July 13, 1965 J. H. KUTZ 3,194,582

REMOTELY OPERABLE SEAT BELT LOCKING DEVICE

Filed Nov. 8, 1962

Fig. 1.

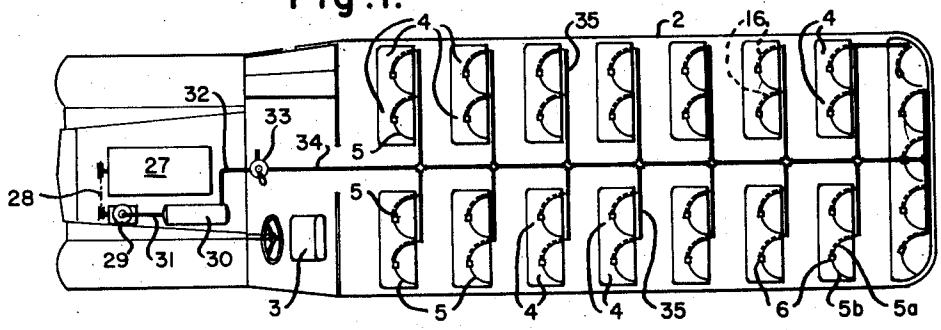


Fig. 2.

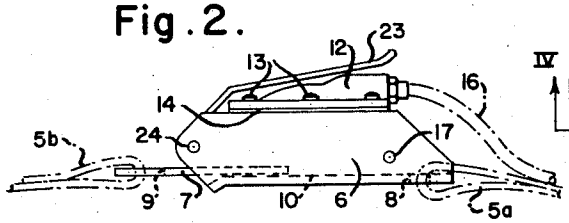


Fig. 3.

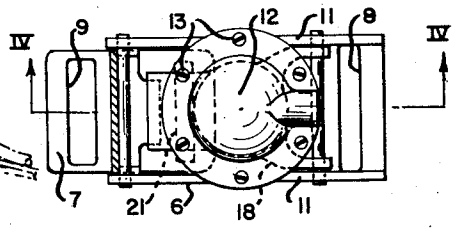


Fig. 4.

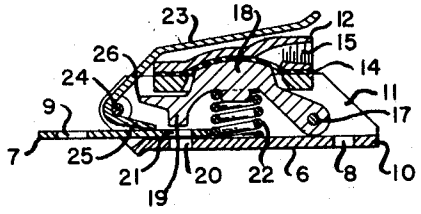


Fig. 5.

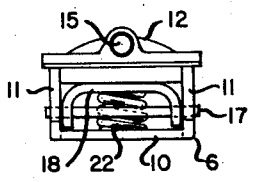


Fig. 6.

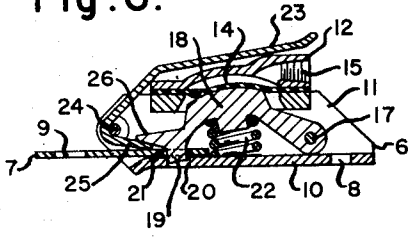
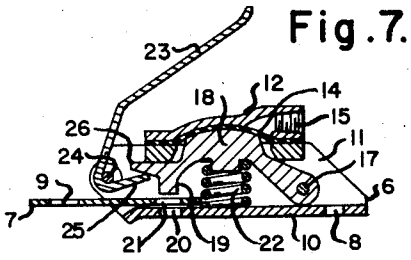


Fig. 7.



INVENTOR

Jacob H. Kutz

By Hoopes, Leonard & Buell

his attorneys

United States Patent Office 3,194,582 Patented July 13, 1965

3,194,582

REMOTELY OPERABLE SEAT BELT LOCKING DEVICE

Jacob H. Kutz, 3050 Fadette St., Pittsburgh, Pa.

Filed Nov. 8, 1962, Ser. No. 236,275
7 Claims. (Cl. 280—150)

This invention relates to a safety device and particularly to a safety device having provision for rendering the device inoperative at a time when its operativeness might be hazardous. The invention further contemplates a safety device comprising a plurality of holding elements with common means for rendering the holding elements operative and inoperative.

My invention has varied applications but for purposes of explanation and illustration it will be described as embodies in a safety device used in a school bus. The seat for each child is equipped with a safety belt. Each safety belt has a locking member for rendering the safety belt operative. Each safety belt has resilient or spring means urging the locking member to unlocked position. All of the locking members are adapted to be moved to locked position by control means operated by the driver. In case of emergency the driver may operate the control means to permit the spring means to move the locking members to unlocked position, releasing the children. Each safety belt is also provided with means for moving the locking member to unlocked position even when the driver's control means is in the position maintaining the locking members locked so that if the driver should become incapacitated and be unable to release the children each child can release himself.

I provide a safety device comprising a holding element having portions adapted to be disposed in predetermined relative position when the holding element is to be rendered operative, a locking member associated with the holding element so that when the portions of the holding element are in said position the locking member may be moved to locked position to render the holding element operative, resilient means urging the locking member to unlocked position and fluid pressure operated means to move the locking member to locked position against the action of the resilient means. I prefer to disposed a diaphragm in juxtaposition to the locking member opposed to the resilient means together with means operable against the diaphragm to press the diaphragm toward the locking member and thus move the locking member to locked position against the action of the resilient means. The means operable against the diaphragm to press the diaphragm toward the locking member are preferably fluid pressure means.

My safety device preferably comprises a plurality of holding elements each having portions adapted to be disposed in predetermined relative position when the holding element is to be rendered operative together with a locking member associated with each holding element so that when the portions of a holding element are in said position the locking member associated therewith may be moved to locked position to render that holding element operative, resilient means urging each locking member to unlocked position, fluid pressure means to move the locking members to locked position against the action of the resilient means and a common control device for controlling the flow of fluid to all of the locking members.

In a preferred embodiment of my invention the safety device may, as above indicated, comprise a seat belt having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in a seat together with a locking member associated with the seat belt so that when the portions of the seat belt are in said position the locking member may be moved to locked position to render the

seat belt operative, resilient means urging the locking member to unlocked position and means, preferably fluid pressure operated, to move the locking member to locked position against the action of the resilient means. The safety device normally comprises a plurality of seat belts thus equipped and a common control device for controlling the flow of fluid to all of the locking members. Manually operable means are preferably provided to move each locking member to unlocked position against the action of the means moving the locking member to locked position.

In a specific preferred embodiment I provide, in a vehicle having a motor and a plurality of seats, a seat belt for each seat, each seat belt having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in the corresponding seat, a locking member associated with each seat belt so that when the portions of a seat belt are in said position the locking member associated therewith may be moved to locked position to render that seat belt operative, resilient means urging each locking member to unlocked position, means operated by the motor of the vehicle for supplying fluid under pressure, means conducting the fluid to the locking members to move the locking members to locked position against the action of the resilient means and a common control device positioned for operation by the operator of the vehicle for controlling the flow of fluid to all of the locking members. Manually operable means are preferably provided to move each locking member to unlocked position against the action of the fluid pressure means.

Other details, objects and advantages of the invention will become apparent as the following description of a present preferred embodiment thereof proceeds.

In the accompanying drawings I have shown a present preferred embodiment of the invention in which

FIGURE 1 is a diagrammatic illustration of a school bus showing the driver's seat, the seats for the children and the safety device embodying holding elements in the form of seat belts, one for each child, and control means therefor as above explained;

FIGURE 2 is an elevational view of the ends of one of the seat belts, shown in chain lines, and the locking means associated therewith;

FIGURE 3 is a plan view of the locking means shown in FIGURE 2 but with a portion of the releasing lever broken away;

FIGURE 4 is a central vertical cross-sectional view taken on the line IV—IV of FIGURE 3;

FIGURE 5 is a view of the structure of FIGURE 3 as seen from the right-hand side of FIGURE 3;

FIGURE 6 is a view similar to FIGURE 4 but showing the locking member in operative position; and

FIGURE 7 is a similar view showing the locking member moved to inoperative position by manually operable means.

Referring now more particularly to the drawings, FIGURE 1 shows a school bus designated generally by reference numeral **2** having a seat **3** for the driver and thirty-three seats **4** for the children. Each seat **4** is provided with a holding element in the form of a seat belt designated generally by reference numeral **5** and having flexible portions *5a* and *5b* extending from opposite sides of the seat over the lap of the child sitting in the seat. Connected with the portion *5a* of the seat belt is a bracket **6**. Connected with the portion *5b* of the seat belt is a keeper **7**. A loop at the end of the portion *5a* of the seat belt passes through a slot **8** in the bracket **6** and a loop at the end of the portion *5b* of the seat belt passes through a slot **9** in the keeper **7**.

The bracket **6** has a base **10** with integral opposed upstanding side walls **11**, and a top member **12** is connected

with the side walls 11 by bolts or other suitable connecting means 13. A diaphragm 14 is disposed under and in sealed relationship to the top member 12, and the top member 12 is provided with a connection 15 for a flexible fluid pressure conduit 16.

Pivoted to the bracket 6 by a pivot pin 17 is a locking member 18 having a locking detent 19. Below the locking detent 19 the base 10 of the bracket 6 is provided with a slot 20. The keeper 7 has a slot 21 adapted to be positioned in vertical alignment with the slot 20 of the bracket 6 as shown in FIGURE 4. The locking member 18 is urged to unlocked or inoperative position by a compression coil spring 22. A lever 23 is pivotally mounted in the bracket 6 at 24 and has an arm 25 underlying a portion 26 of the locking member 18 projecting to the left, viewing FIGURE 4, of the detent 19.

The motor of the school bus 2 is shown at 27. The motor through a sprocket or belt drive 28 drives an air compressor 29 which compresses air into a tank 30, the air passing from the compressor 29 to the tank 30 through a pipe 31. The compressed air tank 30 has a pipe 32 leading therefrom to a control valve 33 adapted to be controlled by the driver. From the control valve 33 leads a header pipe 34 from which extend branch pipes 35 connected by conduits 16 to the respective top members 12 so that when the valve 33 is open compressed air enters all of the top members 12 and forces the diaphragms 14 downwardly to move the locking members 18 to operative or locked position as shown in FIGURE 6. When the valve 33 is closed the supply of compressed air to the header pipe 34 is shut off and the header pipe 34 is vented to the atmosphere releasing the pressure against the locking members 18 so that the springs 22 move the locking members 18 to unlocked or inoperative position as shown in FIGURE 4.

Each lever 23 may be grasped by the child at any time and moved from the position of FIGURE 6 to the position of FIGURE 7 to raise the locking member 18 to inoperative position so that if anything should happen to the driver in an emergency preventing the driver from closing the valve 33 each child can release himself even when the pressure is on. Also, the lever 23 is used by each child to momentarily move the locking member 18 to unlocked or inoperative position when the child boards the bus on the way to school to enable moving the keeper 7 into position with its slot 21 in alignment with the slot 20, whereafter the lever 23 is released and the air pressure moves the locking member 18 to operative or locked position.

My safety device maintains the children in their seats when the bus is moving. When the bus reaches its destination, or, in case of an accident, after the accident has occurred and the bus has come to a stop, the valve 33 is closed by the driver and all of the children's seat belts are released. If an accident occurs resulting in failure of the compressed air supply the springs 22 move the locking members 18 to inoperative position and release the children.

While I have shown and described a present preferred embodiment of the invention it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied within the scope of the following claims.

I claim:

1. A safety device comprising a plurality of seat belts each having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in a seat, a locking member associated with each seat belt so that when the portions of a seat belt are in said position the locking member associated therewith may be moved to locked position to render that seat belt operative, resilient means urging each locking member to unlocked position, fluid pressure means to move the locking members to locked position against the action of the resilient means and a common control device for controlling the flow of fluid to all of the locking members.

2. A safety device comprising a seat belt having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in a seat, a locking member associated with the seat belt so that when the portions of the seat belt are in said position the locking member may be moved to locked position to render the seat belt operative, resilient means urging the locking member to unlocked position, fluid pressure operated means to move the locking member to locked position against the action of the resilient means and manually operable means to move the locking member to unlocked position against the action of the fluid pressure operated means.

3. A safety device comprising a plurality of seat belts each having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in a seat, a locking member associated with each seat belt so that when the portions of a seat belt are in said position the locking member associated therewith may be moved to locked poistion to render that seat belt operative, resilient means urging each locking member to unlocked position, fluid pressure means to move the locking members to locked position against the action of the resilient means, a common control device for controlling the flow of fluid to all of the locking members and manually operable means to move each locking member to unlocked position against the action of the fluid pressure means.

4. In a vehicle having a motor and a plurality of seats, a seat belt for each seat, each seat belt having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in the corresponding seat, a locking member associated with each seat belt so that when the portions of a seat belt are in said position the locking member associated therewith may be moved to locked position to render that seat belt operative, resilient means urging each locking member to unlocked position, means operated by the motor of the vehicle for supplying fluid under pressure, means conducting the fluid to the locking members to move the locking members to locked position against the action of the resilient means and a common control device positioned for operation by the operator of the vehicle for controlling the flow of fluid to all of the locking members.

5. In a vehicle having a motor and a plurality of seats, a seat belt for each seat, each seat belt having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in the corresponding seat, a locking member associated with each seat belt so that when the portions of a seat belt are in said position the locking member associated therewith may be moved to locked position to render that seat belt operative, resilient means urging each locking member to unlocked position, means operated by the motor of the vehicle for supplying fluid under pressure, means conducting the fluid to the locking members to move the locking members to locked position against the action of the resilient means, a common control device positioned for operation by the operator of the vehicle for controlling the flow of fluid to all of the locking members and manually operable means to move each locking member to unlocked position against the action of the fluid pressure means.

6. A safety device comprising a plurality of seat belts each having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in a seat, a locking member associated with each seat belt so that when the portions of a seat belt are in said position the locking member associated therewith may be moved to locked position to render that seat belt operative, resilient means urging

each locking member to unlocked position, means to move the locking members to locked position against the action of the resilient means and a common control device for rendering said last mentioned means operative to move the locking members to locked position.

7. A safety device comprising a seat belt having portions adapted to be disposed in predetermined relative position when the seat belt is to be rendered operative for holding a person in a seat, a locking member associated with the seat belt so that when the portions of the seat belt are in said position the locking member may be moved to locked position to render the seat belt operative, resilient means urging the locking member to unlocked position, actuating means for moving the locking member to locked position against the action of the resilient means and manually operable means to move the

locking member to unlocked position against the action of the actuating means.

References Cited by the Examiner

UNITED STATES PATENTS

2,228,675	1/41	Raymond	292—201 X
2,475,226	7/49	Ellis	280—150 X
2,705,529	4/55	Bull	280—150 X
2,815,085	12/57	Whipple	180—82
2,845,676	8/58	Huber	280—130 X
2,888,287	5/59	Taylor	292—144 X
3,075,208	1/63	Mercer et al.	24—230.1 X

A. HARRY LEVY, *Primary Examiner.*

LEO FRIAGLIA, *Examiner.*