

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO HINGES

(71) We, A/S GRORUD JERNVARE-FABRIK, a Norwegian Body Corporate, of Haugenslettveien, Grorud, Oslo, Norway, 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 performed, to be particularly described in and by the following statement:—

This invention relates to hinges for doors, windows and the like.

A large number of hinges for doors and windows are known, none of which are, in our opinion, suitable for use in modern, rationalized production of doors and windows, however. One of the present requirements is that the door panels must be produced with ready milled cutouts for hinge plates, and the hinge plates must be of such type that the door panels may be hinged to the right or to the left of the door merely by turning the door around, the hinges being symmetrically positioned on the door panel. To achieve this, the hinges must be provided with loose hinge pins and, since these are relatively small, they are easily lost on a building site with the result that doors may stand unhinged for long periods of time, until new hinge pins have been provided.

The known hinges which permit symmetrical manufacture of door panels also have a hinge curl which projects from the edge of the door panel and causes difficulties when storing door panels since they must be stored, for example stacked, with great care so that a hinge curl projecting from a door panel does not damage adjacent door panels in the stack.

The invention provides a hinge for doors and the like comprising in combination a locking plate to be mounted on a door adjacent its mounting edge and a cooperating hinge plate member having means along one edge for receiving a hinge pin and having an engagement structure spaced inwardly from its opposite edge adapted to be received and cooperate with the locking plate, said locking plate being adapted to be mounted in a recess in the surface of the door adjacent

to its mounting edge so as to have an outer surface in the plane of the outer surface of the door, said locking plate being adapted to be secured to the door and provide in cooperation with the recess an elongate opening for receiving the engagement structure of the hinge plate member, a resilient locking member extending inwardly from the front edge portion of the locking plate and having an outer surface in the plane of the outer surface of the locking plate, and a locking means on the underside of the inner portion of the resilient locking member adapted to be engaged by the engagement structure of the hinge plate member when inserted into the elongate opening under the locking plate at the edge of the door.

The engagement structure of the hinge plate member may comprise an elongate slot spaced inwardly from the opposite edge of the hinge plate member, and wherein the locking means on the underside of the resilient locking member comprises a lug adapted to be received into the slot of the hinge plate member.

The resilient locking member may comprise an integral portion of the locking plate connected thereto only along the front edge portion of the locking plate.

Preferably the hinge includes a second hinge plate member having means along one edge for receiving a hinge pin, and a hinge pin securing said second hinge plate member to the hinge pin receiving means of said first-mentioned hinge plate member.

The second hinge plate may comprise an engagement structure spaced inwardly from its edge opposite to that of its hinge receiving means.

The inner edge of the resilient locking member may be spaced from the inner edge portion of the locking plate so as to provide an access slot between the inner end of the locking member and inner end portion of the locking plate.

Specific embodiments of the invention will now be described by way of example with

reference to the accompanying drawings, in which:—

Figure 1 shows a locking plate seen from the side,

5 Figure 2 shows a section through the locking plate of Figure 1 with the locking plate mounted on to a door panel,

Figure 3 shows the second member of the hinge plate,

10 Figure 4 shows an embodiment of a hinge, and

Figures 5 and 6 show how a door panel is set in place in a door frame.

As shown in the drawings, a hinge has a lip 1 with a central resilient lip 2 and screw apertures 3 for mounting of the locking plate in a milled recess on, for example, a door panel 4 (Figure 2). The locking plate 1 fits the recess 5 in the door panel 4 in such a manner that the door panel has plane side surfaces and edges 6. This substantially simplifies storage since finished door panels may be stacked without it being necessary to take into consideration the risk of damage to adjacent door panels in the stack from projecting hinge members.

The second member of the hinge plate (Figure 3) has a curl 7 for permanent hinging to the second hinge plate 8 (Figures 4 and 5) and the hinge plate member 9 fits into the locking plate of Figure 1 and is locked to this in the embodiment illustrated by means of a slot 10 which co-operates with a locking lug 11 on the underside of the resilient lip 2. The hinge member 9 is inserted into the fitting 1, 2 as indicated by an arrow 12 in Figure 2, when the members which are to be interhinged are mounted together.

40 In the embodiment shown in Figure 4, the hinge is provided with two hinge plates which are both provided with members 8 and 9, for cooperation with respective locking plates effected as illustrated on Figures 1 and 45 2. This offers the advantage that the hinge, when used on furniture for example, may be readily replaced by an unskilled person, and it is thus possible in a simple manner to fit the furniture hinge to furniture already in existence. If, for example, existing furniture sections are provided with hinges and other fittings made of bronze, it is hardly suitable to have, for example, nickel hinges on new articles of furniture, even though these otherwise suit the furniture. With the locking plate illustrated on Figure 1 mounted on furniture and on doors, and with the movable parts of the hinge constructed as illustrated in Figure 4, it is therefore simple 60 to replace the hinges without any further work on the article of furniture. The movable parts of the hinge may be readily released from the fittings 1 by using a suitable tool through a slot 13 and lifting the resilient lip 2 so that the lug 11 is disengaged from

the slot 10. The hinge plates 8 and 9 may then be readily withdrawn from the fitting 1.

Hinges in accordance with the invention are, however, of particular importance in connection with hinging of door panels as explained hereinabove, and one hinge plate, designated by 8 on Figures 5 and 6, may then be constructed in a manner known *per se* and tightened to a suitable extent in a door frame 75 14 or a part which is to be subsequently assembled as door frame. The member 9 is permanently hinged to the hinge plate 8, and mounting of the door panel 4 is carried out by lifting the door panel with locking plate 1 to the correct height in relation to the hinge member 9, as illustrated on Figure 5, and, when the hinge member 9 and the locking plate 1 are brought together, as 80 illustrated on Figure 6, both at the upper and lower part of the door, the door is then hinged without use of further separate parts or tools. The hinging is so simple to carry out that risk of damage to pre-painted door panels and frames is much less than when previously known hinges are used, and a further advantage in assembly of frame and door panel by horizontal movement of the door panel, is that the sharp corners of the door panel will not be in a position to 85 make marks and dents in the door frames and mouldings around the door opening, this last being easily done when the hinges are of the type where the door panel must be raised somewhat in order to bring the hinge plates 100 together.

WHAT WE CLAIM IS:—

1. A hinge for doors and the like comprising in combination a locking plate to be mounted on a door adjacent its mounting 105 edge and a cooperating hinge plate member having means along one edge for receiving a hinge pin and having an engagement structure spaced inwardly from its opposite edge adapted to be received by and 110 cooperate with the locking plate, said locking plate being adapted to be mounted in a recess in the surface of the door adjacent to its mounting edge so as to have an outer surface in the plane of the outer surface 115 of the door, said locking plate being adapted to be secured to the door and provide in cooperation with the recess an elongate opening for receiving the engagement structure of the hinge plate member, a resilient locking member extending inwardly from the 120 front edge portion of the locking plate and having an outer surface in the plane of the outer surface of the locking plate, and a locking means on the underside of the inner portion of the resilient locking member adapted to be engaged by the engagement structure of the hinge plate member when 125

reference to the accompanying drawings, in which:—

Figure 1 shows a locking plate seen from the side,

5 Figure 2 shows a section through the locking plate of Figure 1 with the locking plate mounted on to a door panel,

Figure 3 shows the second member of the hinge plate,

10 Figure 4 shows an embodiment of a hinge, and

Figures 5 and 6 show how a door panel is set in place in a door frame.

15 As shown in the drawings, a hinge has a lip 1 with a central resilient lip 2 and screw apertures 3 for mounting of the locking plate in a milled recess on, for example, a door panel 4 (Figure 2). The locking plate 1 fits the recess 5 in the door panel 4 in such a manner that the door panel has plane side surfaces and edges 6. This substantially simplifies storage since finished door panels may be stacked without it being necessary to take into consideration the risk of damage to adjacent door panels in the stack from projecting hinge members.

25 The second member of the hinge plate (Figure 3) has a curl 7 for permanent hinging to the second hinge plate 8 (Figures 4 and 5) and the hinge plate member 9 fits into the locking plate of Figure 1 and is locked to this in the embodiment illustrated by means of a slot 10 which co-operates with a locking lug 11 on the underside of the resilient lip 2. The hinge member 9 is inserted into the fitting 1, 2 as indicated by an arrow 12 in Figure 2, when the members which are to be interhinged are mounted together.

40 In the embodiment shown in Figure 4, the hinge is provided with two hinge plates which are both provided with members 8 and 9, for cooperation with respective locking plates effected as illustrated on Figures 1 and 2. This offers the advantage that the hinge, when used on furniture for example, may be readily replaced by an unskilled person, and it is thus possible in a simple manner to fit the furniture hinge to furniture already in existence. If, for example, existing furniture sections are provided with hinges and other fittings made of bronze, it is hardly suitable to have, for example, nickel hinges on new articles of furniture, even though these otherwise suit the furniture. With the locking plate illustrated on Figure 1 mounted on furniture and on doors, and with the movable parts of the hinge constructed as illustrated in Figure 4, it is therefore simple to replace the hinges without any further work on the article of furniture. The movable parts of the hinge may be readily released from the fittings 1 by using a suitable tool through a slot 13 and lifting the resilient lip 2 so that the lug 11 is disengaged from

the slot 10. The hinge plates 8 and 9 may then be readily withdrawn from the fitting 1.

Hinges in accordance with the invention are, however, of particular importance in connection with hinging of door panels as explained hereinabove, and one hinge plate, designated by 8 on Figures 5 and 6, may then be constructed in a manner known *per se* and tightened to a suitable extent in a door frame 14 or a part which is to be subsequently assembled as door frame. The member 9 is permanently hinged to the hinge plate 8, and mounting of the door panel 4 is carried out by lifting the door panel with locking plate 1 to the correct height in relation to the hinge member 9, as illustrated on Figure 5, and, when the hinge member 9 and the locking plate 1 are brought together, as illustrated on Figure 6, both at the upper and lower part of the door, the door is then hinged without use of further separate parts or tools. The hinging is so simple to carry out that risk of damage to pre-painted door panels and frames is much less than when previously known hinges are used, and a further advantage in assembly of frame and door panel by horizontal movement of the door panel, is that the sharp corners of the door panel will not be in a position to make marks and dents in the door frames and mouldings around the door opening, this last being easily done when the hinges are of the type where the door panel must be raised somewhat in order to bring the hinge plates together.

WHAT WE CLAIM IS:—

1. A hinge for doors and the like comprising in combination a locking plate to be mounted on a door adjacent its mounting edge and a cooperating hinge plate member having means along one edge for receiving a hinge pin and having an engagement structure spaced inwardly from its opposite edge adapted to be received by and cooperate with the locking plate, said locking plate being adapted to be mounted in a recess in the surface of the door adjacent to its mounting edge so as to have an outer surface in the plane of the outer surface of the door, said locking plate being adapted to be secured to the door and provide in cooperation with the recess an elongate opening for receiving the engagement structure of the hinge plate member, a resilient locking member extending inwardly from the front edge portion of the locking plate and having an outer surface in the plane of the outer surface of the locking plate, and a locking means on the underside of the inner portion of the resilient locking member adapted to be engaged by the engagement structure of the hinge plate member when



inserted into the elongate opening under the locking plate at the edge of the door.

2. A hinge as claimed in claim 1, wherein the engagement structure of the hinge plate member comprises an elongate slot spaced inwardly from the opposite edge of the hinge plate member, and wherein the locking means on the underside of the resilient locking member comprises a lug adapted to be received into the slot of the hinge plate member.

3. A hinge as claimed in claim 1 or claim 2 wherein the resilient locking member comprises an integral portion of the locking plate connected thereto along the front edge portion of the locking plate.

4. A hinge as claimed in any of the preceding claims including a second hinge plate member having means along one edge for receiving a hinge pin, and a hinge pin securing said second hinge plate member to the

hinge pin receiving means of said first-mentioned hinge plate member.

5. A hinge as claimed in claim 4 wherein said second hinge plate comprises an engagement structure spaced inwardly from its edge opposite to that of its hinge receiving means.

6. A hinge as claimed in any of the preceding claims wherein the inner edge of the resilient locking member is spaced from the inner edge portion of the locking plate so as to provide an access slot between the inner end of the locking member and inner end portion of the locking plate.

7. A hinge substantially as hereinbefore described with reference to and as illustrated by the accompanying drawings.

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