

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 824 175 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
18.02.1998 Bulletin 1998/08

(51) Int Cl.⁶: **E05C 1/06**, E06B 11/02,
E06B 9/02

(21) Application number: **97306055.1**

(22) Date of filing: **08.08.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**

Designated Extension States:
AL LT LV RO SI

(30) Priority: **09.08.1996 GB 9616786**

(71) Applicant: **Hago Products Limited**
Bognor Regis, West Sussex PO22 9RD (GB)

(72) Inventor: **Watkins, Barry James**
Fontwell BN18 OSP (GB)

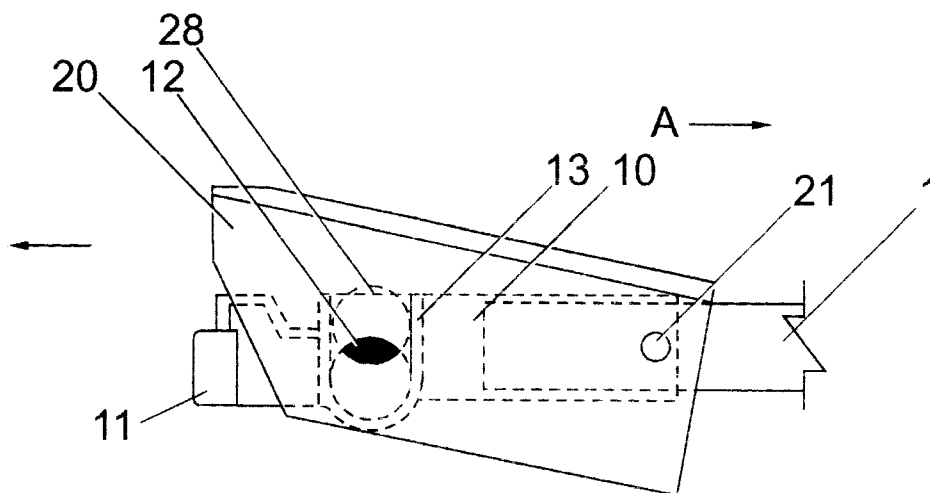
(74) Representative: **Pacitti, Pierpaolo A.M.E. et al**
Murgitroyd and Company
373 Scotland Street
Glasgow G5 8QA (GB)

(54) **Catch**

(57) A catch for a gate, for example a child safety gate, is disclosed, the catch having a bolt moveable between a locked position and an unlocked position such that downward pivotal movement of a handle which co-operates with the bolt causes the bolt to engage with an

upright member of a door frame. In this way the gate is secured across a doorway. The catch has the advantage that it can be adjusted to provide maximum force transmission to the axial movement of the bolt at later stages of engagement with the upright member.

Fig. 2



EP 0 824 175 A2

Description

This invention relates to a catch, and particularly to a catch for use with child safety gates.

Most child safety gates of conventional design require wall mountings to fix the gate to a wall. In many instances it is inconvenient or difficult to mount child safety gates permanently, e.g. in doorways, and force-mounted designs of child safety gates have emerged in recent years which are held in place in a doorway for example by lateral force exerted by the gate on the jambs of the doorway (or other upright structure). In the absence of sufficient force, the gate can become dislodged, and such gates preferably have a lever arrangement on the top rail of the gate to move a bolt (generally laterally of the gate) thereby locking the gate in use. However, even lever-locked gates can often lack sufficient lateral force to meet safety standards when closed, since the lever is often designed to lock after a position of maximum applied force has been passed, so that the lever does not apply the maximum force to the frame when locked.

According to the present invention there is provided a catch for a gate, the catch comprising a bolt which is moveable between a locked position in which it can engage a member to resist movement of the gate and a free position in which it can be disengaged from said member, and an actuator which can move the bolt between the free and locked positions, such that a given movement of the actuator produces variable extents of movement of the bolt.

Optionally, for constant rates of movement of the actuator, the bolt moves more when at or adjacent its free position than when adjacent its locked position. Additionally, for a given constant force exerted by the actuator, the force with which the bolt moves is less when at or adjacent its free position than when adjacent its locked position. Thus, a greater force can be transmitted to or by the bolt at the end of its travel when it contacts the member against which the gate locks, and the rate of movement of the bolt is greatest when furthest from the member.

Preferably the bolt moves in an axial manner, optionally along the top bar of the gate.

Optionally, the catch also comprises locking means to lock the bolt in the locked position, for example by maintaining the force of the actuator against the bolt.

An embodiment of the present invention will now be described by way of example only, and with reference to the accompanying drawings, in which:

Fig 1 is an exploded view of the components of a catch of the present invention;

Fig 2 is a side view of a catch in an open position;

Fig 3 and Fig 4 are side views of the catch in sequential steps leading to closing; and Fig 5 is a side view of the catch in the closed position.

Referring now to the drawings, a catch is mounted on a top bar 1 of a gate (not shown). The catch comprises a bolt 10, one end of which 10a is hollow and receives a portion of the bar 1 so that the bolt 10 is slidable axially along the bar 1. Flaps 11 (only one shown) are attached at each lateral side of the bolt 10 at its opposite end 10b and extend a few millimetres from the end 10b of the bolt 10. In use, flaps 11 engage an upright member of the gate frame (not shown) so as to lock the gate in position. In the mid-section of the bolt 10, a pair of hemispherical or spherical buttons 12 (or other appropriate shapes) protrude in opposite directions from opposite lateral sides of the bolt 10. Each button 12 is movable in a lateral direction with respect to the bolt 10 under the force of a spring (not shown) such that in the absence of any force pushing them together, the buttons are forced outwards from the lateral sides of the bolt 10. The buttons 12 are maintained within the bolt 10 by a U-shaped collar 13 on each lateral side of the bolt 10.

The bolt 10 is attached to the bar 1 by a spring (not shown) which is held in tension thereby pulling the bolt 10 and bar 1 together such that the bolt is urged in the direction A shown in the drawings.

A handle 20 is generally U-shaped in end view and has apertures 28 in the lateral sides. Handle 20 is pivotally mounted on bar 1 at pivot point 21, although a separate embodiment of the invention might allow the handle 20 to move in a sliding manner (e.g. orthogonally) with respect to the bar 1. The handle 20 has a profiled edge 22 which is inclined from a lower edge 23 at a constant angle along a first portion 24 and is curved along a second portion 25. The curved section 25 has a variable radius. The profiled edge 22 could equally comprise two (or more) portions inclined at constant (but mutually different) angles, or a curved section adjacent the lower edge with a straight section adjacent the upper edge 26. Alternatively, the end 22 could be formed as a curve from lower edge 23 to upper edge 26. Such a curve could have a constant radius, or a radius which changes (eg decreases) from the lower edge 23 to the upper edge 26.

The bolt 10 is located on the bar 1 and attached thereto by the spring (not shown). The handle 20 is attached to the bar 1 at pivot point 21, and downward pivotal movement of the handle 20 engages the edge 22 against the flaps 11 at portion 24. Further downward pivotal movement of the handle 20 forces the end portion 24 to slide past the flaps 11, thereby forcing the bolt 10 to move axially against the spring tension in the direction B shown in the drawings and moving the flaps 11 towards the upright member of the frame (not shown). Movement of the bolt in response to a constant rate of downward movement of the handle 20 continues at a constant (high) rate and with (minimal) force provided that the portion 24 is inclined at a constant angle. Once the flaps 11 move past portion 24 into portion 25 for a given downward pivotal movement of the handle 20 the bolt 10 will be moved by a relatively smaller amount and

with greater force. For a given downward pivotal movement of the handle 20, a smooth transition curve on edge 22 will produce a rate of movement of the bolt 10 which gradually decreases as the force with which the bolt 10 moves increases. When the handle 20 is at the end of its travel and is parallel to the bar 1, the buttons 12 protrude from the U-shaped collar 13 through the holes 28 in the handle 20 and are held in that position by the spring (not shown), thereby preventing further movement of the handle 20 and retraction of the bolt 10 by the spring tension. Thus, when the handle 20 is pushed to its parallel position, the bolt 10 is locked against the upright member (not shown). The buttons 12 can be depressed simultaneously against the force of the spring(s) not shown, so that the handle 20 can be raised and the bolt 10 can be retracted by the spring (not shown).

Advantages of the present invention are that the profile of the edge 22 of the handle 20 can be adjusted to provide maximum force transmission to the axial movement of the bolt 10 at later stages of engagement with the upright member to which the gate is locked in use. (In this example, Fig 4 shows the position in which maximum force is applied.) Additionally, the profile can be adjusted to allow maximum movement of the bolt with minimum force transmission in the early stages of engagement (such as the stage seen in Fig 3 in this example) when the bolt is required to close up large gaps between the upright member and the gate, but is not required to exert extreme force on the upright member. Additionally, the bolt can be locked in position at its point of maximum force transmission.

Modifications and improvements can be incorporated without departing from the scope of the invention.

Claims

1. A catch for a gate, the catch comprising a bolt which is moveable between a locked position in which it can engage a member to resist movement of the gate and a free position in which it can be disengaged from said member, and an actuator which can move the bolt between the free and locked positions, such that a given movement of the actuator produces variable extents of movement of the bolt.
2. A catch as claimed in Claim 1 wherein for constant rates of movement of the actuator, the bolt moves more when at or adjacent its free position than when adjacent its locked position.
3. A catch as claimed in either one of Claims 1 or 2 wherein for a given constant force exerted by the actuator, the force with which the bolt moves is less when at or adjacent its free position than when adjacent its locked position.
4. A catch as claimed in any one of Claims 1 to 3 wherein the bolt moves in an axial manner.
5. A catch as claimed in Claim 4 wherein the bolt moves along the top bar of the gate.
6. A catch as claimed in any one of the preceding Claims wherein the catch also comprises locking means to lock the bolt in the locked position.

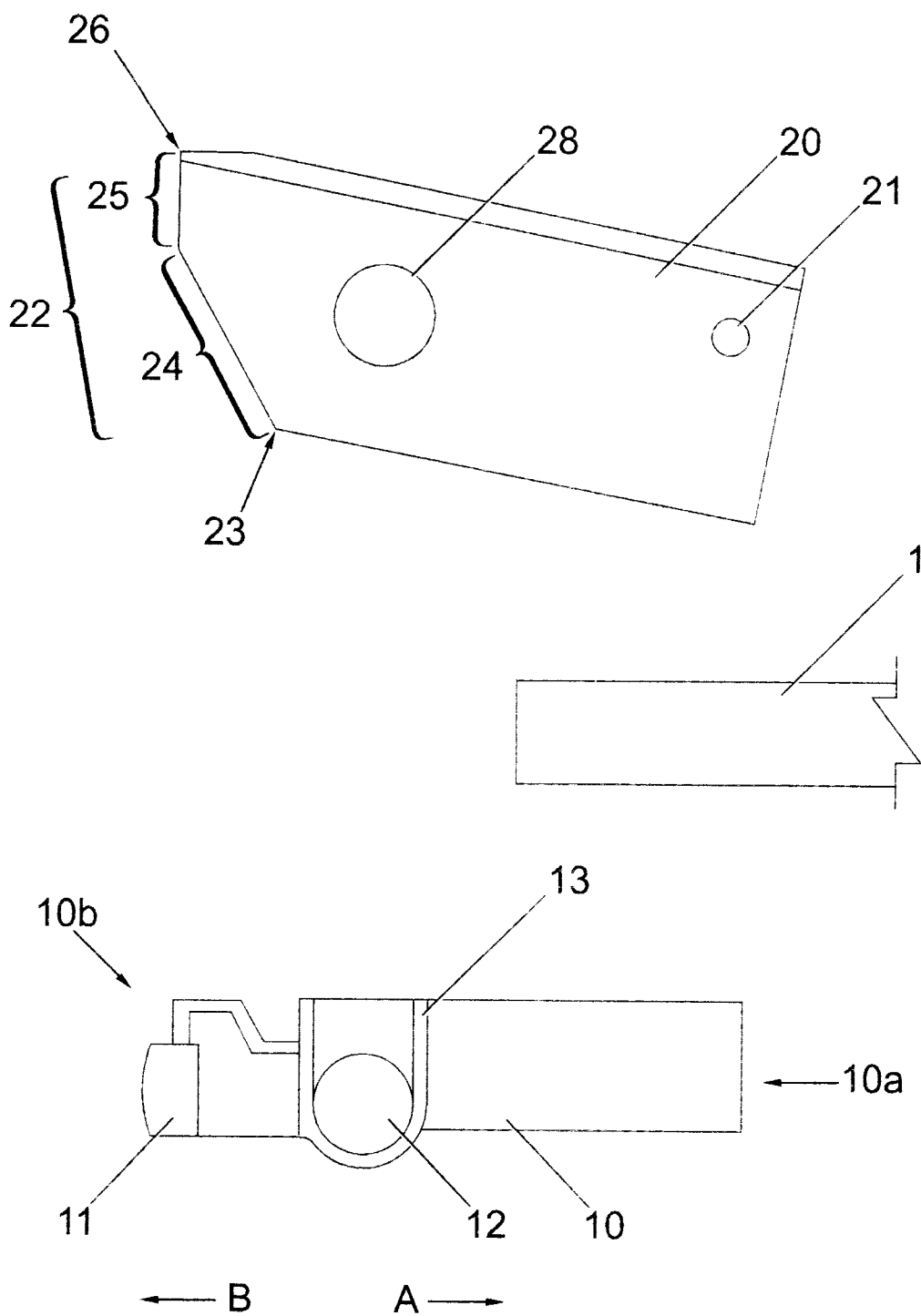


Fig. 1

