Sept. 15, 1964 J. R. FOSTER 3,148,903

MEANS FOR PREVENTING DOGGING OF PANIC EXIT BAR IN LATCHED POSITION

Filed June 19, 1961

Fig. 1.

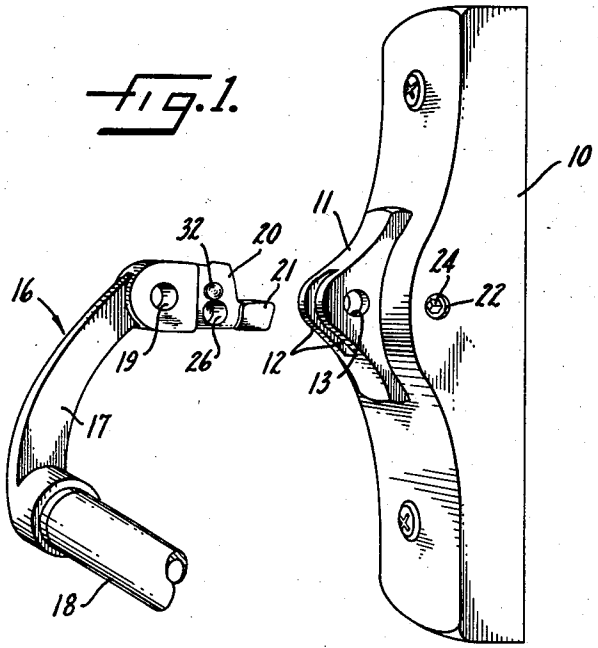


Fig. 2.

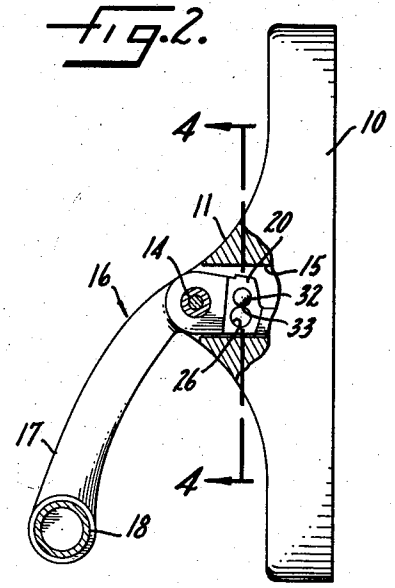


Fig. 3.

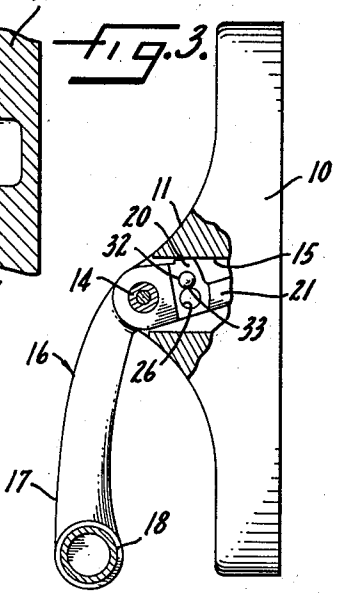


Fig. 4.

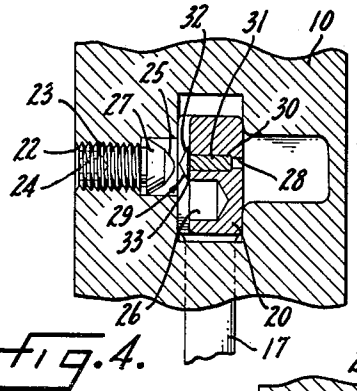


Fig. 5.

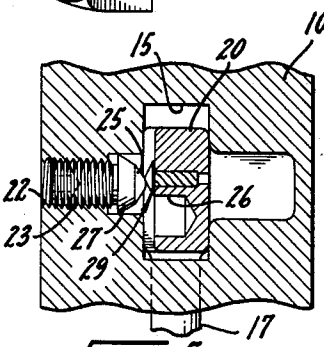
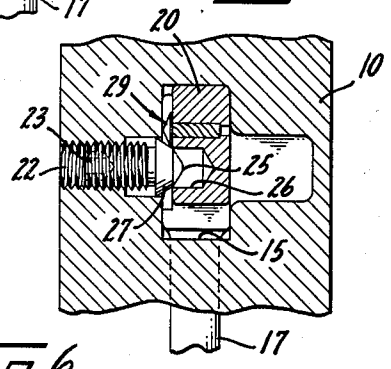


Fig. 6.



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MEANS FOR PREVENTING DOGGING OF PANIC EXIT BAR IN LATCHED POSITION

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The present invention relates to panic exit devices, and is primarily concerned with an improvement in means for dogging such devices.

A panic exit device comprises a panic bar supported from one or more levers and traversing the inside surface of an outwardly-opening door, one or both of the levers being operatively connected to latch means carried by the door in such a fashion that, when the panic bar is moved toward the door surface, the lever is moved from a latch-projected position to a latch-retracted position and the latch means is disengaged from its associated keeper means to permit the door to open freely. Conventionally, such devices are spring-biased toward latch-projected positions so that, whenever the door is in closed position, the latch means will be resiliently held in projected relation to its keeper means.

It is frequently deemed desirable, during daytime hours, to arrange such doors so that they may be freely opened from the outside, and to that end it is customary to provide means whereby the panic exit mechanism may be blocked or dogged in latch-retracted condition. Conventionally, this is accomplished by providing a dogging screw, threadedly seated in the lever case, manipulable from outside the case and capable of being advanced, by such manipulation, until the inner end of the screw engages the inner arm of the lever to hold the lever against movement. Conventionally, the lever arm is provided with a socket which, when the lever arm is in fully latch-retracted position, is disposed to receive the inner end or nose of the dogging screw, and it is the intent of such conventional structures that the dogging screw shall be advanced into dogging relation with the lever only when the lever is so positioned that the screw nose will enter that socket.

However, in practice it has been found that a careless attendant, or mischievous unauthorized persons, may sometimes manipulate the screw, while the lever is not in fully latch-retracted position, to press the screw nose so tightly against the lever arm as to inhibit, or even entirely prevent, movement of the lever in either direction. Customarily, such levers are formed of relatively soft metal such as brass or aluminum so that, if the screw is advanced forcefully enough, it may actually cut its way into the surface of the lever arm. Obviously, if this is done at a time when the lever is in latch-projected position, the whole purpose of the panic exit device will be defeated, thus creating a hidden and terrible hazard.

The object of the present invention is affirmatively to prevent the creation of such a hazard. According to the present invention, that object is accomplished by providing a cam surface of material harder than the material of the lever arm or of the screw, so arranging that cam surface that advancement of the conventional dogging screw at a time when the panic lever is not in fully latch-retracted position, will tend affirmatively to move said lever toward fully latch-retracted position, the arrangement being such that, if advancement of the screw is continued, the lever will ultimately be moved into fully latch-retracted position and will there be dogged against movement in either direction. However, the arrangement is such that, until the lever reaches fully latch-retracted position, no setting of the screw will in any way

prevent or inhibit movement of the lever toward fully latch-retracted position.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific construction illustrated and described, so long as the scope of the appended claims is not violated.

FIG. 1 is an exploded perspective view of a conventional panic bar lever case, a lever constructed in accordance with the present invention and a fragment of a panic bar associated therewith;

FIG. 2 is a side elevation of such a case, with the panic bar lever operatively mounted therein, parts being broken away for clarity of illustration and the lever being shown in latch-projected position;

FIG. 3 is a view similar to FIG. 2 but showing the lever in fully latch-retracted position;

FIG. 4 is a fragmentary section, taken substantially on the line 4—4 of FIG. 2 and drawn to an enlarged scale, showing the dogging screw in retracted position;

FIG. 5 is a view similar to FIG. 4 but showing the dogging screw advanced merely into engagement with the anvil carried by the inner arm of the panic lever; and

FIG. 6 is a similar section showing the dogging screw in fully-advanced position and blocking the panic lever in its fully latch-retracted position.

Referring more particularly to the drawings the reference numeral **10** indicates a conventional case for one lever of a panic exit device. Customarily, such a case is formed on its forward surface with a protuberance **11** providing a pair of spaced, parallel ears **12** penetrated by registering openings **13** adapted to receive trunnion means **14**. The case is formed to provide a slot **15** opening from between the ears **12** to the interior of the case.

A panic lever is indicated generally by the reference numeral **16** and comprises an outer arm **17** adapted to support one end of a conventional panic bar **18**. Intermediate its ends, the lever **16** is provided with a transverse bore **19** adapted to pass the trunnion means **14**, whereby the lever is oscillatably supported with its inner arm **20** disposed in the slot **15** and its projecting tongue or finger **21** extending into the interior of the case **10** where it operatively engages actuating means (not shown) for conventional latch mechanism.

In accordance with conventional practice, the case **10** is formed in one side wall with a threaded bore **22** in which is threadedly seated a dogging screw **23**. One end **24** of the screw is thus exposed for manipulation and is preferably formed with a polygonal socket for the reception of a manipulating wrench. At its other end, the screw is formed with a rounded or tapered nose **25** which is disposed inside the case **10** and is presented toward the lever arm **20**. The inner face of the lever arm **20** is formed with a socket **26** which is so proportioned and arranged that, when said lever is in fully latch-retracted position, said socket is in axial alignment with the screw **23** and will receive the nose of said screw with the beveled head **27** thereof solidly in engagement with the lip of the socket to retain the lever affirmatively against any movement relative to the case.

Immediately above the socket **26** and in substantial parallelism therewith, the lever arm **20** is formed with a bore **28** therethrough. An anvil of hard material, such as tool steel, is indicated generally by the reference numeral **29** and comprises a stem **30** seated in the bore **28** and an enlarged head **32**. The stem **30** preferably is formed with a self-cutting thread **31** so that, as the anvil **29** is pressed into its illustrated position, said stem will cut a threaded

seat for itself within the bore 28, whereby it will be firmly held against any movement relative to the arm 20.

The anvil head 32 is so proportioned and designed that its perimeter is, at least at the point which passes the axis of the screw 23 as the lever oscillates, coincident with the lip of the socket 26. In the illustrated embodiment of the invention, the socket 26 is cylindrical and the anvil head 32 is conical, and in that embodiment it will be seen that the base periphery of the anvil head is tangent to the lip of the socket at the point 33 which, in an intermediate position of the lever, lies in the axis of the screw 23.

As is clearly to be seen in FIG. 4, the axis of the conical head 32 of the anvil lies above the axis of the rounded nose 25 of the screw 23 even when the lever 16 is in fully latch-projected position. Otherwise stated, the axis of the screw nose 25 is disposed between the axis of the anvil head and the axis of the socket 26 at all times except when the screw nose and the socket are coaxial.

The shape of the anvil head 32 is such that it presents towards the screw nose 25 a cam surface which inclines away from said screw and toward the socket 26 at a slip-angle. That is, the screw and the anvil will slide relative to each other in response to the exertion of an axial force by one upon the other. Furthermore, while the screw, when engaged with the anvil head, can hold the lever arm 20 against downward movement toward latch-projected position, it interposes no obstacle to upward movement of the lever arm toward latch-retracted position. Thus, when the screw 23 is advanced from its position of FIG. 4 to and beyond its position of FIG. 5, the screw nose 25 acts upon the cam surface 32 of the anvil head to move the lever arm 20 upwardly; and the farther the screw is advanced, the farther the arm will be moved upwardly. Eventually, as the screw is advanced toward its position of FIG. 6, the screw nose will slip off the cam surface of the anvil head and will being to enter the socket 26. Since the base of the anvil head is tangent to the lip of the socket, the hardened steel edge of the anvil head will support the force exerted by the screw nose as the screw advances farther into the socket so that the screw head never bears against or rubs upon the relatively soft metal of the lever arm 20.

Since the cooperating shapes of the screw nose 25 and the anvil head 32 are such that those surfaces will slide against each other as the screw is advanced, and since the axis of the anvil head never comes into a position between the axis of the screw and the axis of the socket 26, it is impossible for the screw ever to exert any tendency toward preventing or inhibiting movement of the panic lever 16 toward latch-retracted position.

I claim as my invention:

1. In a panic exit device including a case providing trunnion means, a lever supported from said trunnion means for oscillation between latch-projected position and latch-retracted position, said lever having an arm formed of readily machinable material disposed within said case, a dogging screw threadedly mounted in said case and having one end accessible for manipulation from outside said case and having a nose disposed within said case and presented toward said lever arm, said lever arm being formed with a recess which, when said lever is in latch-retracted position, is disposed for reception of said screw nose, and an anvil of material harder than the material of said lever arm, said anvil being mounted to move with said lever arm and presenting toward said screw nose a surface which is inclined away from said screw nose and toward said recess, said last-named surface being arranged in registry with said screw nose at all times except when said lever is in latch-retracted position.

2. In a panic exit device including a case providing trunnion means, a lever supported from said trunnion means for oscillation between latch-projected position and latch-retracted position, said lever having an arm formed of readily-machinable material disposed within said case, a dogging screw threadedly mounted in said case upon an axis substantially parallel with the axis of said trunnion means, said screw having one end accessible for manipulation from outside said case and having a nose disposed within said case and presented toward said lever arm, said lever arm being formed with a socket proportioned and designed to receive said screw nose, upon advancement of said screw when said lever is in fully latch-retracted position, to dog said lever against movement about the axis of said trunnion means, said lever arm further being provided with a bore therethrough disposed adjacent said socket and in axial parallelism therewith, an anvil having a stem seated in said bore and having a head formed of material significantly harder than the material of said lever arm, said head having its external perimeter arranged tangent to said socket and presenting toward said screw a cam surface inclined away from said screw toward said point of tangency, said last-named surface being disposed in registry with said screw nose in all positions of said lever other than its fully latch-retracted position.

3. The device of claim 2 in which said anvil stem is provided with a self-cutting external thread.

4. The device of claim 2 in which the nose of said screw is tapered, the cam surface of said anvil head is tapered, and the axis of said screw is disposed between the axis of said anvil and the axis of said socket in all positions of said lever except fully latch-retracted position.

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