

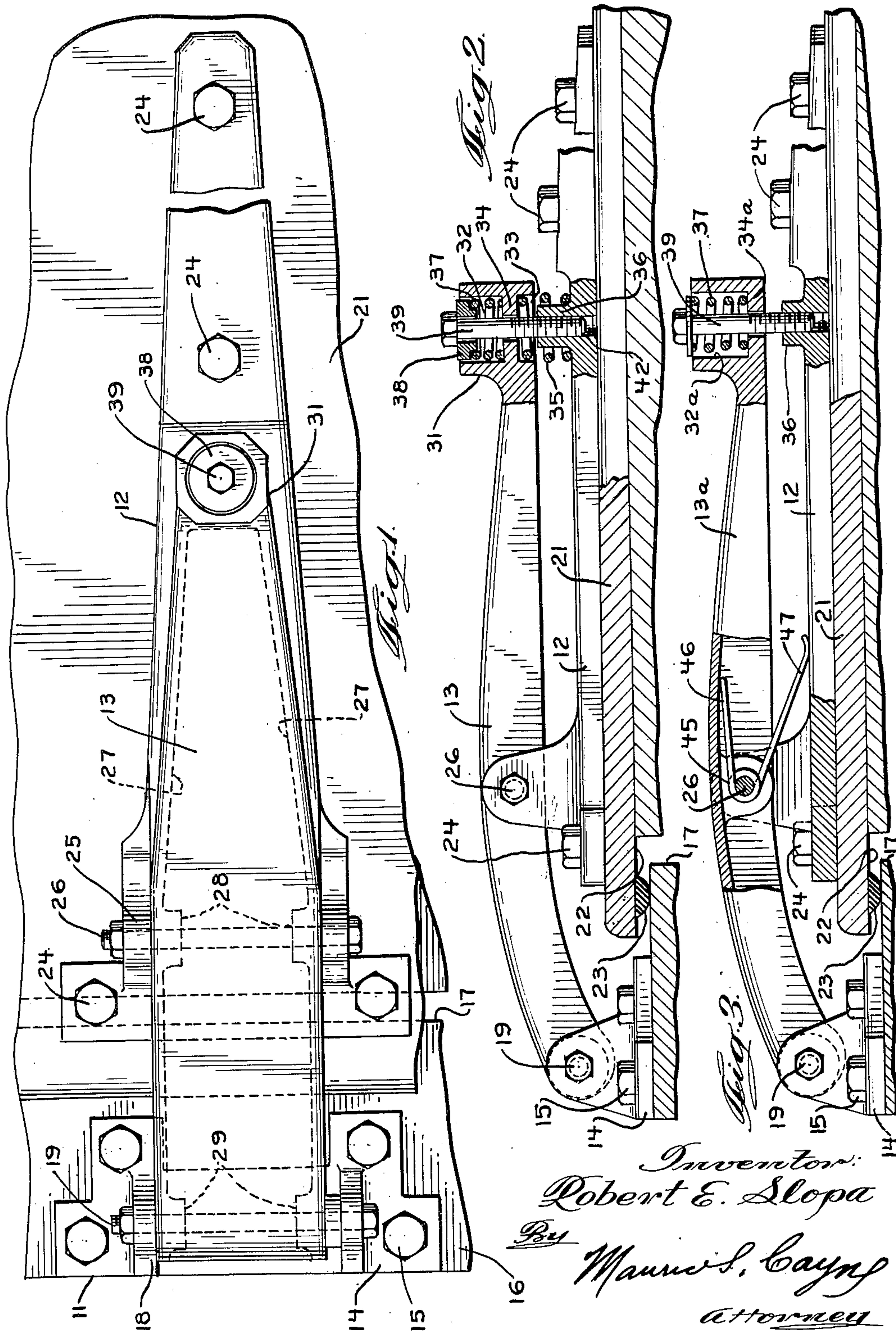
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YIELDABLE OVERLAP HINGE

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YIELDABLE OVERLAP HINGE

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The present invention relates to improvements in adjustable hinge assemblies and is particularly concerned with a novel, ruggedly constructed, yieldable hinge structure especially adapted for use on refrigerator chamber doors or the like.

The hinge structure disclosed herein is generally concerned with the type of overlap hinge having manually manipulable means to adjust the door-supporting link relative to the hinge member to facilitate adjustment of its yieldable elements so as to insure tight sealing yieldable contact between the door and the door frame and to compensate for any strain due to icing or other conditions which may tend to prevent uniform sealing. It is, therefore, an object of the present invention to provide a novelly constructed, rugged, yieldable overlap hinge of the character referred to.

Another object of the present invention is to provide a hinge structure with novel means to enable tight sealing contact between a refrigerator door and the door frame.

Another object is to provide a hinge structure for a door, with means therein to compensate for gasket wear or for the accumulation of ice around the opening to be sealed by said door.

Another object is to provide a hinge structure of the character described with novel spring means at the pivotal connection between the link and hinge member to normally urge the free end of the link away from said member.

Another object is to provide a hinge structure of the character described with yieldable connections to permit and to compensate for relative movement between related parts resulting from unusual pressures resisting opening and closing of a door supported thereby.

Another object is to provide a link for a hinge of the character referred to, with a socket or sockets in its free end to receive one or more compensating springs.

Another object is to provide a yieldable hinge structure with novel means to adjust the relative normal positions of the hinge member and connecting link.

Other and further objects of my invention not at this time particularly enumerated will be made more apparent as the description proceeds, especially when considered in connection with the accompanying drawings wherein:

Fig. 1 is a front elevational view of the hinge assembly showing it mounted on a door and door frame.

Fig. 2 is a side elevational view of the hinge

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shown in Fig. 1, showing the door and door frame in section.

Fig. 3 is a side elevational view, showing parts broken away, of a modified form of yieldable hinge construction.

Referring to the accompanying drawings, the hinge assembly illustrated in Figs. 1 and 2 includes a mounting bracket 11, a hinge member 12, and a link 13. The bracket 11 preferably is fabricated as by casting and it includes a mounting plate 14 suitably apertured to receive anchoring screw bolts 15 constituting means by which the mounting bracket is firmly secured to the face of the door frame 16 closely adjacent to an opening 17. Although only one hinge assembly and but a fragment of the door frame 16 is illustrated, it should be understood two or more hinge assemblies are used and that said frame extends around the opening 17. The bracket 11 has a pair of spaced apart integral lugs 18 having aligned apertures to receive there-through a pintle bolt 19.

The door opening 17 is adapted to be closed by a door 21 which is provided on its marginal edges with an overhanging flange 22, carrying on its bottom face a sealing gasket 23. When the door is in closed position, the flange 22 overlies the marginal area of the door frame 16 with the gasket 23 firmly compressed between the flange 22 and said frame 16 to thereby provide a hermetic seal around the door opening.

The hinge member 12 is firmly secured, as by means of screw bolts 24, to the outside face of the door 21 closely adjacent to the edge adapted to be hingedly connected to the door frame so as to permit the door to be swung into open and closed positions. As best shown in Fig. 1, the hinged member 12 consists of an elongated strap-like member, preferably formed by casting, and is provided adjacent its end disposed nearest to the edge of the door with a pair of upstanding transversely spaced apart ears 25, each of which is suitably apertured to receive therethrough a pintle bolt 26.

The link 13 preferably is formed by casting and it is provided with side walls 27 formed with suitable boss enlargements 28 and 29 on their inside face, which boss enlargements are provided with aligned apertures for purposes to be described presently. The boss enlargements 29, at one end of the link 13, are pivotally mounted upon pintle bolt 19 so as to thereby hingedly connect said end of the link to the mounting bracket 11. The boss enlargements 28, which are located intermediate the ends of the link 13,

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are pivotally mounted on the hinged member 12 between the ears 25 by means of the pintle bolt 26 extending through said ears and said boss enlargements. It should be obvious at this time that the door 21 is hingedly mounted securely along one side of the door frame 16 and that it may be swung into open and closed positions about the pintle bolt 19.

Means is provided adjacent the free end of the link 13 to afford a yieldable connection between said link and the hinge member 12. This yieldable connection is provided so as to afford means whereby the door may be adjusted relative to the door frame to compensate for gasket wear or for the accumulation of ice or other foreign matter on the door frame.

As best shown in Fig. 2 the free end of the link 13 is provided with an enlarged boss-like protuberance 31 suitably recessed on its opposed faces to provide a pair of sockets 32 and 33 separated by an intermediate wall 34. A compression spring 35 is arranged with its upper end located within the socket 33 and its lower end fitted over a boss 36 formed integrally with the hinge member 12. This spring tends to urge the free end of the link away from the hinge member 12. A second compression spring 37 is arranged in the socket 32. A washer or cap 38 is seated upon the spring 37. This washer and the intermediate wall 34 are suitably apertured to receive freely therethrough a bolt 39, having its threaded end engaged in a tapped opening 42 extending through the boss 36. The tension of the springs 35 and 37 may be easily and quickly adjusted by means of the bolt 39.

The hinge assembly described hereinabove is such that any obstruction present on the door frame of a kind that will interfere with tight sealing contact between said frame and the door gasket 23 is compensated for through the yieldable connection between the hinge member 12 and the free end of link 13. Gasket wear also is compensated for by adjustment of the tension of the springs 35 and 37. The spring 37 functions to absorb shock arising from any sudden blow applied to the door or to the hinge either while the door is in its open position or in its closed position, thus minimizing the possibilities of breakage.

The hinge assembly illustrated in Fig. 3 is substantially like that shown in Figs. 1 and 2. In this embodiment of the invention, the free end of the link 13a is provided with a single socket 32a to receive spring 37. A bolt 39 extends through the spring 37 and the bottom wall 34a of the socket, and has its threaded end threadingly secured in tapped boss 36 on the hinge member 12. The spring 37 functions in the same manner as the spring 37 of the device previously described. Movement of the free end of the link 13a away

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from the hinge member 12 is, in this embodiment, obtained by the provision of a coil spring 45 which is arranged around pintle bolt 26 and has one of its ends 46 bearing against the bottom face of the link 13a and its other end 47 bearing against the top face of the hinge member 12.

Although exemplary forms of the present invention have been described in the foregoing specification and shown in detail in the accompanying drawing, it should be apparent that the invention is capable of embodying a wide variety of modifications without departing from the spirit of the invention or the scope of the arranged claims.

I claim:

1. A hinge for doors adapted to close and seal an opening through a door frame comprising, a bracket adapted to be secured to the door frame, a hinge member adapted to be secured to the face of the door adjacent one edge thereof, a hinge link overlying the hinge member, said link having one end extending beyond the said edge of the door, a pin pivotally connecting said projecting end of the link to the bracket, means pivotally connecting the hinge member to the link intermediate the link ends, a spring between the free end of the link and the hinge member to urge said free end away from the hinge member, a bolt to limit relative movement between the free link end and the hinge member, and spring means between said free link end and the bolt to afford a compressible connection between said link and bolt.

2. A hinge for doors adapted to close and seal an opening through a door frame comprising, a bracket adapted to be secured to the door frame, a hinge member adapted to be secured to the face of the door adjacent one edge thereof; a hinge link overlying the hinge member, said link having one end extending beyond the said edge of the door, a pin pivotally connecting said projecting end of the link to the bracket, means pivotally connecting the hinge member to the link intermediate the link ends, a spring between the free end of the link and the hinge member to urge said free end away from the hinge member, and a bolt to limit relative movement between the free link end and the hinge member.

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