

HATCH LOCK

FIELD OF INVENTION

The present invention relates to a hatch latch. Furthermore the present invention
5 relates to a hatch closure which incorporates a latch to allow for the locking of a hatch
to an opening of for example a bulk head or other compartment of a marine vessel.

BACKGROUND

The secure closure of a hatch or bulk head door or similar normally involves the
10 use of a latching mechanism. There are normally provided a plurality of such latching
mechanisms which provide fastening of a door or hatch at distributed points at the
perimeter of the hatch with the frame of the opening to which the hatch provides
closure. Large handles are normally presented to allow for a person to operate the
latching mechanism to allow for the latch to be moved from a latching condition to an
15 unlatching condition to allow for the hatch to become secured or opened.

However different hatches and their relationship to the frame of the opening to
which the hatch is moveably disposed, will provide for different geometry that must be
accommodated by the latch used for the purposes of securing the hatch. The distance
between clamping surfaces of the hatch and/or the frame of the opening and the hatch
20 itself where the latch is normally engaged, may be of different spacing for different
hatch/frame configurations. In some configurations the hatch may be of a thickness
which is thinner than in other applications. This may have bearing on the reach that
the latch is required to have in order to allow for it to engage with a clamping surface
of the frame of the opening. Accordingly different latches may need to be provided
25 tailored to allow for their use with different hatch/frame configurations. The packing
out of the latch by the use of washers is one means of achieving the variable
configuration of latch to accommodate different hatch/frame configurations. However
the use of washers may not always be convenient as washers may not be readily at
hand. Furthermore the use of washers may not provide an infinitely variable
30 adjustment of the latch between minimum and maximum limits.

It would be an advantage if a latch were provided which was adjustable in configuration to allow for it to be used in a variety of different hatch/frame configurations where the geometry of the latch could be varied to accommodate variations in geometry and yet still allow for it to be conveniently utilised.

5 Accordingly it is an object of the present invention to provide a hatch latch which addresses the abovementioned advantage or which will at least provide the public with a useful choice.

BRIEF DESCRIPTION OF THE INVENTION

10 In a first aspect the present invention consists in a hatch latch to selectively capture a hatch to an opening defined in a wall in a closing condition, said hatch latch comprising

 a. a mounting means including (i) a mounting region at which said mounting means can be affixed with said hatch and (ii) a threaded portion presented to
15 one side of said mounting region, the thread of said threaded portion having a thread axis defining an axis of said hatch latch, said mounting means including an axis aligned and extending aperture

 b. an adjustment nut threadingly engaged with said threaded portion of said mounting means, said adjustment nut including a clamping surface the normal to
20 which is parallel to the axial direction and directed away from said mounting region, said adjustment nut including an axis aligned and extending aperture

 c. a locking bar including an axis aligned positioned and extending aperture positioned adjacent the clamping surface of the adjustment nut said locking bar including a locking arm provided radially outwardly to said axis

25 d. a shaft extending in the direction of said axis and through each of the apertures of said adjustment nut, mounting means and locking bar, said shaft including (i) at or towards the mounting means disposed distal end thereof a first shaft enlargement of a size to prevent it passing through said aperture of said mounting means and (ii) at or towards the locking bar disposed distal end thereof a second shaft
30 enlargement of a size to prevent it passing through said aperture of said locking bar, at

least one of said first and second enlargements being threadingly engaged with said shaft and displaceable in the direction of said axis relative to said shaft

wherein said mounting means, said adjustment nut and said locking bar are captured between said first and second shaft enlargements of said shaft and wherein the adjustment nut can be displaced in the axial direction to position relative to mounting means, said clamping surface at the desired axial displacement from said mounting region and the adjustment of one of said first and second shaft enlargements of said shaft in the direction of said axis allow the firm capturing of said locking bar with said adjustment nut and

wherein said locking bar is mounted to said shaft in manner fixed about the axial direction and slidably engagable in the axial direction, said shaft being rotatable about said axis by a means to rotate.

Preferably said means to rotate is a handle.

Preferably said means to rotate is presented, in the direction of said axis from the mounting means side of the hatch latch and the locking bar end of the hatch latch.

Preferably said means to rotate is actuatable from the mounting means side of said hatch latch.

Preferably said means to rotate is a drivable means affixed to said shaft.

Preferably said drivable means is a nut with which a means to drive can couple for the rotation of the shaft in the axial direction.

Preferably said means to rotate is disposed at the first distal end of said shaft.

Preferably said means to rotate is or includes said first shaft enlargement.

Preferably said first shaft enlargement includes a nut or bolt head.

Preferably said first shaft enlargement is a nut threadingly engaged onto said shaft.

Preferably said first shaft enlargement also includes a washer positioned intermediate of said nut or bolt head and the mounting means.

Preferably said shaft extends in the direction of said axis from said mounting means side of said hatch latch, to a handle formed or engaged with said shaft, said handle including a handle region disposed outwardly from the axial direction.

Preferably said handle is a wheel.

Preferably said handle is an arm extending radially from the shaft to the axial direction.

5 Preferably said first shaft enlargement is located within a receptacle of the mounting means.

Preferably said receptacle of said mounting means extends in the direction of said axis from the end of the mounting means of said mounting region towards the threaded portion disposed end of said mounting means, the receptacle being of a depth to locate said first shaft enlargement to the threaded portion side of the mounting
10 region disposed distal end of the mounting means.

Preferably said first distal end of said shaft does not extend in the direction of said axis, beyond the mounting region disposed distal end of said mounting means.

Preferably said mounting means is of a body including a hollow cylindrical shaped perimeter mounting region and a cylindrical threaded portion.

15 Preferably said cylindrical mounting region and said cylindrical threaded portion are coaxial.

Preferably said cylindrical mounting region and said cylindrical threaded portion are of substantially the same exterior cylindrical diameter.

20 Preferably wherein said mounting region defines a region to allow for said hatch latch to be welded to a hatch, said means to rotate disposed to be accessible from one side of said hatch, said adjustment nut and locking bar disposed from the opposite side of the hatch.

Preferably said aperture of said mounting means is provided extending through a transverse to the direction of said axis extending web interior of said receptacle of
25 said mounting means.

Preferably said web presents a transverse to the axial direction surface the normal to which extends to the mounting region disposed distal end of said mounting means.

30 Preferably said first shaft enlargement locates against the transverse surface of said web.

Preferably said aperture through said mounting means is of a size sufficiently large to accommodate the shaft extending therethrough yet prevent the passing of said first shaft enlargement therethrough.

5 Preferably said surface of said web includes a means to register a locking cap which is engaged with said means to register and thereby prevented from movement at least rotationally about the direction of said axis, said locking cap also rotationally fixed with said shaft to thereby prevent said shaft from rotating about the direction of said axis.

10 Preferably said locking cap can displace in the axial direction between a means to register engagement condition thereby preventing the locking cap from rotating about the axial direction to a means to register disengaged condition thereby allowing rotation of said shaft about the axial direction.

Preferably said locking cap is able to be held in a rotationally fixed relationship relative to said shaft by its engagement with the first shaft enlargement.

15 Preferably said first shaft enlargement is a nut or bolt head, said locking cap engages with said nut or bolt head in a manner to become rotationally fixed about the axial direction relative to the nut or bolt head and wherein its registering with the means to register will simultaneously hold the nut or bolt head and shaft from rotating about the axis.

20 Preferably said threaded portion is an external thread, and said adjustment nut includes an internal thread to engage with the external thread threaded portion of the mounting means.

25 Preferably said threaded portion is an internal thread, and said adjustment nut includes an external thread to engage with the internal thread threaded portion of the mounting means.

Preferably said adjustment nut disposes its said clamping surface beyond the threaded portion disposed distal end of said mounting means.

Preferably said aperture of said mounting means is defined by a bush.

Preferably said aperture of said mounting means includes an O-ring sealingly interposed between said mounting means and said shaft to create a leak resistant seal between said shaft and the mounting means.

Preferably said locking bar includes a shaft mounted region including its aperture and from which there extends in a radial direction a locking bar arm for engagement with a latching surface of a surround to said opening.

Preferably said locking bar arm extends transverse to the direction of said axis.

Preferably said mounting region of said locking bar defines an aperture of a non-circular shape and which is mounted on a section of said shaft of a complementary non-circular shape, the relationship of said locking bar with said shaft allows for sliding displacement of said locking bar in the direction of said axis along at least that section of said shaft shaped complementary to the aperture shape of the locking bar mounting region yet remain relatively rotationally fixed with the shaft.

Preferably said shaft defines a spline shaped section with which said locking bar is engaged said locking bar including an aperture of a complementary shape to the shape of the spline section of said shaft, the relationship allowing for displacement of said locking bar relative to said shaft, in the axial direction.

Preferably said adjustment nut presents said clamping surface in a manner adjustable in the axial direction dependent from which the locking bar axial direction displacement relative to the mounting means can be fixed, the movement of the first and second shaft enlargements towards each other resulting in the capturing of said locking bar to (whether directly or indirectly) said clamping surface to present said locking bar in a condition displaced in the axial direction desired relative to the mounting means.

In a second aspect the present invention consists in a hatch latch to selectively capture a hatch to an opening defined in a wall in a closing condition, said hatch latch comprising

a. a mounting means including (i) a mounting region at which said mounting means can be affixed with said wall and (ii) a threaded portion presented to one side of said mounting region, the thread of said threaded portion having a thread

axis defining an axis of said hatch latch, said mounting means including an axis aligned and extending aperture

b. an adjustment nut threadingly engaged with said threaded portion of said mounting means, said adjustment nut including a clamping surface the normal to which is parallel to the axial direction and directed away from said mounting region, said adjustment nut including an axis aligned and extending aperture

c. a locking bar including an axis aligned and extending aperture positioned adjacent the clamping surface of the adjustment nut said locking bar including a locking arm provided radially outwardly to said axis

d. a shaft extending in the direction of said axis and through each of the apertures of said adjustment nut, mounting means and locking bar, said shaft including (i) at or towards the mounting means disposed distal end thereof a first shaft enlargement of a size to prevent it passing through said aperture of said mounting means and (ii) at or towards the locking bar disposed distal end thereof a second shaft enlargement of a size to prevent it passing through said aperture of said locking bar, at least one of said first and second enlargements being threadingly engaged with said shaft and displaceable in the direction of said axis relative to said shaft

wherein said mounting means, said adjustment nut and said locking bar are captured between said first and second shaft enlargements of said shaft and wherein the adjustment nut can be displaced in the axial direction to position relative to mounting means, said clamping surface at the desired axial displacement from said mounting region and the adjustment of one of said first and second shaft enlargements of said shaft in the direction of said axis allow the firm capturing of said locking bar with said adjustment nut and

wherein said locking bar is mounted to said shaft in manner fixed about the axial direction and slidably engagable in the axial direction, said shaft being rotatable about said axis by a means to rotate.

This invention may also be said broadly to consist in the parts, elements and features referred to or indicated in the specification of the application, individually or collectively, and any or all combinations of any two or more of said parts, elements or

features, and where specific integers are mentioned herein which have known equivalents in the art to which this invention relates, such known equivalents are deemed to be incorporated herein as if individually set forth. For the purposes of illustrating the invention, there is shown in the drawings a form which is presently preferred. It is being understood however that this invention is not limited to the precise arrangements shown.

BRIEF DESCRIPTION OF THE DRAWINGS

Reference will now be made to the accompanying drawings in which:

Figure 1 is a perspective view of a hatch latch of the present invention,

Figure 2 illustrates a plurality of latches engaged to a hatch which is engaged to a frame of an opening of for example a bulk head,

Figure 3 is a sectional view through one configuration of the latch of the present invention which will hereinafter also be referred to as the flush mount version,

Figure 4 is a sectional view through the latch of Figure 3 engaged to a hatch and in locking engagement with an opening frame, but wherein a slight configuration change is shown in respect of the adjustment nut relationship with the mounting,

Figure 5 is a sectional view through a latch of a similar configuration to Figure 3 but wherein this version illustrates a handled configuration (hereinafter referred to as the handled version),

Figure 6 is a sectional view illustrating the use of a driver to drive the rotation of the locking bar capable of engagement with the frame of the opening to allow the locking bar to be moved between a locking condition and a release condition,

Figure 7 is a part sectional view through a latch of the present invention showing a double handled version,

Figure 8 is a sectional view of a latch of Figure 3 but wherein a handled adaptation has been provided,

Figure 9 is an exploded view of the components of the latch of Figure 3,

Figure 10 is a close up view of part of the drawing of Figure 6,

Figure 11 is an exploded view and sectional view of the components of the latch of Figure 3,

Figure 12 is a perspective view of the latch of Figure 3,

Figure 13 illustrates the mounting, adjustment nut and locking bar in
5 perspective view,

Figure 14 is a perspective view of the mounting, adjustment nut and locking bar, and

Figure 15 is a perspective view of the clamping cap and the end closure to the mounting.

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DETAILED DESCRIPTION OF THE INVENTION

With reference to Figure 3, the latch of the present invention (the flush mount version) may generally be defined by the components consisting of a mounting or mounting means 3, an adjustment nut 4, a shaft 7, a first shaft enlargement 2 and a
15 second shaft enlargement 6, the locking bar 5 and preferably for the flush mounted version a locking cap 8 and a closure lid 1. The mounting 3 is the component of the latch which is engaged with a hatch and is or is to become securely affixed therewith. Whilst in the most preferred form the latch of the present invention is engaged to the hatch 9 and disposes the locking bar 5 in a manner to engage with a clamping surface
20 11 of the frame surround 10 to the opening it is envisaged that in an alternative configuration the latch may be provided to the frame surround 10 of the opening and present the locking bar 5 for engagement with a clamping surface of the hatch. However reference will herein predominantly be made to the preferred version where the latch is engaged in a fixed condition with the hatch 9. With reference to Figure 5,
25 the mounting 3 may be engaged to a hatch by for example welding. Alternatively the mounting 3 may incorporate a threaded portion to allow for a clamping engagement by a threaded ring to capture the mounting 3 to the hatch 9. The hatch 9 will include an aperture extending therethrough for the mounting 3 to extend and become snugly engaged as for example shown in Figure 5. However alternatively the mounting may
30 be directly welded to a face of the hatch 9.

The latch is preferably operable from at least one side of the hatch 9 and may be operable from both sides of the hatch 9. The opening surround or frame 10 is positioned proximate to where the latch is engaged to the hatch 9 such that the locking bar 5 can reach for engagement with a clamping surface 11 of the frame to the opening. In the configuration shown in the accompanying drawings the latch is operable from at least one side, being a side of the hatch opposite to where the locking bar 5 is disposed. However with reference to Figure 7, it can be seen that two handles are provided for engagement of the latch from either side of the hatch 9.

The mounting 3 includes a hatch engageable or mounting region 12. The mounting region 12 is disposed at or towards a first end 13 of the mounting. At proximate or disposed from the opposite end 14 of the mounting is a threaded region 15. In the configuration as shown in Figure 3, the threaded region 15 is an external thread. In the configuration as shown in Figure 5, the threaded region 15 is an internal thread. The direction of thread extends in a direction parallel to the axial direction AA. In the most preferred form the mounting 3 is a body of a cylindrical exterior perimeter and both the mounting region 12 and the external threaded portion 15 of the configuration of Figure 3 are substantially the same diameter. The cylindrical shaped mounting defines an axis extending in the axial direction AA. The threaded region 15 is accessible by a complimentary threaded region 16 of an adjustment nut 4 engageable with the mounting 3 from the second end 14. In the version of Figure 3 where the thread of the mounting means 3 is external, the thread of the adjustment nut 4 is internal. In the version as shown in Figure 5, the thread of the adjustment nut 4 is an external thread engageable with the internal thread 15 of the mounting 3. The mounting nut 4 is displaceable in the axial direction relative to the mounting 3 by the threaded rotation of the adjustment nut 4 relative to the mounting 3. Rotation about the axis AA of the adjustment nut relative to the mounting 3 will result in the adjustment nut moving in the axial direction AA relative to the mounting 3. The adjustment nut 4 presents a clamping surface 17 which has a normal to such a surface which is parallel to the axial direction AA and is directed in a direction away from the mounting 3. The clamping surface 17 is preferably a planar surface. This planar

surface moves as a consequence of the ability for the adjustment nut 4 to move in the axial direction relative to the mounting 3 and hence is also displaceable in the axial direction AA relative to the mounting 3. When the mounting 3 is engaged with a hatch 9, the consequence of the movement of the nut relative to the mounting, moves the planar clamping surface 17 relative to the hatch 9. With reference to Figure 7, the distance H between the clamping surface 17 is hence able to be adjusted. The clamping surface 17 is the reference surface from which the locking bar 5 will take reference from in respect of fixing its disposition relative to the hatch 9.

Holding the assembly of the mounting and adjustment nut with the locking bar 5, is a shaft 7. The shaft 7 includes a first shaft enlargement 2 and a second shaft enlargement 6. The shaft 7 in the form as shown in Figure 3 passes through an aperture 19 of the mounting, an aperture 20 of the adjustment nut and an aperture 21 of the locking bar 5. The first enlargement 2 is of a size which prevents the shaft from moving through the aperture 19 of the mounting 3 in the axial direction away from the first end 13 towards the second end 14 of the mounting 3. Likewise the second enlargement 6 is of a size which prevents it from passing through the aperture 21 of the locking bar 5. As a consequence of the prevention of movement of the shaft as a result of the enlargements 2, 6, the locking bar 5 can for use, become clamped against the clamping surface 17 (or an extension thereof). In the most preferred form of the present invention the first enlargement 2 is part of the shaft 7 and may for example be a bolt head. The second enlargement 6 is movable relative to the shaft by it being mounted in threaded engagement with the shaft. However in an alternative form, the first enlargement 3 may be engaged with the shaft in a threaded like manner. Where at least one of the enlargements 2, 6 is engaged with the shaft to allow for it to move in an axial direction AA along the shaft, the distance between the first enlargement 2 and the second enlargement 6 can be varied. Accordingly if the adjustment nut 4 is rotated relative to the mounting 3 and accordingly displaces axially relative thereto, adjustment of one of the enlargements 2, 6 along the shaft will need to be made so as to accommodate any slack to ensure the clamping of the locking bar 5 with the clamping surface 17 of the adjustment nut 4. When the desired axially displaced

location of the adjustment nut 4 has been reached (such that the locking bar will be disposed in the appropriate displacement from the hatch 9), one or both of the enlargements 2, 6 can be adjusted relative to the shaft to thereafter again ensure that a clamping engagement of the locking bar 5 occurs with the clamping surface 17. Such a clamping engagement is of a kind which will firmly hold the locking bar against the clamping surface 17 but still allow for the locking bar to rotate relative to the clamping surface about the axis AA. A washer may be placed intermediate of the clamping surface 17 and the locking bar 5 to aid in such relative rotation.

In order to allow for the locking bar 5 to rotate with the shaft 7 about the axis AA the locking bar 5 is mounted to the axle in a manner to allow it to slide along a region of the shaft 7 in the axial direction yet be retained for rotation with the shaft about the axis AA. Accordingly the aperture 21 of the locking bar 5 is of a configuration which is noncircular. The region of the shaft 7 at which the locking bar 5 is located is preferably of a corresponding shape to the aperture 21 of the locking bar 5. The aperture 21 of the locking bar 5 snugly fits over the region of the shaft 7 at where the locking bar 5 is disposed. The relationship of the aperture 21 and the corresponding section of the shaft 7 is of a kind which will allow for a driving rotation of the locking bar 5 to be obtained by the shaft 7. Accordingly the movement of the handle 25 as for example shown in Figure 5 for rotation about the axle AA will rotate the shaft 7 with which it is rigidly engaged and as a consequence of the driving relationship between the shaft 7 and the locking bar 5, will rotate the locking bar about the axis AA. For example the region of the shaft 7 at where the locking bar 5 is mounted may be of a square cross section and the aperture 21 of the locking bar 5 may be of a corresponding square shape the shape being such as to allow for driving rotation to be achieved between the shaft 7 and the locking bar 5. Alternatively splined or other noncircular close fitting cross sectional shapes of the aperture and region of the shaft at where the locking bar 5 is provided will allow for such driving rotation. The shaft region at where the locking bar 5 is engaged is of a constant cross section to allow for the locking bar 5 to be displaceable along that region of the shaft 7 to allow it to attain the appropriate disposition relative to the hatch 9. Once the desired

location has been achieved the adjustment nut 16 is moved to position its clamping surface 17 at a position corresponding to that which will hold the locking bar 5 in the appropriate disposition relative to the hatch 9 whereafter the second enlargement which is preferably a nut 6 is adjusted to displace towards the adjustment nut 4 thereby clamping the locking bar 5 against the adjustment nut 4. The locking bar 5 will include adjustment nut facing surface or surfaces which are of a shape to allow for rotational movement relative to the adjustment nut 4 to be maintained. In the examples shown in the accompanying drawings such a surface of the locking bar 5 facing the adjustment nut 4 is a planar surface which engages against the planar surface defining the clamping surface 17 of the adjustment nut 4.

With reference to Figure 12 and 13 the adjustment nut 4 preferably has a perimeter surface or provides part of its perimeter surface about the axis AA of a kind which allows for it to be conveniently rotated and driven. For example the perimeter surface as shown in Figures 13 and 14 is hexagonal and such may allow for a crescent to engage with the adjustment nut 4 for its rotation about the axis AA and relative to the mounting 3. The perimeter surface may alternatively be of a square cross section (cross section transverse to the axial direction AA) or may be of a circular cross section. A persons hand may grasp the adjustment nut 4 and with or without additional driving aiding surfaces at the perimeter of the nut, may be able to rotate the adjustment nut for its relative displacement with the mounting 3.

In the flush mount version of the present invention, the mounting 3 preferably includes a receptacle region 28 within which part of the shaft 17 and first shaft enlargement 2 are located. This receptacle region extends from an opening presented at the first distal end 13 of the mounting 3. With reference to Figure 13, it can be seen that the receptacle region 28 is of a circular cross section to the axial direction AA and extends inwardly from the distal end 13. In order to allow for a thrusting surface to be provided by the mounting 3 against which the enlargement 2 can act, a web 29 is provided which extends transverse to the axial direction AA. With reference to Figure 4, the web 29 presents a surface 30 which is preferably lateral to the axial direction AA and its normal is directed towards the first distal end 13 of the mounting. It is

against this surface 30 that the shaft enlargement 2 (preferably a bolt head) is able to thrust for the clamping engagement of the assembly of the components of the present invention (for the flush mount version). For the handled version as for example shown in Figure 8, the shaft enlargement 2 is able to thrust against the surface presented at the first distal end 13 of the mounting 3. Whilst a web 29 is shown its purpose is to provide a bearing surface for the holding of the shaft. This may not be an essential component in the operation of the invention of the handled version. Such a bearing surface may also be provided by the hatch. However for both the handled version and the flush mount version a thrusting surface projecting away from the end of the shaft at where the locking bar 5 is provided, is used for engagement by the first enlargement 2.

The receptacle 28 is of a depth sufficient to allow for the first enlargement 2 to be disposed entirely to the second end of the assembly away from the distal end 13 of the housing. Accordingly no part of the locking bar actuation mechanism is disposed to the side of the first end 13 of the housing presented to the side of the hatch 9 opposite to where the locking bar 5 is provided. It can be seen with reference to Figure 4, that a flush mounting can be provided to the hatch 9 as a consequence. The receptacle 28 is preferably of a circular cross section or at least extending in from the first end 13 of the mounting is of a circular cross section to allow for a cap 1 to engage with the receptacle in a manner to enclose the receptacle in a manner which will present a flush surface to the hatch 9. The cap 1 is preferably a circular disk with external thread 32 which can threadingly engage with the internal thread 33 of the receptacle 28. A key feature 34 may be provided to the surface of the cap 1 presented to the side of the hatch 9 opposite to the side where the locking bar 5 is provided. The key 34 allows for engagement of a screwdriver or a like driving device to rotate the cap 1 for engagement/disengagement with the mounting 3. Such a cap 1 may also act as a barrier to the progression of water from one side of the hatch 9 to the other side of the hatch 9. In addition however a sealing bush 36 may be provided to the aperture 19 of the mounting 3 as for example shown in Figure 4. The sealing bush 36 provides an additional seal to the progression of water from one side of the hatch to the other as a consequence of its sealing with the mounting 3 and the shaft 7. The sealing bush may

for example include an O-ring seal 37 provided about the axis AA and to be located intermediate of a part of the assembly fixed to the mounting 3 and to the shaft 7. Accordingly any water which may be present either on one or the other side of the hatch 9, may encounter additional resistance to the flow thereof to the opposite side of the hatch by the sealing bush 36 and its associated O-ring seal 37.

The flush mount version of the latch of the present invention is preferably of a kind which may remain in a condition closing and locking the hatch in a more permanent configuration. With reference to Figure 6, it can be seen that a means to drive the shaft 7 is able to engage with the first enlargement 2 to operate the locking bar 5 for its rotation between a locking condition and an unlocked condition. The means to drive 39 may engage with a drivable portion of the first enlargement 2 for rotating the first enlargement 2 and as a result of its rotatably fixed association with the shaft 7, to rotate the shaft 7 about the axis AA. The means to drive 39 may slidably engage about the perimeter of the first enlargement 2 and become engaged therewith for rotation thereof about the axis AA. In the most preferred form the first enlargement 2 is a bolt head of a hexagonal shape and a spanner or pipe spanner or the like can engage with the bolt head 2 for its driving about the axis AA. In the flush mount configuration the lid 1 will need to be removed from the mounting 3 prior to access being gained to the bolt head 2 for its rotation. Accordingly it can be appreciated that the flush mount version may not be provided in a condition for rapid unlocking of the hatch relative to its frame opening. In order to provide additional security to prevent the rotation of the locking bar 5 the shaft may be held in a fixed condition relative to the mounting 3 when the locking bar is in a locking condition holding the hatch 9 in a closed condition to the opening frame 10. With reference to for example Figure 4, a cap 40 may become affixed with the bolt head 2 and simultaneously become fixed with the mounting 3 by its engagement with registering aperture(s) 41 of the mounting 3. With reference to Figure 14 and 15, the registering apertures 41 extend into the surface of the web 29 and are located to allow for upstands or projections 43 of the locking cap 40 to engage therewith. The locking cap when in such a condition placed over the bolt head 2 will engage with the driving

surfaces of the bolt head 2 and become rotationally fixed about the axis AA relative thereto. The projections 34 upon there location into the registering apertures 41 will thereby prevent the relative rotation of the shaft to the mounting 3. The locking cap 40 is able to slidably engage in the axial direction onto the bolt head 2 and can also be axially removed therefrom by moving it in the opposite direction to its engagement direction. Accordingly the locking cap 40 can selectively prevent the rotation of the shaft 7 to the mounting 3 thereby effectively locking the locking bar 5 from rotation about the axis AA relative to the housing 4 and hence relative to the hatch 9 and the opening frame 10. To encourage the locking cap 40 to remain in the engaged condition with both the bolt head 2 and the register apertures 41, the locking cap 40 may be associated with the cap 1, the geometric relationship being such that when the cap 1 is fully registered with the mounting 3, it will hold the locking cap 40 in a condition to prevent the projections 34 from becoming removed from the registering apertures 41. The cap 1 effectively clamps the locking cap 40 against or towards the web 29 into which the register apertures 41 are provided. Many alternative forms of ensuring a locking of the shaft with the mounting may be provided. For example a transverse bar may extend through a castellated end of the bolt head 2 and also extend into a slot extending in the axial direction AA of the mounting 3. Alternatively radially exposed apertures extending through the bolt head in the axial direction may allow for locking pins to be inserted therethrough and extend also into correspondingly positioned registering apertures of the web of the mounting to thereby lock the rotation of the bolt head and hence the shaft to the mounting.

Whilst reference herein is made to the shaft enlargement 2, 6 being of a single item it will be appreciated by a person skilled in the art that such may incorporate additional hardware such as a washer or washers 45 which in conjunction with the enlargements 2, 6 will prevent the movement of the enlargement through the respective apertures as hereinbefore mentioned. Furthermore whilst the locking bar 5 is shown to have a substantially planar arm it may be that the arm provides an offset from the general planar direction thereof. Furthermore it need not extend completely lateral to the axial direction and may extend at an angle but radially outwardly from

the axis AA. The example as shown in Figure 7 illustrates the double handled version of the present invention but a person skilled in the art will appreciate that the latch of the present invention may incorporate one and either on one or the other side of the hatch 9 or no handles as for example the flush mount version. In the most preferred form all of the components and their relative rotation are coaxial with the axis AA of the entire assembly. Such relative rotation is achieved by the close fitting relationship defined by the apertures of the various components with the shaft and/or threaded relationships established between some of the components. All such moveable components are rotatable about the single axis AA and relative to each other.

Where reference herein is made to the mounting means 3 being of a cylindrical configuration it will be appreciated by a person skilled in the art that it need not be entirely cylindrical in shape. The mounting means may act like a chassis yet does present towards its second end 14 or at least for engagement from its second end 14 a cylindrical surface with which the thread (whether internal or external) is provided. A person skilled in the art will however appreciate that such a cylindrical surface need not be a continuous surface yet still allow for arcs of cylindrical surfaces to be presented into which the thread is generated. However in the most preferred form the surface is a complete and continuous cylindrical surface.

CLAIMS

1. A hatch latch to selectively capture a hatch to an opening defined in a wall in a closing condition, said hatch latch comprising

- 5 a. a mounting means including (i) a mounting region at which said mounting means can be affixed with said hatch and (ii) a threaded portion presented to one side of said mounting region, the thread of said threaded portion having a thread axis defining an axis of said hatch latch, said mounting means including an axis aligned and extending aperture
- 10 b. an adjustment nut threadingly engaged with said threaded portion of said mounting means, said adjustment nut including a clamping surface the normal to which is parallel to the axial direction and directed away from said mounting region, said adjustment nut including an axis aligned and extending aperture
- 15 c. a locking bar including an axis aligned positioned and extending aperture positioned adjacent the clamping surface of the adjustment nut said locking bar including a locking arm provided radially outwardly to said axis
- 20 d. a shaft extending in the direction of said axis and through each of the apertures of said adjustment nut, mounting means and locking bar, said shaft including (i) at or towards the mounting means disposed distal end thereof a first shaft enlargement of a size to prevent it passing through said aperture of said mounting means and (ii) at or towards the locking bar disposed distal end thereof a second shaft enlargement of a size to prevent it passing through said aperture of said locking bar, at least one
- 25 of said first and second enlargements being threadingly engaged with said shaft and displaceable in the direction of said axis relative to said shaft

wherein said mounting means, said adjustment nut and said locking bar are captured between said first and second shaft enlargements of said shaft and wherein
30 the adjustment nut can be displaced in the axial direction to position relative to

mounting means, said clamping surface at the desired axial displacement from said mounting region and the adjustment of one of said first and second shaft enlargements of said shaft in the direction of said axis allow the firm capturing of said locking bar with said adjustment nut and

- 5 wherein said locking bar is mounted to said shaft in manner fixed about the axial direction and slidably engagable in the axial direction, said shaft being rotatable about said axis by a means to rotate.
2. A hatch latch as claimed in claim 1 wherein said means to rotate is a handle.
3. A hatch latch as claimed in claim 1 or 2 wherein said means to rotate is
10 presented, in the direction of said axis from the mounting means side of the hatch latch and the locking bar end of the hatch latch.
4. A hatch latch as claimed in any one of claims 1 to 3 wherein said means to rotate is actuatable from the mounting means side of said hatch latch.
5. A hatch latch as claimed in any one of claims 1 to 4 wherein said means to
15 rotate is a drivable means affixed to said shaft.
6. A hatch latch as claimed in claim 5 wherein said drivable means is a nut with which a means to drive can couple for the rotation of the shaft in the axial direction.
7. A hatch latch as claimed in any one of claims 1 to 6 wherein said means to rotate is disposed at the first distal end of said shaft.
- 20 8. A hatch latch as claimed in any one of claims 1 to 7 wherein said means to rotate is or includes said first shaft enlargement.
9. A hatch latch as claimed in any one of claims 1 to 8 wherein said first shaft enlargement includes a nut or bolt head.
10. A hatch latch as claimed in any one of claims 1 to 9 wherein said first shaft
25 enlargement is a nut threadingly engaged onto said shaft.
11. A hatch latch as claimed in claim 9 or 10 wherein said first shaft enlargement also includes a washer positioned intermediate of said nut or bolt head and the mounting means.
12. A hatch latch as claimed in any one of claims 1 to 11 wherein said shaft extends
30 in the direction of said axis from said mounting means side of said hatch latch, to a

handle formed or engaged with said shaft, said handle including a handle region disposed outwardly from the axial direction.

13. A hatch latch as claimed in claim 12 wherein said handle is a wheel.

14. A hatch latch as claimed in claim 12 wherein said handle is an arm extending
5 radially from the shaft to the axial direction.

15. A hatch latch as claimed in any one of claims 1 to 14 wherein said first shaft enlargement is located within a receptacle of the mounting means.

16. A hatch latch as claimed in claim 15 wherein said receptacle of said mounting means extends in the direction of said axis from the end of the mounting means of said
10 mounting region towards the threaded portion disposed end of said mounting means, the receptacle being of a depth to locate said first shaft enlargement to the threaded portion side of the mounting region disposed distal end of the mounting means.

17. A hatch latch as claimed in any one of claims 1 to 16 wherein said first distal end of said shaft does not extend in the direction of said axis, beyond the mounting
15 region disposed distal end of said mounting means.

18. A hatch latch as claimed in any one of claims 1 to 17 wherein said mounting means is of a body including a hollow cylindrical shaped perimeter mounting region and a cylindrical threaded portion.

19. A hatch latch as claimed in claim 18 wherein said cylindrical mounting region
20 and said cylindrical threaded portion are coaxial.

20. A hatch latch as claimed in claim 18 or 19 wherein said cylindrical mounting region and said cylindrical threaded portion are of substantially the same exterior cylindrical diameter.

21. A hatch latch as claimed in any one of claims 1 to 20 wherein said mounting
25 region defines a region to allow for said hatch latch to be welded to a hatch, said means to rotate disposed to be accessible from one side of said hatch, said adjustment nut and locking bar disposed from the opposite side of the hatch.

22. A hatch latch as claimed in any one of claims 15 to 21 wherein said aperture of said mounting means is provided extending through a transverse to the direction of
30 said axis extending web interior of said receptacle of said mounting means.

23. A hatch latch as claimed in claim 22 wherein said web presents a transverse to the axial direction surface the normal to which extends to the mounting region disposed distal end of said mounting means.

24. A hatch latch as claimed in claim 22 or 23 wherein said first shaft enlargement
5 locates against the transverse surface of said web.

25. A hatch latch as claimed in any one of claims 1 to 24 wherein said aperture through said mounting means is of a size sufficiently large to accommodate the shaft extending therethrough yet prevent the passing of said first shaft enlargement therethrough.

10 26. A hatch latch as claimed in one of claims 22 to 25 wherein said surface of said web includes a means to register a locking cap which is engaged with said means to register and thereby prevented from movement at least rotationally about the direction of said axis, said locking cap also rotationally fixed with said shaft to thereby prevent said shaft from rotating about the direction of said axis.

15 27. A hatch latch as claimed in claim 26 wherein said locking cap can displace in the axial direction between a means to register engagement condition thereby preventing the locking cap from rotating about the axial direction to a means to register disengaged condition thereby allowing rotation of said shaft about the axial direction.

20 28. A hatch latch as claimed in claim 26 or 27 wherein said locking cap is able to be held in a rotationally fixed relationship relative to said shaft by its engagement with the first shaft enlargement.

29. A hatch latch as claimed in any one of claims 26 to 28 wherein said first shaft enlargement is a nut or bolt head, said locking cap engages with said nut or bolt head
25 in a manner to become rotationally fixed about the axial direction relative to the nut or bolt head and wherein its registering with the means to register will simultaneously hold the nut or bolt head and shaft from rotating about the axis.

30. A hatch latch as claimed in any one of claims 1 to 29 wherein said threaded portion is an external thread, and said adjustment nut includes an internal thread to
30 engage with the external thread threaded portion of the mounting means.

31. A hatch latch as claimed in any one of claims 1 to 30 wherein said threaded portion is an internal thread, and said adjustment nut includes an external thread to engage with the internal thread threaded portion of the mounting means.

32. A hatch latch as claimed in any one of claims 1 to 31 wherein said adjustment
5 nut disposes its said clamping surface beyond the threaded portion disposed distal end of said mounting means.

33. A hatch latch as claimed in any one of claims 1 to 32 wherein said aperture of said mounting means is defined by a bush.

34. A hatch latch as claimed in any one of claims 1 to 33 wherein said aperture of
10 said mounting means includes an O-ring sealingly interposed between said mounting means and said shaft to create a leak resistant seal between said shaft and the mounting means.

35. A hatch latch as claimed in any one of claims 1 to 34 wherein said locking bar includes a shaft mounted region including its aperture and from which there extends in
15 a radial direction a locking bar arm for engagement with a latching surface of a surround to said opening.

36. A hatch latch as claimed in any one of claims 1 to 35 wherein said locking bar arm extends transverse to the direction of said axis.

37. A hatch latch as claimed in any one of claims 1 to 36 wherein said mounting
20 region of said locking bar defines an aperture of a non-circular shape and which is mounted on a section of said shaft of a complementary non-circular shape, the relationship of said locking bar with said shaft allows for sliding displacement of said locking bar in the direction of said axis along at least that section of said shaft shaped complementary to the aperture shape of the locking bar mounting region yet remain
25 relatively rotationally fixed with the shaft.

38. A hatch latch as claimed in any one of claims 1 to 37 wherein said shaft defines a spline shaped section with which said locking bar is engaged said locking bar including an aperture of a complementary shape to the shape of the spline section of said shaft, the relationship allowing for displacement of said locking bar relative to
30 said shaft, in the axial direction.

39. A hatch latch as claimed in any one of claims 1 to 38 wherein said adjustment nut presents said clamping surface in a manner adjustable in the axial direction dependent from which the locking bar axial direction displacement relative to the mounting means can be fixed, the movement of the first and second shaft enlargements
5 towards each other resulting in the capturing of said locking bar to (whether directly or indirectly) said clamping surface to present said locking bar in a condition displaced in the axial direction desired relative to the mounting means.

40. A hatch latch to selectively capture a hatch to an opening defined in a wall in a closing condition, said hatch latch comprising

- 10 a. a mounting means including (i) a mounting region at which said mounting means can be affixed with said wall and (ii) a threaded portion presented to one side of said mounting region, the thread of said threaded portion having a thread axis defining an axis of said hatch latch, said mounting means including an axis aligned and extending aperture
- 15 b. an adjustment nut threadingly engaged with said threaded portion of said mounting means, said adjustment nut including a clamping surface the normal to which is parallel to the axial direction and directed away from said mounting region, said adjustment nut including an axis aligned and extending aperture
- 20 c. a locking bar including an axis aligned and extending aperture positioned adjacent the clamping surface of the adjustment nut said locking bar including a locking arm provided radially outwardly to said axis
- d. a shaft extending in the direction of said axis and through each of the apertures of said adjustment nut, mounting means and locking bar, said
25 shaft including (i) at or towards the mounting means disposed distal end thereof a first shaft enlargement of a size to prevent it passing through said aperture of said mounting means and (ii) at or towards the locking bar disposed distal end thereof a second shaft enlargement of a size to prevent it passing through said aperture of said locking bar, at least one
30 of said first and second enlargements being threadingly engaged with

said shaft and displaceable in the direction of said axis relative to said shaft

wherein said mounting means, said adjustment nut and said locking bar are captured between said first and second shaft enlargements of said shaft and wherein
5 the adjustment nut can be displaced in the axial direction to position relative to mounting means, said clamping surface at the desired axial displacement from said mounting region and the adjustment of one of said first and second shaft enlargements of said shaft in the direction of said axis allow the firm capturing of said locking bar with said adjustment nut and

10 wherein said locking bar is mounted to said shaft in manner fixed about the axial direction and slidably engagable in the axial direction, said shaft being rotatable about said axis by a means to rotate.