May 1, 1951 C. M. GOSHE 2,551,534

TOGGLE LATCH MECHANISM

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FIG. 1.

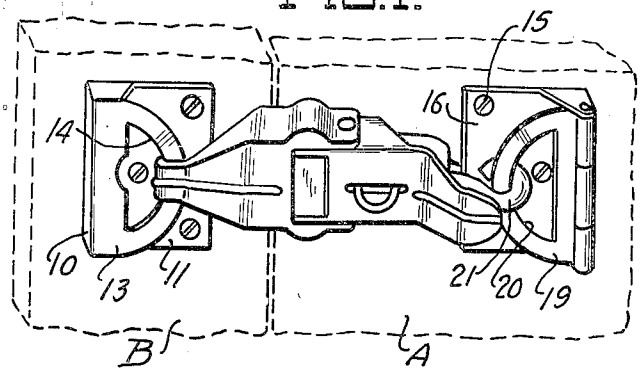
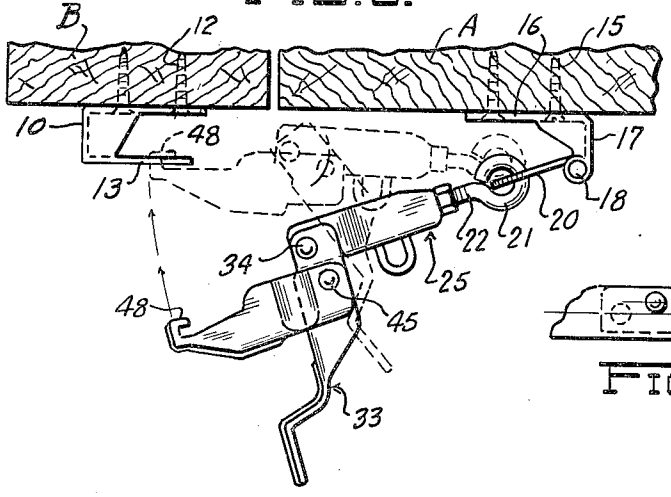


FIG. 2.



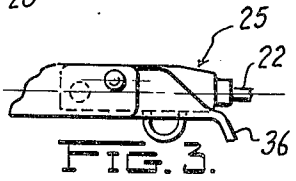


FIG. 3.

FIG. 4.

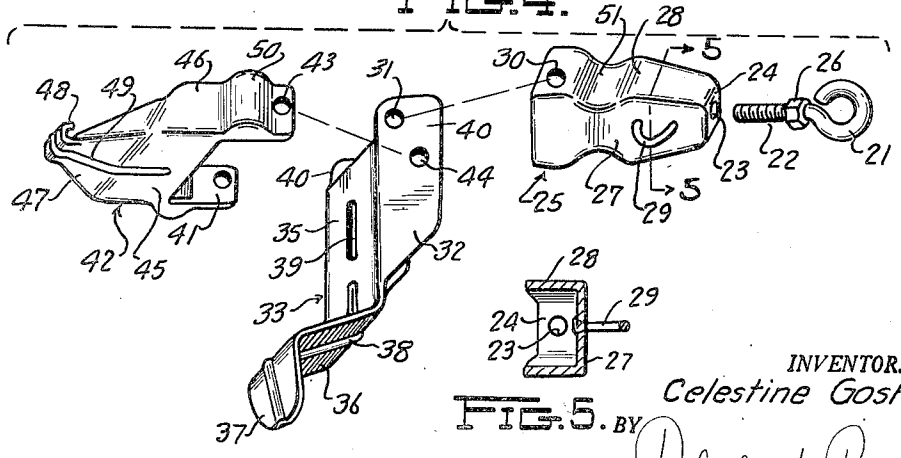


FIG. 5.

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TOGGLE LATCH MECHANISM

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1 Claim. (Cl. 292—113)

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This invention relates to latch mechanisms but particularly to door latch mechanisms involving toggle action.

An object is to produce a new and improved toggle action door latch, the parts of which are formed from sheet metal stampings, thus adapting the structure for economical quantity production.

Another object is to produce a toggle action door latch, the parts of which are formed from sheet metal stampings and designed for rigidity and sturdiness and ease of assembly and installation.

Another object is to produce a toggle action latch mechanism having the new and improved features of construction, arrangement and operation hereinafter described, and for purposes of illustration but not of limitation, an embodiment of the invention is shown on the accompanying drawings, in which

Figure 1 is a perspective view of the toggle latch mechanism with the parts in latched position and shown mounted on door panels;

Figure 2 is a top plan view of the latch mechanism applied to door panels, the latter being shown in transverse section, the latch being shown in full lines in unlatched position and in broken lines in latched position;

Figure 3 is a fragmentary plan view of the latch mechanism in the region of the toggle joints;

Figure 4 is an exploded view of the parts of the toggle latch mechanism showing the same in perspective view; and

Figure 5 is a transverse sectional view on the line 5—5 of Figure 1.

The illustrated embodiment of the invention comprises a pair of door panels A and B, a sheet metal keeper 10 having a mounting plate 11 being secured to the panel B by screws 12. Parallel with the mounting plate 11 and forming a rigid part of the keeper is a plate 13 which is of curvilinear form and has a sector shaped opening 14 to receive the hooked end of the latch, as will hereinafter be described.

Connected to the door panel A by screws 15 is a sheet metal mounting plate 16 having an integral flange 17 to which is pivotally connected by a hinge joint 18, an anchor member 19 which is likewise curvilinear in form and has a sector shaped opening 20. Engaging in the sector shaped opening 20 is a portion 21 of an eye bolt 22 having a screw-threaded shank which extends through an opening 23 in an end wall 24 of a sheet metal body member 25. On opposite sides

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of the end wall 24 are nuts 26 which secure the eye bolt in position and enable longitudinal adjustment thereof to meet the requirements of service. The body member 25 comprises a top wall 27 of sheet metal having a pair of integral side flanges 28 extending at substantially right angles from the top wall 27 and are rigidly secured to the end wall 24.

Fixedly secured, as by welding, to the rear portion of the top wall 27 is a staple 29 for a purpose hereinafter to be described. Each of the side flanges 28 has an aperture 30 in its inner end portion to register with apertures 31 on side flanges 32 of a toggle lever 33 similarly of sheet metal. Passing through the registering openings 30 and 31 is a rivet 34. The toggle lever is formed with a top wall 35 with which the flanges 32 are integral and from which they project at substantially right angles. At the inner end of the top wall 24 and integral therewith is a laterally and outwardly inclined handle portion 36 terminating in a substantially right angle finger piece 37, a rib 38 being formed in the finger portion 37 and handle 36 to increase the strength and rigidity thereof. In the top wall 35 is a longitudinally elongate slot 39 adapted to receive the staple 29 when the parts are in latched position, the staple being adapted to receive a padlock for positively locking the assembly in latched position. The apertures 31 are actually formed in integral extensions 40 of the flanges 32 and project beyond the adjacent end of the top wall 35.

Straddling the flanges 32 of the toggle lever 33 is a pair of flange end portions 41 integral with a sheet metal hook member 42. The end portion of the flange extensions 41 are formed with apertures 43 to register respectively with apertures 44 in the toggle lever flanges 32, the apertures 44 being spaced from the apertures 31 in the flange extensions 40 and laterally offset therefrom.

Passing through the registering sets of apertures 43 and 44 are rivets 45 respectively enabling relative pivotal movement between these parts. The hook member 42 is of sheet metal and has a flat top wall with which side flanges 46 extending at substantially right angles are integral with the opposite side. The outer portion of the top wall is tapered as indicated at 47 and inclines laterally in a direction toward the door panels, the side flanges being accordingly tapered. Formed at the extreme end of the tapered portion 47 is a hook member 48 and in order to reenforce the hook member and adjacent parts

a rib 49 extends longitudinally of the top and the hook member for this purpose.

The hook member 48 is adapted to engage in the sector shaped opening 14 of the keeper particularly as shown in Figures 1 and 2. After being engaged therein, upon rocking the toggle arm 33 to the right (Figures 1 and 2), the parts are drawn tightly together. Thus in the event of any irregularities in the positioning of the panels A and B, this may be compensated for by the toggle action which tends to draw these panels toward each other and into substantial alignment.

To accommodate the rivets providing the pivotal connection between the parts, the flange end portions 41 are outwardly curved as indicated at 50. Similarly, the side flanges 28 of the body member 25 are inwardly curved as indicated at 51. This obviates any possible interference during the rocking movement of the pivotally mounted parts, as will be readily apparent.

From the above description, it will be manifest that I have produced an exceedingly simple and efficient toggle latch mechanism which is formed practically entirely from stampings thereby enabling the structure to be economically formed on a quantity basis. The flange-like structure of the component parts greatly adds to the strength and rigidity of the structure, assisting in militating against unwarranted actuation of the assembly when in locked position since access to the pivotal mountings is, to a large extent, concealed. The structure can be readily assembled and in view of its extreme simplicity, the liability of faulty operation is eliminated.

It is to be understood that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claim.

What I claim is:

A toggle latch mechanism comprising a sheet metal hook member having a top wall, a hook integral with the outer end of said top wall, flanges integral with opposite sides of said top wall and having end portions extending beyond the inner end of the top wall, a sheet metal toggle lever having a top wall, a handle portion integral with the inner end of said last top wall and extending laterally thereof, flanges integral with opposite sides of said last top wall and having outwardly extending end portions to fit respectively between said first end portions, pivot means respectively connecting the flange end portions of the hook member to the toggle lever flanges at points spaced from the toggle lever flange end portions, a sheet metal body portion having a top wall, flanges integral with opposite sides of said last top wall, said last flanges fitting between the toggle lever flange end portions, pivot means connecting the inner end of said body flanges to the flange end portions of said toggle lever member, outwardly curved regions on the end portions of the hook flanges to accommodate the pivot connection between the toggle lever member and the body portion flanges, inwardly curved regions on the body portion flanges to accommodate the pivot connection between the toggle lever member and the hook flange end portions, an integral outer end wall for said body member, an eye bolt connected to said end wall, and an anchor member for connection to a door frame having a hingedly mounted element receiving the eye of the eye bolt.

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