

July 9, 1968

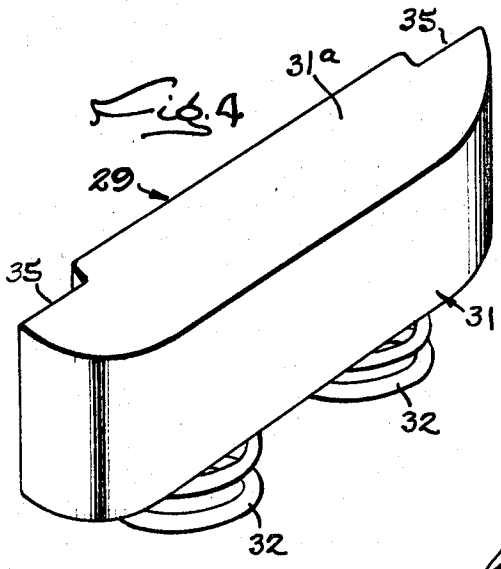
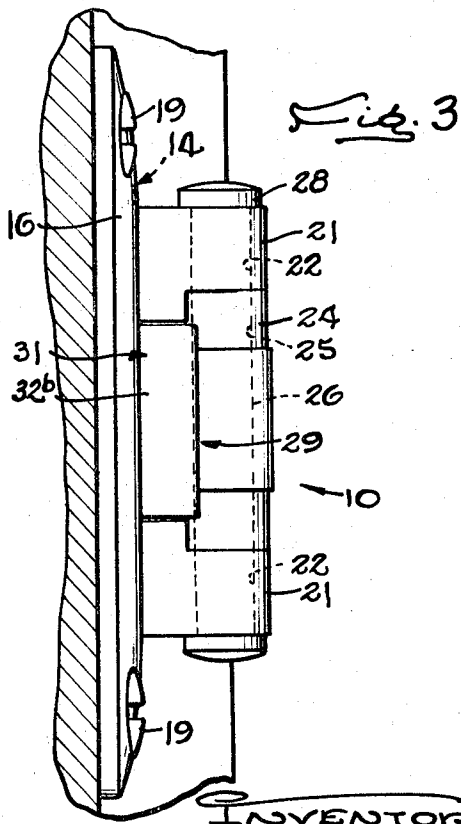
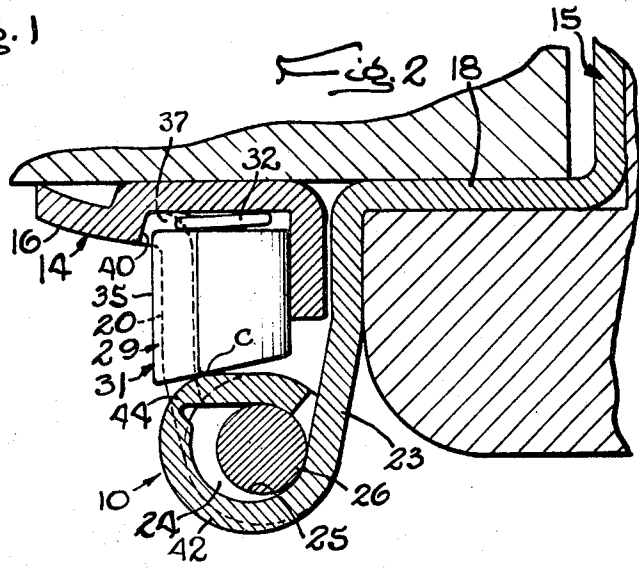
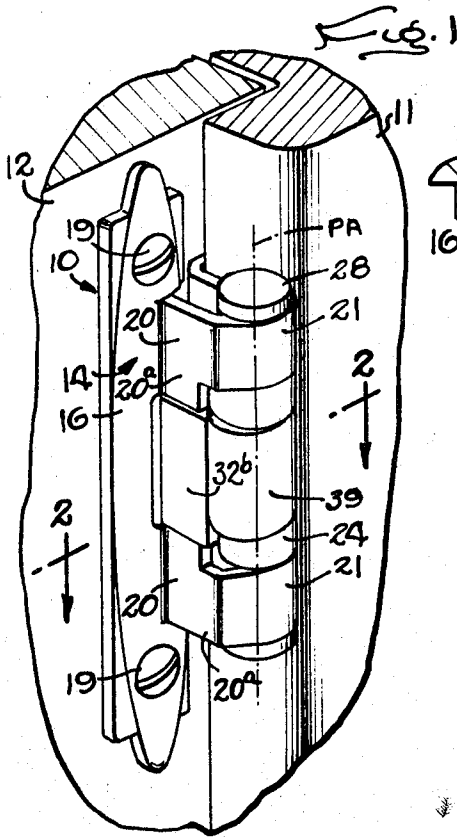
L. L. ANDERSON

3,391,420

HINGE

Filed Oct. 7, 1966

4 Sheets-Sheet 1



INVENTOR
Lloyd L. Anderson
by Wolfe, Hubbard, Vait & Osann
ATTORNEY

July 9, 1968

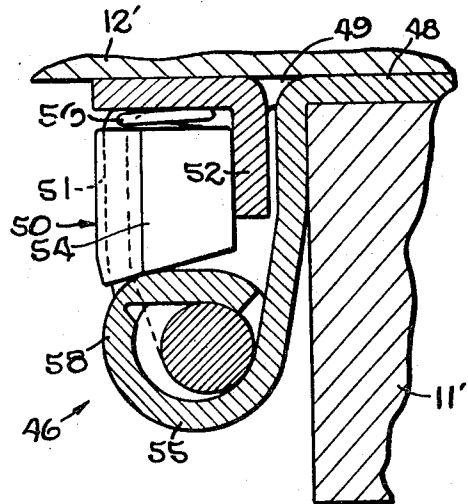
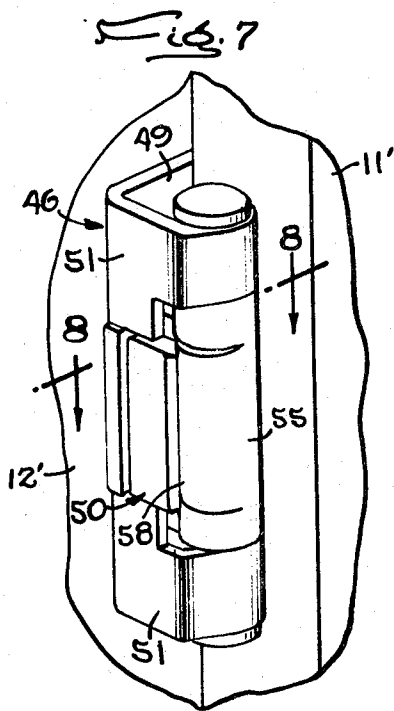
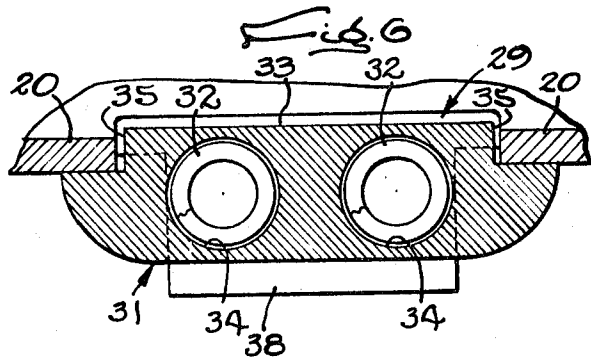
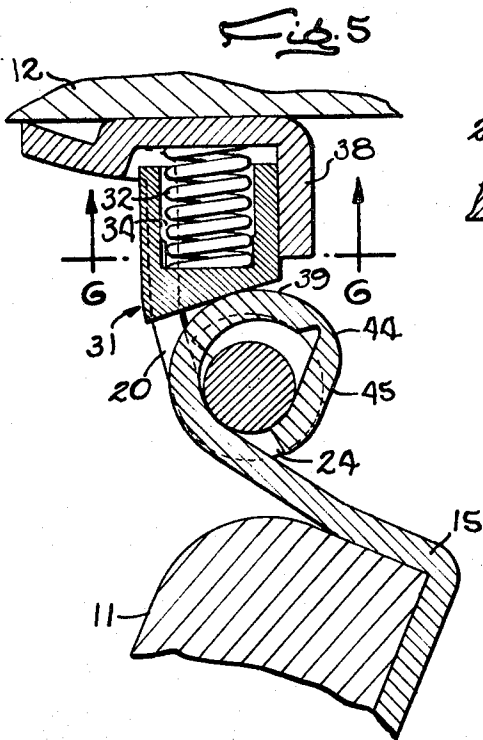
L. L. ANDERSON

3,391,420

HINGE

Filed Oct. 7, 1966

4 Sheets-Sheet 2



INVENTOR
Lloyd L. Anderson
by Wolfe, Hubbard, Jait + Osann
ATTORNEYS

July 9, 1968

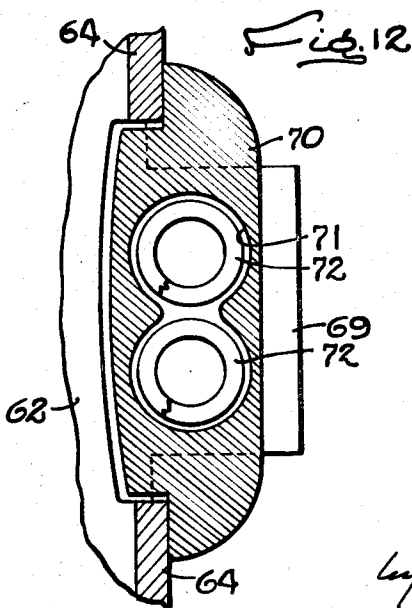
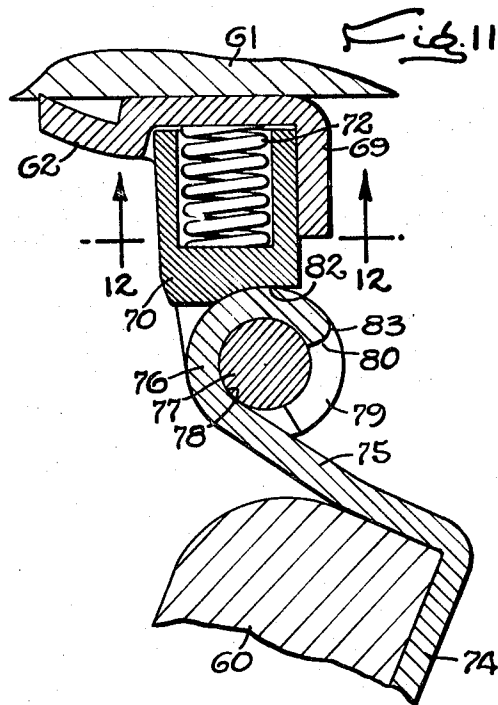
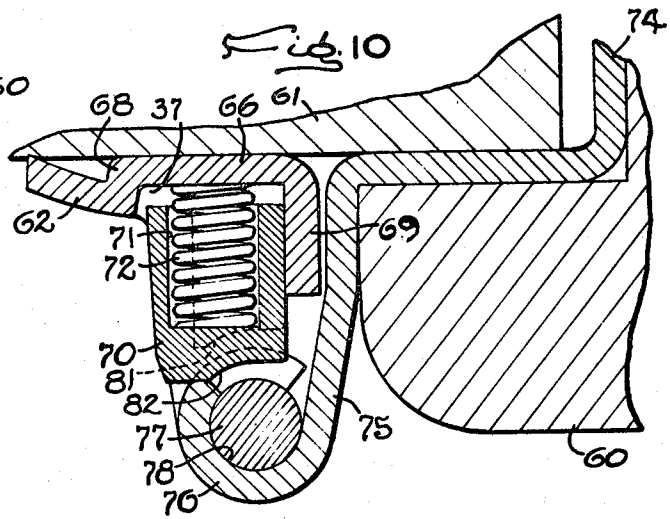
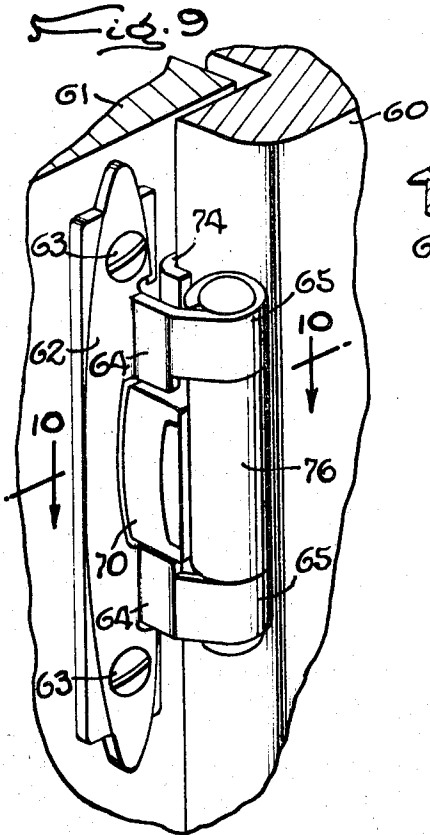
L. L. ANDERSON

3,391,420

HINGE

Filed Oct. 7, 1966

4 Sheets-Sheet 3



INVENTOR
Lloyd L. Anderson
by Wolfe, Hubbard, Pitt & Deane
ATTORNEYS

July 9, 1968

L. L. ANDERSON

3,391,420

HINGE

Filed Oct. 7, 1966

4 Sheets-Sheet 4

Fig. 13

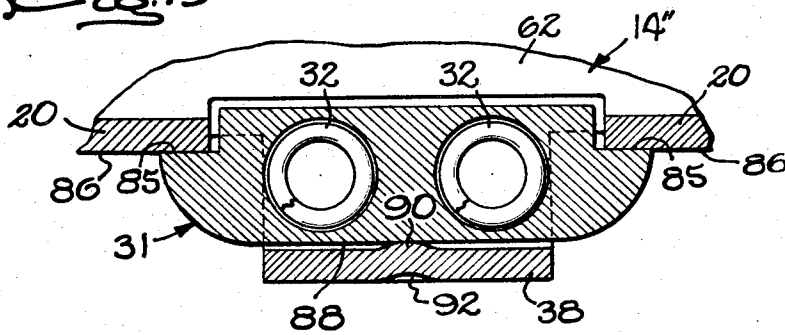
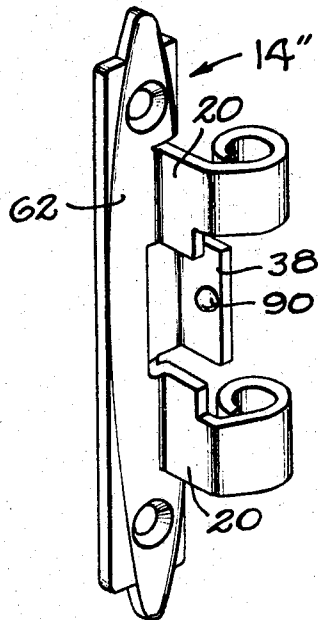


Fig. 14



INVENTOR

Lloyd L. Anderson
by Wolfe, Hubbard, Voit & Osann
ATTORNEY

1

3,391,420
HINGE

Lloyd L. Anderson, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill., a corporation of Connecticut
Continuation-in-part of application Ser. No. 461,133, June 3, 1965. This application Oct. 7, 1966, Ser. No. 598,553

9 Claims. (Cl. 16—139)

This application is a continuation-in-part application of a copending application of Lloyd L. Anderson, Ser. No. 461,133, entitled, "Hinge," filed June 3, 1965, now abandoned.

This invention relates to a spring loaded hinge for use in supporting a door on a frame for pivoting about a fixed axis between an open and closed position. More particularly, the invention relates to a hinge spring assembly and means for mounting it on the hinge for imparting a turning force on a door supporting curl member to assist in pivoting the door and holding it in a preselected position.

It is convenient to spring load cabinet doors, and particularly those used in kitchen cabinets, so that they will remain opened or closed when moved to one of these positions. The most convenient method of holding the doors in one or more positions is by supporting them on spring loaded hinges. However, past hinge structures have been large and cumbersome and have been less effective from the standpoint of not functioning properly, being expensive, and in detracting considerably from the overall appearance of the cabinets.

The primary object of this invention is to provide a simple and compact spring-loaded hinge which may be substituted and used wherever conventional cabinet hinges are used, and which functions effectively to urge the door to one or more preselected positions.

A more detailed object of this invention is to provide a compact spring-loaded hinge which makes use of the leaf structure and curl supporting flanges of the hinge in a novel manner to hold and guide a spring assembly for urging the door to a preselected position.

A further object of the invention is to provide a compact, spring-loaded hinge with an inconspicuously mounted spring assembly which is quiet in operation.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which

FIGURE 1 is a fragmentary perspective view of a door supported on a frame by a cabinet type hinge embodying the novel features of the present invention,

FIG. 2 is a cross-sectional view along the line 2—2 of FIG. 1,

FIG. 3 is a side view of the hinge,

FIG. 4 is an enlarged perspective view of the plunger and springs,

FIG. 5 is a cross-sectional view showing the hinge and door partially opened,

FIG. 6 is a cross-sectional view along the line 6—6 of FIG. 5,

FIG. 7 is a fragmentary perspective view of a door supported on a frame by a hidden leaf type cabinet hinge employing the subject invention,

FIG. 8 is a cross-sectional view along the line 8—8 of FIG. 7,

FIG. 9 is a fragmentary perspective view of a door supported on a frame by a cabinet type hinge embodying the novel features of a third embodiment of the present invention,

FIG. 10 is an enlarged cross-sectional view along the line 10—10 of FIG. 9,

2

FIG. 11 is a view similar to FIG. 10 with the door opened,

FIG. 12 is a cross-sectional view along the line 12—12 of FIG. 11,

5 FIG. 13 is a cross-sectional view of the spring assembly mounted in a frame leaf constructed in accordance with another embodiment of the invention,

FIG. 14 is a perspective view of the frame leaf of FIG. 13.

10 While the invention has been described in connection with preferred embodiments, it will be understood that it is not intended to limit the invention thereto, but it is intended to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

15 For purposes of illustration, the present invention is shown embodied in a hinge 10 for use in mounting a door 11 on a frame 12 to pivot about a vertical axis between an open and closed position. In FIGS. 1 through 6, the illustrated hinge is of a type commonly known as a cabinet hinge and is utilized to pivotally mount a door for closing an opening in the cabinet frame 12. More than one such hinge is usually employed to support such a door, with each including two leaves or wings, one 20 being a frame attached leaf 14 and the other a door attached leaf 15, pinned together so the door leaf and supported door can pivot about an axis PA.

25 The leaves 14 and 15 include portions 16 and 18 formed to lie along the inner side of the door 11 and against the frame 12, respectively, and secured thereto by screws 19. The frame leaf 14 includes a pair of spaced flanges 20 extending from the edge of the leaf adjacent the hinge pivot axis and bent to lie in a plane normal to that of the frame leaf. The outer ends of these spaced flanges are bent back on themselves to form cylindrically shaped curls 21, each with an aligned center opening 22 centered on the pivot axis PA.

30 Similarly a flange 23 is formed integrally with the door leaf 15 at the edge adjacent the pivot axis and bent to extend along the edge of the door in a plane longitudinal of the hinge pivot axis. The outer end of this flange is also bent back on itself to form a curl 24, sized to fit snugly between the spaced curls 21 and including a center opening 25 aligned with the center openings 22 of the frame leaf curls. The leaves are joined by passage of a pivot pin 26 through the center openings 22 and 25 of the curls such that with the frame leaf 14 attached to the frame, the curl 24 and door leaf 18 with the attached door are supported for swinging about the hinge pivot axis PA. A head 28 on the pin abuts the top of the upper curl 21 to prevent the pin from falling on through the curl openings. To spring load the hinge in a manner to assist in pivoting and holding the door in predetermined positions about the axis, a spring assembly 29 is supported on the frame leaf.

35 In accordance with the present invention, this spring assembly 29 is supported between the extending curl supporting flanges of the frame leaf to form therewith a substantially continuous wall facing outwardly from the axis, in a position to abut and exert a turning moment on the door supporting curl 24 for assisting in pivoting the door to one or more positions, and for holding the door in these one or more positions. This spring assembly includes a plunger 31 and spring means comprising a pair of compression springs 32, each supported in a well 34 in the plunger (FIGS. 4, 5 and 6). The plunger 31 is supported between the curl supporting flanges 20 which fit into recesses 35 in the plunger front face 33 to guide it for reciprocal movement between the frame leaf and the curl 24. A third flange 38 bearing against the other side of the plunger is positioned to extend parallel to but

3

laterally spaced from the flanges 20, formed by extending the leaf between and past the flanges 20 to where it is thereafter bent to extend normal to the leaf in a plane parallel to that of the flanges 20 and abut the back of the plunger to hold it against the flanges 20. These up-
 standing flanges 20 and 38 are spaced apart sufficiently
 to permit movement of the plunger therealong in a direc-
 tion lateral to the hinge pivot axis and normal to a
 surface 39 on the door curl 24. The plunger is urged
 towards the curl 24 by the compression springs 32
 squeezed between the bottom of the wells 34 and frame
 leaf 14. While coiled compression springs are shown and
 described, other types such as flat or leaf-type springs
 could be used with equal success. An offset portion 40
 forms a shoulder extending on a line joining where the
 flanges 20 connect with this leaf, to hide and protect the
 springs.

For imparting a turning moment on the door 11, the
 abutting surfaces on the plunger and door curl form a
 cam mechanism for imparting rotary motion to the curl
 as the plunger is urged thereagainst by the springs 32.
 That is, the line of contact between the contacting sur-
 faces of the plunger 31 and the door supporting curl 24,
 as determined by the relative shapes of these surfaces, is
 positioned such that the resultant force impressed on the
 curl, by the springs acting through the plunger, is offset
 from the pivot axis of the curl, and thereby urges the curl
 and supported door to a preselected position. This same
 offset resultant force also functions to hold the door in
 that position selected after the door is moved thereto.

As shown in FIGS. 2 and 5, the curl surface 39 which
 contacts the plunger along a line C, is raised above the
 normal curl surface and formed off-center or non-concen-
 trically about the pivot axis PA, and includes a spiral
 portion 42, a knee portion 44, and a flat portion 45 extending
 longitudinally of the hinge pivot axis. The plunger is
 formed with the face 31a abutting the surface 39 on the
 curl 24, being canted with respect to the line of move-
 ment of the plunger.

As the door is closed thereby turning the curl 24 coun-
 terclockwise (FIGS. 2 and 5), the curl surface 39 rides
 against the plunger face 31a. As the curl turns, the spiral
 portion 42 and the knee portion 44 contact the plunger
 face 31a in that order, therefore the resultant line of force
 acting on the curl at the contact line C remains the same
 to maintain a substantially constant turning moment on
 the curl as the door is moved to the open position. As
 shown in FIG. 2, just before the door 11 reaches the
 closed position, the knee 44 rides up against the plunger
 31a with the line of contact C passing this knee and rid-
 ing on over to the flat 45. The spring assembly 29 in this
 manner imparts a constant turning moment on the door
 when it is over half way open, or until the door is closed
 so the plunger rides past the knee 44, at which time the
 turning moment now urges the door closed. An over-
 center action is thereby provided whereby the door is urged
 closed as it is moved to the closed position, as deter-
 mined by the form of the contacting surfaces on the
 plunger and curl. If it is desired to urge the door to other
 positions, the plunger and door curl can be replaced with
 others having different surface configurations for this pur-
 pose.

As the contour of the surface 39 changes with rotation
 of the curl, the plunger moves along the flanges 20 and
 38 within the stroke space 37. The offset shoulder 40 ex-
 tends laterally towards the curls sufficiently to overlap
 this stroke space 37 allowing the plunger 31 to be sized
 to close the space between the curl 24 and the leaf 14. The
 flanges 20 are spaced apart a predetermined distance and
 a portion of the plunger including the plunger face 32b
 has a width substantially equal to the predetermined dis-
 tance. Thus, with the flanges 20 inset in the plunger re-
 cesses 35, the plunger face 20 forms a continuous wall
 with the outer faces 20a of the flanges thereby affording
 an inconspicuously mounted spring assembly in the hinge.

4

To illustrate the invention in another hinge construc-
 tion, FIGS. 7 and 8 show a hidden leaf hinge 46 having
 overlapping leaves or wings 48 and 49 supporting a door
 11' on a frame 12'. In this embodiment the frame leaf
 49 extends and is attached to the frame 12' at a point
 behind the door 11' when the door is in the closed posi-
 tion. The frame leaf 49 includes a cutout portion (not
 shown) into which the door leaf 48 fits when the door
 is closed. A spring assembly 50 is supported between up-
 standing flanges 51 and a flange 52 formed integrally with
 the frame leaf 49. The assembly 50 includes a plunger 54
 which is urged against a door supporting curl 55 by a
 compression spring 56 positioned to abut the frame leaf
 49. The coaction of the plunger and an off-center surface
 curl 58 on the curl 55 is the same as before described to
 impart a turning moment on the door and urge it to the
 open or closed positions.

In FIGURES 9 through 12 is shown a third embodi-
 ment of the invention for supporting a door 60 on a
 frame 61 for swinging about a vertical axis. Herein, a
 frame leaf 62 is attached to the frame by screws 63 and
 in turn supports a pair of spaced flanges 64 extending per-
 pendicular to the leaf. The ends of these flanges are bent
 back on themselves to form cylindrically shaped curls 65.

The portion 66 of the frame leaf extending between the
 flanges 64 is offset at 68 and thereafter extends along
 the frame past these flanges towards the door where it is
 then bent to form a third flange 69 extending perpendicu-
 lar to the leaf and parallel to the flanges 64. A plunger 70
 is supported between the pair of flanges 64 and the third
 flange 69 and forms a substantially continuous wall with
 the outward facing walls of the flanges 64. A well 71 in
 the plunger facing the leaf portion 66 holds a pair of
 springs 72 for urging the plunger in a direction towards
 the curls 65. A door attached leaf 74 includes a flange
 75 bent to extend along the edge of the door and in turn
 supporting a curl 76 formed by bending this flange back
 on itself in a cylindrical configuration. This door curl 76 is
 held between the frame curls 65 by a pin 77 extending
 through the center openings 78 thereof.

In this embodiment of the invention, the door is biased
 closed during approximately the last 20 degrees of closing
 movement by the plunger riding over an open-faced
 area of the door curl formed by notching out the ex-
 tending edge of the door leaf 74 prior to its being bent
 to form the door curl 76. For this purpose the door curl
 76 is formed with a pair of fingers 79 bent to extend al-
 most completely around the center opening 78 of the curl,
 with the portion therebetween being cut back to an edge
 80 to form a rectangular shaped "window" in the side
 of the curl.

The plunger face is recessed at 81 to form an upstand-
 ing face 82 extending along the length of the curl 76
 for a distance slightly less than the distance between the
 fingers 79, such that this face 82 will ride over the edge
 80 as the door is closed. The edge 80 is rounded at 83
 to facilitate the plunger travel thereover. In pressing
 against this edge 80 (as shown in FIG. 10), a turning
 moment is thus imparted to the curl 76 and swinging door
 to bias the door to the closed position in the same man-
 ner as described with respect to the previous embodi-
 ments.

During reciprocation of the plunger 31, the curl surface
 39 exerts a force on the inclined plunger face 31a to shift
 the plunger laterally either against the flanges 20 or
 against the third flange 38 if the plunger has any free-
 dom for movement in the lateral direction between the
 flanges 20 and the third flange 38. With ordinary manu-
 facturing processes, a slight gap or space often occurs be-
 tween surfaces 85 (FIG. 13) disposed for face to face
 engagement with the interior facing surfaces 86 on the
 respective flanges 20, or alternatively a slight gap may
 be present between the rear wall or surface 88 of the
 plunger and the third flange 38. In either event, as the
 plunger moves within the stroke space 37 a slight click-

ing may be generated as the plunger shifts laterally to engage the flanges 20 or the flange 38 and take up the slight gap.

In accordance with a further aspect of the invention, such a clicking noise may be avoided with a frame lead 14" (FIGS. 13 and 14) while employing usual manufacturing processes and tolerances for the sideways dimension of the plunger between the surfaces 85 and 88 and for the lateral spacing between the flanges 20 and the flange 38. For this purpose, an abutment 90 is formed in one of the flanges 20 or 38 (herein on the flange 38) to extend inwardly toward the opposite flange or flanges and to force the plunger into contact against the opposite flange. The abutment projects for a sufficient distance to take up any gap which may exist, but does not interfere with the stroke of the plunger. Herein, the abutment is a small, hemispherical offset or bump formed centrally in the flange 38 by a punch leaving a depression 92 on an outer side of the flange 38. Because the plunger is usually formed of a plastic material which has a considerable cored area for receiving the springs, the abutment is able to slightly flex the wall 88 of the plunger. Any increase in frictional resistance to the reciprocating movement of the plunger due to the abutment engaging the plunger does not noticeably effect the sliding of the plunger and the compression or expansion of the springs 32 but does produce a more quiet operation by eliminating the likelihood of a clicking noise. In a similar manner, an abutment may be provided on a flange of the frame leaf 49 of the embodiment of FIGS. 7 and 8 or on a flange of the frame leaf 62 of the embodiment of FIGS. 9-12.

By the heretofore described hinge construction, a compact spring-loaded hinge is provided which, by changing the configuration of the abutting surfaces of the plunger and door curl, may be made to urge the supported door to a plurality of positions, and to thereafter hold the door in that position to which it is moved.

I claim as my invention:

1. A spring loaded hinge for supporting a door on a frame for swinging about a pivotal axis and for urging the door to the open and closed positions, having, in combination, a frame leaf including means for attachment to the frame, a pair of parallel flanges spaced apart a predetermined distance and extending from the edge of said frame leaf adjacent to the hinge axis in a plane longitudinal of the pivot axis, a pair of frame curls supported by said flanges in alinement along the pivot axis and in spaced relationship to each other and to said frame leaf, a third flange supported on said frame leaf edge between said pair of flanges and extending in a plane parallel to but spaced on the other side of the pivot axis from the plane of said pair of flanges, a door leaf including means for attachment to the door, a door curl supported by said door leaf and positioned between and in alinement with said frame curls, said door and frame curls each including an alined opening centered on the axis, a pin seated in said openings to thereby pivotally couple said curl members and leaves together, and mechanism for urging the door to the open and closed positions comprising a plunger having a width substantially equal to said predetermined distance supported between said pair of flanges and said third flange and forming with the pair of flanges a substantially continuous wall, said plunger being seized for reciprocable movement between said frame leaf and said curls, a spring acting between the plunger and frame leaf to urge said plunger towards said pivot axis, a raised portion on said plunger positioned to contact said door curl as said plunger moves toward the pivot axis, and said door curl including a raised portion thereon positioned to contact said plunger raised portion when said curl is turned to position the door between the open and closed positions whereby when the plunger is contacting said door curl on either side of said raised portion it will impart a turning moment thereon urging the door to either the open or closed positions.

2. A spring loaded hinge for supporting a door on a frame for swinging about a pivotal axis and for urging the door to one position through which it turns, having, in combination, a frame leaf including means for attachment to the frame, a pair of parallel flanges supported on said frame leaf a predetermined distance apart and extending in a plane longitudinal of said axis, a pair of frame curls supported by said flanges in alinement along the pivot axis and in spaced relationship to each other and to said frame leaf, a third flange supported on said frame leaf extending in a plane parallel to the plane of said parallel flanges and positioned on the other side of said pivot axis therefrom, a door leaf including means for attachment to the door, a door curl supported by said door leaf and positioned between and in alinement with said frame curls, said door and frame curls each including an alined opening extending therethrough along the axis, a pin seated in said alined openings to thereby pivotally couple said curl members and leaves together, and mechanism for urging said door curl and supported door to one position comprising, a plunger supported between said frame leaf supported flanges for reciprocating movement between said frame leaf and said door curl, said plunger having a width substantially equal to said predetermined distance to form with parallel flanges a substantially continuous wall, a spring operatively positioned between said plunger and frame leaf for urging adjacent surfaces on said plunger and said door curl into abutment, and said adjacent surfaces on said plunger and door curl forming a cam and follower mechanism whereby said plunger in being urged against the curl will impart a turning moment thereon to urge the door toward one position through which it pivots.

3. A spring loaded hinge for supporting a door on a frame for swinging about a pivotal axis and for urging the door to one position through which it turns, having, in combination, a frame leaf including means for attachment to the frame, a pair of parallel flanges spaced apart a predetermined distance and supported by said frame leaf to extend in a plane generally towards said pivot axis, a pair of frame curls supported on said flanges in alinement along the pivot axis and in spaced relationship to each other and to said frame leaf, a door leaf including means for attachment to the door, a door curl supported by said door leaf and positioned between and in alinement with said frame curls, said door and frame curls each including an alined opening extending therethrough along the axis, a pin seated in said alined openings to thereby pivotally couple said curl members and said leaves together, and mechanism for urging said door curl and supported door to one position comprising, a plunger having a width substantially equal to said predetermined distances, means supporting said plunger between said frame leaf supported flanges for reciprocating movement between said frame leaf and door curl, a portion of the plunger disposed between the spaced flanges and forming with the flanges a substantially continuous wall, a spring positioned between said plunger and frame leaf for urging said plunger against said door curl, and the surface of said door curl being formed non-concentrically about said pivot axis and cooperating with said plunger to form cam and follower surfaces whereby said plunger in being urged thereagainst will impart a turning moment on the door curl to urge the door toward a predetermined position through which it pivots.

4. A spring loaded hinge for supporting a door on a frame for swinging about a pivotal axis and for urging the door to one position through which it turns, having, in combination, a frame leaf including means for attachment to the frame, a pair of parallel flanges supported on said frame leaf and extending generally towards said pivot axis, said flanges being spaced apart a predetermined distance, a pair of frame curls supported on said flanges in alinement along the axis and in spaced relationship to each other and to said frame leaf, a door leaf in-

cluding means for attachment to the door, a door curl supported on said door leaf and positioned between and in alinement with said frame curls, said frame and door curls each including an alined opening extending along the axis, a pin seated in said alined openings to thereby pivotally couple said curl members and leaves together, a plunger having a width substantially equal to said predetermined distance, means supporting said plunger on said frame leaf for reciprocating movement between said frame leaf and said door curl, a portion on said plunger disposed between said flanges to substantially fill the space therebetween, spring means acting between said plunger and said door curl for causing the adjacent surfaces thereof to abut, and said adjacent surfaces forming cooperating cam and follower surfaces whereby upon contact a turning moment is imparted to said door curl tending to urge the door to one position through which it turns.

5. A spring loaded hinge for supporting a door on a frame for swinging about a pivotal axis and for urging the door to one position through which it turns, having, in combination, first and second leaves and means for mounting one on the door and one on the frame, a pair of flanges spaced apart a predetermined distance supported on said first leaf and extending generally towards said axis, a pair of first curls supported on said flanges in alinement along said axis and in spaced relationship to each other and to said first leaf, a second curl supported on said second leaf and positioned between and in alinement with said first curls, said first and second curls each including an alined opening extending along the pivot axis, a pin seated in said openings to thereby pivotally couple said curl members and leaves together, a plunger having a width substantially equal to said predetermined distance, means supporting said plunger for reciprocating movement between said first leaf and said second curl, spring means acting between said first leaf and said plunger urging said plunger against said second curl for causing the adjacent surfaces thereof to abut, and said adjacent surfaces forming a cam and follower mechanism whereby upon contact a turning moment is imparted to said second curl tending to urge the leaves and supported door and frame to a predetermined relative position.

6. A spring loaded hinge for supporting a door on a frame for swinging about a pivotal axis and for urging the door to one position through which it turns, having,

in combination, first and second leaves and means for mounting one on the door and one on the frame, a pair of flanges spaced apart a predetermined distance supported on said first leaf and extending generally towards said axis, a pair of first curls supported on said flanges in alinement along said axis and in spaced relationship to each other and to said first leaf, a third flange supported on said second leaf and having the end bent back on itself in a circle to form a third curl having a center opening, said third curl including a portion in one side thereof opening, into said center opening, said first curls including alined openings extending along the pivot axis, a pin seated in said alined openings and said center opening with the third curl being positioned between the first curls to thereby pivotally couple said leaves together, a plunger having a portion of a width substantially equal to said predetermined distance, means supporting said plunger between said pair of flanges and third flange for reciprocating movement between said first leaf and said second curl, and spring means acting between said first leaf and said plunger urging said plunger against said second curl for causing the adjacent surfaces to abut whereby said plunger will ride into said open side of said second curl and impart a turning moment thereon to urge the leaves and supported door and frame to a predetermined relative position.

7. The combination of claim 1 in which an abutment is formed on the third flange extending laterally from the third flange toward the parallel flanges for engaging and forcing the plunger against the parallel flanges.

8. The combination of claim 2 in which a projecting surface is formed on at least one of the flanges to extend laterally toward the plunger and to force the same against the laterally opposite flange.

9. The combination of claim 3 including means for engaging the plunger and for holding the same tightly in the supporting means against movement laterally of the pivot axis.

References Cited

UNITED STATES PATENTS

3,205,532	9/1965	MacDonald	-----	16-180
3,262,149	7/1966	Gorton et al.	-----	16-142

BOBBY R. GAY, *Primary Examiner*.

DORIS L. TROUTMAN, *Assistant Examiner*.

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. :- 3,391,420
DATED : July 9, 1968
INVENTOR(S) : L. L. Anderson

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 5, line 63, "seized" should be --sized--.

Column 6, line 24, "usbstantially" should be --substantially--;
line 53, "tances," should be --tance, --.

Column 8, line 11, delete the first comma;

lines 20, 22 and 24, "second" should be --third--.

Signed and Sealed this

Twenty-second Day of March 1977

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks