

Aug. 14, 1956

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2,758,864

SAFETY DOOR RETAINER WITH LATCH

Filed March 16, 1953

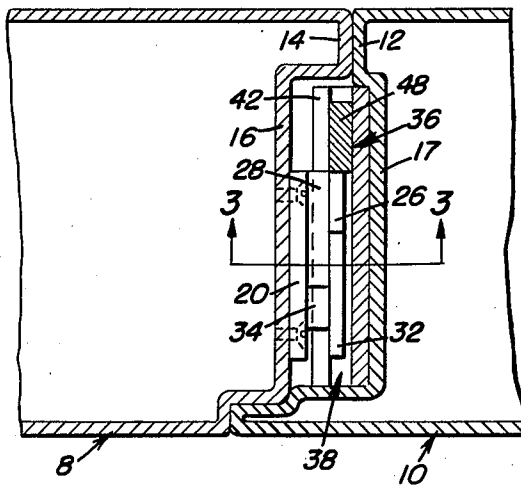


Fig. 2

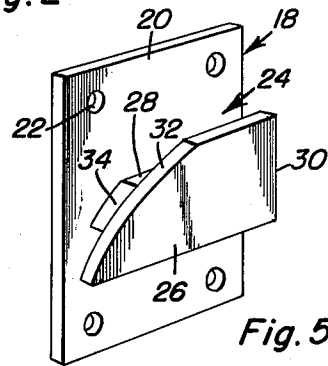


Fig. 5

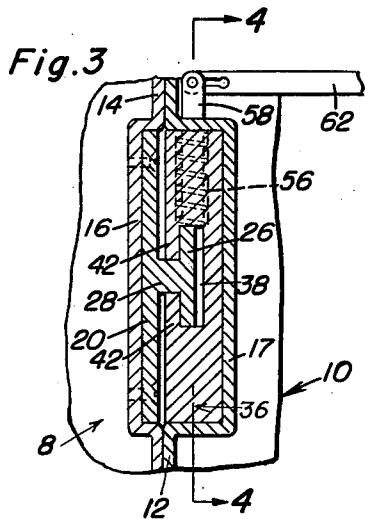


Fig. 4

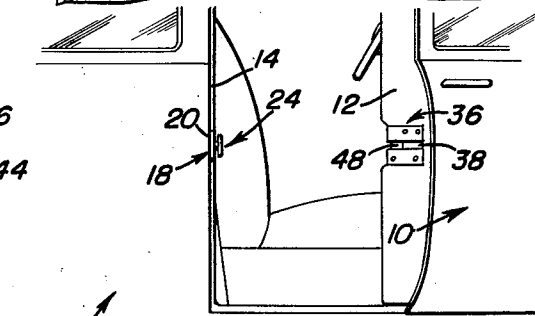
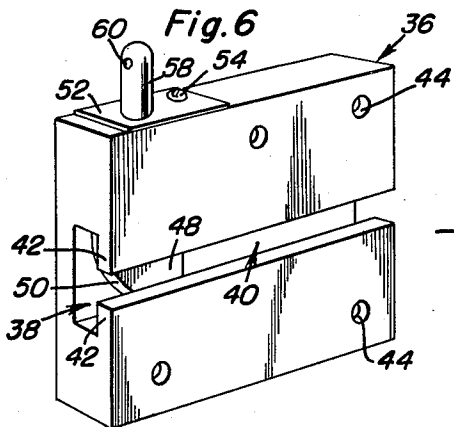
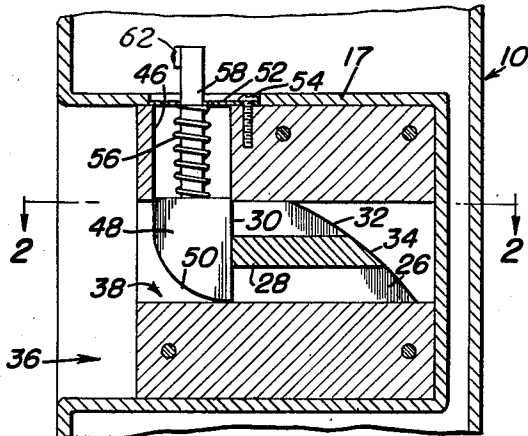


Fig. 1 Samuel M. Dixon
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2,758,864

SAFETY DOOR RETAINER WITH LATCH

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Application March 16, 1953, Serial No. 342,419

3 Claims. (Cl. 292—302)

The present invention relates to motor vehicle body constructions, generally comprehended, and has reference to certain new and useful improvements in a vehicle door and jamb construction, particularly special safeguarding retainer means which is interposed and operatively mounted between the jamb and free swingable edge of the door, when the latter is closed, and which serves to come into play in a manner to lessen the possibility of the door becoming accidentally unlatched and flying open if the jamb, usually the center post in a four door body construction, is either temporarily or permanently sprung, wrenched, or deformed beyond the intended limit, this as a result of sudden violent rebound shock, forcible collision or similar disrupting stresses and strains.

The ordinarily employed door latching means is reliably effective when fully latched, especially when the safety catch means is applied and, therefore, under normal conditions presently provided latching mechanisms are regarded as safe and reliable. It is apparent, however, that it is quite possible for the latch bolt or other keeper to pull out of its shouldered keeper seat if an abnormal space is suddenly caused to present itself if the jamb parts from the door by being deformed or sprung beyond intended limit. Depending on the severity of the jar and temporary or permanent deformation of parts, the latch means may become momentarily ineffective, whereupon the door will, more likely than not, swing open, with grave danger to the occupants of the vehicle. It is therefore the object of the instant invention to ward off the likelihood of unwarranted and accidental door opening when abnormal stresses and strains are encountered when the vehicle is in motion, whereby to safeguard the lives and limbs of otherwise helpless occupants.

To this end, the present invention therefore appertains to an improved combination characterized by a body structure embodying an entrance and exit opening having a fixed door jamb, a door hingedly mounted on said body structure and having a free edge portion swingable to a position opposed in mating proximity to said jamb whereby to close said opening, and safety retaining means for said door, when closed, comprising a male coupling unit fixed to said jamb, and a female coupling unit fixed to said free edge in operative alignment with said male unit, said units being connectible and releasable in a normal direction and manner to allow the door to open and close, as usual, but being incapable of pulling apart and uncoupling in directions perpendicular to said first mentioned direction, whereby to prevent dangerous parting of the jamb from the door if temporarily or permanently sprung or deformed beyond intended limits by sudden shock, collision, or otherwise.

Another phase of the invention has to do with the retainer means by itself; namely, a male coupling unit comprising an attaching plate adapted to be fixedly mounted on a door jamb, said plate being provided on one face with a horizontally elongated keeper T-shaped in cross-section and embodying a shank at right angles

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to said face and a head in spaced parallelism relative to said face, and a companion female coupling unit comprising a plate conformable in size and shape with said first plate and being adapted to be fixed to the free edge portion of a door, that face of said second named plate which is opposed to the complementary face of said first named plate having a horizontal slot T-shaped in cross-section and open at its ends, said keeper being slidably keyed in said slot.

Then, too, novelty is predicated on the above structural adaptation wherein the leading end of the head is formed with a cam surface, said second named plate having a socket at right angles to and communicating with the keyway or slot, and a spring pressed latch bolt slidably mounted in the socket and normally projecting into the slot and having a cam surface cooperable with the first mentioned cam surface, whereby the retainer also includes as a feature, the added latch and makes it possible to substitute this latch-equipped retainer for the usual latch means should manufacturers decide to dispense with the latter and substitute the improved device therefor.

Other objects, features and advantages will become more readily apparent from the following description and the accompanying sheet of drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the same:

Figure 1 is a fragmentary view on a small scale, showing a portion of a vehicle body, the door jamb, the door, and the improved safety-type, latch-equipped door retainer means and its manner of application and use;

Figure 2 is a fragmentary sectional and elevational view taken approximately on the horizontal line 2—2 of Figure 4;

Figure 3 is a section at right angles taken on the plane of the line 3—3 of Figure 2, looking in the direction of the arrows;

Figure 4 is a section on the vertical line 4—4 of Figure 3, looking in the direction of the arrows;

Figure 5 is a perspective view of the aforementioned male coupling or retainer unit; and

Figure 6 is a perspective view of the companion or complementary female coupling latch-equipped unit.

With reference to Figure 1, the body structure is denoted generally by the numeral 8 and this has an entrance and exit opening which is adapted to be closed by the usual horizontally swinging, hingedly mounted door 10. The free swinging edge 12 of the door becomes contiguous to the door jamb 14 in the usual manner. The surfaces of the free edge and door jamb are, of course, provided with suitable indentations or formations 16 and 17 to properly seat and house the members or units which go to make up the safety retainer, and these parts occupy the positions clearly shown in the drawings. The male coupling and keeper unit is denoted by the numeral 18 in Figure 5 and comprises the flat rectangular attaching plate 20 with holes 22 to accommodate the fastenings which secure it firmly in place. The headed T-shaped complement is denoted generally by the numeral 24 and it comprises a somewhat rectangular flat faced head 26 in spaced parallelism to the plate and joined to the plate by a shank or stem portion 28. One end provides a stop shoulder, as at 30, and the other end is formed into a latch lifting cam 32. The corresponding end of the shank is also curved appropriately, as at 34.

The female coupling unit is denoted by the numeral 36 and it too, comprises a rectangular attaching plate which appears as a thick rectangular block, relatively speaking. The horizontal keyway portion is a slot which is open ended and T-shaped in cross-section and denoted by the numeral 38. The narrow entrance opening 40 thereof, actually defines a pair of retaining flanges 42—42

with which the upper and lower projecting edge portions of the head 26 have interlocking engagement. The numerals 44 designate holes for fastenings which serve in an obvious manner. There is a vertical passage formed in the block, as best shown in Figure 4, and this constitutes a socket 46 for the head portion 48 of the spring-pressed latch bolt. The head of the bolt which projects into the keyway 38, has a cam surface 50 for proper releasing coaction with the cam surface 32. When the door closes and the units are matchingly aligned, the cam surfaces serve to lift the latch temporarily until it again recedes into its locking position behind the shoulder 30, as brought out in Figures 3 and 4. There is a cover plate 52 for the socket 46, a fastening 54 and a coil spring 56. The stem or shank 58 projects above the cover plate 52 through an opening therein and has an eye 60 to accommodate means for linking an operating link or lever 62 thereto which is used for remote control in lifting the latch and permitting normal sliding release of the unit 36 from the unit 18 in a rather obvious manner.

It will be clear that when the door 10 is swung from right to left, that is, from the partially open position, seen in Figure 1, the spring-pressed latch bolt on the then leading end of the female unit 36 will engage its cam 50 with the cam 32 of the stationary keeper head whereupon said latch will be lifted and said keeper head will then slide into the keyway or T-shaped slot 38. When the door is fully closed, the latch will drop down behind the shoulder 30 to perform its latching accomplishment. It is to be pointed out here that it is within the purview of the over-all invention to actually dispense with the latch and to consider the invention as directed to the interlocking coupling units 18 and 36 which prevent the jamb from pulling away from the door, or vice versa, in case of abnormal or accidental deformation either temporary or permanent. Since however, it may be desired to use this device as both a safety retainer or coupling device as well as latching means, the latch is preferably included. This makes it possible to substitute the present invention for regular latch means, of varying types, employed on automobile door constructions. It is repeated therefore, that this is a safety life preserving retainer and latch construction designed to prevent automobile doors from coming open in all types of accidents by preventing the post or jamb and door from spreading apart when, by sudden shock or jar, subjected to either permanent or temporary distortion.

As stated, the invention may be installed in place of standard equipment latch means or can be installed as an auxiliary safety device. It will serve, it is believed, to prevent a high percentage of automobile fatalities. The operating link means may be raised with conventional door handle or bell crank arrangement or in other numerous ways depending upon the type of automobile construction or other mechanisms which will necessarily have to be taken into account.

It is believed that the invention is characterized by the prerequisites of simplicity, economy, efficiency and operation and that its over-all construction is such as to meet the requirements of manufacturers and needs of users, generally speaking.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. As a new article of manufacture, a male coupling unit comprising an attaching plate adapted to be fixedly mounted on a door jamb, said plate being provided on one face with a horizontally disposed and elongated

keeper which is T-shaped in cross-section and embodies a shank extending at right angles from said plate and a head on said shank in spaced parallelism with said face, said shank being rectangular in cross-section, said head being also rectangular in cross-section, having spaced parallel upper and lower longitudinal edges and leading and trailing transverse edges, said leading transverse edge being arcuately sloped from the upper longitudinal edge to the lower longitudinal edge and providing a cam surface and said trailing edge being vertically disposed and providing a stop shoulder, a companion female coupling unit comprising a plate conformable in size and shape with said first plate and adapted to be fixed to the free edge portion of a door, that face of said second plate which is opposed to the complementary face of the first named plate having a horizontally disposed slot which is T-shaped in cross-section and open at its respective ends, said slot being of the same cross-sectional dimension from end to end, the head of said keeper fitting into said slot snugly but slidably and the longitudinal edges thereof having sliding contact with the corresponding upper and lower longitudinal walls of said slot, said head being of a length appreciably less than the length of the slot, said second named plate having a vertical socket at right angles to and communicating with said slot intermediate the open ends of said slot, and a spring-pressed latch bolt having a head portion rectangular in cross-section slidably operable in said socket and normally projecting into an end portion of said slot and having a cam surface cooperable with the first mentioned cam surface and having a vertical shoulder slidably and firmly engaging the aforementioned stop shoulder, said latch bolt head being in alignment with said keeper head, the cross-sectional area of said latch head being greater than the cross-sectional area of said keeper head.

2. As a new article of manufacture, a male coupling unit comprising an attaching plate adapted to be fixedly mounted on a door jamb, said plate being provided on one face with a horizontally disposed and elongated keeper which is T-shaped in cross-section and embodies a shank extending at right angles from said plate and a head on said shank in spaced parallelism with said one face, said shank being rectangular in cross-section, said head being also rectangular in cross-section, having spaced parallel upper and lower longitudinal edges and leading and trailing transverse edges, said leading transverse edge being arcuately sloped from the upper longitudinal edge to the lower longitudinal edge and providing a cam surface and said trailing edge being vertically disposed and providing a stop shoulder, a companion female coupling unit comprising a plate conformable in size and shape with said first plate and adapted to be fixed to the free edge portion of a door, that face of said second plate which is opposed to the complementary one face of the first named plate having a horizontally disposed slot which is T-shaped in cross-section and open at its respective ends, said slot being of the same cross-sectional dimension from end to end, the head of said keeper fitting into said slot snugly but slidably and the longitudinal edges thereof having sliding contact with the corresponding upper and lower longitudinal walls of said slot, said head being of a length appreciably less than the length of the slot, the upper portion of said second plate being provided with a vertical passage between the median portion and one end portion of said T-shaped slot, one end of said passage opening into said slot and the other end opening through an upper longitudinal edge of said plate and providing a socket, a cover plate secured to said upper edge and covering said socket having an aperture therein, a latch bolt having a head portion slidably mounted in said socket and also in said T-shaped slot, said head being provided with a stem extending slidably up through said socket and through and above the aperture in the cover plate, a coil spring

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surrounding said stem and operable in said socket and bearing at one end against said cover plate and at its opposite end against said head, one vertical edge of said head providing a shoulder and cooperating with the aforementioned stop shoulder, the other vertical edge being arcuately formed and providing a cam surface which is cooperable with the first named cam surface, said latch bolt head being in alignment with said keeper head when the two are in cooperative latching relationship.

3. As a new article of manufacture, a male coupling unit comprising an attaching plate adapted to be fixedly mounted on a door jamb, said plate being provided on one face with a horizontally disposed and elongated keeper which is T-shaped in cross-section and embodies a shank extending at right angles from said plate and a head on said shank in spaced parallelism with said one face, said head having spaced parallel upper and lower longitudinal edges and leading and trailing transverse edges, said leading transverse edge being arcuately sloped from the upper longitudinal edge to the lower longitudinal edge and providing a cam surface and said trailing edge being vertically disposed and providing a stop shoulder, a companion female coupling unit comprising a plate adapted to be fixed to the free edge portion of a door, that face of said second plate which is opposed to the complementary one face of the first named plate having a horizontally disposed slot which is T-shaped in cross-section and open at its respective ends, said slot

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being of the same cross-sectional dimension from end to end, the head of said keeper fitting slidably into said slot and being of a length appreciably less than the length of the slot, the upper portion of said second plate being provided with a vertical passage at right angles to and situated between the median portion and one end portion of said T-shaped slot, one end of said passage opening into said slot, a latch bolt slidably mounted in said passage and also in said T-shaped slot, said latch bolt having a stem extending slidably up through said passage, a coil spring surrounding said stem and operable in said passage and bearing at one end against said latch bolt, said latch bolt having vertical edges and one vertical edge cooperating with the aforementioned stop shoulder, and the other vertical edge being arcuately formed and providing a cam surface which is cooperable with the first named cam surface.

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