

[54] **AUTOMATIC ACTING MECHANISM FOR CONTROL OF STOWABLE 'TWEEN DECKS**

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[56] **References Cited**

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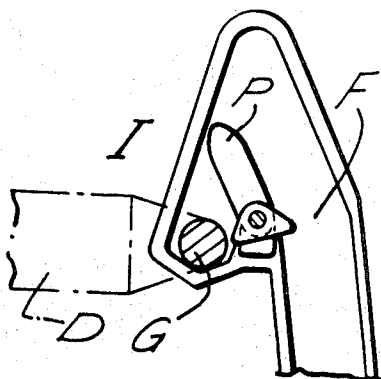
Attorney—Larson, Taylor and Hinds

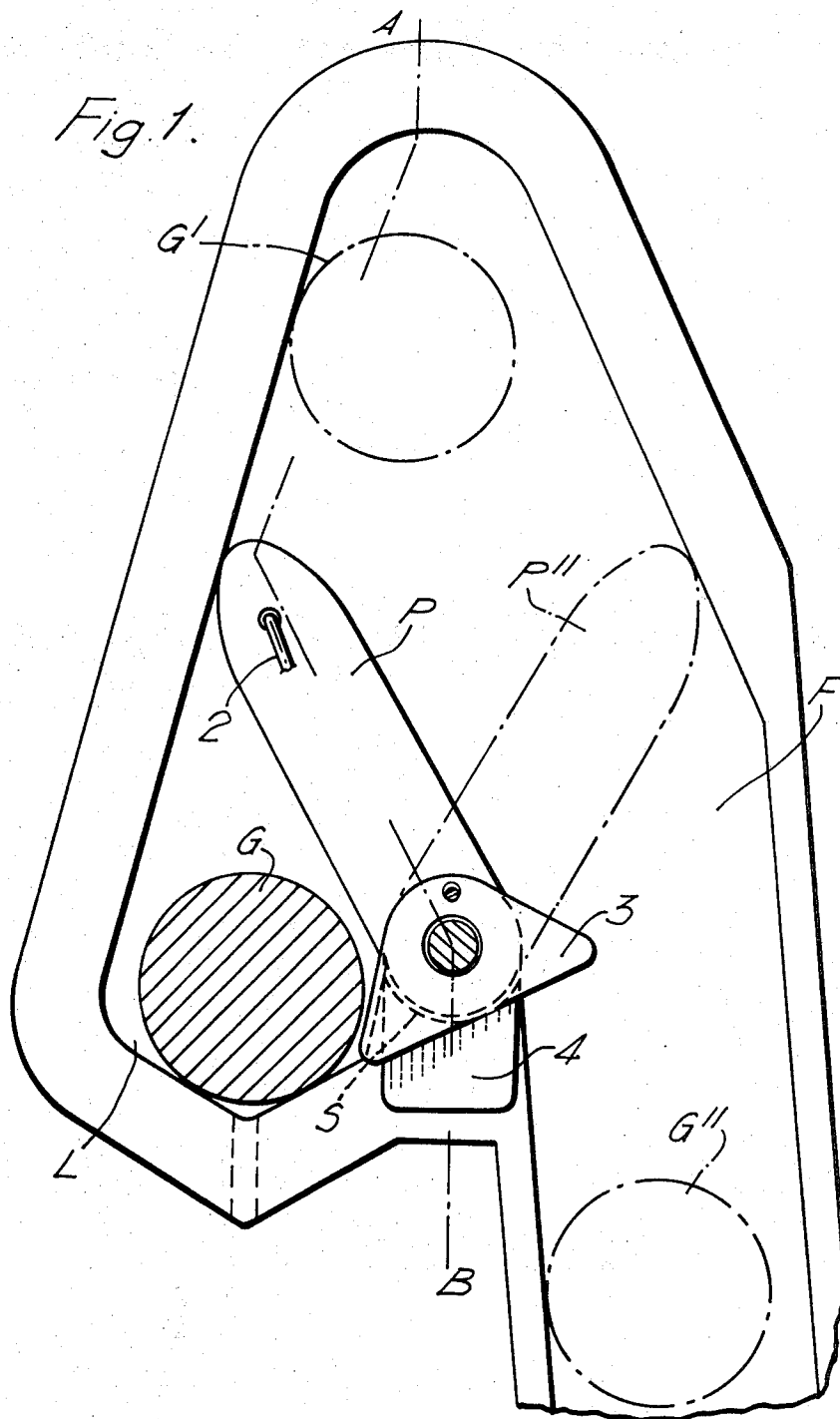
[57] **ABSTRACT**

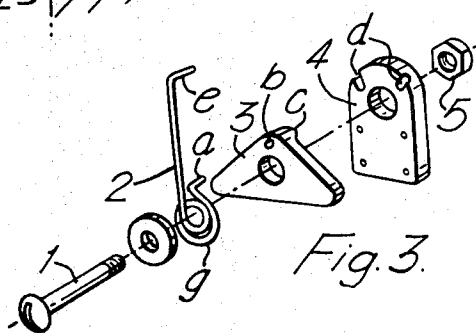
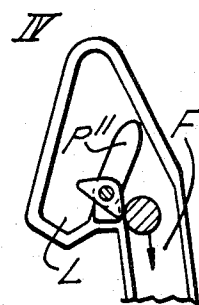
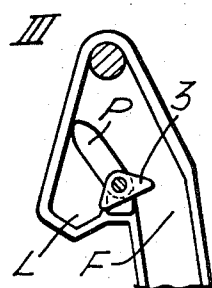
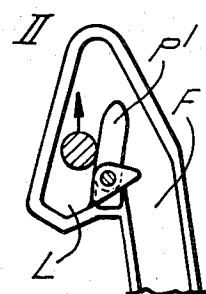
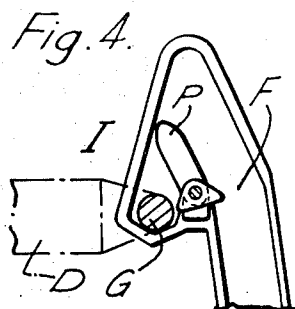
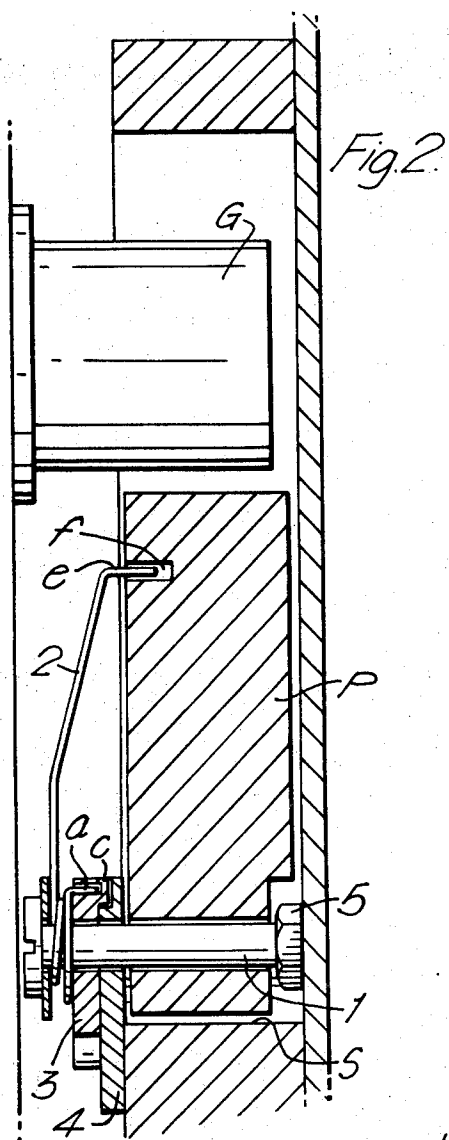
An improved arrangement for holding a stowable 'tween deck in service position. The 'tween deck is moveable between a substantially vertical stored position and a substantially horizontal service position. A guide path is provided at the side of the ship for guiding the 'tween deck for motion between its stored and

service positions. The 'tween deck includes a trunnion member extending outwardly into the guide path from that portion of the 'tween deck which is lowermost when the 'tween deck is in its stored position. The improved holding arrangement according to the invention is located at the upper end of the guide path and includes a pocket formed by an enlargement of the guide path at the upper end thereof, a pawl member positioned between the pocket and the guide path. The pawl member pivotally mounted for motion between a first position blocking the pocket to guide the trunnion member in the guide path, and a second position blocking the guide path to guide the trunnion member from the top of the guide path into the pocket. A readjustment arm is coaxially mounted with the pawl member for pivotal movement in position between the pocket and the guide path between a first position in which a portion of the arm extends into the guide path and in which the arm is undisturbed by motion of the trunnion from the upper portion of the guide path to the pocket and a second position in which a portion of the arm extends into the pocket and in which the arm is undisturbed by motion of the trunnion in the guide path. The arrangement also includes means for releasably securing the readjustment arm in the first and second positions, and spring means connected to the readjustment arm and the pawl member for biasing the pawl member to its first position when the arm is in the first position and for biasing the pawl member to the second position when the arm is in the second position.

2 Claims, 4 Drawing Figures







AUTOMATIC ACTING MECHANISM FOR CONTROL OF STOWABLE 'TWEEN DECKS

The invention relates to an automatic acting mechanism for control of suspended trunnions for stowable 'tween decks in shipload, said trunnions being transferable in guides, which 'tween decks may be moved from a substantial vertical stowage position up to the side of the ship, a bulk head or the like and to a horizontal service position in that trunnions which are arranged at the lower resp. inner ends of the decks, glide in guides being arranged along the side of the ship or the like, and where there are arranged means at the upper ends of the guides, which grip the trunnions in the service position of the decks.

Such 'tween decks are described in the Norwegian Patent No. 122,357. An hydraulic controlled mechanism was arranged on the previously known decks of this type, by which the suspended trunnions of the 'tween decks could be guided and gripped to and from the stowed and service position. Such mechanisms are, however, complicated and expensive. It is thus the object of the invention to provide a mechanism for this purpose which is purely mechanical and acts automatically without making use of hydraulics or other externally supplied power.

According to the invention it is thus proposed an automatic acting mechanism of the above said kind which is characterized in that an extended section or a side pocket is arranged at the upper end of each of the guides, into which the trunnion may be brought into a supported suspended position after having passed by a reversing pawl which is weight- or spring loaded in such a way that it controls the trunnion automatically from the guide to the said pocket in the lifting of the 'tween deck to service position, and that it likewise automatically controls the trunnion from the pocket to the guide for lowering along this by the movement of the 'tween deck to vertical stowing position.

According to a preferred construction, the pawl is connected elastically to a readjustment-arm which protrudes into the guide and which by an operating edge- and notch-connection may occupy the one or the other of two positions in relation to a stationary suspension piece or the like.

For a better understanding of the invention it will be further described in the following with reference to a constructional example on the drawings.

FIG. 1 shows a side elevation of the automatic acting mechanism according to the invention.

FIG. 2 is a section along the line A-B in FIG. 1.

FIG. 3 shows the parts of the mechanism separated and in perspective.

FIG. 4 shows schematically how the mechanism works, according to the invention.

On the drawings, F denotes the upper end of the guiding notch for one of the gliding trunnions G which sticks out to the side at the lower end of a rigable 'tween deck. The guide F has, as will be seen, an extended section or a pocket L at the upper end, in which the trunnion G may arrive at supporting suspension, as shown in FIG. 1.

However, in order to move from the guide F to suspended position in the pocket L, the trunnion G must pass the automatic acting mechanism, according to the invention.

This mechanism includes a pawl P which is pivotally suspended about a trunnion 1 stationary secured between the guide F and the pocket L. The pawl may occupy the one or the other of the two positions, P' resp. P''. The first one is in FIG. 1 shown fully drawn, the other by dotted lines. The pawl P is spring loaded. This is done over a spring-arm 2 whose free end e fits into a hole f in the pawl. The other end of the spring 2 is secured to a readjustment-arm or a readjustment piece 3, which is pivotally suspended on the trunnion 1, and which is provided with a hole b for the other branch 2 of the spring. The spring has a screw shaped section g between the two branches a and e.

The pawl P is carried in addition to, the said trunnion 1, preferably also by a cup-bearing S shaped in connection with the guide F. The strong forces, impacts etc. which are present with this mechanism will thus not only be carried by the trunnion 1 but also by the cup-bearing S.

The readjustable arm 3 is provided with an edge or a cam c. This is intended to interact with two notches d in a stationary suspension piece 4.

The above described details appear most clearly from FIG. 3 related to FIG. 2.

When the parts are composed as shown in FIG. 2 the cam c will lie in one of the notches d. By influence of the readjustable arm 3 the mutual position between this and the suspension piece 4 may, however, be altered against the influence of the screw-shaped part g of the spring 2.

Viewing FIG. 1 and 4 it is immediately understood how the mechanism works according to the invention. In FIG. 4I the position is indicated where the 'tween decks D by its suspension-trunnion G rests in the pocket L, and thus gives support to the deck D in service position. When the deck is to be moved to stowing position, it is lifted up by suitable means, e.g., by means of a crane or derrick, such that the trunnion G moves upwards as indicated in FIG. 4II. The pawl is thus pushed aside as shown by P'. When the trunnion G has arrived in top of the pocket L, the pawl will move back to initial position in I, as shown by III. When the deck subsequently is lowered to stowing position, the trunnion will move down through the guide F, since it then hits against the pawl and is controlled into the guide. During the passage of the described mechanism the trunnion will however, hit the readjustable arm 3 and move the pawl over to the position P''. The pawl will then retain this position until the trunnion at the next rigging moves upwards along the guide F in order to pass the described mechanism in reversed order and move to rest in the suspension pocket L.

As will be seen from FIG. 4, the movement of the trunnion G up from the pocket L to the top position in the pocket will effect the readjustable arm 3 in relation to the pawl P, i.e., that the cam c is transferred from the one to the other of the two notches d.

The desired mechanism is, as will be seen, acting fully automatic and purely mechanical in its functioning. It gives a safe control of the suspension trunnions of the 'tween decks to and from suspension position in the supported pocket L. The mechanism consists of few and solid parts and is thus well suited for the intended object and can without difficulties tolerate large forces, and stresses, which it is subjected to due to rigging or stowing away of such heavy and large 'tween decks as spoken of here.

The mechanism according to the invention is here described in connection with stowable 'tween decks, but it will be appreciated that it may also be given another application, e.g., for hatchway covers or other elements to be transferable from one level to another by means of suitable guides. Such applications are also considered covered by the following claims.

We claim:

1. In a ship having a 'tween deck moveable between a substantially vertical stored position and a substantially horizontal service position, guide means including a substantially vertical guide path located at a side of the ship for guiding said 'tween deck for motion between said stored and service positions, holding means at the upper end of said guide path for supporting said 'tween deck in said service position, and a trunnion member extending outwardly from the end of said 'tween deck which is lowermost when in said stored position extending into said guide path, the improvement wherein said holding means comprises a pocket formed by an enlargement of said guide path at the upper end thereof, a pawl member positioned between said pocket and said guide path and pivotally mounted for motion between a first position blocking said pocket to guide said trunnion member in said guide path, and a

second position blocking said guide path to guide said trunnion member from the top of said guide path into said pocket, a readjustment arm coaxially mounted with said pawl member for pivotal movement in position between said pocket and said guide path between a first position in which a portion of said arm extends into said guide path and in which said arm is undisturbed by motion of said trunnion from the upper portion of said guide path to said pocket and a second position in which a portion of said arm extends into said pocket and in which said arm is undisturbed by motion of said trunnion in said guide path, means for releasably securing said readjustment arm in said first and second positions, and spring means connected to said readjustment arm and said pawl member for biasing said pawl member to its said first position when said arm is in said first position and for biasing said pawl member to said second position when said arm is in said second position.

2. An improved 'tween deck arrangement according to claim 1 wherein said releasable securing means comprises a member fixed with respect to said guide path including first and second notches releasably engageable by a cam on said readjustment arm.

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