

[54] **DOORWAY SAFETY RAIL AND DOOR LOCK FOR VEHICLE LIVING UNITS**

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[22] Filed: **Sept. 13, 1974**

[21] Appl. No.: **505,544**

[52] U.S. Cl. **49/56; 49/394; 292/259**

[51] Int. Cl.² **E06B 3/68; E06B 7/00**

[58] Field of Search **49/56, 50, 63, 67, 394, 49/70, 460; 292/259, 260**

[56] **References Cited**
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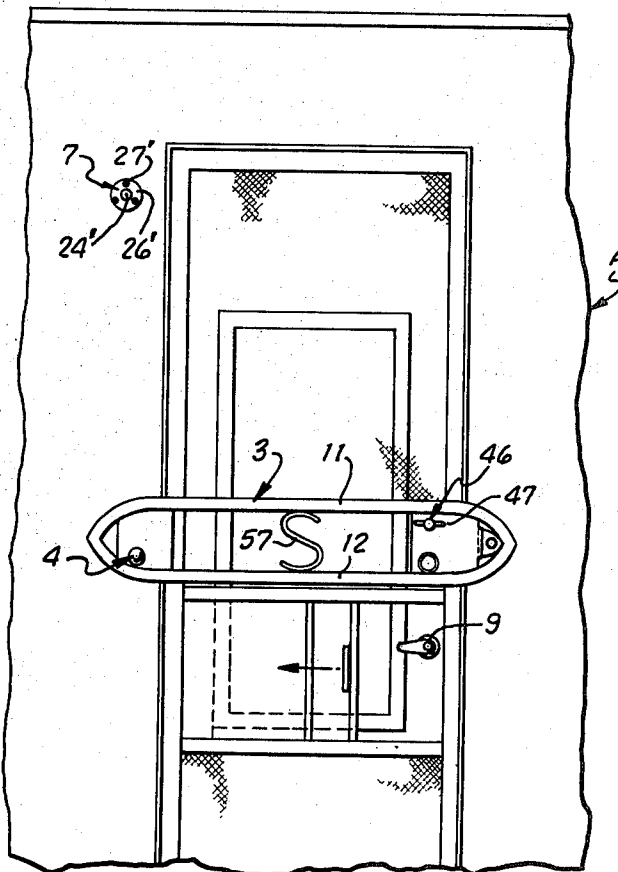
[57] **ABSTRACT**

A safety rail for vehicle doorways mounted on the inside of the living unit and consisting of an elongated member mounted on the doorway frame for pivotal movement from a position spanning the doorway opening to a position clearing the opening. A member connected to the inside of the frame releasably holds the rail across the opening and another member connected to the other side of the doorway opening holds the rail clear of the opening.

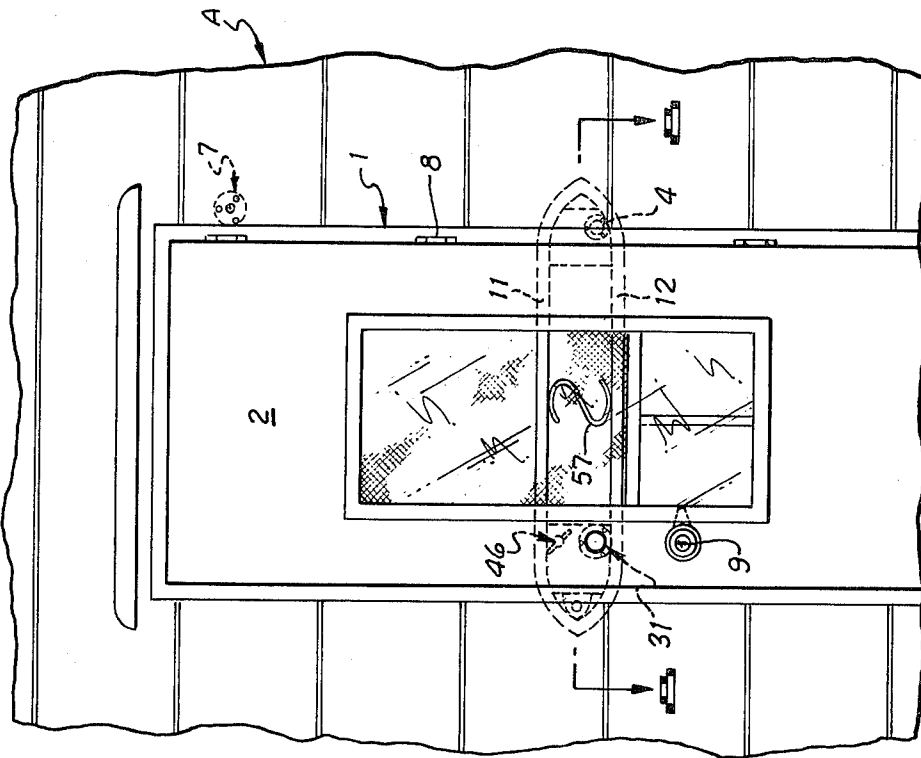
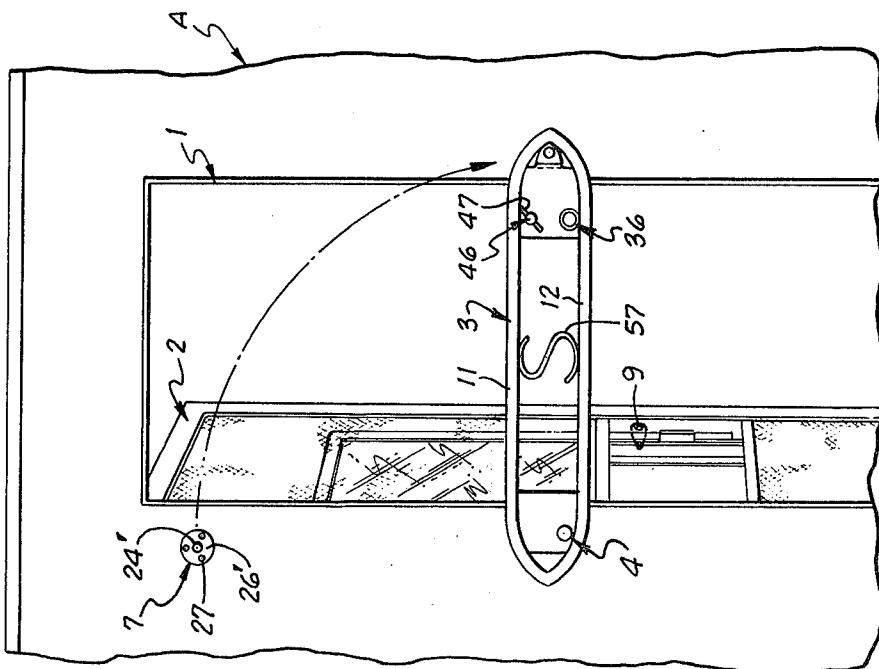
The rail may be designed to carry a catch for engagement with a lock mechanism mounted on the door which is operated by a key from the inside of the vehicle and engages a latch catch mounted on the door.

The rail may also be designed to carry a latch which is manually operated from the inside of the vehicle and engages a latch catch mounted on the door.

5 Claims, 8 Drawing Figures







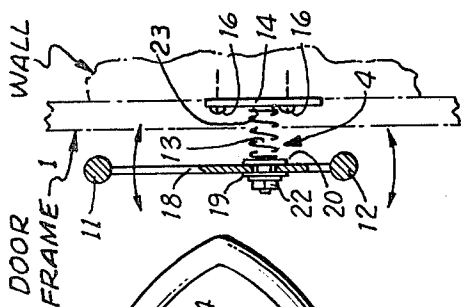


FIG. 1

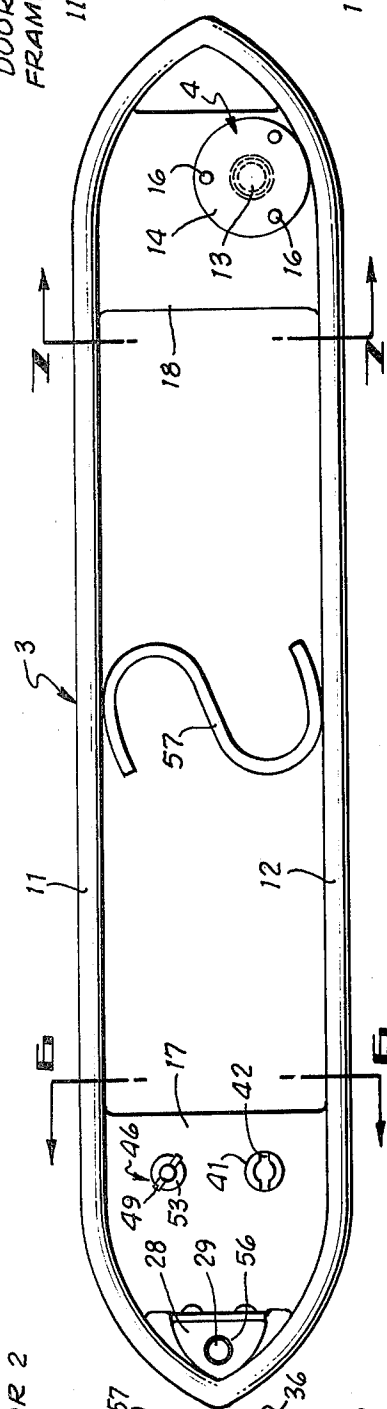


FIG. 2

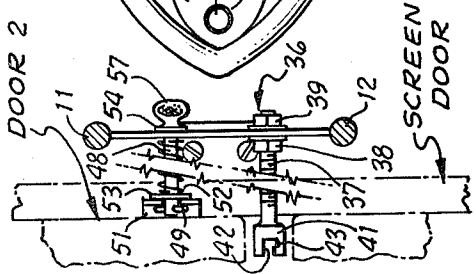


FIG. 3

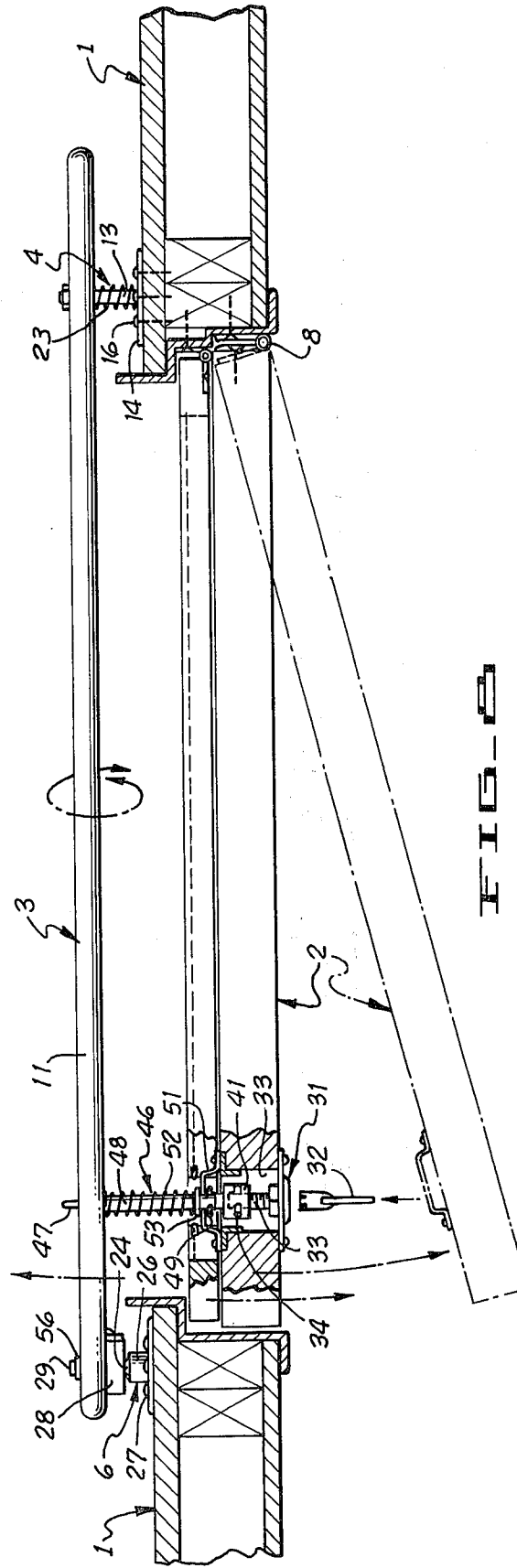


FIG. 4

DOORWAY SAFETY RAIL AND DOOR LOCK FOR VEHICLE LIVING UNITS

BACKGROUND OF THE INVENTION

After World War II, living units began to be developed for hauling on pickup trucks. These units had separate access doors which were usually placed at the tail gate. People seldom traveled in the living unit when the vehicle was moving, but when they did, it was generally prudent to lock the door from the outside to insure the safety of the passengers from accidentally opening the door and falling to the pavement at high speeds. As pickup campers became more comfortable and the trucks more adapted to hauling the living units, more and more people began to travel in the camper living units and the rate of injuries caused by accidental openings of the rear doors increased accordingly. In the late 1950's with the advent of motor homes, mini-homes, chassis mounts and converted vans, thousands of vehicles entered the highways with persons riding in the living units of these vehicles.

The doors of these living units did not take into consideration the vast differences between a person normally seated in a sedan and a person walking about in a motor home as it sped down highways at speeds of 55 mph or above. While a door in a sedan would rarely be thrown open by a person being thrown against it, such an occurrence in a camper or motor home is an every day reality.

In many motor homes and campers, the doors which were provided were often designed in the same manner as an ordinary home door, and in few cases was the door as safely designed as the common sedan door.

Another problem with many existing doors is the fact that they are easy to force open and provide little protection from theft and burglaries.

SUMMARY OF THE INVENTION

The gist of the present invention is the use of a safety rail which is attached to the inside frame or wall of a vehicle such as a camper or motor home and may be used in any such type of vehicle regardless of the type or construction of the door. The safety rail gives a visual indication whether the rail is in place or not. If the door should come open during movement of the vehicle, the safety rail will operate to prevent persons from falling through the open doorway.

Another object of the present invention is to provide a safety rail which can be modified to serve as an additional locking means to prevent theft or burglaries.

A further object is to provide a safety rail which provides the requisite safety with a mechanism which is attractive, light weight, maintenance free and will fit nearly every vehicle which is constructed with a living unit.

Still another object is to provide a safety rail which is easy to operate, will visually indicate whether it is properly in place and is fail safe in operation.

A still further object is to provide a safety rail which can be used without modification of the basic structure but with a simple addition to the rail as a secure locking structure against theft or burglary through the doorway.

Another object is to provide a device which will offer maximum safety from accidental falling from a moving camper or motor home and maximum burglar protec-

tion at a cost which every camper or motor home owner can afford.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation view of the device of the present invention as viewed from the inside of a motor home or camper living unit.

FIG. 2 is the same view as shown in FIG. 1 with the safety rail of the present invention shown in the operating position to prevent accidental exodus from a moving vehicle.

FIG. 3 is the same view as shown in FIGS. 1 and 2 with the door of the vehicle opened.

FIG. 4 is a front elevation view of the door to a camper or motor home as viewed from the outside and showing the device of the present invention in dotted line and in the same position illustrated in FIG. 2.

FIG. 5 is an enlarged front elevation view of the device constructed in accordance with the present invention as viewed from the outside of the vehicle and corresponding to the view shown in FIG. 4.

FIG. 6 is a cross sectional view of the device taken along line 6—6 of FIG. 5 with portions removed for purposes of brevity and showing portions of the door of the living unit in phantom line.

FIG. 7 is a cross sectional view of the device as taken along line 7—7 of FIG. 5 and showing the wall of the living unit in phantom line.

FIG. 8 is a cross sectional view of the device taken along line 8—8 of FIG. 4. The safety rail is shown in full line for purposes of clarity. The door of the living unit is shown in a partially opened position in phantom line. The key used to lock the unit is shown in solid line to illustrate its use.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION

The safety rail of the present invention for a vehicle living unit "A" having a door frame 1 and door 2 consists briefly of an elongated safety rail 3 pivotally mounted on the door frame on the inside of the living unit and having a first position spanning the door opening at about waist level and a second position clearing the door opening; means 6 connected to the door frame for releasably holding the safety rail in the first position; means 7 connected to the door frame for releasably holding the safety rail in the second position; and pivot means 4 mounted on the door frame for pivotally holding the safety rail.

The living unit "A" illustrated in the drawings may be a pickup camper, mini-motor home, motor home chassis mount or van mounted living unit. Such units may have doors mounted in the side or rear of the structure. The doors normally swing outwardly on hinges 8 as opposed to fixed home door structures which swing inwardly and are operated by the usual door handle 9.

The safety rail 3 may be a single bar but preferably it is constructed of at least two spaced bars 11 and 12 so that the structure may remain light weight but provide a greater area to prevent a person from falling through the doorway if he is accidentally thrown against the door while the vehicle is moving. Preferably the rail is constructed from metal tubing but other materials would be suitable.

The pivot means 4 for pivotally holding the rail is shown in detail in FIGS. 7 and 8. A post 13 is connected to flange 14 which is attached to the wall or frame of the unit by screws or other suitable fasteners

16. The rail as shown is formed with cross brace members 17 and 18. The rail is connected to the post by washers 19 and 20 placed on either side of the brace 18 and pressed between threaded nut 22 and spring 23.

One means 6 for releasably holding the safety rail in the first position is shown in detail in FIGS. 5 and 8. Although, several different mechanisms could be used to releasably hold the rail in the first position, a preferred means is illustrated. A post 24 mounted on flange 26 is attached to the frame or wall by rivets 27 or other fasteners. A quick release latch mechanism 28 is connected to brace 17 which registers with post 24. A manually engageable release button 29 instantly disengages the safety rail from the post 24 by merely depressing the button.

Means 7 for holding the safety rail in the second position is illustrated in FIGS. 1 and 3. Again, several devices for releasably attaching to the rail itself or the bracket could be used. As illustrated the means is the same as for holding the rail in the first position and consists of a post 24' mounted on flange 26' which is attached to the wall or frame by rivets or other suitable fasteners 27'. Means 7 is mounted so that when the rail is attached thereto, it will completely clear the doorway opening.

Dual use of the safety rail may be obtained by mounting a locking mechanism 31 on the door 2 for operation by key 32. A preferred lock mechanism is illustrated in FIGS. 5, 6 and 8. An opening 33 is made in the door 2 and the lock mechanism 31 is connected thereto with the key receiving opening facing to the outside of the vehicle unit. The barrel key 32 turns shaft 33 which rotates pins 34. A catch mechanism 36 mounted on the safety rail in aligned registration with shaft 33 consists of a shaft 37 connected by locking nuts 38 and 39 to brace 17. The shaft 33 is formed with an enlarged head 41 which has an end opening slot 42 for receiving pins 34 and a cam slot 43 into which the pins 34 are rotated for locking the door to the safety rail.

When pins 34 engage the slot in the head of shaft 33, the door 2 is connected to safety rail 3 and forms an effective door lock which cannot be forced or the standard latch tripped.

A manually engageable latch 46 may be added to the safety rail to permit the door 2 to be locked to the safety rail 3 as an additional lock operable from the inside of the living unit. The latch mechanism consists briefly of a manually engageable latch handle 47 mounted on the inside face of brace 17 of the safety rail, a shaft 48 connected to the handle and a pin 49 mounted on the end of shaft. A latch catch 51 is connected to the door 2 and is formed with a slot for receiving pin 49 therethrough in one rotated position of handle 47. Spring 52 mounted on shaft 48 is seated against brace 17 and biases the shaft toward the latch catch 51 bearing against washer 53 mounted on the shaft 48. Enlarged head 54 bears against brace 17 and limits movement of the shaft toward the door.

In order that shaft 37 of the locking mechanism and shaft 52 of the latch mechanism will be accurately aligned with the respective lock mechanism 31 and latch catch 51 means 6 not only holds the safety rail in the first position but a guide member 56 mounted on brace 17 positively holds the rail at substantially the same arcuate position when the safety rail approaches the first position from the second position on a path at right angles to the plane of the door frame by engaging post 24.

Limited pivotal movement of the safety rail at right angles to the door frame is permitted by a special construction of the pivot means 4. This limited pivotal movement permits the safety rail to move in an arc so that sleeve 56 will register with post 24. Referring to FIGS. 7 and 8, washer 20 may be mounted on post 13 so that it has limited movement along post 13. Thus pivoting the rail outwardly will spread the washers against the biasing force of spring 23.

Additional stiffening of the pair of members 11 and 12 and also some esthetic treatment may be added by connecting a design 57 between the members.

Operation of the safety rail is as follows: When the rail is in the second position as shown in FIG. 1, it is removed from holding means 7 by depressing button 29. The rail is pivoted about shaft 13 and as it approaches shaft 24, the rail is pulled slightly toward the inside of the living unit so that sleeve 56 will fit over and mate with shaft 24. The rail is moved toward the door 2 and automatically snap locks in place. If it is desired to lock the door and rail from the inside, manually engageable handle 47 is rotated until pins 49 line up with slots in latch catch 51. Spring 48 moves shaft 48 toward the door and partial rotation of handle 47 locks the pins to catch 51.

To lock the safety rail to the door from the outside, key 32 is inserted into lock mechanism 31, rotated, and pins 34 move into cam slot 43 and interlock with shaft 37 which is connected to the safety rail.

To move the safety rail back to the second position as shown in FIG. 1, both the lock and the latch must be disengaged. Button 29 is pushed, the rail is swung outwardly and then upwardly until sleeve 56 engages post 24' and is automatically snap-locked in place.

I claim:

1. A safety rail for a vehicle living unit having a door frame with first and second sides and a door hingedly mounted for pivotal movement outwardly comprising:

a. an elongated safety rail adapted for two way pivotal mounting on one side of the door frame on the inside of the living unit and having a first position spanning the door opening at about waist level and a second position clearing the door opening;

b. quick release means adapted for connection to said door frame for releasably holding said safety rail in said first generally horizontal position, having a pin preventing rotation in a plane parallel to the door frame and having a member preventing movement of said safety rail in a direction perpendicular to said door;

c. means adapted for connection to said door frame for releasably holding said safety rail in said second generally vertical position; and

d. pivot means adapted for mounting on said first side of said door frame for pivotally holding said safety rail having a member permitting movement of said rail in a plane parallel to said frame through an arc of at least 90° and another member further permitting limited pivotal movement of said rail generally perpendicular to the plane of said frame.

2. A safety rail as described in claim 1 comprising:

a. a locking mechanism adapted for mounting on the outside face of said door; and

b. a catch mounted on said safety rail for locking engagement with said lock mechanism.

3. A safety rail as described in claim 1 comprising:

a. a manually engageable latch mounted on said safety rail and having a manually engageable latch

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handle on the inside face of said safety rail adapted for locking said door from the inside of said living unit; and

- b. a latch catch adapted for mounting on said door for releasable engagement with said latch.

4. A safety rail as described in claim 2 comprising:

- a. said quick release means for holding said safety rail in said first position including a pin and a guide member for positively guiding said rail onto said pin at substantially the same arcuate position when said safety rail approaches said first position from said second position on a path at right angles to the plane of said door frame; and

- b. said pivot means including a joint permitting limited pivotal movement of said safety rail at right angles to said door frame permitting mating of said rail with said guide member.

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5. A safety rail as described in claim 4 comprising:

- a. a manually engageable latch mounted on said safety rail and having a manually engageable latch handle on the inside face of said safety rail adapted for locking said door from the inside of said living unit;

- b. a latch catch mounted on said door for releasable engagement with said latch;

- c. said safety rail including a pair of vertically spaced members and a pair of cross braces connecting said spaced members; and

- d. said lock catch and said manually engageable latch are mounted on one of said cross braces and said pivot means is mounted on the other of said cross braces.

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