Oct. 6, 1970 L. R. POE 3,532,373

LINK OPERATED OPPOSED JAW LATCH

Filed Nov. 21, 1968

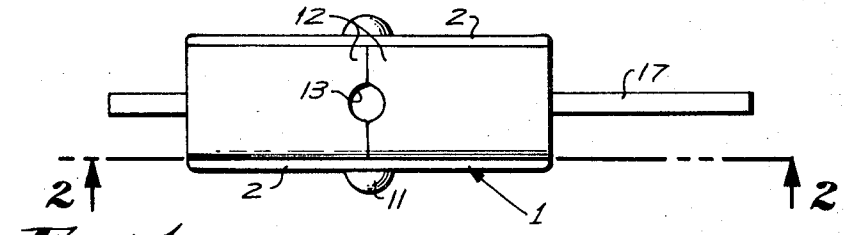

FIG. 1

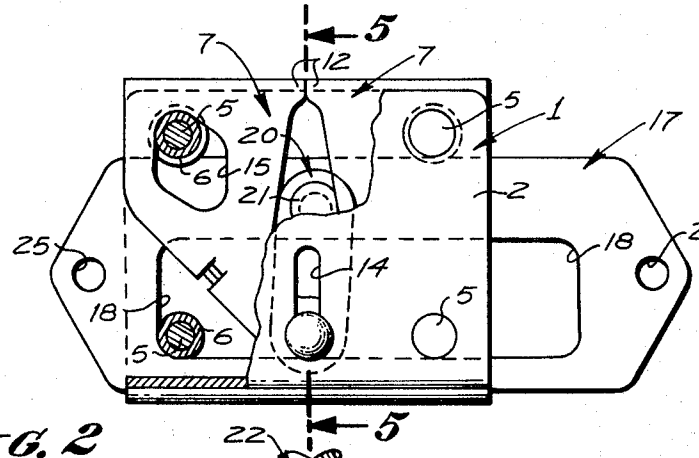

FIG. 2

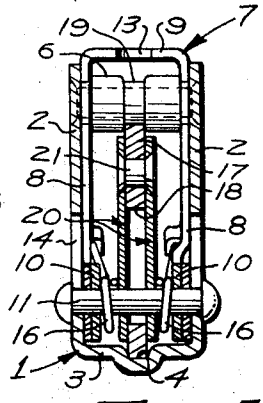

FIG. 5

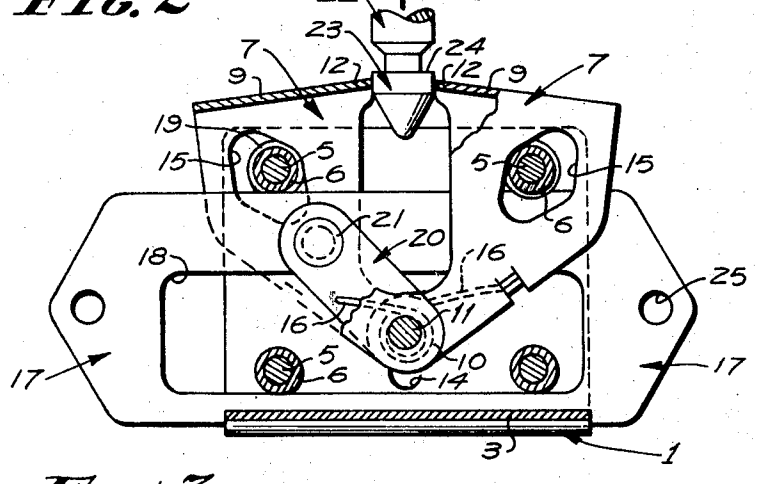

FIG. 3

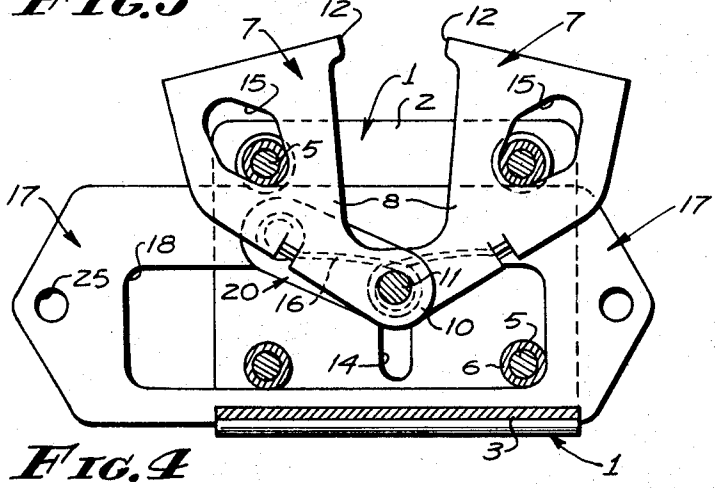

FIG. 4

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LINK OPERATED OPPOSED JAW LATCH

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ABSTRACT OF THE DISCLOSURE

An opposed jaw latch having a laterally movable slide which may be linked to slides of companion latches; the slide being movable in a housing containing a pair of extensible and retractable, as well as relatively pivotable, opposed jaw members joined to the slide by a link to effect movement of the jaw members, upon lateral reciprocation of the slide, between a closed or bolt locking position, an intermediate bolt receiving position, and an open position.

BACKGROUND OF THE INVENTION

The present invention is related to the following copending applications: Opposed Jaw Latch, Ser. No. 762,306, filed Sept. 16, 1968, Lloyd Richard Poe et al.; and Opposed Jaw Latch, Ser. No. 775,327, filed Nov. 13, 1968, James E. Brockway.

These latches as well as the present latch have in common a pair of opposed latch jaws which receive a shouldered latch bolt and are operated by a reciprocable slide intended to be linked with similar latches to work in unison. They differ, however, in construction of the latch jaws, the slide and the connection therebetween.

SUMMARY OF THE INVENTION

The objects of this invention include:

First, to provide an opposed jaw latch in which a pair of opposed keeper jaws move between a retracted bolt locking position, and an extended bolt releasing position through an intermediate yieldable bolt receiving position in response to a transversely movable slide.

Second, to provide an opposed jaw latch which is intended primarily for use in sets; that is, the slides of a pair or more of the latches are interconnected so that the latches of a set are operated in unison.

Third, to provide an opposed jaw latch wherein the principal parts such as the housing, keeper jaws, slide and link may be formed of inexpensive stampings.

DESCRIPTION OF THE FIGURES

FIG. 1 is a top view of the opposed jaw latch, shown in its closed position.

FIG. 2 is a partial sectional, partial elevational view thereof, the sectional portion being taken through 2—2 of FIG. 1, and the latch being shown in its closed position.

FIG. 3 is a partial sectional, partial elevational view thereof, corresponding to FIG. 2, with the latch being shown in an intermediate position for yieldably receiving a mating bolt.

FIG. 4 is another partial sectional, partial elevational view thereof, corresponding to FIG. 2, showing the latch in its fully open position.

FIG. 5 is a transverse sectional view, taken through 5—5 of FIG. 2.

SPECIFICATION

The opposed jaw latch includes a housing 1, preferably formed of sheet metal and U-shaped in cross section, to provide a pair of parallel sides 2, joined by a connecting

web 3. Formed centrally in the connecting web is a guide channel 4. The sides or side plates 2 are joined by a set of four rivets 5, provided with spacing and guide sleeves 6. The rivets are arranged near the margins of the side plates 2 and define the corners of a rectangle.

The housing 1 receives a pair of keeper jaw members 7, each of which is U-shaped in cross section, and includes a pair of side flanges 8, joined by a connecting web 9. The side flanges 8 terminate in overlapping pivot connections 10, which receive a pivot shaft 11, so that the keeper jaw members are pivotable about a common axis.

The confronting ends of the two webs 9 form jaw elements 12, which define therebetween a bolt receiving opening 13.

The side plates 2 are provided with a pair of slots 14, perpendicular to the connecting web 3 and adjacent thereto. The slots 14 receive the ends of the pivot shaft 11, which are preferably provided with heads so as to be retained in the housing. The side flanges 8 are provided with pairs of slots 15, which accommodate the pair of rivets 5 and guide sleeves 6, remote from the connecting web 3. The slots 15 have axes which converge toward the slots 14, and are so arranged that when the pivot shaft 11 is at its lowest position, adjacent the connecting web 3, the slots 15 force the jaw elements 12 into mutual engagement, as shown in FIG. 2. When the pivot shaft 11 is at its opposite extreme position in the slots 14, as shown in FIG. 4, the slots 15 and their corresponding rivets hold the jaw elements in their open position. Intermediate their extremities, the slots 15 are widened so that the jaw elements 12 are free to move to or from each other. Springs 16, wrapped about the pivot shaft 11 and anchored in the side flanges 8, urge the jaw elements 12 toward each other.

The housing 1 receives a slide 17 in the form of a flat plate, one edge of which rides in the channel 4. The slide 17 is provided with a rectangular clearance aperture 18, which receives the lowermost set of rivets 5 and their guide sleeves; that is, the rivets adjacent the connecting web 3. The aperture 18 is of sufficient width to expose the slots 14 in the housing, so as to permit the desired movement of the pivot shaft 11. The upper margin of the slide remote from the web 3 and its channel 4 is held against lateral displacement by guide grooves 19, provided in the sleeves 6 which receive the upper set of connecting rivets 5.

The slide 17 is connected to the pivot shaft 11 by a pair of links 20, disposed on opposite sides of the slide and joined through the slide by a pivot pin 21. The links cause the keeper jaw members 7 to move between the position shown in FIG. 2 and the position shown in FIG. 4 when the slide 17 is reciprocated.

The opposed jaw latch is intended to engage a bolt 22, having a head 23, forming a retention shoulder 24, as shown in FIG. 3 of the drawings.

Operation of the opposed jaw latch is as follows:

It is intended to use a pair or more of the latches and operate them in unison to engage corresponding bolts 22. The slides 17 of the set of latches are joined together by any suitable linkage, holes 25 being provided in the extremities of the slides for this purpose.

When the slide 17 of each latch is in one extreme position, as shown in FIG. 2, the jaw elements 12 are held in their mutually contacting or closed position in which the opening 13 fits around the head of the bolt, and the margins of the jaw elements engage the shoulder 24. When the slide 17 is moved to its opposite extreme position, as shown in FIG. 4, the jaw elements 12 are held in their open position so that the bolt may pass freely between the jaw elements in either direction. When the slide is in the intermediate position, shown in FIG. 3, the jaw ele-

ments tend to occupy their mutually closed position, represented in FIG. 2, by action of the springs **16**. However, the head of the bolt which may be pointed functions as a cam to spread the jaw elements until the head **23** passes therebetween permitting the jaw elements to close behind the shoulder **24**.

While particular embodiments of this invention have been shown and described it is not intended to limit the same to the details of the constructions set forth, but instead, the invention embraces such changes, modifications and equivalents of the various parts and their relationships as come within the purview of the appended claims.

I claim:

1. An opposed jaw latch adapted for engagement with a bolt, said latch comprising:

(a) a housing having a spaced side plates;

(b) a pair of jaw members mounted therebetween, each jaw member including a pair of side flanges positioned adjacent said side plates and a web joining said side flanges and forming a jew element confronting the jaw element of the other jaw member;

(c) pin and slot means including pivot pins extending through said side plates and side flanges and slots for said pins formed in said side plates and side flanges, said pins and slots being so located as to effect relative pivotal movement of said jaw members upon translatory movement thereof relative to said housing for causing said jaw elements to engage and disengage said bolt;

(d) a slide reciprocable in said housing transversely to the translatory movement of said jaw members;

(e) and a link means joining said slide and jaw members to cause opening and closing of said jaw elements with respect to said bolt.

2. A latch, as defined in claim **1**, wherein:

(a) said pin and slot means includes a movable pin journalling said jaw members about a common axis; slot means receiving said housing side plates defining the translatory path of said jaw members; a pair of fixed pins secured in said housing, and slot means in said jaw members converging toward said movable pin.

3. A latch, as defined in claim **2**, wherein:

(a) spring means urges said jaw members toward their closed positions;

(b) and the slot means in said jaw members being laterally enlarged intermediate their ends to permit yieldable spreading of said jaws by said bolt when said jaw members are in an intermediate position with respect to said fixed pins.

4. An opposed jaw latch adapted for engagement with a bolt, said latch comprising:

(a) a housing including a pair of side plates;

(b) guide and spacing means securing said side plates in spaced relation;

(c) a pair of jaw members, each including a pair of side flanges disposed adjacent said side plates, and a latch jaw element connecting said side flanges;

(d) a pivot pin pivotally connecting said jaw members for movement of said jaw elements to and from each other to engage and disengage said bolt;

(e) said pivot pin to permit translatory movement of said jaw members;

(f) the side flanges of said jaw members having slots to receive selected guide and spacing means to effect relative movement of said jaw elements to and from each other on sliding movement of said pivot pin in its slots;

(g) a slide member apertured to receive said guide and spacing means and reciprocable in a direction transverse to the translatory movement of said jaw members;

(h) and link means connecting said slide member and said jaw members to effect operation of said jaw members on reciprocation of said slide member.

5. A latch, as defined in claim **4**, wherein:

(a) springs interconnect said jaw members to urge said jaw elements toward locking engagement with said bolt;

(b) and the slots in the side flanges of said jaw members are dimensioned at their extremities to fix said jaw elements in their open or closed positions upon fixing said slide in corresponding positions, and said slots being widened intermediate their ends to permit spreading of said jaw members in opposition to said spring when said slide is fixed in an intermediate position thereby to permit forcing said bolt between said jaw elements.

6. A latch, as defined in claim **4**, wherein:

(a) said housing and jaw members being formed of sheet metal and being U-shaped in cross section.

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