Aug. 12, 1924. 1,504,316

H. BEAUCHAMP

DOOR LATCH

Filed Sept. 21. 1920

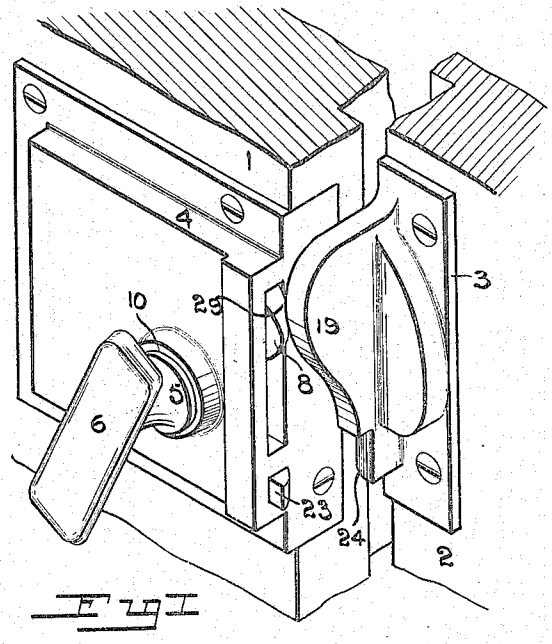


Fig I

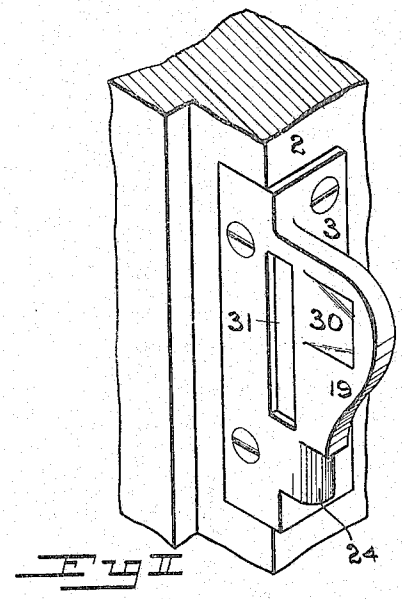


Fig II

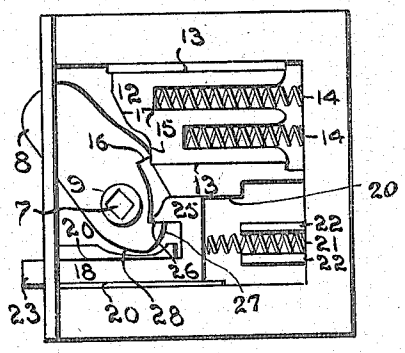


Fig III

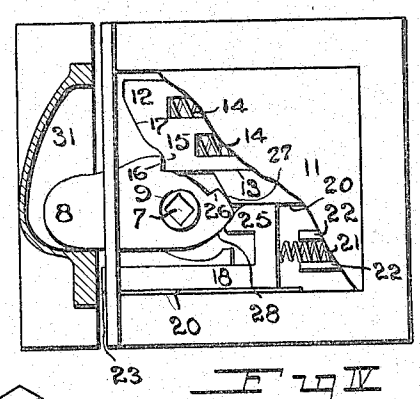


Fig IV

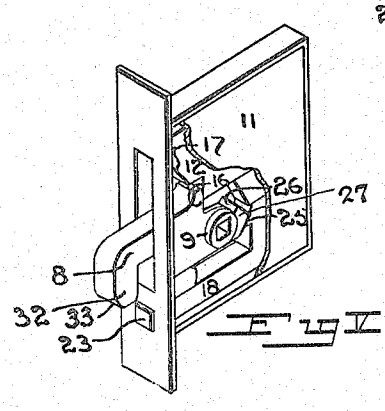


Fig V

INVENTOR:
Hedley Beauchamp.

By

his ATTORNEY.

Patented Aug. 12, 1924. 1,504,316

UNITED STATES PATENT OFFICE.

HEDLEY BEAUCHAMP, OF JOHANNESBURG, TRANSVAAL, SOUTH AFRICA.

DOOR LATCH.

Application filed September 21, 1920. Serial No. 411,806.

To all whom it may concern:

Be it known that HEDLEY BEAUCHAMP, a British subject, residing at corner of Scholtz Avenue and Cicely Road, Norwood, Johannesburg, Transvaal Province of the Union of South Africa, has invented certain new and useful Improvements in Door Latches, of which the following is a specification.

The present invention has reference to latches of the kind suitable for securing the doors of railway carriages and the like, and especially to such latches in which the release of the bolt to move to its locking position is controlled by a trigger which is actuated by contact with the striking plate on the standing pillar.

An object of the invention is to obviate the wear between the trigger and the striking plate due to their vibration against one another, which soon so alters the position of the trigger relative to the latch as to render it inoperative.

A further purpose is to construct such a latch having a pivoted bolt which is operated freely and positively by its propelling spring upon release by the trigger.

The invention is illustrated in the accompanying drawings in which—

Fig. I shows part of a carriage door and standing pillar provided with a latch constructed according to this invention.

Fig. II is a different view of the striking plate of Fig. I.

Fig. III shows the same latch from the opposite side and with its cover plate removed.

Fig. IV is a similar view with parts differently positioned.

Fig. V shows the latch arranged for a sliding door.

Referring to Figs. I to IV, 1 indicates part of a carriage door, and 2 a part of the adjacent standing pillar. On the latter is fixed the striking plate 3, and on the door is secured the latch comprising a case 4.

Rotatably mounted in the case 4 is a handle spindle 5 on which are fixed the handles 6, and which is squared to engage in the square hole 7 in the latch bolt 8. Said bolt is formed with flanges 9 which are rotatably supported in bearings 10 in the casing 4 and the casing cover 11.

The bolt is urged towards its locking position by means of a follower 12 mounted to slide between guide surfaces 13 and fitted with springs 14 which bear against the end wall of the casing to press it forward. A surface 15 on said follower engages a lug 16 on the bolt to rotate said bolt forwardly, said lug being well spaced from the centre of rotation of the bolt so as to provide an effective turning moment on the latter with a minimum of friction. The follower is formed with a surface 17 which forms a stop to limit the movement of the bolt when retracted.

In accordance with the usual railway practice, the bolt is adapted, upon being released when the door is open, to be held in a position of half lock, (Fig. III) from which it is capable of being fully retracted by contact with the striking plate 3, upon the door being slammed; and it moves to its fully extended locking position (Fig. IV) only when the trigger 18 is pressed inwards by contact with the striking plate 3. The striking plate is correspondingly formed with a recessed outward extension 19 forming a safety catch which prevents the door from swinging open should it be not fully closed or should it be partly opened without the handle being fully retracted. In order to open the door completely the handle must be held retracted until the bolt 8 has fully passed said safety catch 19.

The bolt is held in this position of half lock by means of the trigger 18, which is shown as an L shaped member, arranged to slide between guide surfaces 20. A spring 21 seated between ribs 22 in the casing, urges the trigger outwards so that its nose 23 extends beyond the casing 4 and into the path of part 24 of the striking plate. At 25 the trigger is formed with a pawl arranged to engage a stop 26 on the bolt so positioned that when said pawl and said stop are engaged, the bolt is at half lock. The end 25 of the trigger is directly supported by a guide surface 34 to ensure that said end cannot be displaced by the pressure of the bolt and so release the latter.

Beyond said stop 26 the bolt is formed with a curved surface 27 which is cam shaped with an increasing radius from the centre of rotation of the bolt so that, upon extending movement of the bolt, said surface 27 not only holds the trigger retracted, but additionally moves it inward to ensure its being held free from contact with the striking plate 3, as shown in Fig. IV.

Beyond said cam surface 27 is an opposite cam surface 28 which is engaged by

the back of the pawl 25 and assists to retain the bolt in its extended position.

The operation of the lock is accordingly as follows:

When the door is open, the bolt 8 is held at half lock by the trigger pawl 25, Fig. III. Upon the door being slammed, the bevelled surface 29 of the bolt engages the extremity of the safety lock 19, so causing the bolt to be thrust up to pass said extremity, whereafter the bolt springs back to the half lock position, and engages in the safety catch; the trigger nose 23 then standing free from the striking plate. If the door is slammed with sufficient force completely to close it, during its further inward movement it causes the bolt to slip up over the inclined surface 30 at the back of the safety catch, and to come opposite the main locking slot 31. When this happens the nose 23 of the trigger impinges upon the surface 24 of the striking plate, whereby the trigger is thrust in sufficiently far to release its pawl 25 from the stop 26 on the bolt, whereupon the latter is projected by its follower 12 and falls into full lock in the main locking slot 31. The nose of the trigger would ordinarily remain in contact with the surface 24 of the striking plate, and with the jarring and vibration of the door would become worn and eventually fail to release the bolt. As the bolt falls into its main locking position however, its cam surface 27 engages the pawl 25 of the trigger, and thrusts the trigger back clear of the striking plate 3. Upon the bolt next being lofted to open the door and the door being partly or fully opened, the trigger again engages the bolt to hold the same at half lock. When the bolt 8 is fully extended, the pawl slips slightly forward and engages the cam surface 28 Fig. IV thus assisting the follower 12 to hold the bolt securely in its extended position. Moreover the follower then exerts its pressure in the most effective direction on the bolt, this itself retaining the bolt firmly notwithstanding the decreased pressure of the springs 14 due to their extension.

By forming the bolt with a hook end 32 as shown in Fig. V the lock is adapted for use with a sliding door. In this case, as the half lock is not required the stop 26 and pawl 25 would usually be so positioned as to hold the bolt fully retracted. The corner 33 of the bolt in this case may be bevelled to enable it to be lifted by contact with the striking plate to engage the same.

I claim:

1. A latch having a spring extended latch bolt, a spring extended trigger adapted to be thrust in by contact with a fixed part, said trigger being adapted, when extended, to retain the bolt in a retracted position, and when thrust in to release said bolt said bolt when extended holding said trigger retracted from contact with the fixed part when the door to which the latch is attached is closed.

2. In a latch, a spring extended latch bolt, a spring extended trigger adapted to be thrust in by contact with a fixed part, co-acting means, on the trigger and bolt whereby the trigger when extended can hold the bolt retracted, said co-acting means being disengaged when the trigger is thrust in, and means operative upon further extending movement of the bolt past its releasing position for additionally retracting the trigger.

3. A latch having a spring extended pivoted bolt formed with a stop, and a spring extended trigger adapted to be thrust in by contact with a fixed part and adapted to engage said stop to hold the bolt retracted, the bolt having a cam surface which, upon extending movement of the bolt, engages and retracts the trigger.

4. A latch having a pivoted spring extended latch bolt, formed with a stop, a sliding trigger having an end adapted to engage said stop to hold the bolt retracted and means directly supporting said end against the extending pressure of the bolt.

5. In a latch, a bolt pivoted to swing from a substantially vertical retracted position to a substantially horizontal projected position and formed with a substantially radial contact surface, a spring actuated sliding follower guided for sliding movement in the direction of the bolt's projecting movement, and bearing on said contact surface, said contact surface being normal to the direction of movement of the follower when the bolt is extended.

In testimony whereof, I affix my signature.

HEDLEY BEAUCHAMP.