Jan. 21, 1964 M. W. WHITE ETAL 3,118,703

RELEASABLE FASTENING DEVICES

Filed Aug. 26, 1960 2 Sheets-Sheet 1

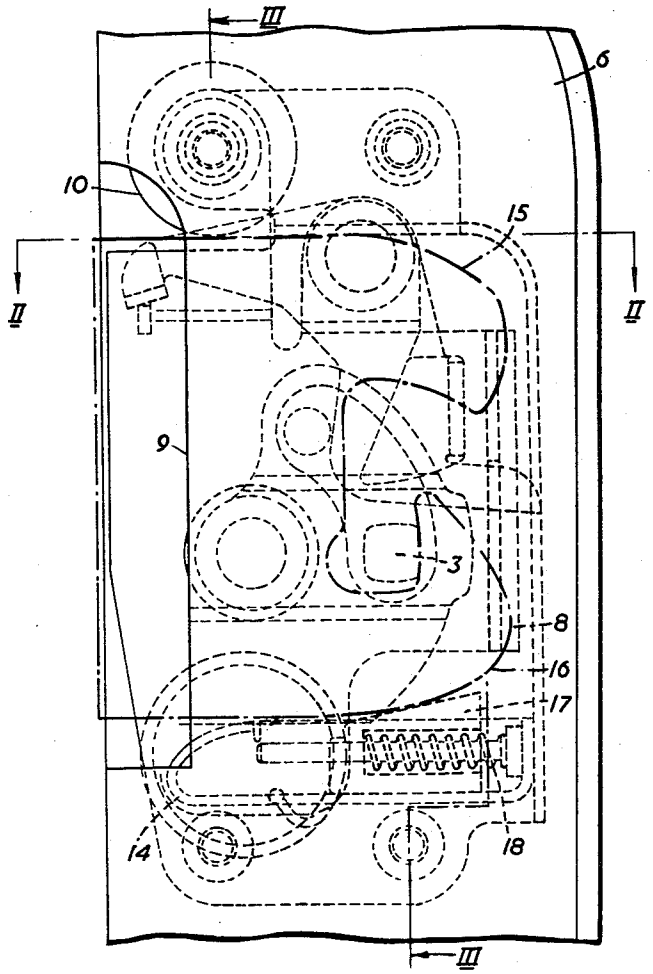


FIG. 1

INVENTORS
MAURICE WILLIAM WHITE
PHILIP SWINGEWOOD JEAVONS
BY Irvin S. Thompson
ATTORNEY

Jan. 21, 1964 M. W. WHITE ETAL 3,118,703

RELEASABLE FASTENING DEVICES

Filed Aug. 26, 1960 2 Sheets-Sheet 2

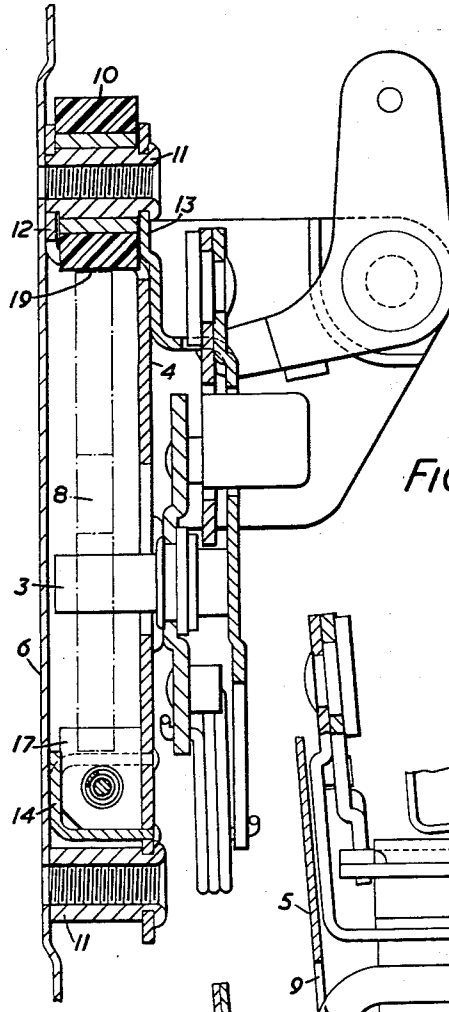


FIG. 3.

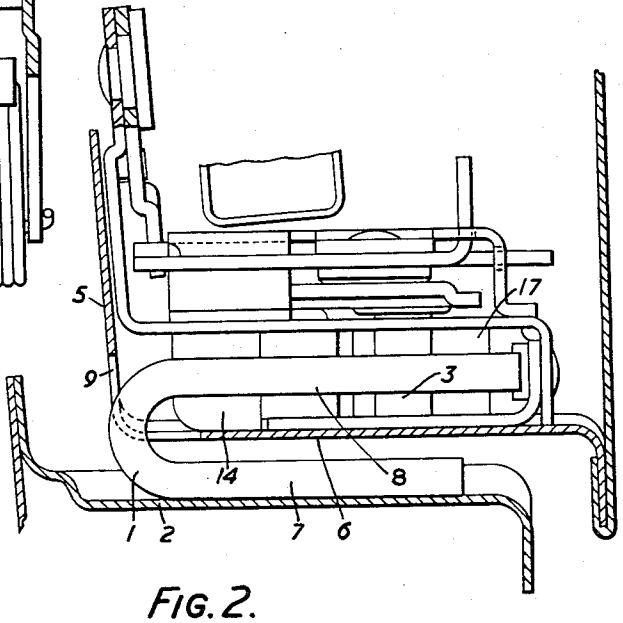


FIG. 2.

INVENTORS
MAURICE WILLIAM WHITE
PHILIP SWINGEWOOD JEAVONS
By Irwin S. Thompson
ATTORNEY

United States Patent Office 3,118,703 Patented Jan. 21, 1964

3,118,703

RELEASABLE FASTENING DEVICES

Maurice William White, Gravelly Hill, Birmingham, and Philip Swingewood Jeavons, Birmingham, England, assignors to Wilmot-Breeden Limited, Birmingham, England

Filed Aug. 26, 1960, Ser. No. 52,155
Claims priority, application Great Britain Aug. 29, 1959
4 Claims. (Cl. 292—221)

This invention relates to releasable fastening devices, and in particular to releasable fastening devices suitable for use with vehicle doors and to door and body structures utilising such fastening devices.

Fastening devices for vehicle doors normally have two parts for mounting respectively on a door pillar and a corresponding body pillar, these parts engaging when fastened to prevent opening movement of the door. Such engagement of the parts cannot prevent relative movement of the body pillar and door in the plane of the latter so that body distortion, for example during a collision, sometimes produces sufficient separation of the door and body pillar for the door to burst open. In recent years fastening devices have been developed which act to prevent undue relative movement of the body pillar and the door in the plane of the latter, and the object of the invention is to provide a releasable fastening device which will prevent such relative movement in a particularly convenient and simple manner and which moreover possesses further subsidiary advantages.

According to one object of the invention a releasable fastening device comprises two parts adapted to enter into coupling engagement as a result of relative translatory movement, one of the parts being arranged so as to be externally shrouded by an associated door or body structure when fitted therein and the other part adapted to enter within the shroud during the fastening operation so that when the parts are coupled the engagement of the other part within the shroud will prevent separation of the parts in a direction transverse to the direction of said relative translatory movement.

Preferably the shroud is provided, when the device is fitted, by a structural member such as a panel member or pressing forming part of an associated door pillar so that the main body of the device is completely concealed within the door structure, a small aperture being left in the latter to allow entry of the other part.

Preferably the shrouded part is rotatably mounted for movement within the shroud to the coupled position and with the other part arranged to remain stationary at least in the angular sense during the fastening operation.

The other or fixed part may be generally U-shaped with one limb of the U formed for fixing to the body or door pillar and the other limb formed for coupling engagement with the rotatably mounted part, so that during the fastening operation the shroud enters between the two limbs of the U.

According to another object of the invention a door or body structure, for example a vehicle door structure, utilising a releasable fastening device comprising two parts adapted to enter into coupling engagement as a result of relative translatory movement during a door closing operation has one of the parts mounted within the structure and externally shrouded thereby, the other part being adapted to enter the structure for the purpose of such engagement and the latter being arranged to prevent separation of the parts laterally of the door when the parts are coupled.

When intended for use with heavy doors, for example the doors of commercial vehicles, it is desirable that vertical guiding means be provided to guide the two parts into coupling engagement. Such guiding means act during the fastening operation to lift the door if the latter has "dropped" and they may comprise a guide roller mounted within the shroud for engagement with the fixed part. The guide roller is conveniently of nylon or some other material of a resilient nature. A guide member may be positioned within the shroud to engage the other side of the fixed part to position the door correctly if the latter is slightly high.

The invention will now be further described with reference to the accompanying drawings which illustrate, by way of example, a releasable fastening device in accordance with the invention in association with corresponding vehicle door and body structures, and in which:

FIGURE 1 is a side view of the shut face of the door structure,

FIGURE 2 is a sectional view of the door and body structures on the line II—II in FIGURE 1, and

FIGURE 3 is a sectional view on the line III—III in FIGURE 1.

The fastening device utilises two parts in the form respectively of a striker 1 mounted on a body pillar 2 of the vehicle body structure so as to be stationary during the fastening or door closing operation and a rotatably mounted latch pin 3 carried by and projecting through a backplate 4 mounted on the corresponding door pillar 5. The function of the parts 1 and 3 and the associated inside elements of the device are generally similar to those of the fastening device described in our co-pending patent application Serial No. 690,293, now Patent No. 3,042,436, and hence is not further described in detail herein. In the drawings only the adjacent portions of the door and body structures are illustrated sufficient to show the arrangement of the device relatively thereto.

The backplate 4 on which the latch pin 3 is mounted is fixed to and spaced inwardly from a structural member in the form of a pressing forming a side panel member 6 of the door pillar 5 defining the aforesaid shut face. This member 6 serves to shroud the latch pin 3 within the door structure itself, and for this purpose the pin 3 terminates short of the member 6. The striker 1 is generally U-shaped (as shown more particularly in FIGURE 2) with one limb 7 formed for bolting to the body pillar 2 so that during the fastening operation the other limb 8 can enter the door pillar 5 for latching engagement with the latch pin 3. To enable the free limb 8 of the striker 1 to enter into such shrouded engagement with the latch pin 3 the door panelling is cut away at 9 to provide a suitable aperture through which the limb 8 passes.

A nylon guide roller 10 is pivotally mounted, on one of a number of tubular rivets 11 serving to attach the backplate 4, between a cranked portion 12 of the backplate which engages the panel member 6 and an outtrigger bearing plate 13 of the device. A pressed guide member 14 mounted on the backplate 4 between the latter and the panel member 6 has a curved inwardly facing nose, and the arrangement is such that the roller 10 and guide member 14 act to position the door vertically relatively to the striker 1 during the fastening operation to guide the striker into correct latching engagement with the latch pin 3. For this purpose the outer edges of the striker 1 are smoothly radiused off with inclined guide surfaces 15 and 16 (see FIGURE 1 which shows in broken lines the limb 8 in latching position), and if the door is initially too low the guide roller 10 engages and rides up the upper guide surface 15 to lift the door to its correct level; alternatively, if the door is initially too high the guide member 14 engages and rides along the lower guide surface 16 to lower the door.

The guide member 14 serves as a housing for a spring-loaded wedge 17 which is slidably mounted within the

housing and urged inwardly of the door by a compression spring 18. During the fastening operation the inclined guide surface 16 of the striker 1 engages the wedge 17 and moves the latter against the spring loading, at the same time entering into wedging engagement therewith to wedge the striker against the downwardly facing surface 19 of the cranked portion 12 of the backplate 4. This wedging provides vertical restraint and prevents rattle of the door when fastened, and as the striker limb 8 is wedged against the surface 19 the wedging load is not borne by the guide roller 10 which is only engaged by the striker 1 if the door is initially too low and then only before wedging of the striker occurs.

Any tendency for the vehicle body to distort and allow the door to burst open, as may occur during a collision, is resisted by engagement of the free limb 8 of the striker 1 with the panel member 6 which shrouds the latch pin 3. Thus the member 6 serves not only to shroud the rotatable part or latch pin 3 of the device, but also to prevent the parts 1 to 3 from becoming uncoupled and the door from bursting open as a result of body distortion.

We claim:

1. A releasable vehicle door fastening device comprising a rotary latch part mounted within and shrouded by a door structure of the vehicle, and a U-shaped striker part having one limb fixed to an associated body structure of the vehicle and having another limb which is of forked shape with upper and lower arms, said other limb being adapted to enter into coupling engagement with said latch part on door closure with the latch part received within the fork arms of said other limb, a structural member of said door structure having an aperture through which said other limb enters prior to said coupling engagement with said latch part and the arrangement being such that when said parts are coupled separation thereof in a generally horizontal direction transverse to the fastening direction in the event of distortion of said body structure is prevented by engagement of said other limb with said door structure, said other limb being spaced from said door structure in that direction, a guide roller initially engaging the outer edge of one of said arms, a spring-loaded wedge member, and a fixed wedging surface, said wedge member engaging the outer edge of the remaining arm when said wedging surface engages the outer edge of said one arm.

2. A releaseable vehicle door fastening device comprising a rotary latch part mounted within and shrouded by a vehicle door structure, and a U-shaped striker part having a first limb which is fixed to the vehicle body structure and having a second limb which has a forked shape including upper and lower arms, said second limb being adapted to enter into coupling engagement with said latch part on door closure with the latch part received between said upper and lower arms, a structural member of said vehicle door structure being cut away to allow entry of said second limb of said striker part for said coupling engagement with said latch part and the relative arrangement of said door structure and said parts then being such that separation of the latter in a generally horizontal direction transverse to the direction of relative translatory movement thereof during fastening is prevented by said door structure, said second limb being spaced from said door structure in that direction, a guide roller adapted for engagement with the outer edge face of one of said arms, and a spring-loaded wedge member and a fixed wedging surface, said wedge member engaging the outer edge face of the other arm and said wedging surface engaging the outer edge face of said one arm on door closure to apply vertical restraint to said second limb and to relieve said roller of all wedging load.

3. A releasable vehicle door fastening device comprising a rotary latch part mounted within and shrouded by an associated door structure of said vehicle, a striker part mounted on the body structure of said vehicle and adapted to enter into coupling engagement with said latch part on door closure, a structural member of said door structure being cut away to allow entry of said striker part before coupling engagement with said latch part, and vertical guiding means also mounted and shrouded within said door structure which act to guide said striker part relative to said latch part and comprise a guide roller for engagement with one edge of said striker part, a spring-loaded wedge which engages the opposite edge of said striker part and a fixed surface against which said striker part is wedged by said wedge when the device is fastened to apply vertical restraint to said striker part when the device is fastened without subjecting said guide roller to a wedging load, the arrangement of said parts when coupled being such that said striker part is horizontally spaced from said door structure and distortion of said body structure during a collision which would otherwise result in separation of such parts in a generally horizontal direction brings said striker part into engagement with said door structure which opposes said separation.

4. A releasable fastening device according to claim 3, wherein the guide roller is formed from a resilient material such as nylon.

References Cited in the file of this patent

UNITED STATES PATENTS

1,470,001	Descombes	Oct. 9, 1923
1,910,372	Thomas	May 23, 1933
2,100,591	Haberstump	Nov. 30, 1937
2,246,086	Austin	June 17, 1941
2,914,352	Roethel	Nov. 24, 1959
2,914,353	Roethel	Nov. 24, 1959

FOREIGN PATENTS

300,411	Great Britain	Nov. 15, 1928