D. W. TOWER.

LATCH.

APPLICATION FILED APR. 3, 1909.

949,862. Patented Feb. 22, 1910.

2 SHEETS—SHEET 1.

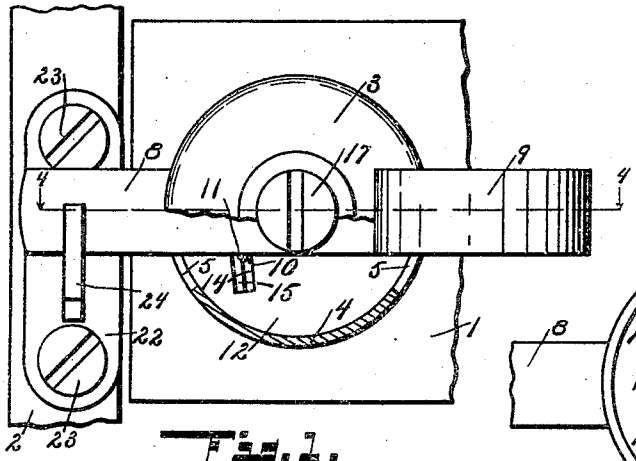

Fig. 1.

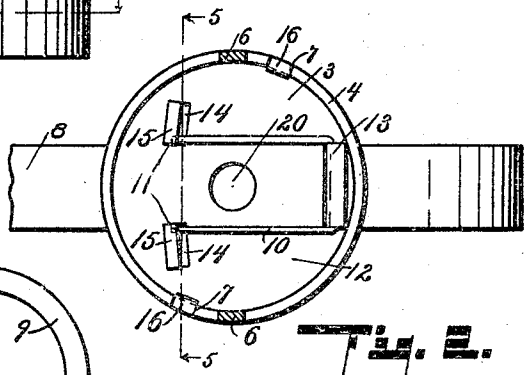

Fig. 2.

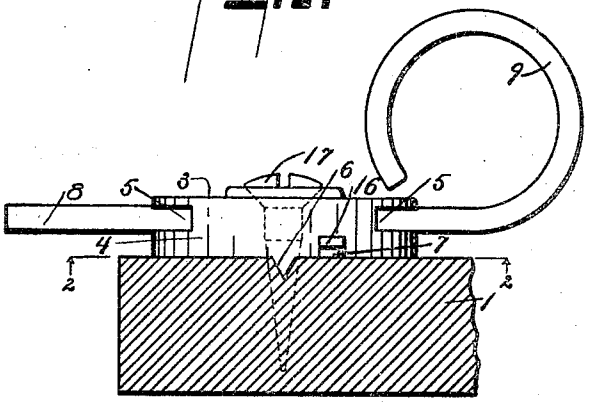

Fig. 3.

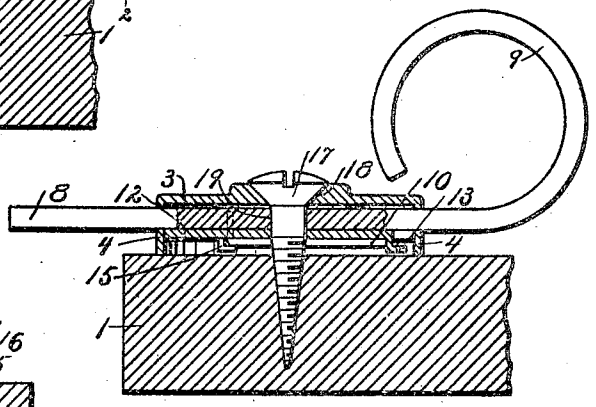

Fig. 4.

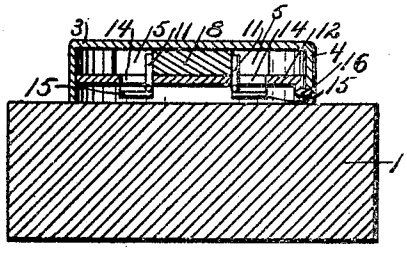

Fig. 5.

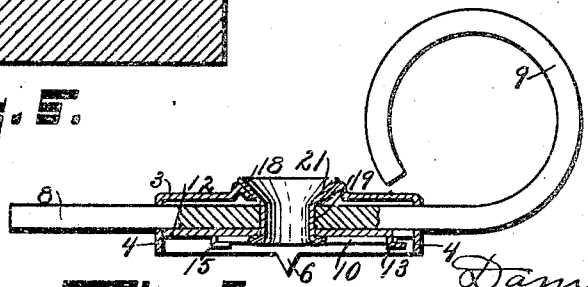

Fig. 6.

Witnesses

F. G. Tallman

Elora E. Braden

Inventor

Daniel W. Tower

By Chappell & Earl

Attorneys

D. W. TOWER.

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2 SHEETS—SHEET 2.

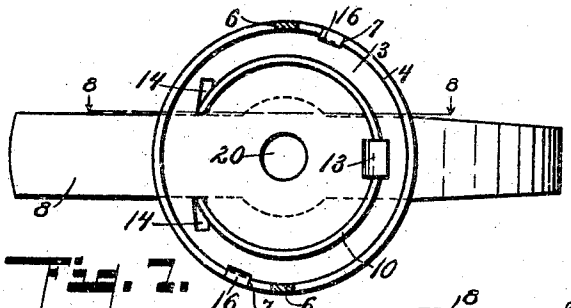

Fig. 7.

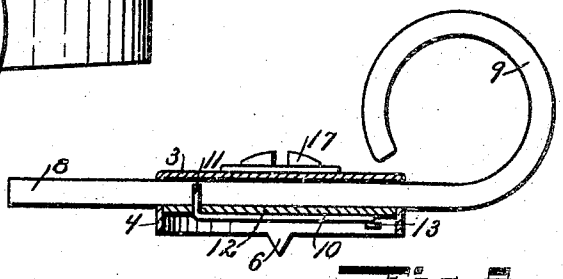

Fig. 8.

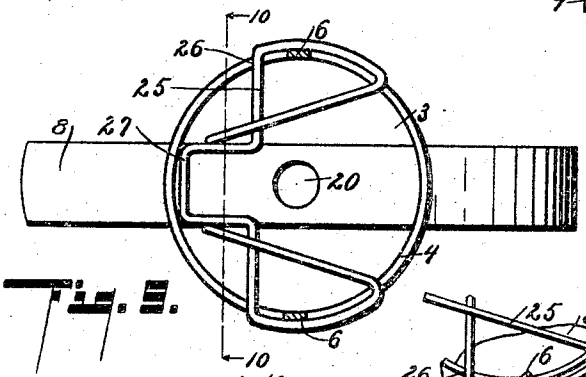

Fig. 9.

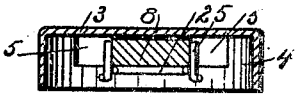

Fig. 10.

Fig. 13.

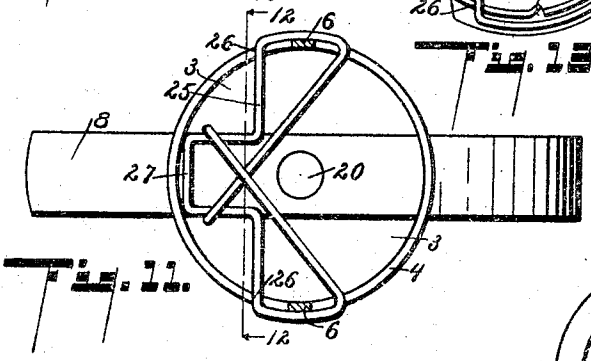

Fig. 11.

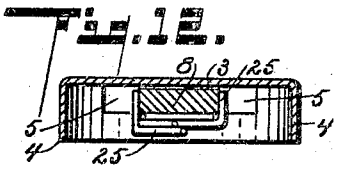

Fig. 12.

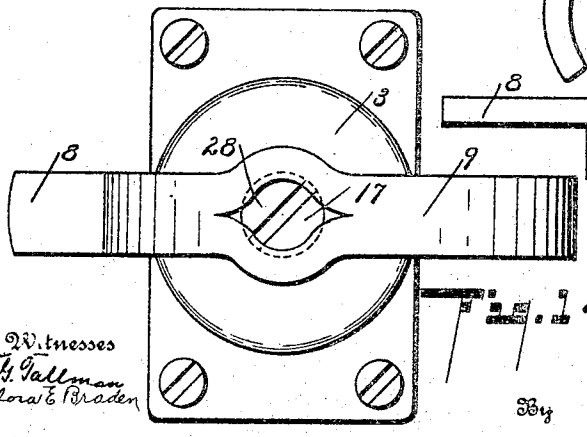

Fig. 14.

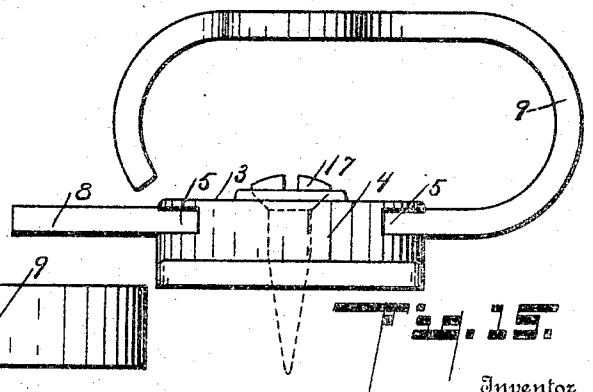

Fig. 15.

Inventor

Daniel W. Tower

By Chappell & Earl

Attorneys

Witnesses

F. H. Tallman

Clara E. Braden

UNITED STATES PATENT OFFICE.

DANIEL W. TOWER, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO GRAND RAPIDS BRASS COMPANY, OF GRAND RAPIDS, MICHIGAN.

LATCH.

949,862. Specification of Letters Patent. **Patented Feb. 22, 1910.**

Application filed April 3, 1909. Serial No. 487,699.

To all whom it may concern:

Be it known that I, DANIEL W. TOWER, a citizen of the United States, residing at the city of Grand Rapids, county of Kent, State of Michigan, have invented certain new and useful Improvements in Latches, of which the following is a specification.

This invention relates to improvements in latches.

The main objects of this invention are: First, to provide an improved latch which is very simple and compact in structure, and at the same time, one which is strong and durable. Second, to provide an improved latch in which the parts can be formed largely from sheet metal stampings. Third, to provide an improved latch which is economical in structure.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is a detail plan of a structure embodying the features of my invention. Fig. 2 is a detail section thereof, taken on a line corresponding to line 2—2 of Fig. 3. Fig. 3 is a side elevation of my improved latch applied to a door, the door being sectioned to show details of the attaching means. Fig. 4 is a detail, partially in section, on a line corresponding to line 4—4 of Fig. 1. Fig. 5 is a detail section taken on a line corresponding to line 5—5 of Fig. 2. Fig. 6 is a detail central section, the bolt being shown partially in full lines, of a modified construction, the modification being in the means for securing the parts together. Fig. 7 is an inverted view, corresponding to that of Fig. 2, of a further modification, the modification being mainly in the form of a spring. Fig. 8 is a sectional view, taken on a line corresponding to line 8—8 of Fig. 7. Fig. 9 is an inverted view, corresponding to that of Fig. 7, of a further modification, the modification residing in the means for securing the spring. Fig. 10 is a section, taken on a line corresponding to line 10—10 of Fig. 9. Fig. 11 is an inverted view, corresponding to that of Fig. 9, of a modified construction, the modification being in the arrangement of the spring. Fig. 12 is a detail sectional view, taken on a line corresponding to line 12—12 of Fig. 11. Fig. 13 is a detail perspective, showing the spring securing means of Fig. 9. Fig. 14 is a plan view of a further modification, the modification being in the form of the latch casing and in the hand piece of the latch bolt. Fig. 15 is a side elevation of the structure appearing in Fig. 14.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents the door and 2 the door casing.

The casing of my improved latch preferably consists of a latch plate 3 having an inturned flange 4 at its edge. The plate of the structure illustrated being round it with its flange forms a cylindrical casing. It is preferably formed of a sheet metal stamping. The casing is provided with oppositely-disposed slots 5 in its sides and with teeth 6 and notches 7 on its edges. The latch bolt 8 is arranged through these slots, the ends of the slots being preferably adapted to form stops for the bolt. The bolt is preferably formed of a strip of metal turned upwardly at its rear end to form the hand piece 9. The spring 10, which is preferably U-shaped in form as shown in Fig. 2, has laterally-projecting bolt-engaging ends 11. This spring is supported by the plate 12, which is provided with a spring-engaging tongue 13 adapted to engage the loop end of the spring, as is illustrated. The laterally-turned ends of the spring are arranged through the slots 14 in the plate to engage the edges of the bolt, as clearly appears in Fig. 5. The portions punched out of the plate to form the openings 14 are preferably adapted to form the retainers 15, under which the ends of the spring move. By this means, the spring is effectively supported so that it cannot become displaced in use, and the strain thereon is reduced to a minimum. The plate 12 is preferably provided with lugs 16 adapted to engage the notches 7 in the edge of the casing. This

prevents the turning of the plate within the casing. The casing is preferably secured by means of the screw 17, which is arranged through a central hole 18 therein, through the hole 19 in the bolt, and the hole 20 in the spring-supporting plate. As the teeth 6 prevent the turning of the casing, the single screw is found effective in securing the latch to the door, and the parts together and it also serves as the pivot for the bolt.

In the modified construction shown in Fig. 6, a hollow rivet 21 is arranged through the casing bolt and spring-retaining plate for securing the parts together. This rivet, being hollow, is adapted to receive the securing screw 17.

The keeper preferably comprises a base plate 22 adapted to receive the securing screws 23, having a suitable outwardly-projecting engaging member 24.

In the modified construction shown in Figs. 7 and 8, the form of the spring is changed slightly and the retainers 15 for the ends of the spring are omitted.

In the modifications shown in Figs. 9 to 13, inclusive, the spring-supporting plate is omitted, the spring 25 being passed through the notches 26 in the edge of the casing, whereby it is retained in position, an offset being preferably provided in the spring to engage the inside of the casing.

The structures of Figs. 11 and 12 differ from that of Figs. 9 and 10 only in the arrangement of the ends of the spring, which are crossed upon each other.

In the modification shown in Figs. 14 and 15, the casing is modified in form, it being shown adapted to receive a plurality of securing screws. In this construction, the hand piece of the bolt is extended over the casing and is provided with an opening 28 adapted to receive the pivot screw 17, as the hand piece overhangs the screw, the object of the opening being to provide a convenient assembling means.

My improved latch is very compact in structure and may be made of comparatively light material, and is, at the same time, very strong and durable. It is also adapted to be made largely of sheet metal stampings, as previously stated.

In the accompanying drawing, I have illustrated several modifications to show the general adaptability of my invention. Other modifications are possible and will be suggested thereby to those skilled in the art to which this invention relates.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination with a casing comprising a latch plate having an inwardly-projecting flange at its edge, said flange having oppositely-disposed slots therein and notches and teeth on its edge, said plate and flange being formed integrally of sheet metal; a latch bolt arranged through said slots in said flange, the ends of said slots forming stops therefor, said bolt being formed of a piece of metal turned outwardly to form a finger piece; a spring having laterally-turned ends; a spring-supporting plate having lugs to engage said notches in said casing plate flange arranged therein, said spring-supporting plate having openings therein through which the laterally-turned ends of said springs are arranged to engage said bolt, a spring securing tongue thereon, and retainers for the ends of said spring, arranged below said openings, said spring-supporting plate, spring-securing tongue and retainers being formed integrally of sheet metal; and a securing screw arranged through said casing plate, bolt and spring-supporting plate whereby the parts are secured in position and a pivot provided for the bolt.

2. The combination with a casing comprising a latch plate having an inwardly-projecting flange at its edge, said flange having oppositely-disposed slots therein and notches on its edge, said plate and flange being formed integrally of sheet metal; a latch bolt arranged through said slots in said flange; a spring having laterally-turned ends; a spring supporting plate having lugs to engage said notches in said casing plate flange arranged therein, said spring-supporting plate having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt, a spring securing tongue thereon, and retainers for the ends of said spring, arranged below said openings, said spring-supporting plate, spring-securing tongue and retainers being formed integrally of sheet metal.

3. The combination with a casing comprising a latch plate having an inwardly-projecting flange at its edge, said flange having oppositely-disposed slots therein and notches and teeth on its edge, said plate and flange being formed integrally of sheet metal; a latch bolt arranged through said slots in said flange, the ends of said slots forming stops therefor, said bolt being formed of a piece of sheet metal turned outwardly to form a finger piece; a spring having laterally-turned ends; a spring-supporting plate having lugs to engage said notches in said casing plate flange arranged therein, said spring-supporting plate having openings therein through which the laterally-turned ends of said springs are arranged to engage said bolt; and a securing screw arranged through said casing plate, bolt and spring-supporting plate whereby the parts are secured in position and a pivot provided for the bolt.

4. The combination with a casing comprising a latch plate having an inwardly-projecting flange at its edge, said flange having

oppositely-disposed slots therein and notches on its edge, said plate and flange being formed integrally of sheet metal; a latch bolt arranged through said slots in said flange; a spring having laterally-turned ends; and a spring-supporting plate having lugs to engage said notches in said casing plate flange arranged therein, said spring-supporting plate having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt.

5. The combination with a casing having a central opening therein and oppositely-disposed slots in the sides thereof and notches and teeth on its inner edge; a latch bolt arranged through said slots in said casing; a spring having laterally-turned ends; a spring supporting plate having lugs to engage said notches in said casing arranged therein, said spring-supporting plate having openings therein through which the laterally-turned ends of said springs are arranged to engage said bolt, a spring-securing tongue thereon, and retainers for the ends of said spring, arranged below said openings, and a securing screw arranged through said opening in said casing, said bolt and said spring-supporting plate whereby the parts are secured in position and a pivot provided for the bolt.

6. The combination with a casing having oppositely-disposed slots in the sides thereof and notches on its inner edge; a latch bolt arranged through said slots in said casing; a spring having laterally-turned ends; a spring-supporting plate having lugs to engage said notches in said casing arranged therein, said spring-supporting plate having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt, a spring-securing tongue thereon, and retainers for the ends of said springs, arranged below said openings.

7. The combination with a casing having a central opening therein and oppositely-disposed slots in the sides thereof and notches and teeth on its inner edge; a latch bolt arranged through said slots in said casing; a spring having laterally-turned ends; a spring-supporting plate having lugs to engage said notches in said casing arranged therein, said spring-supporting plate having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt; and a securing screw arranged through said opening in said casing, said bolt and said spring-supporting plate whereby the parts are secured in position and a pivot provided for the bolt.

8. The combination with a casing having oppositely-disposed slots in the sides thereof and notches on its inner edge; a latch bolt arranged through said slots in said casing; a spring having laterally-turned ends; and a spring-supporting plate having lugs to engage said notches in said casing arranged therein, said spring-supporting plate having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt.

9. The combination with a casing having a central opening therein and oppositely-disposed slots in the sides thereof and teeth on its inner edge; a latch bolt arranged through said slots in said casing; a spring having laterally-turned ends; a spring-supporting plate arranged in said casing, said spring-supporting plate having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt, a spring-securing tongue thereon, and retainers for the ends of said spring, arranged below said openings; and a securing screw arranged through said opening in said casing, said bolt and said spring-supporting plate whereby the parts are secured in position.

10. The combination with a casing having oppositely-disposed slots in the sides thereof; a latch bolt arranged through said slots in said casing; a spring having laterally-turned ends; and a spring-supporting plate arranged in said casing, said spring-supporting plate having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt, a spring-securing tongue thereon, and retainers for the ends of said spring, arranged below said opening.

11. The combination with a casing; a latch bolt; a spring having laterally-turned ends; a spring-supporting plate arranged in said casing and having openings therein through which the laterally-turned ends of said springs are arranged to engage said bolt, a spring-securing tongue thereon, and retainers for the ends of said spring, arranged below said openings; and a securing screw arranged through said opening in said casing, said bolt and said spring-supporting plate whereby the parts are secured in position.

12. The combination with a casing; a latch bolt; a spring having laterally-turned ends; and a spring-supporting plate arranged in said casing having openings therein through which the laterally-turned ends of said springs are arranged to engage said bolt, a spring-securing tongue thereon, and retainers for the ends of said spring, arranged below said openings.

13. The combination with a casing; a latch bolt; a spring having laterally-turned ends; a spring-supporting plate arranged in said casing and having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt; and a securing screw arranged through said opening in said casing, said bolt and said spring-supporting-plate whereby the parts are secured in position.

14. The combination with a casing; a

latch bolt; a spring having laterally-turned ends; and a spring-supporting plate arranged in said casing and having openings therein through which the laterally-turned ends of said spring are arranged to engage said bolt.

15. The combination with a casing comprising a latch plate having an inwardly-projecting flange at its edge, said flange having oppositely-disposed slots therein and teeth on its edge, said plate and flange being formed integrally of sheet metal; a latch bolt arranged through said slots in said flange, the ends of said slots forming stops therefor, said bolt being formed of a piece of sheet metal turned outwardly to form a finger piece; a spring for said bolt; and a securing screw arranged through said casing plate and bolt, whereby the parts are secured in position and a pivot provided for the bolt.

16. The combination with a casing comprising a latch plate having an inwardly projecting flange at its edge, said flange having oppositely disposed slots therein; a latch bolt arranged through said slots in said flange the ends of said slots forming stops therefor; a spring arranged to hold said bolt centrally of said slots and a securing screw arranged through said casing and bolt whereby the parts are secured and a pivot provided for the bolt.

17. The combination with a casing comprising a latch plate having oppositely-disposed slots in its side and teeth on its edge; a latch bolt arranged through said slots in said casing, said bolt being formed of a piece of metal turned outwardly to form a finger piece; a spring for said bolt; and a securing screw arranged through said casing and bolt, whereby the parts are secured in position and a pivot provided for the bolt.

18. The combination with a casing comprising a latch plate having oppositely disposed slots in its side, a latch bolt arranged through said slots in said casing, a spring for said bolt, and a securing screw for said casing arranged through said casing and bolt whereby the parts are connected and the casing secured in position and a pivot provided for the bolt.

19. The combination with a casing comprising a latch plate having teeth on its edge; a perforated latch bolt; a spring for said bolt; and a securing screw for said casing arranged through said casing and bolt said securing screw and teeth on said plate coacting to secure said casing in position.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

DANIEL W. TOWER. [L. S.]

Witnesses:
CATHERINE M. MCCARTHY,
H. M. BERTELSON.