July 11, 1933. W. J. KASSICK 1,918,040

HINGE

Filed Feb. 12, 1929

Fig.1.

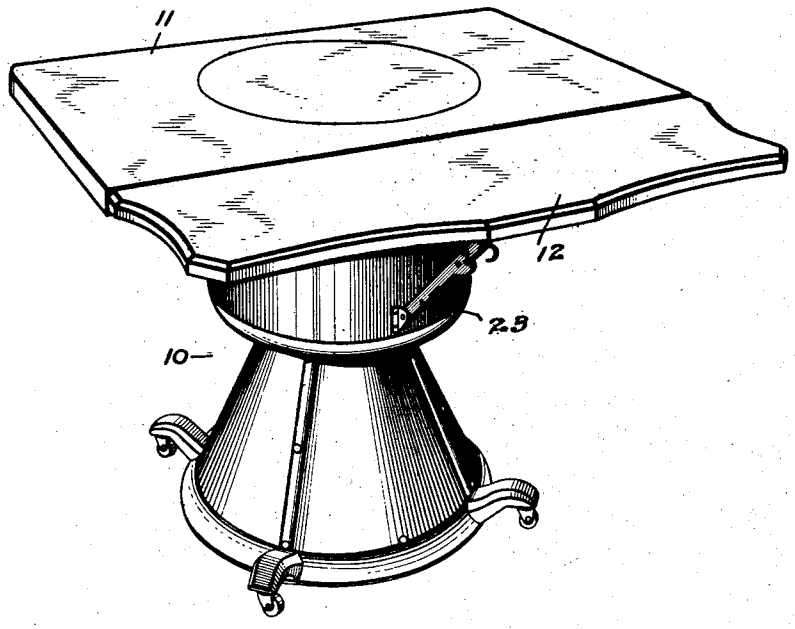


Fig.2.

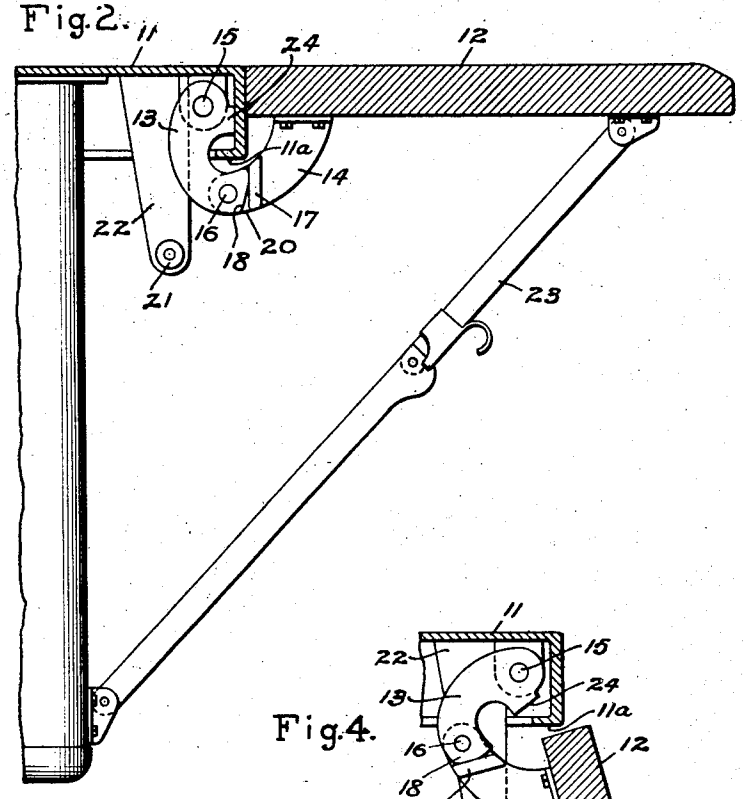


Fig.3.

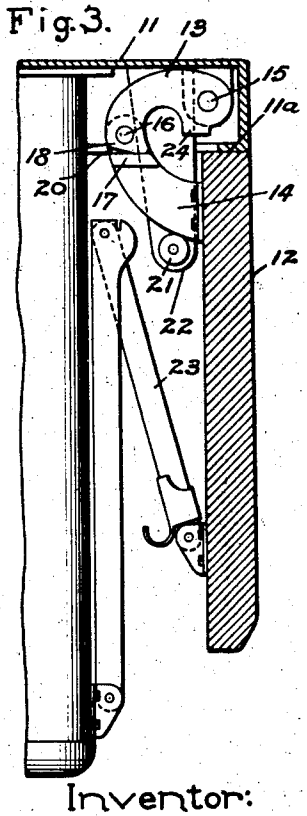
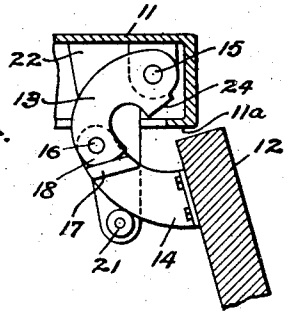


Fig.4.



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His Attorney.

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UNITED STATES PATENT OFFICE

WILLIAM JOSEPH KASSICK, OF NEWARK, NEW JERSEY, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

HINGE

Application filed February 12, 1929. Serial No. 339,351.

My invention relates to hinges, more particularly to hinges for table leaves and the like, and has for its object the provision of an improved hinge of this character.

Although obviously it has other applications, my invention is particularly useful in connection with tables provided for culinary service and the like. The ordinary extension table when used in such service has proved unsatisfactory at times in that with the leaf in its lowered position matter swept from the table would lodge upon the upper edge of the leaf in such quantities that it would be impossible either to raise the leaf to its extended position or to do so without severely straining the hinge fastening means provided for the leaf.

In one of its aspects, my invention contemplates the provision of means for fastening the table leaf so that it will be impossible for matter to collect on the upper edge of the leaf. Moreover, I arrange the fastening means so that the table leaf when lowered will be positioned so as to present a very pleasing appearance.

In carrying my invention into effect in one form as applied to a table, I provide hinge means for the table leaf whereby when the leaf is in its raised position, its upper surface will lie in the same plane with the top surface of the table and when it is in its lowered position, its normally upper surface will be flush with the edge of the table top. Moreover, I provide hinge means for the leaf whereby when the leaf is lowered, it will be forced into engagement with the under surface of the top.

For a more complete understanding of my invention, reference should be had to the accompanying drawing in which Fig. 1 is a perspective view of a dish washing machine provided with a table having an extension leaf hinged in accordance with my invention, the leaf being illustrated in its raised position; Fig. 2 is a vertical section of a portion of the table with the leaf in its raised position; Fig. 3 is a vertical section of a portion of the table with the leaf in its lowered position; and Fig. 4 illustrates the operation of the hinge fastening means as the leaf is being lowered.

Referring to the drawing, I have shown my invention in one form in connection with a dish washing machine provided with a suitable table which when the machine is not in use may be used in place of the ordinary kitchen table. As shown, the dish washing machine 10 is provided with a table comprising a top 11 having a reentrant lower surface 11*a*, and a leaf extension 12 located at one edge of the top. It will be understood that the leaf 12 will occupy a substantially horizontal position when raised so that its upper surface will lie in a plane with the upper surface of the table. Obviously the other edges of the top may be provided with like leaf extensions. Although the table is shown formed of a suitable metal, it will be obvious that it may be formed of any suitable material.

I provide suitable hinge fastening means for the leaf 12 so that when lowered its normally upper surface will be flush with the adjacent table edge and the upper edge of the leaf will engage the under surface of the table top. It will be understood that the leaf may be provided with any desired number of hinges spaced laterally along the secured edge of the leaf. Preferably in the table shown, the leaf 12 will be provided with two hinges. As shown, each of these hinges comprises a pair of mechanically interconnected links 13 and 14. The link 13 is pivotally mounted by means of the pin 15 to the under surface of the table top while the link 14 is rigidly secured in any suitable manner to the under surface of the leaf. As shown a pin 16 serves to pivotally interconnect the outer ends of the links 13 and 14. The link 14 is provided with an abutment or lug 17 which cooperates with a companionate abutment 18 formed by the link 13 so that the two links form a substantially rigid arm upon which the leaf may be swung about the pins 15.

However, in order that the leaf 12 may clear the adjacent edge of the table top while the leaf is being lowered, a suitable clearance, designated by the ordinal 20, is provided between the lug 17 and the abutment 18. As shown, Fig. 4, this clearance is proportioned to permit the leaf to swing about

the pin 16 through a suitable arc before the lug 17 engages its companionate abutment 18. By reason of this construction, it will be apparent that the leaf in being lowered will be swung around the adjacent table edge to a position below the bottom surface of the top.

It will be observed, however, that with the construction thus far described the leaf when lowered would occupy a position permitting considerable clearance between the top edge of the lowered leaf and the reentrant under surface of the table. I have provided, therefore, a fixed abutment 21 shown as a roller, this roller being arranged to engage the lower surface of the link 14 as the leaf is being lowered, as clearly shown in Fig. 4. Thus, the link 14 functions as a cam when it engages the roller 21 and serves to lift the leaf bodily so as to engage the lower surface of the table top. It will be observed that by properly positioning the roller 21 and by suitably designing the under surface of the link 14, the leaf when lowered will be forced into intimate contact with the lower surface of the table. Moreover, the normally upper surface of the leaf will be flush with the edge of the table top. Thus, the table will present a very pleasing appearance with its leaf in the lowered position.

It will be understood that the roller 21 will be suitably supported. Thus, I provide a bracket 22 upon which the roller will be rotatably mounted. It will be obvious that any suitable abutment 21 may be provided, the roller being preferable, however, in that it facilitates the opening and closing of the leaf.

It will be understood that the leaf will be supported in its extended position by any suitable means. Preferably, however, the leaf will be provided with a suitable jointed brace 23. It will be understood that for very large tables, more than one of these braces 23 may be employed.

It will be observed that the link 13 is provided with a projection or abutment 24 which when the table leaf is raised, engages the inner side of the top edge. Thus, the leaf will be secured in its extended position by reason of the substantially rigid arm, provided by the links 13 and 14, together with the supporting brace 23.

In operation it will be understood that when it is desired to lower the table leaf, the brace 23 will be broken and the leaf swung about the pins 15, the clearance 20 between the lugs 17 and the abutment 18 providing for relative movement between the links 13 and 14 so that the table leaf will swing clear of the adjacent edge of the table. As the leaf nears its lowered position, the lower surface of the link 14 will engage the roller 21 to force the upper edge of the lowered leaf into intimate contact with the under surface of the table. To raise the leaf, it is simply necessary to swing the leaf in a counterclockwise direction, as viewed in the figure, to its extended position where it will be supported by the jointed brace 23.

While I have described my invention as embodied in concrete form and operating in a specific manner in accordance with the provisions of the patent statutes, it should be understood that I do not limit my invention thereto since various modifications thereof will suggest themselves to those skilled in the art without departure from the spirit of my invention, the scope of which is set forth in the annexed claims.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a structure having a pivotally interconnected pair of relatively movable members adapted to move between a pair of extreme positions, a hinge structure comprising means operably associated with said members connecting them for relative pivotal movement between said limiting positions and adapted to provide for movement of said members into abutting relation in each of said extreme positions and means adapted to move one of said members into intimate contact with the other member in one of said extreme positions.

2. A hinge structure comprising three pivotally connected members, means for limiting the relative angular movement between two of said members, means for moving the latter two members to predetermined relative positions when said members are swung together about the pivotal connection with the third member whereby the objects connected by said hinge are maintained in abutting relation in each of two positions and a fixed member operably associated with said pivotally connected members, so as to engage with said members when said objects are in one of said positions to thereby force said objects into engagement.

3. A hinge structure comprising three pivotally connected members, means for limiting the relative angular movement between two of said members, means for moving the latter two members to predetermined relative positions when said members are swung together about the pivotal connection with the third member whereby objects connected by said hinge are maintained in abutting relation in each of two positions and cam means operably associated with said pivotally connected members so as to engage with said members when said objects are in one of said positions to thereby force said objects into engagement.

4. In a table provided with a top and an extension leaf at one edge of the top, a hinge structure comprising means connecting said leaf with said top so that when said leaf is

in its lowered position its normally upper face is substantially flush with the edge of said top, and means for moving said leaf so as to engage the bottom surface of said top when said leaf is in its lowered position.

5. In a table provided with an extension leaf movable to a substantially horizontal position when raised and to a substantially vertical position when lowered, hinge structure for said leaf comprising a member movable with said leaf and cam means operably associated with said member so as to engage said member to move said leaf into contact with the bottom surface of the top of said table when the leaf is moved to its lowered position.

6. In a table provided with an extension leaf, a hinge structure for said leaf comprising fastening means for said leaf having link means arranged so that when said leaf is lowered it is swung beneath said top, and cam means arranged to engage with said link means so as to raise said leaf into contact with said top when said leaf is moved to its lowered position.

7. In a table provided with an extension leaf at one edge of the top of the table movable to a substantially horizontal position when raised and into a substantially vertical position when lowered, a hinge structure comprising a pair of interconnected links, one of said links being pivoted to said top and the other of said links being mounted upon said leaf, and an abutment fixed in the path of movement of one of said links so that when said leaf is lowered said abutment engages said link to move said leaf into contact with the under surface of said top.

8. A hinge for connecting an extension leaf to one edge of the top of a table, comprising a link pivoted to said top, a link rigidly mounted upon said leaf, said links being interconnected so that when said leaf is in its raised position its upper surface lies in a plane with the upper surface of said top and lies in a plane with the edge of said top when in its lowered position and a fixed abutment for engaging one of said links when said leaf is moved to its lowered position so that said leaf is raised to bring its upper edge into contact with the lower surface of said top.

9. In a table provided with an extension leaf, hinge structure for said leaf comprising a member movable with said leaf and a second member operably associated with said member so that when said leaf is moved from its extended position said second member engages said first member to move said leaf upwardly into contact with the lower surface of said top.

10. In a table provided with an extension leaf, hinge structure comprising link members secured to said leaf and to said top so as to mechanically connect said leaf with said top, means providing for limited relative movement between said link members so that said leaf can be swung beneath said table top when said leaf is lowered, and a member positioned to engage one of said link members when said leaf is lowered so as to raise said leaf upwardly toward the under surface of said top.

11. In a table provided with an extension leaf, hinge structure comprising link members secured to said leaf and to said top so as to mechanically connect said leaf with said top, means providing a limited relative movement between said link members to provide rigid hinge arms for said leaf when it is in its raised position and to allow said leaf to be swung beneath said table top when said leaf is lowered, and cam means operably associated with said link members so as to engage one of said link members when said leaf is lowered to thereby raise said leaf upwardly into contact with the lower surface of said top.

12. In a table provided with an extension leaf, hinge structure comprising a cam-shaped link secured to said leaf, means pivotally connecting said link with said table top and a member for engaging said link when said leaf is lowered so as to raise said leaf upwardly toward the under surface of said top.

13. In a table provided with an extension leaf, hinge structure comprising a cam-shaped link secured at one end to said leaf, a second link pivotally connected to the free end of said first link, means pivotally connecting said second link to said table top and a member for engaging said cam-shaped link when said leaf is lowered so as to raise said leaf upwardly into contact with the lower surface of said top.

14. In a structure having a pivotally inter-connected pair of relatively movable members adapted to move between a pair of extreme positions, a hinge structure comprising links secured to said members so as to mechanically connect them for said pivotal movement between said extreme positions and providing for movement of said members into abutting relation in each of said positions, and means operably associated with said links adapted to engage with said links to cause one of said members to be moved into intimate contact with the other member in one of said extreme positions.

In witness whereof, I have hereunto set my hand this 8th day of February, 1929.

WILLIAM JOSEPH KASSICK.