



Improvements TO HINGES FOR HINGING

AN OPENING LEAF TO A CASING

The present invention relates to an improvement
5 made to pin hinges which hinge a pivoting opening leaf
relative to a stationary casing, these hinges being constructed, in the conventional manner, by means of two
adjacent cylindrical tubular hinge knuckles through which
a common hinge pin is engaged, these hinge knuckles each
10 being secured to a lateral plate for fixing to the
opening leaf and the casing respectively, allowing the
first to move freely with respect to the second.

In the classic embodiments of such hinged
assemblies, especially for window frames, door frames or
15 the like, where the casing and the opening leaf are made
from metal profile sections, generally made of aluminium,

it is advantageous if not necessary to achieve a fitting which provides satisfactory sealing to air and to water when the opening leaf is pressed and blocked against the casing, as well as good performance from the acoustic
5 insulation point of view.

In particular, it is possible to aim to satisfy these requirements in the simplest possible way, by arranging on the opening leaf a gasket which extends along the entire periphery of the profile sections
10 forming its frame, towards the outside thereof, this gasket, which is intended to be compressed between the opening leaf and the casing, usually being interrupted at the hinges of this opening leaf, something which consequently breaks the seal at this point and may lead to
15 drawbacks, especially if the opening leaf has an outside wall exposed to bad weather.

In an improved fitting, provision has already been made, in a way which is also known in the state of the art of producing frames from metal framework, to
20 equip the hinged assembly with a so-called dual barrier system, formed of two separate and parallel gaskets respectively borne by the opening leaf and the casing and which form, between these two elements, a sort of continuous central cage, the pressure of which is in equi-



librium with that prevailing outside the opening leaf, so as to allow appropriate evacuation of water which may have infiltrated inside this cage. However, this solution again requires the first gasket to be interrupted at the
5 top of the frame in order to achieve this equilibrium, sealing against the air having to be achieved using the second gasket situated closer to the inside of the premises. Under these conditions, and as in the previous case, this second barrier is imperfect owing to the dis-
10 continuities which have to be created at the hinges and to the corresponding thinning down of the gasket made at this point between the opposite ends of the two hinge knuckles of each of these hinges.

The subject of the present invention is an
15 improvement made to hinges of the sort in question, which avoids such thinning-down, especially allowing the sealing gasket, particularly the one constituting the second barrier, in that part of this gasket which runs along the hinges, not to include appreciable discontinui-
20 ties from one end of the latter to the other between the two hinge knuckles and the plates for fixing respectively to the opening leaf and to the casing, the gasket simply being cut on either side of the hinge knuckle secured to the casing in order to allow the latter to pivot relative



to the second hinge knuckle connected to the opening leaf.

To this end, the improvement in question is characterized in that each of the two hinge knuckles includes, in its lateral fixing plate respectively secured to the opening leaf and to the casing, and extending parallel to its tubular element, a slot in which to fit and immobilize a sealing gasket projecting towards the outside of the plate under this tubular element, so that in the position in which the opening leaf bears against the casing, the gaskets borne by the two plates are aligned with one another, thus giving continuity of the sealing at the hinge

By virtue of the invention, each hinge knuckle is thus associated with a gasket which, when the opening leaf is pressed against the casing, provides continuity of the sealing of the fitting, in combination with those parts of this same gasket which, in the conventional fashion, extend along the opening leaf beyond the hinge, on each side thereof.

According to the invention, no thinning-down of the gasket is therefore necessary, the continuity of this gasket, when the opening leaf is in the closed position, being assured over the entire periphery of the opening

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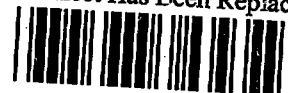


panel, except just where the cuts have been made in this gasket on each side of the hinge knuckle borne by the casing in order to allow the opening panel to pivot freely about the axis of the hinge pin of the hinge.

5 In a preferred embodiment of the invention, in which the opening leaf consists of a frame formed of suitably connected metal profile sections, the fixing plate of the hinge knuckle borne by this opening leaf exhibits an L-shaped profile in cross-section, with an
10 end part fixed to a web of the profile section, the other part secured to the tubular element bearing the slot for accommodating the gasket, which slot is extended, in the profile section of the opening leaf, by a slot of the same cross-section provided in a support tenon secured to
15 this profile section, so that the sealing gasket can be fitted continuously in these two slots in the extension of one another.

Advantageously, the profile section of the opening leaf has an outside edge perpendicular to the
20 plane of the web and against which the end fixing part of the hinge knuckle of the hinge bears, this outer edge being secured to the tenon equipped with the slot for accommodating the gasket.

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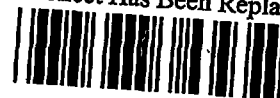
As a matter of preference the outside edge of the profile section is extended by an enveloping end externally surrounding, at least in part, the cylindrical element of the hinge knuckle borne by the opening leaf.

5 According to another feature, the outer edge of the profile section of the opening leaf includes, beyond the hinge knuckle borne by this profile section, a second tenon aligned with the first one, formed as a continuation of the latter on the profile section, and in which
10 an extension of the sealing gasket is fitted, the distance separating the two tenons being substantially equal to the width of the fixing plate of the hinge knuckle borne by the casing, which fits into it when the opening leaf is pressed against the casing.

15 Further features of a hinge produced in accordance with the invention will become clearer in the course of the description which follows of one embodiment given by way of non-limiting indication with reference to the appended drawings in which:

20 - Figure 1 is a part-perspective view of a hinge according to the invention, the hinge knuckles of which include slots for fitting a sealing gasket, these hinged knuckles being illustrated in this Figure prior to the fitting of this gasket.

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- Figure 2 is a part perspective view of the hinge according to Figure 1, equipped in each of its hinge knuckles with a sealing gasket, these hinge knuckles being illustrated before the opening panel is hinged to the casing about the hinge pin which connects the hinge knuckles.

- Figure 3 is a perspective view similar to Figure 2 but illustrating the hinged knuckles of the hinge after mutual assembly.

10 - Figures 4 and 5 illustrate, viewed in transverse section, an opening leaf and a casing for a window frame or the like, respectively in the closed position and in the open position.

In these figures, the reference 1 denotes a hinge including, in a way which is known per se, two adjacent hinge knuckles 2 and 3, each one formed of a cylindrical tubular element 4 and of a fixing plate 5, the latter preferably having a profile which, in cross-section, matches the shape of an L, with a first part 6 secured to the tubular element 4 and extending in a plane containing one longitudinal generatrix linking the plate with this tubular element, then a second end part 7, extending substantially perpendicular to the first part. This part 7 comprises a lip 8 and a rib 9, allowing it to



be immobilized, as the case may be, on the opening leaf or the casing of a window frame, door frame or the like, by means of a locking screw, not represented, engaged in a passage 10 drilled in the part 7 of the plate 5.

5 In the example represented it is assumed, in a way known per se in the art, that the hinge knuckle 2 is fixed by its plate 5 against a profile section constituting the frame of an opening leaf of a window or the like, the hinge knuckle 3 for its part being secured
10 to a stationary casing intended to accommodate the opening leaf when the window or door in question is produced.

The hinge knuckles 2 and 3 are equipped with an extension in the form of a clip 11, provided in the part
15 6 of the fixing plates 5 of these hinge knuckles and especially produced at the time of manufacture thereof, this clip extending parallel to and in the vicinity of the tubular elements 4 of the corresponding hinge knuckles. The clip 11 each time delimits a slot, respec-
20 tively denoted by 12 as far as the hinge knuckle 2 is concerned, and by 13 in the case of hinge knuckle 3.

In the open position of the hinge, illustrated in Figure 1, the slots 12 and 13 are offset, whereas in the closed position, as represented in Figures 3 and 4,



they are aligned with one another allowing, as specified hereinbelow, continuity of a sealing gasket, cut only at the appropriate points to allow one hinge knuckle to move freely with respect to the other when the opening leaf is
5 moved with respect to the casing.

The hinge knuckles 2 and 3 of the hinge 1 are also to be found in Figure 2, the hinge knuckle 2 this time being represented secured by its fixing plate 5 to a metal profile section forming part of the frame of an
10 opening leaf 14 of a door or window (not completely represented).

The opening leaf 14 thus includes a flat web 15 equipped with two parallel rails 16 and 17 respectively, arranged so as to allow the lip 8 of the end part 7 of
15 the fixing plate 5 to be mounted under one of them with the rib 9 bearing against the other, the whole assembly being immobilized in the appropriate position along the length of the profile section 14 by a wedging piece 18.

The profile section of the opening leaf 14
20 moreover includes an outer edge 19 which, in the embodiment represented, extends perpendicular to the web 15, this edge being equipped on the inside with a tenon 20 comprising a slot 21, the position of the tenon being determined by construction such that this slot 21 comes



substantially in line with the slot 12 of the hinge knuckle 2 (see Figure 1) when the latter is immobilized in the profile member in the way indicated hereinabove.

In this position, a gasket 22, the cross-section of which may vary depending on the targeted application, the tubular form represented in the drawing therefore having no limiting nature, is fitted into the slots 12 and 21 without any discontinuity, this gasket simply being stopped at its end 23 at the point occupied by the hinge knuckle 3 once the hinge has been assembled for good.

The profile section of the opening leaf 14 includes a second tenon 24, arranged as a continuation of the tenon 20 and formed continuously with the latter on the profile section, the latter being milled to allow the hinges to be fitted at the desired location. The tenon 24 has a slot 25 for fitting the corresponding part 26 of the gasket 22, the latter being continuous and stopped only at its end 27 facing the end 23, on the other side of the location reserved for the hinge knuckle 3.

The latter, illustrated in Figure 2 before the profile section of the opening leaf 14 is fitted is, for its part, secured by its own fixing plate 5 to a stationary casing (not represented in Figure 2 but which



appears in Figures 4 and 5 under the general reference 28), the ways in which this hinge knuckle 3 is immobilized on the casing 28 being, as a general rule, similar to those envisaged for the hinge knuckle 2 on the opening leaf 14, with rails 16 and 17 and a wedging piece 18 interacting with the lip 8 and the rib 9 of the corresponding fixing plate 5.

A length of gasket 29, the longitudinal dimension of which corresponds to that of the tubular element 4 of the hinge knuckle 3 is then fitted in the slot 13 of this knuckle, this length of gasket having end sections 30 and 31 respectively able to come exactly opposite the ends 23 and 27 of the gaskets 22 and 26 borne by the opening leaf 14 when the latter is in its closed position against the casing 28, this position being represented more particularly in Figure 3. In the latter figure, the reference 32 denotes the pin which allows the hinge knuckles 2 and 3 to be hinged together by this pin being engaged along the common axis of the two tubular elements 4 of these hinge knuckles.

In this position, the gaskets 22, 29 and 26 are strictly in the extension of each other, assuring continuity of the seal between the opening leaf and the casing, including at the hinge 1, with just one cut at

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the ends 23 and 30 on the one hand, 27 and 31 on the other hand.

Figures 3 and 4 illustrate, in cross-section, the fitting of the opening leaf 14 on the casing 28 via the hinge 1 and its hinge knuckles 2 and 3 hinged about the hinge pin 32.

In these figures, it is possible to see how the dual sealing barrier between the opening leaf 14 and the casing 28 is achieved, on the one hand, by means of the continuous gasket 22, 29, 26 and, on the other hand, by means of a second continuous gasket 33 borne by the casing 28 and against which, when the opening leaf is in the closed position, a bearing surface 34 of the latter bears, the assembly in this position delimiting a closed cage 35, advantageously in equilibrium with the outside in terms of pressure.

In the example represented, the outer edge 19 of the opening leaf 14 includes an extension 36 which partially surrounds the hinge 1 (see Figures 3 and 4). Finally, in this example, the opening leaf is illustrated as being fitted with a central glazing unit 37 with double walls, respectively 38 and 39; of course, this latter arrangement has little to do with the invention, it being possible as appropriate for the opening leaf to



consist of a solid panel, especially in the case of a door.

A hinge for hinging an opening leaf to a casing is thus produced which makes it possible to ensure practically perfect continuity of the sealing gasket borne by the opening leaf, improving in a quite remarkable way the effectiveness of the insulation afforded by the second barrier that this gasket achieves in the conventional fitting, especially by avoiding thinning this gasket down at the hinge. This system also improves the performance of the fitting, not only with regard to sealing against air and water, but also as far as acoustic insulation is concerned.

Of course, it goes without saying that the invention is not limited to the embodiment more specifically described in the foregoing with reference to the appended drawings; on the contrary, it encompasses all alternative forms thereof.

CLAIMS

1. Improvement to pin hinges which hinge a pivoting opening leaf relative to a stationary casing, these hinges being constructed by means of two adjacent cylindrical tubular hinge knuckles through which a common hinge pin is engaged, these hinge knuckles each being secured to a lateral plate for fixing to the opening leaf and the casing respectively, allowing the first to move freely with respect to the second, characterized in that each of the two hinge knuckles (2, 3) includes, in its lateral fixing plate (5) respectively secured to the opening leaf (14) and to the casing (28), and extending parallel to its tubular element (4), a slot (12, 13) in which to fit and immobilize a sealing gasket (22, 29) projecting towards the outside of the plate under this tubular element, so that in the position in which the opening leaf bears against the casing, the gaskets borne by the two plates are aligned with one another, thus giving continuity of the sealing at the hinge (1).
2. Improvement according to Claim 1, in an embodiment in which the opening leaf (14) consists of a frame formed of suitably connected metal profile sections, characterized in that the fixing plate (5) of the hinge knuckle (2) borne by this opening leaf exhibits an L-

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shaped profile in cross-section, with an end part (7) fixed to a web (15) of the profile section, the other part (6) secured to the tubular element (4) bearing the slot (12) for accommodating the gasket (22), which slot is extended, in the profile section of the opening leaf, by a slot (21) of the same cross-section provided in a support tenon (20) secured to this profile section, so that the sealing gasket (22) can be fitted continuously in the slots (12, 21) in the extension of one another.

3. Improvement according to one of Claims 1 and 2, characterized in that the profile section of the opening leaf (14) has an outside edge (19) perpendicular to the plane of the web (15) and against which the end fixing part (7) of the hinge knuckle (2) of the hinge (1) bears, this outer edge being secured to the tenon (20) equipped with the slot (21) for accommodating the gasket (22).

4. Improvement according to Claim 3, characterized in that the outside edge (19) of the profile section is extended by an enveloping end (36) externally surrounding, at least in part, the cylindrical element (4) of the hinge knuckle (2) borne by the opening leaf (14).

5. Improvement according to one of Claims 3 and 4, characterized in that the outer edge (19) of the profile

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section of the opening leaf (14) includes, beyond the hinge knuckle (2) borne by this profile section, a second tenon (24) aligned with the first one (20), formed as a continuation of the latter on the profile section, and in
5 which an extension (26) of the sealing gasket (22) is fitted, the distance separating the two tenons being substantially equal to the width of the fixing plate (5) of the hinge knuckle (3) borne by the casing (28), which fits into it when the opening leaf is pressed against the
10 casing.

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