June 7, 1955 G. L. LARIMORE 2,710,212

LATCH

Filed Aug. 20, 1953

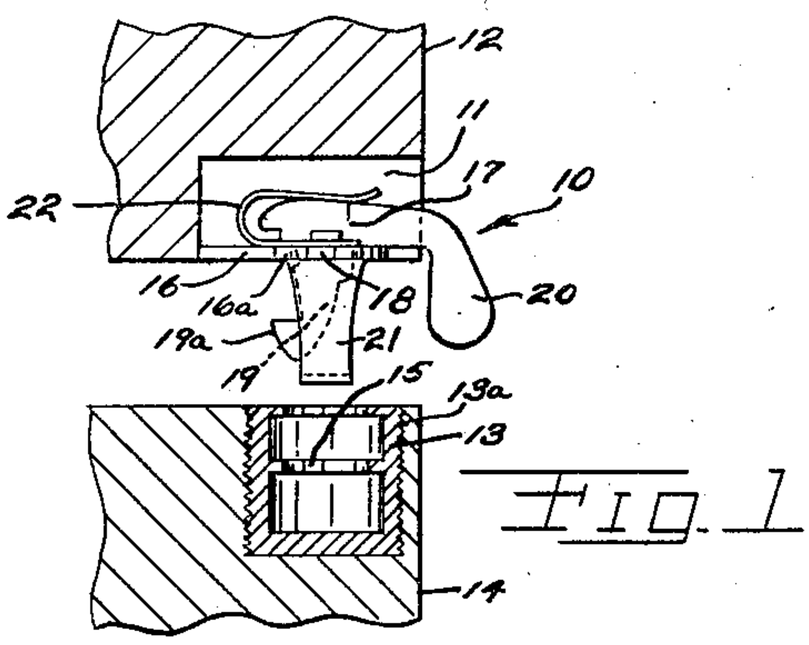

FIG. 1

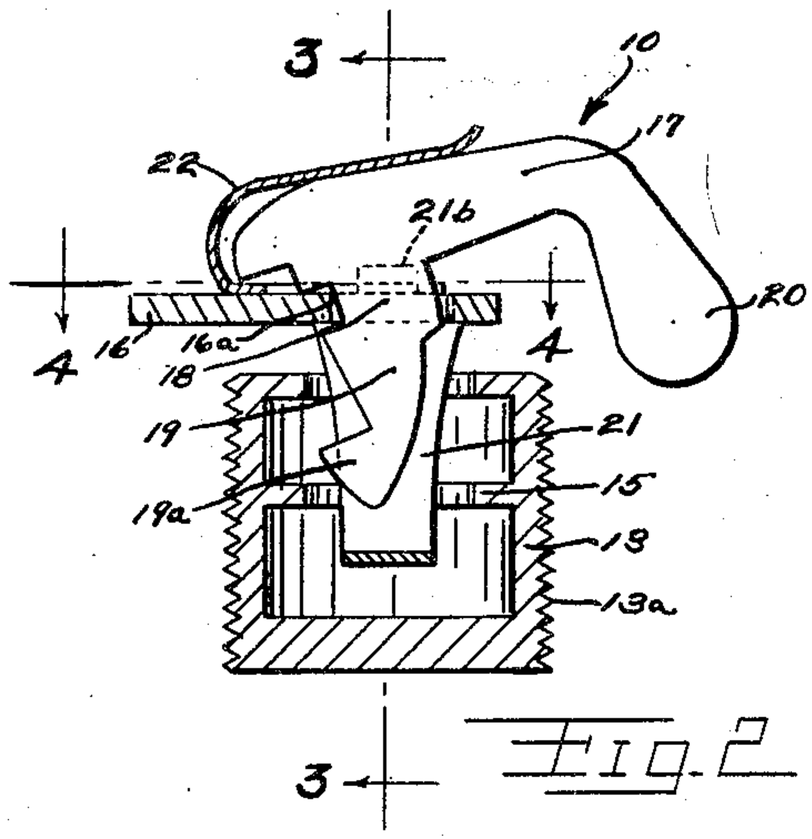

FIG. 2

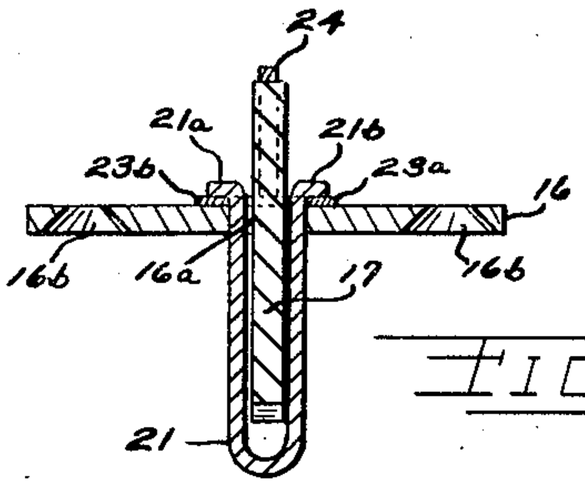

FIG. 3

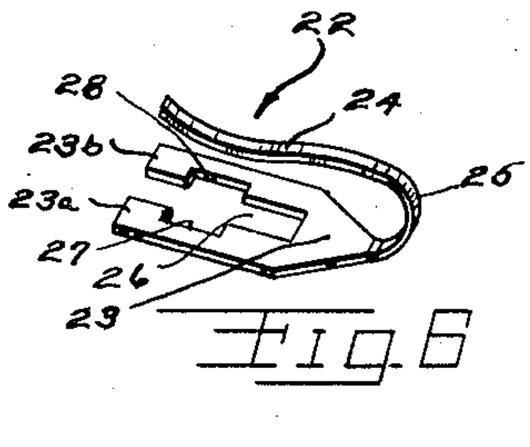

FIG. 6

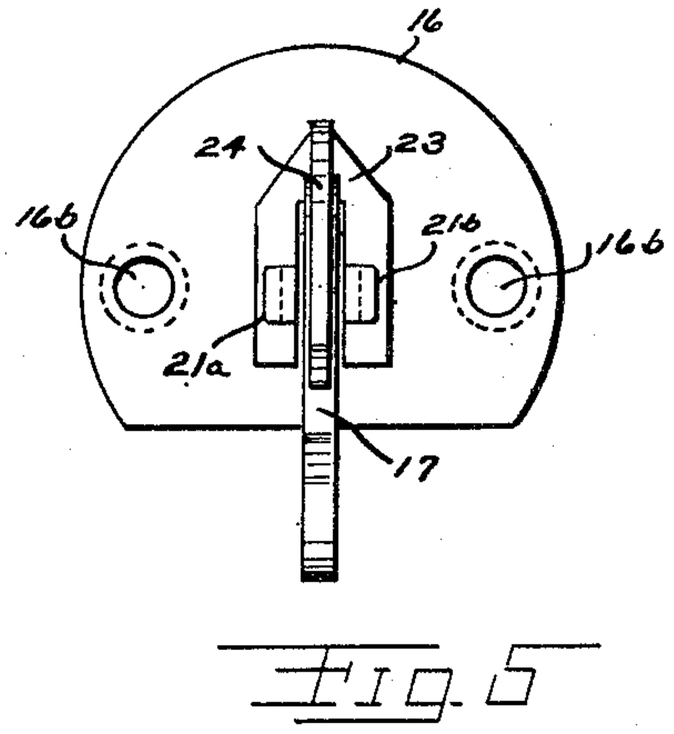

FIG. 5

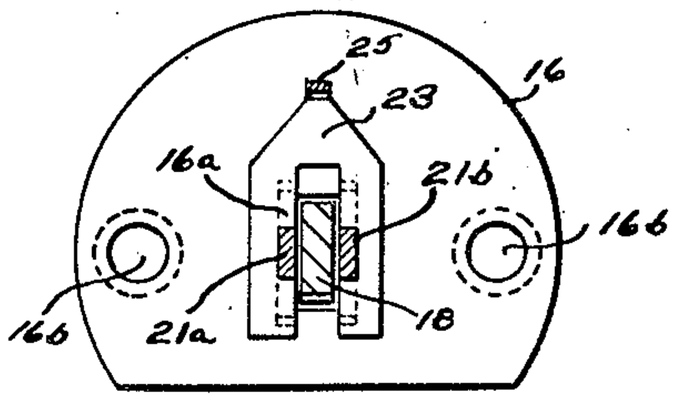

FIG. 4

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LATCH

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5 Claims. (Cl. 292—128)

This invention relates generally to improvements in a latch and more particularly to a spring for a latch.

One of the objects of this invention is to provide an improved spring for a pivotal latch member which will positively and firmly constrain the latching hook in a latched position.

Another object is to provide a pivotal latch member with an improved spring that is readily assembled without special tools.

Another object is to provide an improved spring that can be readily assembled, and which, when fastened in position, holds its associated latch member in its anchor plate.

Another object is to provide an improved spring that is extremely simple in construction and easy to manufacture.

A further object of the present invention is to provide a latch spring characterized by its structural simplicity, its ease of assembly, its strong and sturdy nature and its low manufacturing cost.

Other objects and advantages of this invention will be apparent from the accompanying drawings and description and the essential features will be set forth in the appended claims.

In the drawings,

Fig. 1 is a side elevational view of a latch with which my invention may be used, mounted in a lid shown in fragmental cross-section, and a coacting catch mounted in a body member shown in cross-section;

Fig. 2 is an enlarged side elevational view of the latch and spring from Fig. 1 in an unlatched position but adapted to cooperate with the catch shown in cross-section;

Fig. 3 is a vertical sectional view of the latch and spring taken along the line **3—3** of Fig. 2, excluding the catch;

Fig. 4 is a horizontal sectional view of the latch and spring taken along the line **4—4** of Fig. 2;

Fig. 5 is a top plan view of the latch and spring shown in Fig. 2;

Fig. 6 is a perspective view of the spring member before assembly with the latch.

With reference to Figs. 1 and 2, a latch generally shown at **10** is secured in a recess **11** of a box lid **12** by suitable fastening means passing through securing holes **16***b* and adapted to engage catch **13**, which is fastened to the base wall **14** by means of screw threads **13***a*. Catch **13** has an annular shoulder **15**, which is engaged by the hook portion **19***a* of latch **10**.

The latch **10** comprises an anchor plate **16**, containing an aperture **16***a*, through which latch member **17** extends and is substantially pivotally mounted therein. The latch member **17** consists of three different integrally connected portions, namely **18**, **19** and **20**. Portion **18** is a neck piece which pivotally extends through the aperture **16***a* and oscillates between the latching position of Fig. 1 and the unlatching position of Fig. 2. The second portion **19** extends downwardly below plate

16 and includes a hook **19***a* which engages the shoulder **15** of catch **13**. The third portion **20** is a handle having an L-shape. When this handle is held flush against the anchor plate as seen in Fig. 1, the hook **19***a* is in catch engaging position.

A U-shape guide member **21** is provided to guide and shield the portion **19** and **19***a* of the latch. A U-shape spring **22** is fastened to the anchor plate and exerts tension on the handle portion of the latch member **17** thereby constraining the latch into catch engaging position.

The details of spring **22** are clearly shown in perspective in Fig. 6. The spring **22** is made of spring steel or other suitable material and is generally U-shape, having two main legs **23** and **24** integrally connected by a neck portion **25**. The leg **23** is bifurcated so as to provide two forks **23***a* and **23***b* having an elongated longitudinal slot **26** extending between them. The slot **26** has two opposed cut-outs or notches **27** and **28** in its side walls. The lower leg **23** forms a keeper plate which is fastened to the anchor plate **16**; the upper leg **24** acts as a spring member and exerts spring tension whenever its neutral position as seen in Fig. 6 is disturbed.

The spring **22** as shown is stamped out of a plate of spring metal but other ways of forming the same will occur to those skilled in this art.

The spring **22** is fastened to the anchor plate as seen in Figs. 3, 4 and 5. The portion **18** of latch **17** fits into the slot **26** of the spring **22**. The U-shape guide member **21** has each of its legs provided with an up-standing lug, **21***a* and **21***b*, which passes upwardly through the aperture **16***a* of the anchor plate **16**, one on each side of the latch member **17**, and outwardly through the opposed cut-outs **27** and **28**. The lugs **21***a* and **21***b* are then turned over tightly against the upper surface of leg **23**, thus securely holding the spring in place, as seen in Figs. 3 and 5. The spring leg **24** engages the top surface of the latch member **17** and holds this member against the anchor plate **16** so that the hook portion **19***a* is in catch engaging position. During operation of the handle **20** the spring leg **24** is flexed and placed under tension so that upon releasing the handle, the latch is automatically returned to the latching position.

My improved spring may be installed after the other components of the latch have been assembled. By certain manipulations the latch member may be inserted through aperture **16***a* in anchor plate **16** as described in the copending application of Paul P. Harsch, Serial No. 296,221, filed June 28, 1952, now Patent No. 2,704,219, issued March 15, 1955. The lugs **21***a* and **21***b* are extended through aperture **16***a* and notches **27** and **28**. The spring may be slipped over the latch **17** by means of slot **26** until the leg **23** contacts the anchor plate **16**. At this point, the leg **24** will engage the top of the latch member **17**. The lugs **21***a* and **21***b* are then turned over (outwardly away from each other) as previously mentioned and the spring becomes operatively connected. It should further be noted that upon engaging the cut-out **27** and **28**, the lugs **21***a* and **21***b* prevent lateral displacement of the spring when the spring is placed under tension. Also, after spring **22** is in place, the leg **24** covers sufficient of aperture **16***a* that latch member cannot be removed as taught in the above-mentioned Harsh application.

It is apparent from the drawings and the discussion given hereinbefore that this novel type of spring means as illustrated is extremely simple to construct, easy to assemble and positive in its action.

What I claim is:

1. In a securing device comprising an anchor plate having an aperture therethrough and a latch member extending through and oscillatable relative to said anchor plate, said latch member having a catch engaging por-

tion on one side of said anchor plate and a handle on the other, a generally U-shaped guide member for said catch engaging portion of the latch member, said guide member having its two ends forming lugs which extend through the aperture on either side of the latch member; spring means to constrain the latch member in a latched position, said spring means being generally U-shaped, there being a longitudinal slot in one of said legs, said slot containing opposed notches in its sidewalls, said leg being fastened to the anchor plate by said lugs passing through said opposed notches and bent down upon said leg, said latch member fitting into said slot, a second leg of said spring integral with said first leg and pressing on the handle side of the latch member and constraining the catch engaging portion to a latched position, said lugs preventing lateral movement of said spring when the spring is placed under tension by operation of the latch handle.

2. In a securing device comprising an anchor plate having an aperture therethrough and a latch member extending through and oscillatable relative to said anchor plate, said latch member having a catch engaging portion on one side of said anchor plate and a handle on the other, a U-shaped guide member for said catch engaging portion of the latch member, said guide member having its two ends forming lugs which extend through the aperture on either side of the latch member; spring means to constrain the latch member in a latched position, said spring means located on the latch handle side of the anchor plate, said spring means being made of spring metal and generally of U-shape, one leg of which is bifurcated, opposed cut-outs in the bifurcation opening toward the fork of said bifurcation, said leg secured to the anchor plate by means of said lugs engaging said notches and bent down upon said leg, said latch member passing between said work of said spring, a second leg on said spring exerting spring tension on said latch member and constraining the catch engaging portion to a latched position.

3. In a securing device comprising an anchor plate having an aperture therethrough and a latch member extending through and oscillatable relative to said anchor plate, said latch member having a catch engaging portion on one side of said anchor plate and a handle on the other, a U-shape guide member for said catch engaging portion of the latch member, said guide member having its two ends forming lugs which extend through the aperture on either side of the latch member said aperture being large enough for said latch member to pass through it; spring means to constrain said latch in a latched position, said spring means positioned on the latch handle side of the anchor plate, said spring means being made of a spring metal and of generally U-shape, said spring means comprising two legs, the first of said legs containing a slot, said slot having a width less than said aperture in said anchor plate said slot having opposed cut-outs in its side walls, said slotted leg forming a keeper plate secured to the anchor plate by means of said lugs engaging said cut-outs and bent down upon said slotted leg, said latch member passing through the slot in said keeper plate, the second of said legs on said spring means engaging the handle portion of said latch member to normally constrain said catch into latching position.

4. In a securing device comprising an anchor plate having an aperture therethrough and a latch member extending through and oscillatable relative to said anchor plate, said latch member having a catch engaging portion on one side of said anchor plate and a handle on the other, a U-shaped guide member for said catch engaging portion of the latch member, said guide member having its two ends forming lugs which extend through the aperture on either side of the latch member said aperture being large enough for said latch member to pass through it; spring means to constrain said latch in a latched position, said spring means positioned on the latch handle side of the anchor plate, said spring means being made of a spring metal and of generally U-shape, said spring means comprising spaced legs, one of said legs containing a slot, said slot having a width greater than the thickness of said latch member, said slot having opposed cut-outs on its side walls, said slotted leg forming a keeper plate secured to the anchor plate by means of said lug engaging said cut-outs, said latch member passing through the slot in said keeper plate, one end of said latch member abutting the keeper plate when said handle is oscillated to an unlatching position, the other of said legs on said spring means conforming closely about said latch member engaging the handle portion of said latch member to normally constrain said catch into latching position, whereby said latch member cannot be disassembled from said anchor plate without removal of said spring means.

5. In a securing device comprising an anchor plate having an aperture therethrough and a latch member extending through and oscillatable relative to said anchor plate, said latch member having a catch engaging portion on one side of said anchor plate and a handle on the other, a U-shaped guide member for said catch engaging portion of the latch member, said guide member having its two ends forming lugs which extend through the aperture on either side of the latch member said aperture being large enough for said latch member to pass through it; spring means to constrain said latch in a latched position, said spring means positioned on the latch handle side of the anchor plate, said spring means being made of a spring metal and of generally U-shape, said spring means comprising two spaced legs of substantially the same length, a curved neck portion integrally connecting said legs, the first of said legs containing a slot extending longitudinally inwardly from the end of said leg, said slot having a width less than said aperture in said anchor plate and greater than the thickness of said latch member, said slot having opposed cut-outs in its side walls, said cut-outs being positioned substantially intermediate the ends of slot, said slotted leg forming a keeper plate secured to the anchor plate by means of said lugs engaging said cut-outs and bent down upon said slotted leg, said latch member passing through the slot in said keeper plate, one end of said latch member abutting the closed end of said keeper plate adjacent said neck portion when said handle is oscillated to an unlatching position, the second of said legs on said spring means conforming closely about the outer periphery of that portion of said latch member which abuts said keeper plate and extending to engage the handle portion of said latch member to normally constrain said catch into latching position, said closed end of said keeper plate and the walls of said aperture in said anchor plate preventing removal of said latch member from said anchor plate, whereby said latch member cannot be disassembled from said anchor plate without removal of said spring means even though said second leg of said spring means be completely distorted.

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