June 24, 1958 J. L. HUTCHINSON ET AL 2,839,778

ADJUSTABLE HINGE

Filed Dec. 30, 1954 3 Sheets-Sheet 1

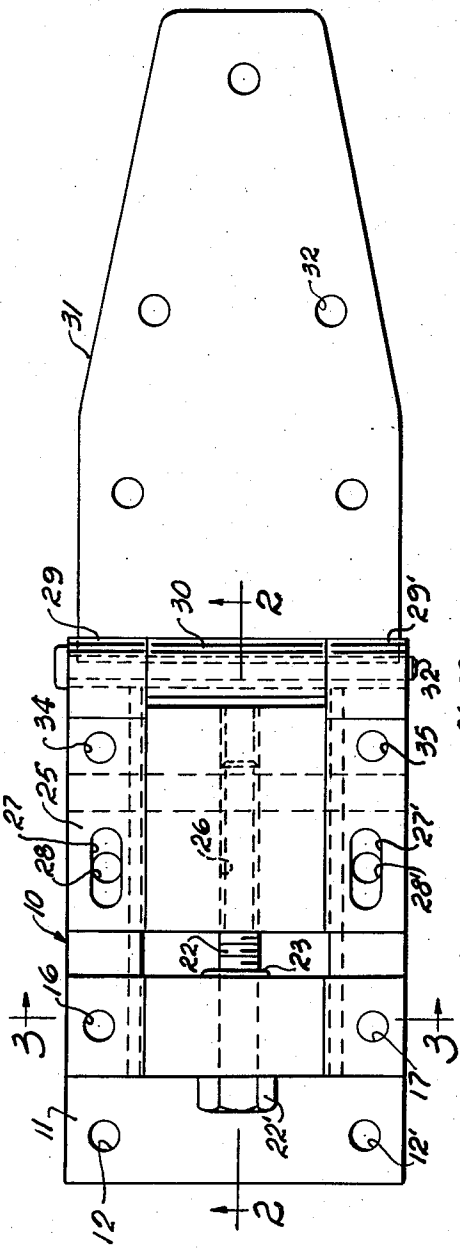


Fig. 1.

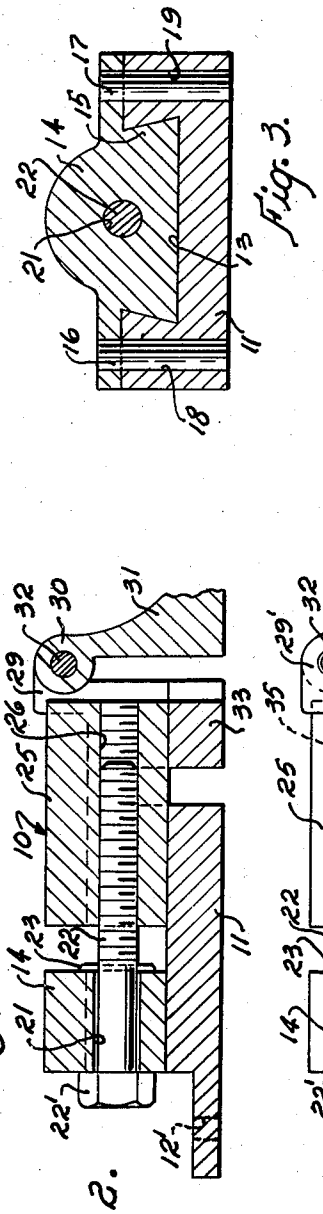


Fig. 2.

Fig. 3.

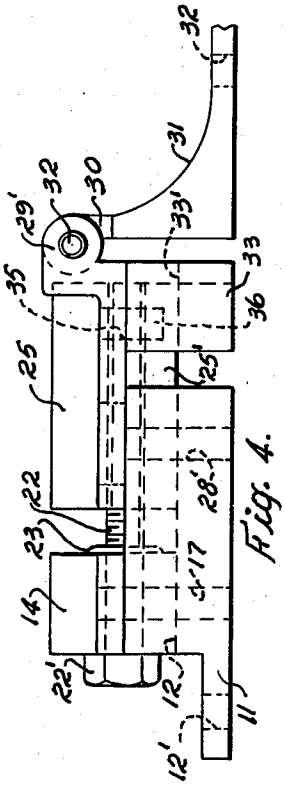


Fig. 4.

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ADJUSTABLE HINGE

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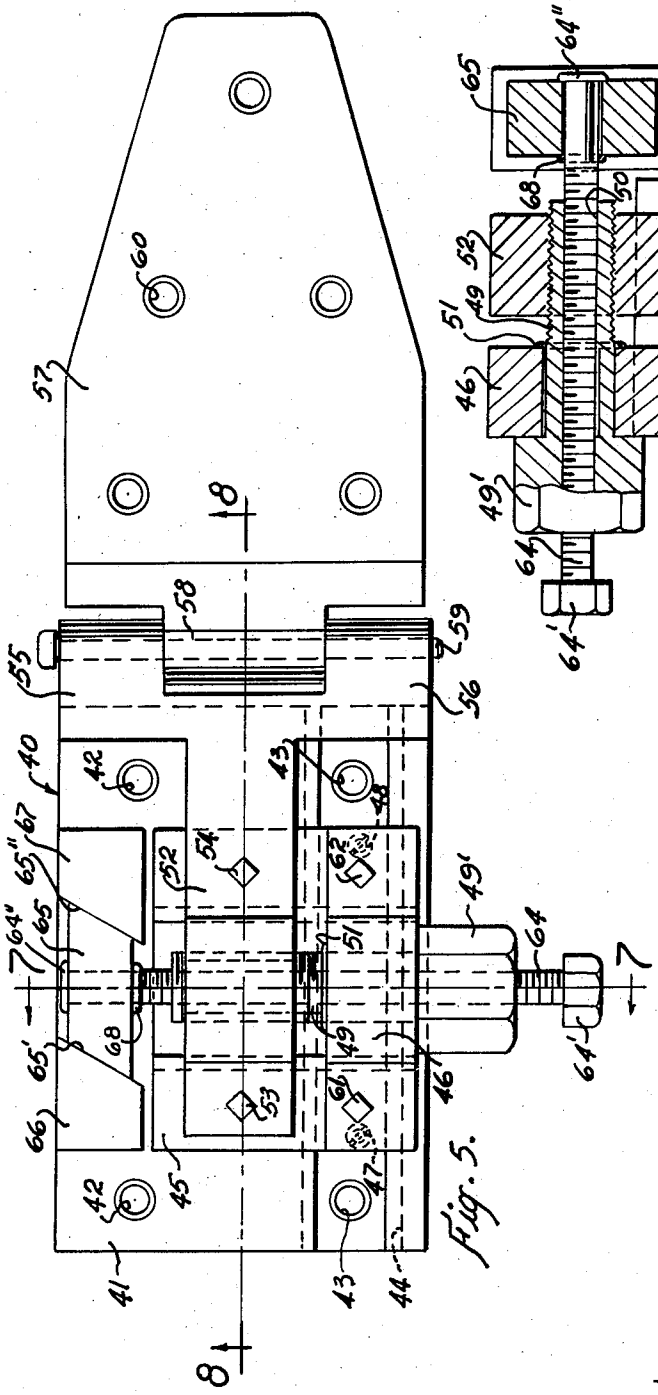


Fig. 5.

Fig. 7.

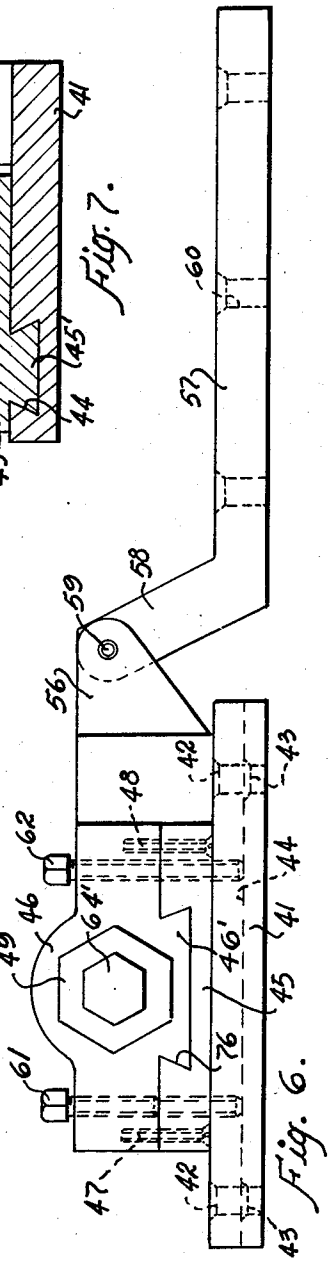


Fig. 6.

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ADJUSTABLE HINGE

Filed Dec. 30, 1954 3 Sheets-Sheet 3

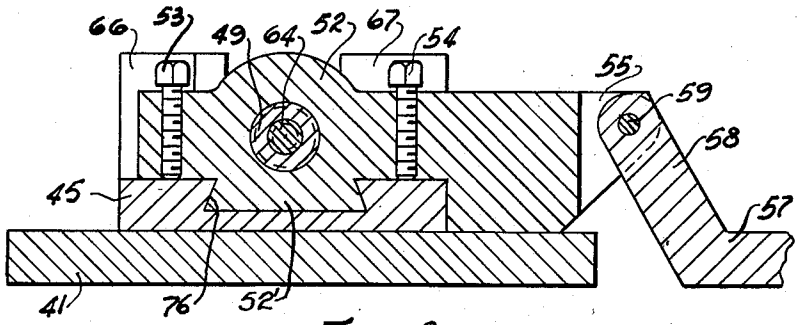


Fig. 8.

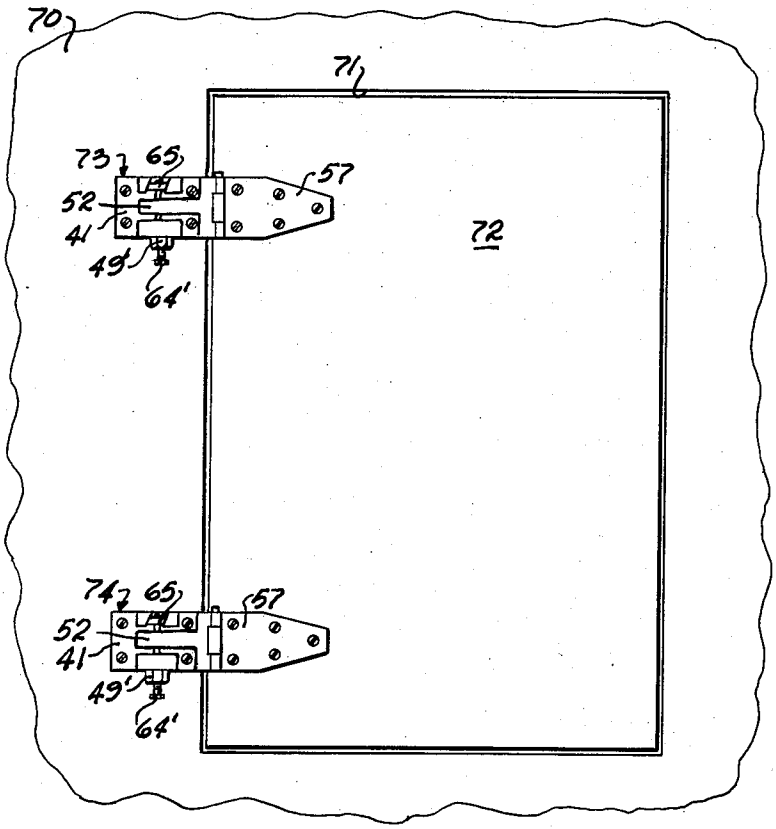


Fig. 9.

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United States Patent Office 2,839,778 Patented June 24, 1958

2,839,778

ADJUSTABLE HINGE

John L. Hutchinson and William F. McLellan, Brooklyn, and Auber A. Belliveau, Astoria, N. Y., assignors, by direct and mesne assignments, of 33⅓ percent to said Hutchinson, 33⅓ percent to said McLellan and 33⅓ percent to Alfred R. Pellegrino, Brooklyn, N. Y.

Application December 30, 1954, Serial No. 478,574

4 Claims. (Cl. 16—129)

This invention relates to an adjustable hinge for heavy doors.

It is an object of the invention to provide an adjustable hinge for the heavier type of door such as those used on cold storage chambers, refrigerators, vaults and other heavy types of door wherein means will be afforded to permit the easy adjustment of the door within the opening in order for it to properly fit the same.

It is another object of the invention to provide an adjustable door hinge which cannot only be adjusted in a horizontal direction but may also be adjusted in a vertical direction, and wherein the means for effecting this adjustment is located for easy access thereto and can be effected with a common wrench, and wherein the adjustment can be made without disassembling the hinge.

It is still another object of the invention to provide a hinge which is adjustable wherein the parts thereof are retained in a precision-like manner with little tolerance so that the parts are truly guided without play.

Other objects of the invention are to provide an adjustable heavy duty hinge which is of simple construction, inexpensive to manufacture, has a minimum number of parts, compact, durable, easy to install, easy to adjust, of pleasing appearance, efficient and effective in use.

For other objects and a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a top plan view of an adjustable hinge constructed according to one form of the invention;

Fig. 2 is a fragmentary longitudinal sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary side elevational view;

Fig. 5 is a top plan view of a modified form of the invention wherein both vertical and longitudinal adjustment of the hinge can be effected;

Fig. 6 is a side elevational view of the hinge shown in Fig. 5;

Fig. 7 is a transverse sectional view taken on line 7—7 of Fig. 5;

Fig. 8 is a fragmentary longitudinal view taken on line 8—8 of Fig. 5;

Fig. 9 is an elevational view of a compartment wall and a door hingedly connected to the wall by the adjustable hinges constructed according to the latter form of the invention.

Referring now particularly to Figs. 1 to 4, 10 represents an adjustable hinge part assembly adapted for connection to a compartment wall and comprising a bottom part 11 having transversely spaced openings 12 and 12' through which screws are extended to fix the bottom part 11 to the wall. This part 11 has a dovetail groove into which is fitted a block 14 and this extends transversely of the bottom plate 11 and which has a dovetail projection 15 and transversely spaced openings 16 and 17 which

are aligned respectively with openings 18 and 19 in the bottom plate 11 and through which attaching bolts are extended to further secure the hinge part assembly 10 the compartment wall.

The block 14 has an opening 21 extending longitudinally therethrough and through which an adjusting bolt 22 is extended. This bolt 22 has a head 22' and is rotatable in the opening 21. A stop washer 23 is secured to the bolt adjacent the front face of the block to hold the bolt 22 against axial rearward displacement from the block.

A slidable part 25 of the assembly 10 is provided with a threaded opening 26 into which the bolt 22 extends so that the slidable part 25, as the bolt 22 is turned, will cause longitudinal adjustment of the part 25 relative to the bottom part 11. This part 25 has a dovetail portion 25' that is slidable in the dovetail groove.

The part 25 has two elongated slots 27 and 27' in order to permit adjustment of the part 25 upon securing bolts being passed respectively through openings 28 and 28' in the bottom part 11. After the adjustment has been effected, the bolts, not shown, can be tightened so as to hold all parts of the assembly 10 secured to the bottom wall.

The slide part 25 has two raised hinge bolt receiving portions 29 and 29' spaced from one another and between which a hinge bolt portion 30 of an elongated hinge part 31 is extended and retained in the hinge-like manner by a hinge pin 32 extending through all hinge sleeve portions. The elongated part 31 has openings 32 through which screws are extended to secure the part 31 to a door.

On the forward end of the hinge slide part 25 is a transverse member 33 that also has a dovetail groove 33' that receives the dovetail portion 25' of the slide part 25 and this part 33 is made secure to the slide part by bolts 34 and 35 that extend into the threaded openings 36 respectively on the part 33.

If it is desired to effect an adjustment of the hinge part assembly 10, the securing bolts that extend through the elongated slots 27 and 27' of the slide part 25 are loosened and the bolt 22 is turned whereby to cause the longitudinal adjustment of the slide part 25 relative to the block 14. Since the slide part 25 has the door fastened thereto through the hinge part 31, the door will be adjusted as the slide 25 is adjusted. Thereafter, the bolts that may extend through the elongated slots 27 and 27' will be tightened to make a rigid hinge part assembly.

Referring now particularly to Figs. 5 through 9, there will be described a modified form of the invention. According to this form of the invention, there is provided a hinge assembly 40 having a bottom part 41 that is secured to the compartment wall by bolts passing through openings 42 that are countersunk so that the flat heads of the screws will not interfere with the movement of adjustable parts upon the bottom part 41. This part 41 has, at one side thereof, a longitudinally extending dovetail groove or guideway portion 44. A longitudinally extending slide part 45 is slidable along the bottom part 41 and is guided by its projection 45' in the dovetail groove 44. This slide part 45 has a block raised member 46 secured thereto at one side thereof by its dovetail projection 46' in a dovetail groove or guideway portion 76 in the slide part 45 and fastening bolts 47 and 48 to slide therewith. A first or outer adjustable screw 49 is journalled in the raised member 46. This screw has a central threaded opening 50 and a head 49' that lies flush against the side face of the raised member 46. A stop collar 51 is secured to the bolt 49 to hold the screw against outward displacement while permitting its rotation in the raised member 46. Since the screw 49 is held against axial displacement, a hinge member 52 into which the screw 49 is threaded

can be laterally adjusted across the slide **45** upon set screws **53** and **54** having been loosened. This hinge member **52** has hinge sleeve portions **55** and **56** spaced from one another and hingeably carries an elongated hinge plate **57** that is secured between the portions **55** and **56** by its portion **58** and a hinge pin **59**. The hinge plate **57** is secured to a door surface by screws entering countersunk openings **60**. After the adjustment has been made by turning the outer bolt **49**, the transversely adjustable hinge member **52** is made secure to the slide part **45** by tightening the set screws **53** and **54**.

In order to effect longitudinal adjustment of the slide part **45** and the hinge member **52**, set screws **61** and **62** are loosened from engagement with the bottom of the dovetail longitudinally extending groove **44**. An inner or second adjusting screw **64** is adjustable in the threaded opening **50** of the screw **49**. This adjusting screw **64** has a head **64'**, and its opposite end carries a block **65**, Fig. 5, having inclined end faces **65'** and **65''** that respectively engage with inclined faces of blocks **66** and **67** fixed to and extending upwardly from the bottom part **41**. The opposite end of the adjusting screw **64** is journalled in the block **65** and the block is held against axial displacement therefrom by a flange **64''** disposed on the end of the bolt **64** and a stop collar **68** engaging with the opposite face of the block **65** from which the flange **64'** engages, Figs. 5 and 7.

By adjusting the inner screw **64** the block **65** is moved transversely and will slide along the inclined faces of the members **66** and **67** so as to adjust the hinge member **52** and the door attached to the hinge member **52** through the hinge part **57** in one direction or the other depending upon the direction in which the adjusting screw **64** is turned. Thereafter, the set screws **53** and **54** will be tightened to hold the hinge member **52** upon the slide part **45**.

As shown in Fig. 9, two such hinges are connected to a compartment wall **70** having a door opening **71** in which a door **72** is contained. These hinges are indicated respectively at **73** and **74**. By turning either of the screws **49** or **64** an adjustment of the hinge parts is effected and the door **72** will be adjusted in the opening **71** to have the proper fitting therein. Thereafter, the set screws will be tightened and the hinge assembly will become a rigid mass.

For longitudinal adjustment, the inner screw **64** is turned so that the slide part **45** is moved along the keyway **44**. For vertical adjustment of the door, the screw **49** is turned so that the hinge member **52** is slid along the slide part **45** with a depending projection **52'** of dovetail shape moving in a groove **76**, Figs. 6 and 8.

It should now be apparent that a convenient means has been provided for adjusting the door **72** in its opening **71** so that there is no need for the door getting out of order and fitting improperly the opening **71**. It should also be apparent that the hinge is formed with a minimum number of parts, all of which are of heavy duty, and adapted to withstand the load of the heavy door **72**.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. An adjustable heavy duty hinge comprising a bottom part adapted to be connected to a compartment wall, said bottom part having a guideway portion extending longitudinally thereof, said bottom part guideway portion being at one side of said bottom part, a slide part having a cooperating guideway portion fitting said bottom part guideway portion, said slide part being movable longitudinally along said bottom part guideway portion, a hinge member connected to said slide part, a cooperating hinge plate hingedly connected to said hinge member and adapted to have a door connected thereto, said bottom part having raised members thereon with opposing inclined parallel faces, adjusting screw means carried by the slide part and a block having corresponding inclined faces engageable with the inclined faces of said raised members, said block journalled upon said adjustable screw means whereby said block will be moved as the screw means is turned along the inclined faces of the raised members and said slide part will be moved along the bottom part guideway portion with the hinge member and the hinge plate.

2. An adjustable hinge assembly comprising a bottom part having a guideway portion along one side thereof, a slide part having a cooperating guideway portion matching with said bottom part guideway portion and slidable therealong, said slide part having a guideway portion thereon, a hinge member having a threaded transverse opening therein and a cooperating guideway portion slidable in the slide part guideway portion, a raised member at one end thereof, an adjusting screw journalled in said raised member and threadedly connected to said hinge member so that upon turning said screw, the hinge member will be adjusted transversely of the slide part and means for adjusting said slide part longitudinally of said bottom part, and means for releasably securing said bottom part and said slide part rigidly together in their adjusted positions.

3. An adjustable hinge assembly comprising a bottom part having a longitudinally extending guideway portion running along one side thereof, a slide part having a guideway portion cooperating with said bottom part guideway portion and adjustable along said bottom part, said slide part having a raised member at one side thereof, a first screw turnable in said raised member and extending transversely of the slide part, a hinge part having a transverse threaded opening therein for receiving said adjusting screw, a hinge plate hingeably connected to said hinge member, said first adjustable screw having a threaded central opening, a second screw adjustable in the threaded central opening of the first screw, a block connected to the end of said second adjustable screw, said block having inclined parallel end faces, raised members on said bottom part having inclined faces with which the inclined faces of the block engage whereby as the second mentioned adjusting screw is adjusted, the block will be moved between the raised members and the slide part with the hinge member will be moved longitudinally along the bottom part.

4. An adjustable hinge assembly as defined in claim 3, and means for releasably securing the slide part to the bottom part and further means for releasably securing the hinge member to the slide part.

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