

PATENT SPECIFICATION

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- (21) Application No. 6545/78 (22) Filed 18 Feb. 1978
(44) Complete Specification published 10 Dec. 1980
(51) INT CL³ F16B 2/18
(52) Index at acceptance E2A 308 319 370 375 428 GD
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(54) A HATCHWAY PROVIDED WITH DEVICE FOR BATTENING-DOWN THE TRANSVERSE JOINT BETWEEN TWO ADJACENT HATCH SECTIONS OF A CARGO-HATCH

(71) We, VON TELL AB, of S—431
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company organized under the laws of Sweden,
do hereby declare the invention, for which
we pray that a patent may be granted to us,
and the method by which it is to be per-
formed, to be particularly described in and
by the following statement:—

In cargo-hatches comprising two or more
hatch sections covering the hatchways of the
cargo-space of ships it is known to batten
down the transverse joint between two ad-
jacent hatch sections with the aid of hooks or
catches which cooperate with abutment
shoulders provided on one hatch section and
which are secured on a shaft which is jour-
nalled on the other hatch section so as to
extend in parallel with the joint. The shaft
is provided with an actuating means in the
form of an arm secured at one of the shaft
ends and arranged, when the hatches are
lowered into closed position on the hatchway
coaming, to abut with its free end against the
latter, thus effecting rotation of the shaft in
a direction ensuring that the hooks are forced
against the abutment shoulders and thus bring
about compression of a gasket extending along
the joint sealing off the latter.

When a load is deposited on top of the
hatch and is positioned unevenly thereon, the
pressure of engagement between some of the
hooks and their associated abutment shoulders
is also changed. In addition thereto, when
the shaft is turned, — which shaft in the case
of large cargo-hatches may have a length of
12 meters or more — one of the hooks may
move into engagement with its associated
engagement shoulder before the other clamp-
ing unit, and in this case the gasket associated
with the latter clamping unit will not be
sufficiently compressed. Should this pre-
maturely loaded clamping unit be the same
as the one which is already more heavily
loaded than the rest on account of the lack
of balance of the load distribution on top of
the hatch section, and should the shaft be

exposed to considerable torsional forces during
its operation, it is readily understood that
some of the clamping units may be rendered
practically completely ineffective and con-
sequently the gasket will not be tight at these
points.

From the Swedish Published Specification
No. 366,516 it is known to interconnect the
hooks by means of a displaceable rod. The
displacement of the rod to batten down the
hatches is effected by means of a screw spindle
which is turned manually.

The purpose of the subject invention is to
provide a hatchway with battening-down
device arranged to operate automatically when
influenced by the weight of the hatch sections
when the latter are lowered onto the hatch
coaming, and by means of which the dis-
advantages inherent in the first-mentioned
prior-art battening-down device are eliminated.

According to the present invention we pro-
vide a hatchway provided with a device for
automatically battening-down the transverse
joint between two adjacent hatch sections of
the hatchway, which are provided with inter-
engaging means comprising abutment means
on one of said hatch sections and retaining
members on the other hatch section, said re-
taining members being arranged to cooperate
with the abutment means to hold the hatch
sections in the battening-down position of the
hatch sections and each being provided at
one end of a respective two-armed lever piv-
otally mounted on said other hatch section, the
opposite ends of said levers being articulated
to a common rod, characterised in that at one
of its ends said rod is articulately connected
to the upper end of an actuating lever which
is pivotally mounted on said other hatch sec-
tion and which is arranged, when said other
section is lowered towards its closing position
in engagement with the coaming around the
hatchway, to move into a position in which
it abuts against said coaming or against a
stationary abutment face thereon to pivot the
actuating lever and consequently displace said

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rod in the direction in which the levers are pivoted into the battening-down position wherein said retaining members engage said abutment means. Owing to the use of a displaceable rod to actuate the retaining members practically the same actuating pressure may be transferred to each clamping unit. This ensures the provision of the required sealing pressure over the entire gasket, also when the load on top of the hatch is somewhat unbalanced. Because the actuating lever, mounted as mentioned above, cooperates with the hatch coaming upon lowering of the hatch sections, the hatch-sections are battened down efficiently and automatically.

Additional characteristics of the inventive object will appear from the following description of a preferred embodiment with reference to the accompanying drawings, wherein

Fig. 1 is a broken plan view of a hatch section along a portion of one transverse edge thereof,

Fig. 2 is a similar view of the adjacent hatch section,

Fig. 3 illustrates on an enlarged scale a side view of the hatch section in accordance with Fig. 1 as seen along line III—III of Fig. 1,

Fig. 4 is a similar view along line IV—IV of Fig. 1,

Fig. 5 is a side view similar to that of Fig. 3 and illustrates the actuating rod in its non-operative position,

Fig. 6 is a view similar to Fig. 4 but illustrates the actuating rod and one of the retaining members in two different positions thereof,

Fig. 7 is a partly sectionalized end view of the transverse joint between the two hatch sections of Figs. 1 and 2, as seen from the left in Fig. 3,

Fig. 8 is a transverse sectional view through the transverse joint along line VIII—VIII of Fig. 3,

Fig. 9 is a transverse sectional view through the transverse joint along line IX—IX of Fig. 6,

Fig. 10 is a side view of a portion of the hatch section according to Fig. 2, as seen along line X—X of that figure, and

Fig. 11 is a side view of the upper portion of a retaining member serving particular purposes.

The cargo-hatch illustrated in the drawings is of the type comprising a number of hatch sections 3, 4 which are displaceable in succession on the coaming 1 around a cargo hatchway 2 and which are interconnected by means of links, chains or similar means (not shown) in such a manner that in their closed position (Fig. 7) they are held together by gripping claws 5, 6 disposed on their respective one of hatch sections 3 and 4. The hatch sections 3, 4 are provided with longitudinally extending, downwardly open channels 7 in which

are received gaskets 8 which are arranged to engage, in the closed position of the hatch, a sealing strip 9 upstanding from the coaming 1.

The hatch section 3 is provided with an upright sealing strip 10 which extends in the transverse direction of the hatch section and which, in the closed position of the hatch, engages in a resilient gasket 11 housed in a downwardly open channel 12 extending in the transverse direction of the hatch section 4.

To make it possible to effect automatic battening-down of the transverse joint between two hatch sections 3, 4 positioned in succession, i.e. to effect engagement between the sealing strip 10 and the gasket 11, the hatch in accordance with the invention includes an battening-down device, one embodiment of which is illustrated in the drawings.

The hatch-batten device comprises a number of levers 13 which are pivotally mounted in a row on the side of the hatch section 3 which faces the hatch section 4, the gripping portion of each such lever 13 being shaped as a retaining hook 14 which cooperates with a retention shoulder 15 formed on the face of the hatch section 4 that is turned towards the hatch section 3. The levers 13 are mounted for pivotal movement about their respective one of horizontal shafts 16 arranged on brackets 17 on the hatch section 3. The end 18 of the lever 13 remote from the hook 14 is by means of a horizontal bolt 19 pivotally connected to an actuating rod 20 consisting of two parallel flat iron bars 21, 22 between which the associated lever is arranged to pivot. The end 23 of the actuating rod 20 which projects beyond one end of the hatch section 3 is provided with a horizontal bolt 24 on which the upper end of an actuating lever 25 is mounted for turning movement, said lever being pivotally mounted about a bolt 26 which is supported by a bracket 27 projecting endwise from the hatch section 3. The opposite end 28 of the lever 25 is arranged to move into abutment against a stationary abutment face 29 on the hatch coaming 1, as will be described in closer detail in the following, when the hatch section 3, and thus also the hatch section 4, are lowered into closing position above the hatchway 2. The left part of the actuating rod 20 consists of a separate rod portion 30 which by means of a horizontal bolt 31 is articulated to the main portion of the actuating rod 20.

As shown in Figs. 4 and 6, the rod 20 is provided with an upwardly extending cam member 32 formed with an oblique edge face 33 which cooperates with a roller 34 on the hatch section 4 to urge the hatch batten device to a position that could be described as a "stand-by" position. More precisely, the purpose of this arrangement is to ensure that when the hatch is about to be closed the actuating rod will be in such a position of dis-

placement that the lower end 28 of the lever 25 assumes a position above the abutment face 29.

Should the actuating rod 20 be in the position of displacement that is indicated by dash-and-dot lines in Fig. 6, see the positions of the cam member 32 and the lever 13 indicated by dash-and-dot lines, when the hatch is to be closed and the hatch sections 3, 4 be displaced on the coaming 1 with the gripping claws 5, 6 intermeshing, the roller 34 will move into abutment with the oblique edge 33 of the cam member 32, thus displacing the actuating rod 20 to the left as seen in Fig. 5 to the position illustrated in continuous lines in this Figure, whereby the end 28 of the lever 25 will assume a position above the face of abutment 29. When the sections 3, 4 are subsequently lowered into sealing position against the coaming 1 and the longitudinal gasket 8 is pressed against the sealing strip 9, the lever end 28 will abut against the abutment face 29 and pivot the lever 25 in the anti-clockwise direction as seen in Figs. 3 and 5. As a result, the actuating rod 20 is displaced to the left, whereby the levers 13 are pivoted in the clockwise direction and the retaining hooks 14 thereon are pressed against the retention shoulders 15 on the hatch section 4. Consequently, the sealing strip 10 on the hatch section 3 will efficiently engage with the gasket 11 on the hatch section 4, and the hatch sections 3, 4 will be securely held together.

When the hatch cover consists of two parts each one of which may comprise several hatch sections, it may be convenient to use levers 13' (Fig. 11) that are provided with retaining hooks 14' of a kind having an upwardly and forwardly projecting edge face 35 which upon closing of the hatch cooperates with its associated retention shoulder 15 on the hatch section 4 in such a manner that in case the levers 13' should happen to be pivoted to a position wherein their respective retaining hook 14' extends somewhat obliquely downwards and forwards when the hatch is about to be closed, the levers 13' will automatically be displaced to a position wherein the retaining hook moves up on its associated retention shoulder 15. Securing is thereafter effected in the manner described above by pivoting of the lever 25.

Owing to the provision of the upright sealing strip 10 on the hatch section 3 supporting the levers 13 with the hooks 14 thereon, the actuating rod 20, and the actuating lever 25, whereas the downwardly open channel 12 and the gasket 11 housed therein are provided on the adjacent hatch section 4, the advantage is gained that by their weight the two hatch sections will assist in providing efficient sealing engagement between the sealing strip 10 and the gasket 11. The reason therefor is that the weight of the hatch section 3 causes the

actuating lever 25 to pivot to a position wherein the retaining hooks 14 exert a pressure from above on the retention shoulders 15 to force the hatch section 4 downwards, urging the gasket 11 thereon into sealing engagement with the sealing strip 10. The weight of the hatch section 4 acts in the same direction.

The embodiment as shown and described is to be regarded as an example only and the actuating device may be constructively altered in a variety of ways within the scope of the invention. When the hatches are wide, and their transverse joint consequently is long, it is preferred to use two actuating rods 20 positioned one after the other with their outer ends projecting beyond the ends of the hatch section 3 and each provided with a lever 25 and each articulated to a number of levers 13 having retaining hooks thereon. The design and structure of the hatch sections 3, 4 is independent of the invention. The lower end 28 of the lever 25 could, if desired, be arranged to abut directly on the upper face of the coaming 1.

WHAT WE CLAIM IS:—

1. A hatchway provided with a device for automatically battening-down the transverse joint between two adjacent hatch sections of the hatchway, which are provided with inter-engaging means comprising abutment means on one of said hatch sections and retaining members on the other hatch section, said retaining members being arranged to co-operate with the abutment means to hold the hatch sections in the battening-down position of the hatch sections and each being provided at one end of a respective two-armed lever pivotally mounted on said other hatch section, the opposite ends of said levers being articulated to a common rod, characterised in that at one of its ends said rod is articulately connected to the upper end of an actuating lever which is pivotally mounted on said other hatch section and which is arranged, when said other section is lowered towards its closing position in engagement with the coaming around the hatchway, to move into a position in which it abuts against said coaming or against a stationary abutment face thereon to pivot the actuating lever and consequently displace said rod in the direction in which the levers are pivoted into the battening-down position wherein said retaining members engage said abutment means.

2. A hatchway as claimed in Claim 1, in which the rod is connected to said actuating lever by an intermediary member which has pivotal connections at opposite ends thereof with the rod and with the actuating lever.

3. A hatchway as claimed in Claim 1 or 2, in which said rod and said one hatch section are provided with camming formations which, when said hatch sections approach the battening-down position, co-operate to displace said



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placement that the lower end 28 of the lever 25 assumes a position above the abutment face 29.

5 Should the actuating rod 20 be in the position of displacement that is indicated by dash-and-dot lines in Fig. 6, see the positions of the cam member 32 and the lever 13 indicated by dash-and-dot lines, when the hatch is to be closed and the hatch sections 3, 4 be displaced on the coaming 1 with the gripping claws 5, 6 intermeshing, the roller 34 will move into abutment with the oblique edge 33 of the cam member 32, thus displacing the actuating rod 20 to the left as seen in Fig. 10 5 to the position illustrated in continuous lines in this Figure, whereby the end 28 of the lever 25 will assume a position above the face of abutment 29. When the sections 3, 4 are subsequently lowered into sealing position against the coaming 1 and the longitudinal gasket 8 is pressed against the sealing strip 9, the lever end 28 will abut against the abutment face 29 and pivot the lever 25 in the anti-clockwise direction as seen in Figs. 3 25 and 5. As a result, the actuating rod 20 is displaced to the left, whereby the levers 13 are pivoted in the clockwise direction and the retaining hooks 14 thereon are pressed against the retention shoulders 15 on the hatch section 4. Consequently, the sealing strip 10 on the hatch section 3 will efficiently engage with the gasket 11 on the hatch section 4, and the hatch sections 3, 4 will be securely held together.

35 When the hatch cover consists of two parts each one of which may comprise several hatch sections, it may be convenient to use levers 13' (Fig. 11) that are provided with retaining hooks 14' of a kind having an upwardly and forwardly projecting edge face 35 40 which upon closing of the hatch cooperates with its associated retention shoulder 15 on the hatch section 4 in such a manner that in case the levers 13' should happen to be pivoted to a position wherein their respective retaining hook 14' extends somewhat obliquely downwards and forwards when the hatch is about to be closed, the levers 13' will automatically be displaced to a position wherein 45 the retaining hook moves up on its associated retention shoulder 15. Securing is thereafter effected in the manner described above by pivoting of the lever 25.

50 Owing to the provision of the upright sealing strip 10 on the hatch section 3 supporting the levers 13 with the hooks 14 thereon, the actuating rod 20, and the actuating lever 25, whereas the downwardly open channel 12 and the gasket 11 housed therein are provided on the adjacent hatch section 4, the advantage is 55 gained that by their weight the two hatch sections will assist in providing efficient sealing engagement between the sealing strip 10 and the gasket 11. The reason therefor is that 60 the weight of the hatch section 3 causes the

actuating lever 25 to pivot to a position wherein the retaining hooks 14 exert a pressure from above on the retention shoulders 15 to force the hatch section 4 downwards, urging the gasket 11 thereon into sealing engagement with the sealing strip 10. The weight of the hatch section 4 acts in the same direction.

The embodiment as shown and described is to be regarded as an example only and the actuating device may be constructively altered in a variety of ways within the scope of the invention. When the hatches are wide, and their transverse joint consequently is long, it is preferred to use two actuating rods 20 positioned one after the other with their outer ends projecting beyond the ends of the hatch section 3 and each provided with a lever 25 and each articulated to a number of levers 13 having retaining hooks thereon. The design and structure of the hatch sections 3, 4 is independent of the invention. The lower end 28 of the lever 25 could, if desired, be arranged to abut directly on the upper face of the coaming 1.

WHAT WE CLAIM IS:—

1. A hatchway provided with a device for automatically battening-down the transverse joint between two adjacent hatch sections of the hatchway, which are provided with inter-engaging means comprising abutment means on one of said hatch sections and retaining members on the other hatch section, said retaining members being arranged to co-operate with the abutment means to hold the hatch sections in the battening-down position of the hatch sections and each being provided at one end of a respective two-armed lever pivotally mounted on said other hatch section, the opposite ends of said levers being articulated to a common rod, characterised in that at one of its ends said rod is articulately connected to the upper end of an actuating lever which is pivotally mounted on said other hatch section and which is arranged, when said other section is lowered towards its closing position in engagement with the coaming around the hatchway, to move into a position in which it abuts against said coaming or against a stationary abutment face thereon to pivot the actuating lever and consequently displace said rod in the direction in which the levers are pivoted into the battening-down position wherein said retaining members engage said abutment means.

2. A hatchway as claimed in Claim 1, in which the rod is connected to said actuating lever by an intermediary member which has pivotal connections at opposite ends thereof with the rod and with the actuating lever.

3. A hatchway as claimed in Claim 1 or 2, in which said rod and said one hatch section are provided with camming formations which, when said hatch sections approach the battening-down position, co-operate to displace said

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5 actuating lever via said rod into a position
for abutment against said coaming or abutment
face as aforesaid, the arrangement being such
that rod displacement effected by said cam-
ming formations moves said levers part-way
towards bringing the retaining members into
engagement with said abutment means and
pivoting of the actuating lever by abutment
with said coaming or abutment face com-
pletes the lever movement to engage said
10 retaining members with said abutment means.

4. A hatchway as claimed in Claim 1, 2 or
3 in which one of said hatch sections is pro-
vided with a resilient gasket extending in the
lengthwise direction of the joint and the other
hatch section is provided with a sealing strip
15 arranged in the battened-down position of the
hatch sections to engage said gasket.

5. A hatchway as claimed in Claim 4 in
which said sealing strip is provided on the
hatch section that pivotally mounts said
actuating lever and associated retaining mem-
bers, said strip being arranged to engage from
below the gasket which is housed in a down-
wardly facing channel formed on the adjacent
25 hatch section.

6. A hatchway as claimed in any one of
the preceding claims in which said hatch sec-
tions are moved towards one another to close
the hatchway, and in which each retaining 30
member is formed with a forwardly and
upwardly projecting edge face which is
arranged, when said hatch sections are moved
towards one another on the coaming, to co-
operate with the abutment means on one of 35
the hatch sections to bring the retaining mem-
ber and associated lever into a predetermined
position preparatory to actuation of the retain-
ing members by said actuating lever.

7. A hatchway substantially as hereinbefore 40
described with reference to, and as shown in,
the accompanying drawings.

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Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1980.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.

