to be brought between disengaged position FL and locked position LL by manual remote actuation by means of said lockable pulling member 5, in disengaged position FL, said respective stop lug 6 having been actuated to be turned to turned-in position inside the circumference edge of the appurtenant panel, and in locked position LL, said respective stop lug 6 being turned out outside the circumference edge of the appurtenant panel to locking position LL, for the receipt of a panel 2, 2A... on desired stop members 3, 3A...

The respective stop lug 6 is arranged to be actuated by separate pulling members 5 to be brought between said disengaged position FL and locked position LL by the appurtenant pulling member 5 being pulled, and by respective stop lug 6 being formed and mounted so that it is allowed to over-rotate. This means that it preferably is angular and mounted out in one angle side 7 thereof in a holder 8 therefor via a shaft, not shown. Furthermore, the stop lug 6 is balanced in such a way that it is adapted to equilibrate, i.e., that it aims, by means of gravitation or by means of applied force, e.g. a spring, to be brought out toward the locking position thereof. Furthermore, the respective stop lug 6 is connected with a rope 9 via an attachment 50 therefor and is deflected over deflection sheaves 10, 11. Between the rope 9, which is running from the deflection sheaves 10, 11, and a pulling member 5 in the form of a pull and actuation rope, which
is running down to the fixed deck 12 of the ship, where staff 13 handling said support mechanisms 1 are prepared, a locking mechanism 14 is arranged, which is arranged to be operated by means of said pull and actuation rope 5. Thus, there is one said pull and actuation rope 5 for each support mechanism 1 at the respective panel 2, 2A,...

According to a preferred embodiment example, a said locking mechanism 14 is formed of an elongate slot 15 in an elongate holder 16, to the respective ends 16A, 16B of which pulling member 5 and rope 9 are connected, and in which slot 15 a locking pin 17 of said stop lug 23 is receivable and lockable in locking position LL. Said locking pin 17 is lockably receivable in an angled part 18 of the slot 15, preferably situated at its upper end portion, in the form of an upside-down V-shaped end stop part of the slot 15 and having an intermediate partition 19. The locking pin 17 has a thickened end portion 20, for instance in the form of a washer 20, which has a width that exceeds the width of the slot 15 at its free outer end and which is arranged to retain the locking pin 17 in position in said slot 15. By first simply and efficiently pulling the appurtenant pulling member 5 and then angling the pulling member in the direction in which the slot widens, the locking pin 17 is released from locking engagement with the angled part 18 of the slot 15. By thereupon loosening the pulling member 5, the stop lug 6 is allowed to, by the dead load or by a provided force, e.g. a spring not shown, turn away from locking engagement with a stop member 3.

It is important that a said locking mechanism 14 is placed and carried by each liftable car deck panel 2, 2A with a rope 9 and a pulling member 5 connected thereto according to what has been indicated
above. Thus, that each car deck panel 2, 2A is regulated by a respective rope 9 and a respective pulling member 5.

The holder 8 for said support mechanism 1 is formed of paired profile pieces 21, 22 assembled with intermediate piece, as well as that a frame 23 attached thereon for the bearing mounting of said pulling member 5 is loosenably connectable with the holder 8 on one side 8A thereof by screws 24, 25. On the side of said frame 23, said locking pin 17 is attached projecting toward one side from the frame 23.

In order to be able to decrease the weight of the cargo panels, it is possible to replace a part of the heavy stop lugs by stop lugs not being so large and heavy but they instead being actuated by a spring which acts in the direction in which otherwise the stop lugs, because of the weight thereof, otherwise would have acted. For instance that a tension spring is tensioned between the holder of the respective stop lug and the free end of the stop lug.

The nature of the invention according to said embodiment examples should have been clearly understood from the above-mentioned and what is shown in the drawings. Below, now the function of said support mechanism is given according to the first embodiment example of the invention.

When the car deck panel 2, 2A is located on its fixed supporting stop member 3, 3A... and the panel 2, 2A accordingly is in its stowed position and the support mechanism 1 is "locked", it is proceeded according to the following:

A. The car deck lifter 13 lifts up the panel 2, 2A so that it is free from its support (stop member 3, 3A) (~25 mm at least).
B. The operator 13 pulls the pull and actuation rope 5 and hooks it on to the locking mechanism up at the stopper.

a. When the pull and actuation rope 5 is pulled and it is brought to the side 60, the movable stop lug 6 is actuated to freely move toward retracted position FL in the panel 2, 2A.

b. This stop lug 6 may over-rotate so that it, in locked position, gives a clearance with a margin.

c. When the pull and actuation rope 5 has been pulled so that the stop lug 6 is fully inside the panel 2, 2A, the hand/the end of the pull and actuation rope 5 is brought in the direction from 60 the pillar, or the web, so that the locking mechanism 14 and its hook come in engagement.

d. Next, the pulling is decreased and by the dead load, the stop lug 6 aims to rotate out.

e. This makes that the pull and actuation rope 5 is pulled up and the hook of the locking plate is hooked on to the shaft 17 of the guide washer 20 in an angled part 18.

f. The stop lug 6 is now in the "free" position.

C. The car deck lifter 13 can now operate the panel 2, 2A downward past existing fixed upper support of the stop members 3, 3A.

D. The operator 13 can then at the correct desired level of the panel 2, 2A go round and let out the stop lug 6 of the panel stopper at optional support by actuating the appurtenant rope.
a. This is made by the operator 13 pulling the pull and actuation rope 5 downward.
b. In doing so, the stop lug 6 over-rotates and the locking mechanism 14 and its hook is now free, i.e., by the dead load or by another force, for instance spring force from arranged spring, the stop lug 6 will rotate out.
c. By bringing the free end of the rope essentially straight down at the pillar 4 or the web, the locking pin 17 of the frame 23 goes free in the elongate slot of the locking mechanism.
d. The stop lug 6 now rotates out by the dead load and pulls the pull and actuation rope 5 in the upward direction.
e. The locking mechanism 14 slides and is guided in its elongate slot 15 and is then hanging freely when the stop lug 6 is in projected position.

E. Visually, acoustically as well as by tactile feedback from the pull and actuation rope 5, the operator 13 can feel, see, and hear that the stop lug 6 is out.

f. The operator 13 can now safely lower the panel 2, 2A onto the fixed support 3, 3A thereof.

Thus, said stop lugs 6 are arranged to be actuated to be turned out to the intended locked position LL by their own weight, by spring force actuation, or in another way, but be brought to disengaged position FL by remote actuation by means of pulling member 5, which is arranged lockable in, for instance, the indicated way by a pulling member 5 that may consist of a rope, which is actuated from below, for instance from the fixed cargo deck of the ship. A holder 8 receives a stop lug 6 therein turnably mounted and the pulling member 5 is connected
with the stop lug 6 via a fastening ear 50. An intermediate locking mechanism 14, with which the pulling member 5 is connected, is arranged, in locking position, to hook on to a fixed object according to the above-mentioned examples, by a locking pin and a lock hook shown in the figures. By means of prior art from, e.g., the sailing boat industry, viz. by means of a number of clamp cleats wherein the actuation ropes are pulled between paired turnable clamping members, the pulling member 5 is simply locked with easy loosening. In one direction in which an actuation rope is running, the turnable and grooved clamping members arrest the actuation rope, while pulling the actuation rope in the cross-direction away from the clamp cleats, will loosen the actuation rope from said clamp cleats so that the actuation rope can run freely again.

According to what is shown in the drawings in Figs. 20-26, instead of a turnably mounted stop lug 6, a displaceably spring-actuatable mounted stop lug 806 may be arranged, viz. a piston-like bar, each one of which is carried by the movable panel 2 in question in a support 850. Said support 850 also carries a holder 808 according to the first embodiment example above and on which a corresponding locking mechanism 14 according to the above is carried attached. In that connection, an activation rope 9 is running from said locking mechanism 14 to the stop lug 806 and is fixedly connected therewith via an attachment 851. A spring 853, preferably a tension spring, is arranged connected with said stop lug 806. This spring 853 actuates the stop lug 806 to be pulled into the holder 808 and the panel 2 carryable by the stop lug 806 after the appurtenant locking mechanism has been loosened so that the rope 9 can move along the stop lug 806 in its
movement provided by the spring 853. Another spring 852 may be carried by the attachment 851 in order to be able to accommodate a possible longitudinal movement of the stop lug 806 if the same would travel to and fro in the projected receipt position with the nose portion projecting from the holder 808 and the interior of the panel. In that connection, said stop lugs 806 are formed and mounted in such a way that they, when they are actuated by the spring 853 after loosening of the appurtenant locking mechanism 14, move in an essentially horizontal direction from locked position LL to disengaged position FL internally into the appurtenant movable liftable panel 2. The respective stop lug 806 is connected with the activation rope 9 via the attachment 851 and is running over deflection sheaves 810, 811 and to the locking mechanism 14. In other respects, the support mechanism is according to said previous examples, i.e., that a pull and actuation rope 5 or another pulling member is connected with said locking mechanism 14 and extends down to the fixed deck of the ship. The stop lug 806 rests with a portion 855 on a reel 856 or some other rolling member, which decreases the friction of the stop lug 806 against the substratum along which it is displaced. A stopper 857 of the stop lug 806 is arranged, in loaded state of panel 2 and stop lug 806, to stop against an anvil 858, which prevents the return of the stop lug inward toward the panel 2, caused by possible external forces.

The pulling of the rope 5 actuates the locking mechanism 14 so that its function becomes the same according to the first example but that the stop lug 806 is pulled into the panel 2 by the spring 853 instead of out from the same, which now is provided by the rope 5.
minimal raising of the liftable panel 2 is required in order for said support mechanism 101 to work, whereby said desired object is clearly achieved.

In Figs. 17-19, examples are shown of a remote-controllable mechanism 201, wherein turnable stop lugs 306 are remotely actuatable from a central actuation unit 380 of a said panel 2. Via, for instance, a remote control 390, not described in more detail, said actuation unit 380 can be activated to either pull in the movable stop lugs 306 inside the circumference edge 400 of the appurtenant liftable panel or let out the stop lugs 306 so that these will come to engagement with a mating stop member on desired level on its underside.

A piston type cylinder 500 is, via pulling members in the form of blocks 501 and ropes 590, connected with a common connection 540, and when said piston type cylinder 500 is activated, either all stop lugs 306 are collectively simultaneously pulled in 600 or the same are let out 700 simultaneously in the way according to what has been mentioned above.

Naturally, the invention is not limited to the embodiments described above and shown in the accompanying drawings. Modifications are feasible, particularly as for the nature of the different parts, or by using an equivalent technique, without departing from the protection area of the invention, such as it is defined in the claims. For instance, other locking mechanisms than the one shown and described may be utilized, e.g., in the form of spring members or others, which are arranged to be activated by means of a rope or another pulling member actuatable at a distance from the panels 2, 3 in question.
Cl a i m s

1. Support mechanism (1; 101; 201) for vehicle-carrying liftable panels (2-2") on board ships and having stop members (3, 3A...) carried in vertical groups on laterally positioned pillars (4) or other carriers on board on fixed levels, wherein movable stop lugs (6; 106; 306; 406; 806), which are distributed along the circumference of the respective panel (2, 2A-2") and arranged in line with the appurtenant group of stop members, are actuatable to come into engagement with desired stop members (3, 3A...), and that said stop lugs (6; 106; 306; 406; 806) are movably mounted to be brought between disengaged position (FL) and locked position (LL) by remote actuation by means of lockable pulling member (5) lockable by locking mechanism (14), in disengaged position (FL), said respective stop lug (6; 106; 306; 406; 806) having been actuated to be brought to dispatched position inside the circumference edge of the appurtenant panel, and in locked position (LL), said respective stop lug being brought out outside the circumference edge of the appurtenant panel for the receipt of a panel (2, 2A-2") on desired stop members (3, 3A...), the stop lugs being arranged to, after the actuation of said pulling member (5), be brought toward the centre of the panel in question internally in said panel, characterized in that the locking mechanism (14), which is carried by said liftable panel (2-2"), is connected with the appurtenant stop lug via an activation rope (9), as well as that the locking mechanism (14) is situated between said activation rope (9) and the pulling member (5), the stop lug being actuatable by dead load and/or by an actuation spring,
which is connected with the stop lug (6), to be brought out from storage position internally in the panel (2-2"
) to receipt position outside the circumference edge of the panel or be pulled into the cargo panel, and by the
pulling member (5) be brought to the opposite position.

2. Support mechanism (1) according to claim 1, characterized in that said stop lugs (6) are formed in
such a way and mounted in such a way that they are allowed to over-rotate, by the fact that the respective stop lug
(6) is angular and that it is mounted out in one angle side (7) thereof in a holder (8), as well as that it is balanced in such a way that it is adapted to equilibrate, i.e., that it aims to, by itself or by means of other
means, e.g. a spring, be brought out toward the locking position (LL) thereof.

3. Support mechanism (101) according to claim 1, characterized in that said stop lugs (806) are formed
in such a way, mounted in such a way, and actuated in such a way by a spring (853) that they, upon the loosening of
the appurtenant locking mechanism (14), are actuated to move in an essentially horizontal direction from locked
position (LL) to disengaged position (FL)

4. Support mechanism (1; 101) according to any one of the above claims, characterized in that the
respective stop lug is connected with the activation rope (9) over deflection sheaves (10, 11; 810, 811).

5. Support mechanism (1) according to any one of the above claims, characterized in that, between the
rope (9), which is running from the deflection sheaves
and a pull and actuation rope (5), which is running down to the fixed deck (12) of the ship, said locking mechanism (14) is arranged, and which is arranged to be operated by means of said pull and actuation rope (5).

6. Support mechanism (1; 201) according to claim 5, characterized in that said locking mechanism (14) is formed of an elongate slot (15) in an elongate holder (16), to the respective ends (16A, 16B) of which pulling member (5) and a rope (9) are connected, and in which slot (15) a locking pin (17) of said stop lug (6) is receivable and lockable in locking position (LL).

7. Support mechanism (1; 201) according to claim 6, characterized in that the locking pin (17) is lockably receivable in an angled part (18) of the slot (15), preferably situated at its upper end portion, in the form of an upside-down V-shaped end stop part of the slot (15) having an intermediate partition (19).

8. Support mechanism (1; 201) according to claim 7, characterized in that the locking pin (17) has a thickened end portion (20) at its free outer end and which is arranged to retain the locking pin (17) in position in said slot (15).

9. Support mechanism (1; 201) according to any one of claims 6-8, characterized in that a holder (8) for said support mechanism (1) is formed of paired assembled profile pieces (21, 22), as well as that a frame (23) attached thereon for the bearing mounting of said pulling member (5) is loosenably connectable with the
holder (8) on one side (8A) thereof by screws (24, 25), and that the locking pin (17) is connected with said frame (23) projecting laterally from the same.

10. Support mechanism (101) according to any one of claims 1 and 3-9, characterized in that said stop lug (806) is formed of a straight essentially horizontally movable lock bolt, which is connected with an actuation spring (853) for the return of the stop lug (806) to the disengaged position (FL) thereof received in the panel, preferably a tension spring.

11. Support mechanism (101) according to claim 10, characterized in that the stop lug (806) rests with a portion (855) on a reel (856) or some other rolling member, which decreases the friction of the stop lug against the substratum along which it is displaced.

12. Support mechanism (101) according to claim 11, characterized in that a stopper (857) of the stop lug is arranged to, upon loaded state of the panel (2) and stop lug (806), stop against an anvil (858), which prevents the return of the stop lug inward toward the panel (2), because of possible external forces.
AMENDED CLAIMS
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Claims

1. Support mechanism (1; 101; 201) for vehicle-carrying liftable panels (2-2^n) on board ships and having stop members (3, 3A...) carried in vertical groups on laterally positioned pillars (4) or other carriers on board on fixed levels, wherein movable stop lugs (6; 106; 306; 406; 806), which are distributed along the circumference of the respective panel (2, 2A-2^n) and arranged in line with the appurtenant group of stop members, are actutable to come into engagement with desired stop members (3, 3A...), and that said stop lugs (6; 106; 306; 406; 806) are movably mounted to be brought between disengaged position (FL) and locked position (LL) by remote actuation by means of lockable pulling member (5) lockable by locking mechanism (14), in disengaged position (FL), said respective stop lug (6; 106; 306; 406; 806) having been actuated to be brought to dispatched position inside the circumference edge of the appurtenant panel, and in locked position (LL), said respective stop lug being brought out outside the circumference edge of the appurtenant panel for the receipt of a panel (2, 2A-2^n) on desired stop members (3, 3A...), the stop lugs being arranged to, after the actuation of said pulling member (5), be brought toward the centre of the panel in question internally in said panel, characterized in that the locking mechanism (14), which is carried by said liftable panel (2-2^n), is connected with the appurtenant stop lug via an activation rope (9), as well as that the locking mechanism (14) is situated between said activation rope (9) and the pulling member (5), the stop lug being actutable by dead load and/or by an actuation spring.
which is connected with the stop lug (6), to be brought out from storage position internally in the panel (2-2ⁿ) to receipt position outside the circumference edge of the panel or be pulled into the cargo panel, and by the pulling member (5) be brought to the opposite position.

2. Support mechanism (1) according to claim 1, characterized in that said stop lugs (6) are formed in such a way and mounted in such a way that they are allowed to over-rotate, by the fact that the respective stop lug (6) is angular and that it is mounted out in one angle side (7) thereof in a holder (8), as well as that it is balanced in such a way that it is adapted to equilibrate, i.e., that it aims to, by itself or by means of other means, e.g. a spring, be brought out toward the locking position (LL) thereof.

3. Support mechanism (101) according to claim 1, characterized in that said stop lugs (806) are formed in such a way, mounted in such a way, and actuated in such a way by the actuation spring (853) that they, upon the loosening of the appurtenant locking mechanism (14), are actuated to move in an essentially horizontal direction from locked position (LL) to disengaged position (FL).

4. Support mechanism (1; 101) according to any one of the above claims, characterized in that the respective stop lug is connected with the activation rope (9) over deflection sheaves (10, 11; 810, 811).

5. Support mechanism (1) according to claim 4, characterized in that, between the rope (9), which is running from the deflection sheaves (10, 11), and the
pulling member (5), which is running down to the fixed deck (12) of the ship, said locking mechanism (14) is arranged, and which is arranged to be operated by means of said pulling member (5).

6. Support mechanism (1; 201) according to claim 5, characterized in that said locking mechanism (14) is formed of an elongate slot (15) in an elongate holder (16), to the respective ends (16A, 16B) of which pulling member (5) and a rope (9) are connected, and in which slot (15) a locking pin (17) on a holder (8) is receivable and lockable in locking position (LL).

7. Support mechanism (1; 201) according to claim 6, characterized in that the locking pin (17) is lockably receivable in an angled part (18) of the slot (15), preferably situated at its upper end portion, in the form of an upside-down V-shaped end stop part of the slot (15) having an intermediate partition (19).

8. Support mechanism (1; 201) according to claim 7, characterized in that the locking pin (17) has a thickened end portion (20) at its free outer end and which is arranged to retain the locking pin (17) in position in said slot (15).

9. Support mechanism (1; 201) according to any one of claims 6-8, characterized in that the holder (8) for said support mechanism (1) is formed of paired assembled profile pieces (21, 22), as well as that a frame (23) attached thereon for the bearing mounting of said pulling member (5) is loosenably connectable with the holder (8) on one side (8A) thereof by screws (24, 25),
and that the locking pin (17) is connected with said frame (23) projecting laterally from the same.

10. Support mechanism (101) according to any one of claims 1 and 3-9, characterized in that said stop lug (806) is formed of a straight essentially horizontally movable lock bolt, which is connected with the actuation spring (853) for the return of the stop lug (806) to the disengaged position (FL) thereof received in the panel, preferably a tension spring.

11. Support mechanism (101) according to claim 10, characterized in that the stop lug (806) rests with a portion (855) on a reel (856) or some other rolling member, which decreases the friction of the stop lug against the substratum along which it is displaced.

12. Support mechanism (101) according to claim 11, characterized in that a stopper (857) of the stop lug is arranged to, upon loaded state of the panel (2) and stop lug (806), stop against an anvil (858), which prevents the return of the stop lug inward toward the panel (2), because of possible external forces.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

*IPC: see extra sheet*

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)

*IPC: B63B*

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

*SE, DK, FI, NO classes as above*

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

*EPO-Internal, PAJ*

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<th>Relevant to claim No.</th>
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<td>JP S621 73394 A (MAC GREGOR FAR EAST), 30 July 1987 (1987-07-30); abstract; figures 1-6</td>
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<td>JP H10 1671 74 A (KAWASAKI HEAVY IND LTD), 23 June 1998 (1998-06-23); abstract; figures 1-21</td>
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[X] Further documents are listed in the continuation of Box C.  [X] See patent family annex.

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Date of the actual completion of the international search
16-01-201 5

Date of mailing of the international search report
19-01-201 5

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International Patent Classification (IPC)

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