

[54] **DUAL SPRING ACTION SELF ADJUSTING LATCH**

[75] Inventor: **Paul R. Gley**, Hillsdale, N.J.
 [73] Assignee: **Rexnord, Inc.**, Milwaukee, Wis.
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 [58] Field of Search **292/113, 247, DIG. 49, 292/66**

[56] **References Cited**
UNITED STATES PATENTS

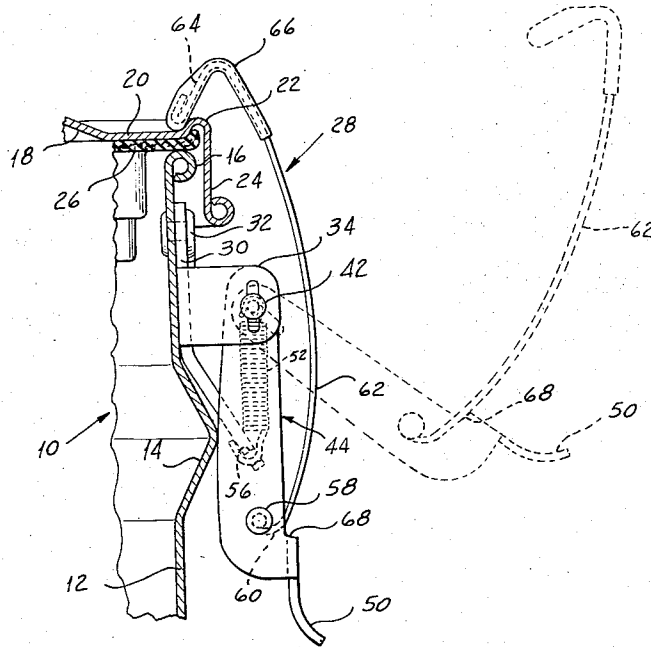
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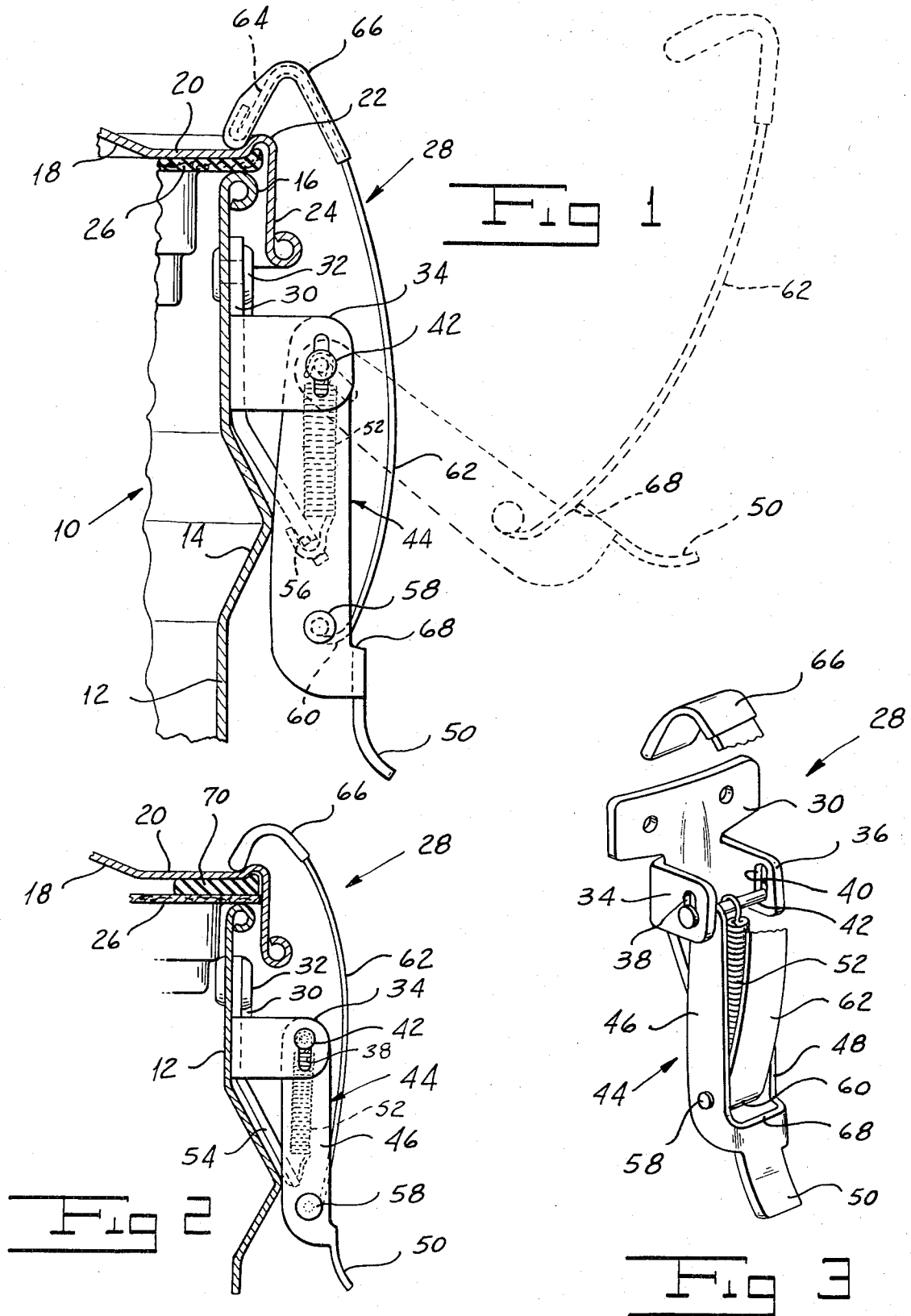
Primary Examiner—Richard E. Moore
 Attorney, Agent, or Firm—Shenier & O'Connor

[57] **ABSTRACT**

A dual spring action self adjusting latch assembly for holding the lid on a canister or the like in which a pivot pin mounted on the side of the canister for sliding movement in a direction perpendicular to the pin length toward and away from the canister mouth and biased away from the canister mouth, rotatably supports a handle adjacent to one end thereof for movement in one direction from an open position at which a bowed draw hook adapted to flex along its length to increase the effective length thereof and pivotally supported on the handle is out of engagement with the lid first to an intermediate position at which the draw hook falls into engagement with the lid and then in the opposite direction to a closed position at which the handle and the draw hook are substantially parallel to the canister side with the draw hook pivot slightly under the handle pivot firmly to hold the lid in place and in which the moving pivot and flexing draw hook accommodate the relatively large grip range of different installations. The latch is released by again moving the handle in the one direction.

7 Claims, 3 Drawing Figures





DUAL SPRING ACTION SELF ADJUSTING LATCH

BACKGROUND OF THE INVENTION

There are known in the prior art latches of the type in which a handle rotatably supported on a base is adapted to be moved from an open position to a closed position at which a draw hook pivotally supported on the handle moves into engagement with a strike firmly to draw together two members on which the strike and the base respectively are mounted. One particular application for a latch of this type is the canister of a vacuum cleaner, for example, in which the draw hook is employed releasably to hold the lid firmly in position on the canister. While the ordinary latch of the type described above may function more or less satisfactorily to achieve its purpose in such an installation, the ordinary latch embodies a number of defects.

First, the particular canister installations vary in requiring different deflections or grip lengths in the locked up position as, for example, where in addition to the usual filter interposed between the lid and the canister mouth, there is provided a gasket or sealing ring. While latches incorporating length adjustable draw hooks are known in the prior art, such a latch requires a manual adjustment of the length when changing from one installation to the other. They are thus relatively complicated and inconvenient to use where a change in deflection may be required. In addition to the foregoing, the ordinary latch of the type described above may require two hands to move it to the locked up position in that the user may be obliged to hold the latch in engagement with the lid with one hand while using the other hand to move the handle from its open to its closed position.

I have invented a dual spring action self adjusting latch which overcomes the defects of latches of the prior art described hereinabove. My latch is especially adapted for use in holding the lid on a canister or the like. It automatically provides an extended grip range. It is self adjusting. It may easily be operated with only one hand. It is simple in construction for the result achieved thereby.

SUMMARY OF THE INVENTION

One object of my invention is to provide a dual spring action self adjusting latch which overcomes the defects of latches of the prior art.

Another object of my invention is to provide a dual spring action self adjusting latch which is especially adapted for holding the lid on a canister or the like.

A further object of my invention is to provide a dual spring action self adjusting latch which affords an extended grip range.

Yet another object of my invention is to provide a dual spring action self adjusting latch which can easily be operated with one hand.

A still further object of my invention is to provide a dual spring action self adjusting latch which is simple in construction.

Other and further objects will appear from the following description.

In general, my invention contemplates the provision of a dual spring action self adjusting latch for holding a lid on a canister or the like in which a pivot pin slidably supported on a canister or the like for limited movement transversely of the pin axis toward and away

from the canister mouth and biased away from the mouth, rotatably carries a handle for pivotal movement from an open position at which a bow-shaped draw hook adapted to flex along its length is out of engagement with the canister lid, first in one direction to an intermediate position at which the draw hook falls into engagement with the lid and then in the opposite direction to a closed position at which the draw hook pivot is slightly below the handle pivot with both the draw hook and the handle lying along the side of the canister and with the movable pivot and flexing of the draw hook providing a relatively wide range of deflection with a reasonable load on the operating parts.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings which form part of the instant specification and which are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

FIG. 1 is a side elevation of my dual spring action self adjusting latch assembly in association with a canister, parts of which are shown in section.

FIG. 2 is a side elevation of my dual spring action self adjusting latch in use with a canister of slightly different type than that illustrated in FIG. 1.

FIG. 3 is a perspective view of my dual spring action self adjusting latch with a part broken away.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, one installation to which my latch can be applied is a canister indicated generally by the reference character 10 having a body 12 formed with an annular rib 14 adjacent to the upper end thereof and having a bead 16 formed around the mouth of the canister. A lid 18 adapted to be assembled over the canister mouth is formed with a peripheral recess 20 providing a bead 22 at the edge of the lid. A peripheral flange 24 on the lid moves downwardly over the bead 16 when the lid 18 is assembled on the body 12 in a manner to be described. In the particular installation illustrated in FIG. 1 which may, for example, be a vacuum cleaner canister, a filter 26 is adapted to be clamped between lid 18 and the bead 16.

My dual spring action self adjusting latch assembly indicated generally by the reference character 28, includes a mounting bracket base 30, adapted to be secured to the body of the canister 12 by any suitable means such, for example, as by rivets 32. Preferably I provide the base 30 with a slightly curved configuration so that it fits closely against the outer surface of the body 12. Base 30 carries a pair of upstanding ears 34 and 36 formed with respective slots 38 and 40 extending in the direction of the longitudinal axis of the body 12. These slots 38 and 40 are adapted to receive a pivot pin which may, for example, be a semi tubular rivet 42. It will readily be appreciated that the slots 38 and 40 support the rivet 42 on the body 12 for sliding movement in a direction transverse to the rivet axis toward and away from the mouth of the body 12.

My latch assembly 28 includes an operating handle, indicated generally by the reference character 44, having a bifurcated configuration with a pair of spaced legs or sides 46 and 48 connected adjacent the free ends thereof by the pivot pin 42. I provide the connecting portion of the handle 44 with a grip 50 extending down-

wardly therefrom as viewed in the drawings. I secure one end of a coil spring 52 to the pin 42 and hook the other end thereof through an opening 56 in an extension 54 on base 30. It will be appreciated that spring 52 normally urges the pin 42 away from the mouth of body 12 and toward the bottoms of the slots 38 and 40.

A second pivot pin 58 which may, for example, be a tubular rivet carried by the handle sides 46 and 48 adjacent to the grip 50 receives a bearing sleeve 60 formed at one end of a bow-shaped draw hook 62 made from a suitable resilient material such as spring steel or the like. I form the end of draw hook 62 remote from the sleeve 60 with a hook portion 64. Preferably, I provide the hook portion 64 with a covering 66 of a suitable material such as polyvinyl chloride to avoid scratching the lid 18 when the latch is locked up in the manner to be described and to inhibit movement of the hook 62 outwardly over bead 22. The upper edge 68 of the connecting portion of the handle provides a stop for the draw hook in the open position of the handle as will be described more fully hereinbelow.

In a second installation illustrated in FIG. 2, an annular gasket 70 is interposed between the periphery of the filter 26 and the underside of lid 18, thus requiring a greater deflection as the latch is locked up in a manner to be described.

In use of my dual spring action self adjusting latch in the open position of the parts, the handle sides 46 and 48 rest against the rib 14. At the same time, draw hook 62 rotates to a position at which it rests on the edge 68. Spring 52 urges the pin 42 toward the bottoms of the slots 38 and 40. With the parts in this position, in order to lock up the assembly, handle 44 first is moved counterclockwise through the broken line position illustrated in FIG. 1 until the draw hook 62 moves by gravity into engagement with the groove 20 in the lid 18. When that occurs, movement of the handle is reversed and as the handle moves in a clockwise direction, the hook portion 64 engages bead 22. Cover 66 assists in preventing the hook portion from sliding over the bead 22. Upon continued movement of the handle 44, the axis of pivot 58 moves slightly closer to body 12 than is the axis of pin 42. In the course of this movement, lid 18 is drawn toward bead 16 and pin 42 moves upwardly to tension spring 52 as required for the desired lock up force. It will be seen that this operation is readily accomplished with the use of only one hand. To release the latch, grip 50 is operated to move handle 44 in a counter clockwise direction until the draw hook 64 moves out of engagement with the lid and falls to a position at which it is supported on the edge 68.

In operation of my latch in the installation shown in FIG. 2 the action is much the same. As the parts move to the locked up position, however, pin 42 moves further upwardly along the slots 38 and 40 and draw hook 62 may flex as required effectively to increase its length. Thus the greater deflection is provided without exceeding a reasonable load on the operating parts of the latch.

It will be seen that I have accomplished the objects of my invention. I have provided a dual spring action self adjusting latch which overcomes the defects of latches of the prior art of the same general type. My latch is especially adapted for use in securing a lid on a canister or the like. It is self-adjusting in providing a relatively wide range of deflections with a reasonable lock up force as required for different installations. It

is easily operated with the use of only one hand. It is simple in construction.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of my claims. It is further obvious that various changes may be made in details within the scope of my invention. It is, therefore, to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, what I claim is:

1. A latch assembly for securing a pair of members in assembled relationship along a parting line including in combination, a handle, a pivot pin on said handle, a pair of spaced ears on a first one of said members, said ears being formed with parallel slots for receiving said pivot pin to mount said pivot pin on said one member for limited sliding movement toward and away from said parting line along a line perpendicular to the pin length, a spring biasing said pin for movement along the length of said slots toward corresponding ends thereof, and a draw hook pivotally carried by said handle for movement toward and away from said one member, said handle being movable in one direction from a first position at which said drawhook is remote from said one member to an intermediate position at which said drawhook engages the other member positioned in cooperative relationship to said one member and then movable in the other direction back to said first position to draw said members together in assembled relationship.

2. A latch assembly as in claim 1 in which said drawhook is resilient in the direction of the length thereof.

3. A latch assembly as in claim 1 in which said drawhook is bowed in the direction of said length and is formed of resilient material.

4. A latch assembly as in claim 1 including means for limiting the pivotal movement in one direction of said drawhook on said handle.

5. A latch assembly for securing a lid over the mouth of a container or the like including in combination, a handle, a pivot pin on said handle, a pair of spaced ears on said container, said ears being formed with parallel slots receiving said pivot pin to mount said pivot pin on said container for limited sliding movement toward and away from said mouth along a line perpendicular to the pin length, a spring biasing said pin for movement away from said mouth, and a drawhook pivotally carried by said handle for movement toward and away from said container, said handle being movable in one direction from a first position at which said drawhook is remote from said container to an intermediate position at which said drawhook engages a lid positioned over said container mouth and then movable in the other direction back to said first position to draw said lid down over said container mouth.

6. An assembly as in claim 5 in which said drawhook is bowed in the direction of its length and is formed of resilient material.

7. An assembly as in claim 5 in which said handle is bifurcated to form spaced legs and a base connecting said legs, said base forming a stop for said drawhook in the open condition of the assembly.

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