

[54] **ACTUATING MECHANISM FOR A DOOR OF A VEHICLE, IN PARTICULAR A TAXI**

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[58] Field of Search296/146, 155; 49/209, 210, 49/216, 221, 360, 358

[56]

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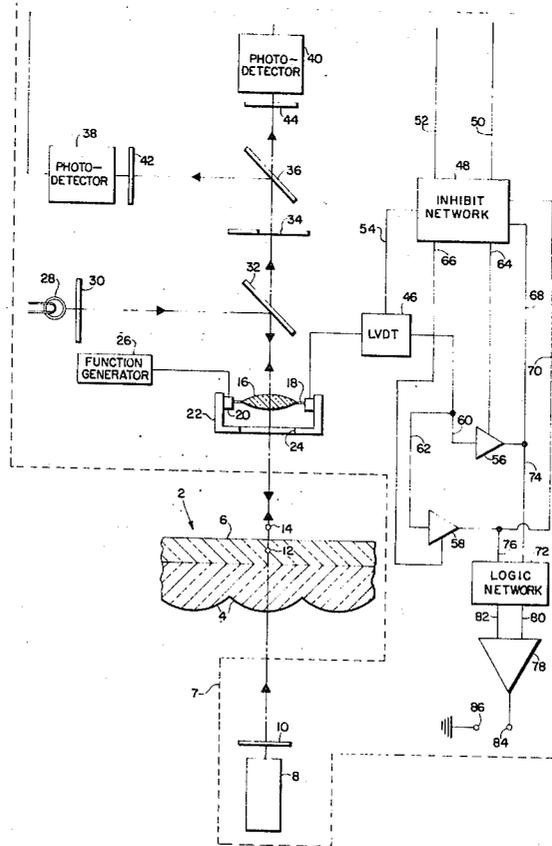
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[57]

ABSTRACT

In a small automobile, in particular a small taxi, a sliding door on the side opposite the driver is actuated by a hand lever and motor control convenient to the driver. A hand lever controls the latching and unlatching of the door and its movement into and out of the door opening. After the door has moved out of the opening it is moved rearwardly on tracks by a motor controlled by a control member near the hand lever.

32 Claims, 15 Drawing Figures



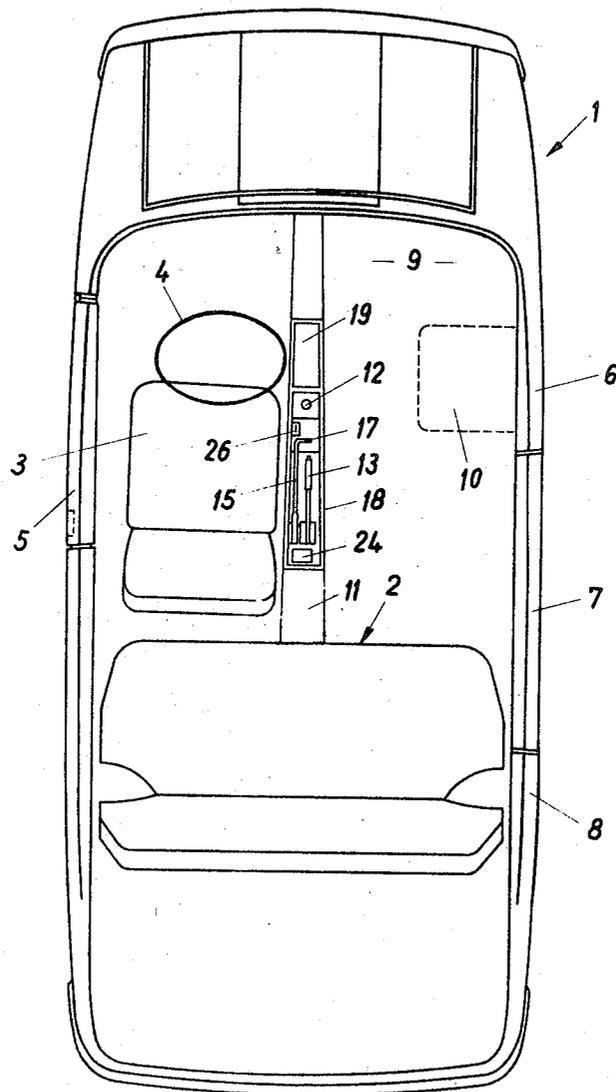


Fig. 1

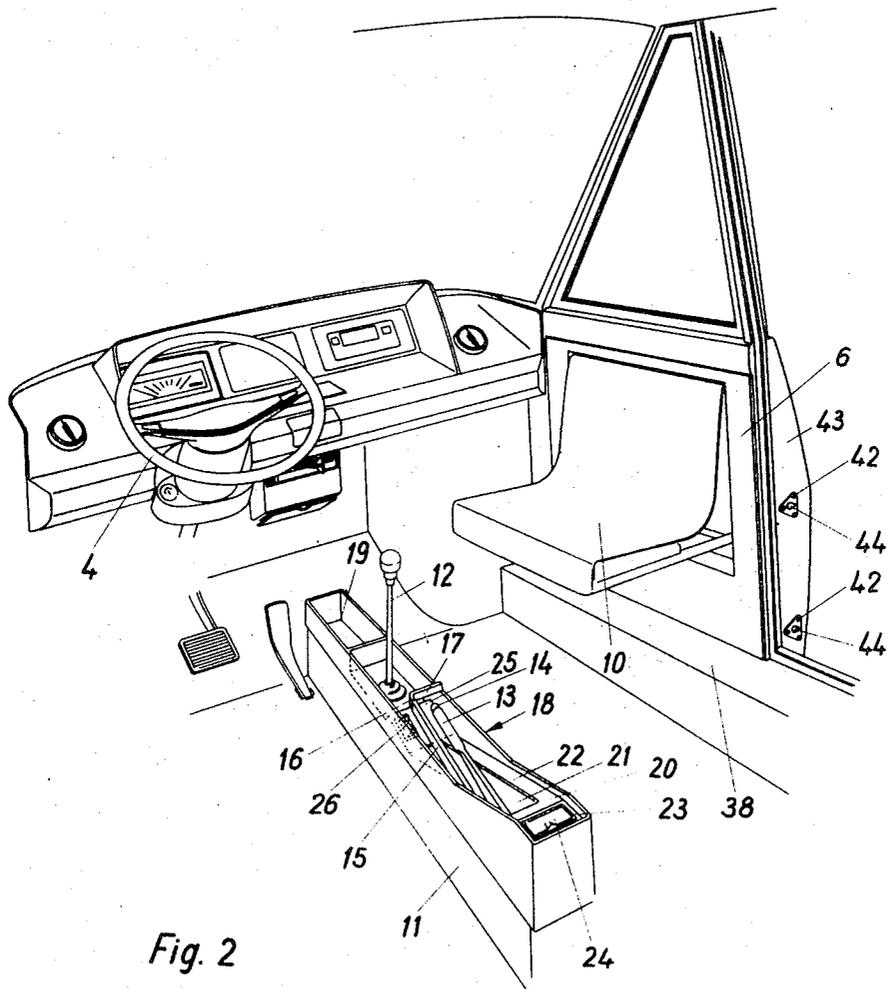


Fig. 2

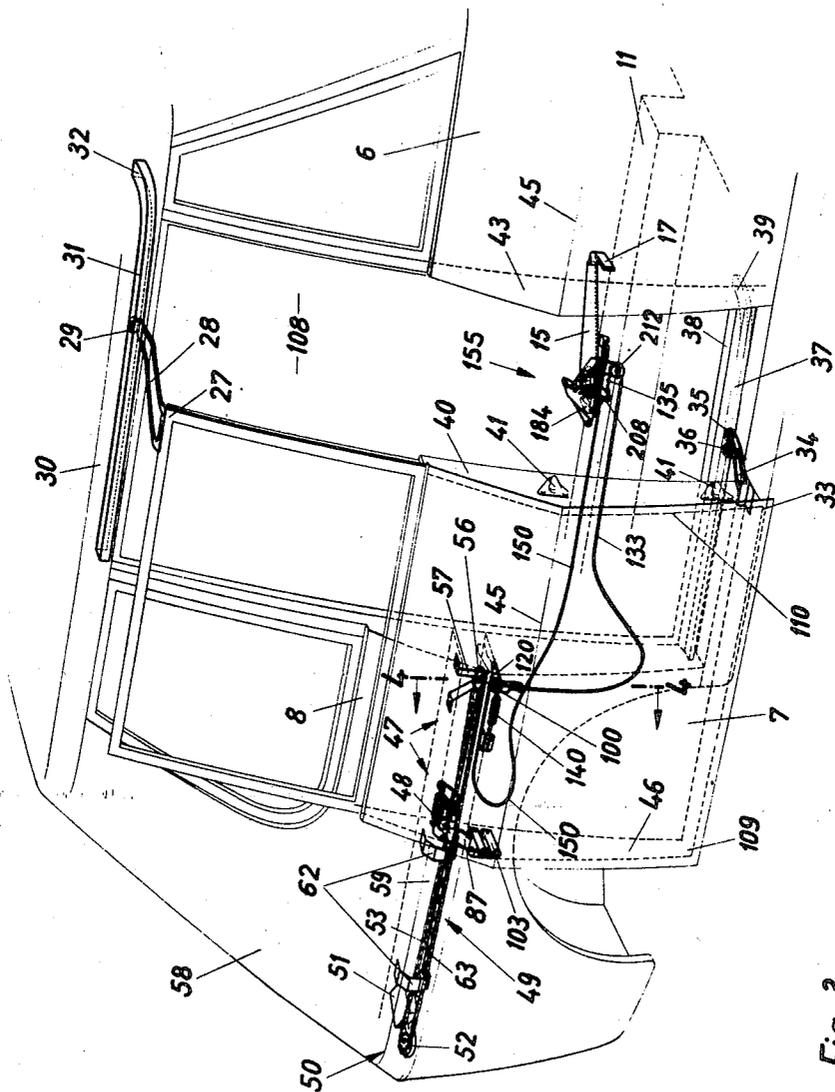


Fig. 3

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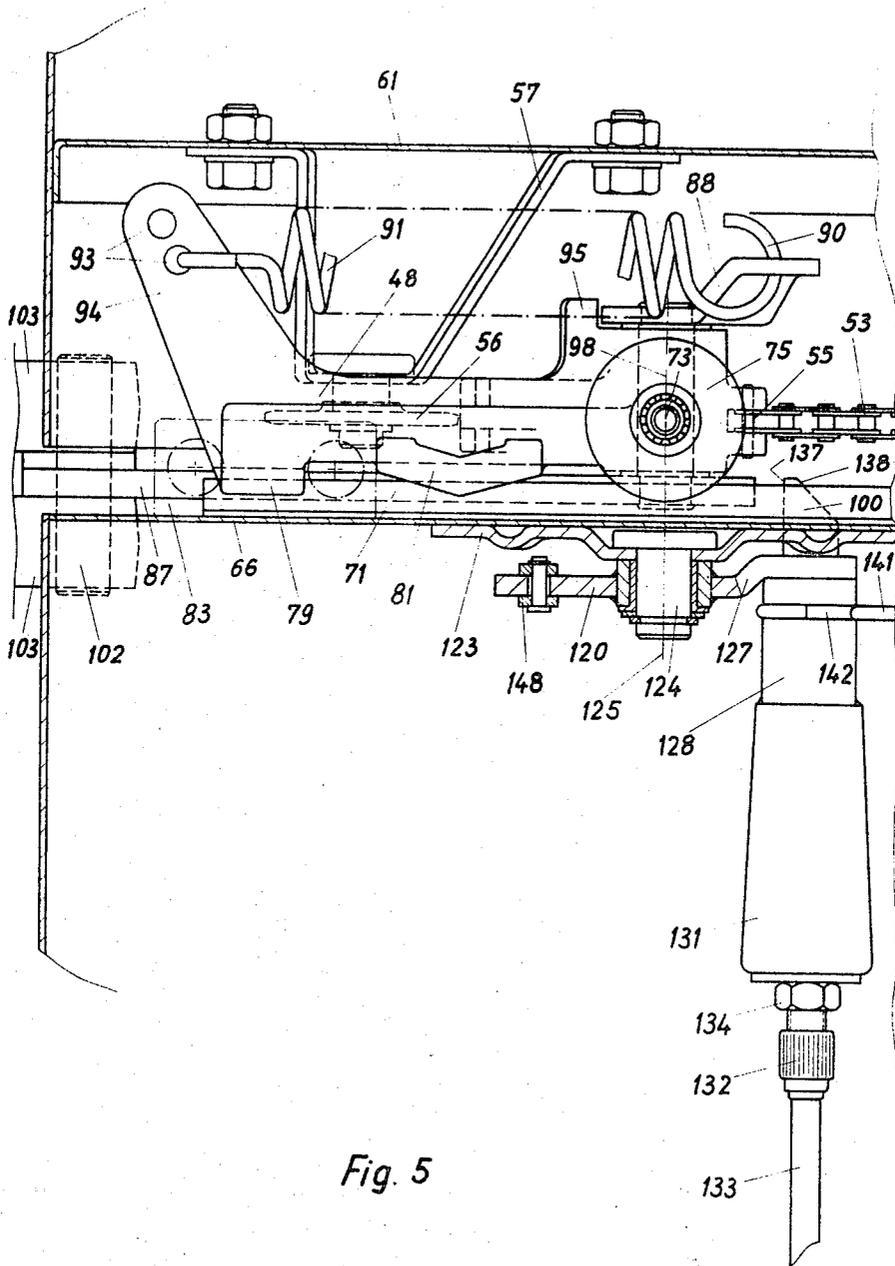


Fig. 5

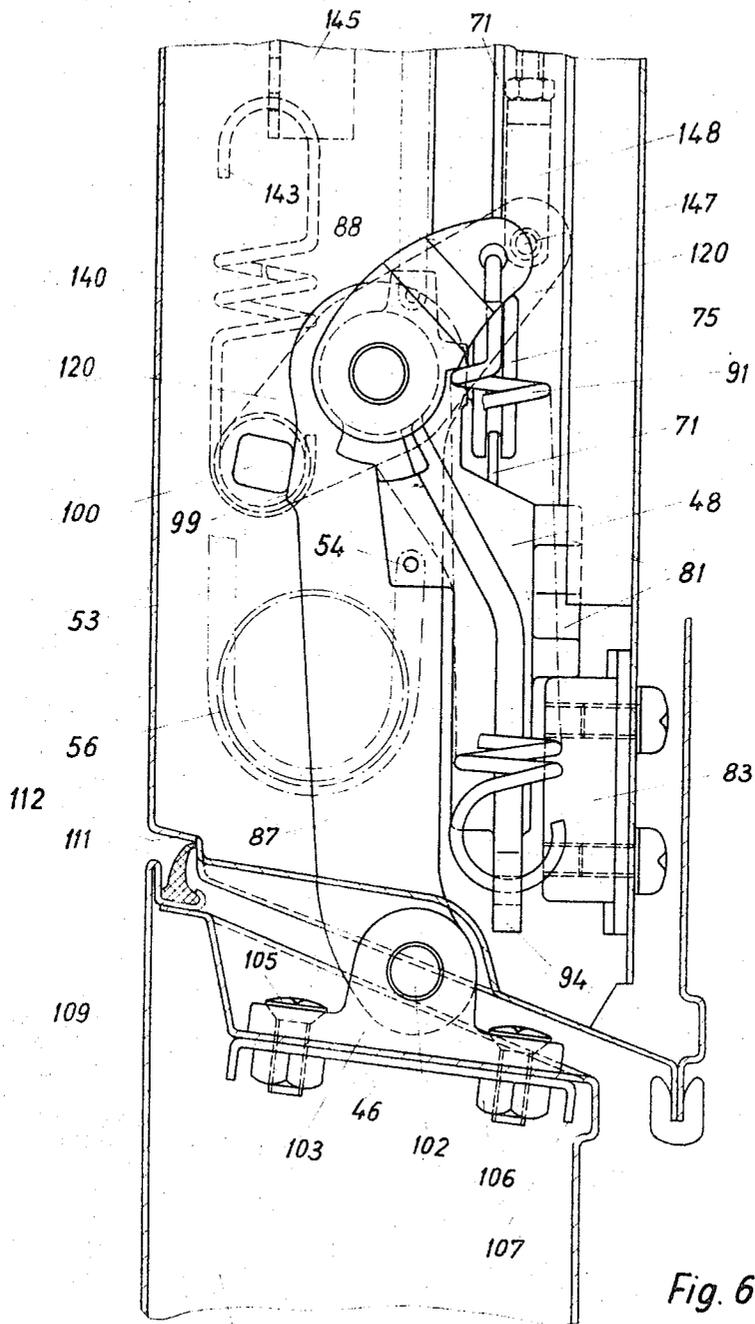


Fig. 6

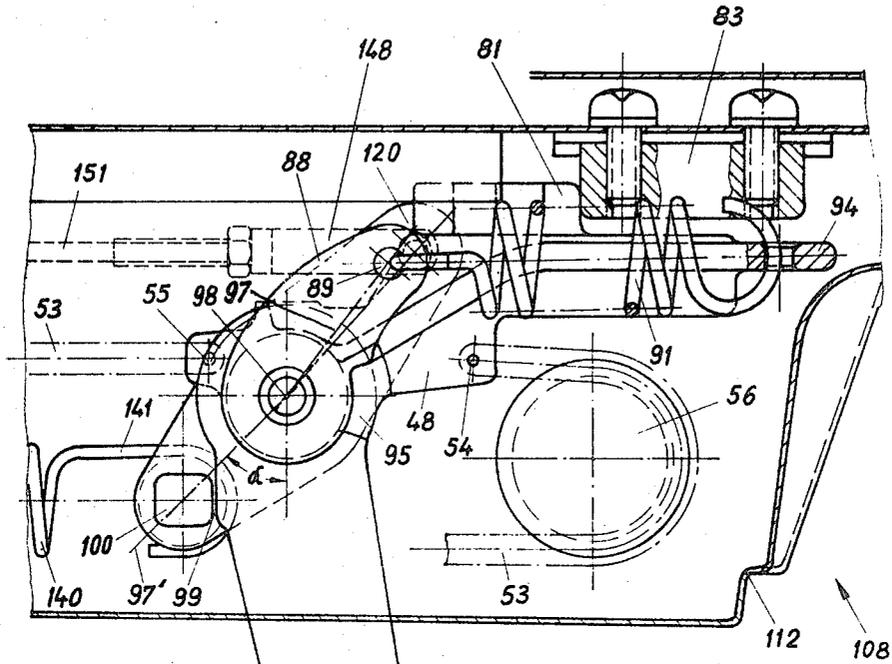
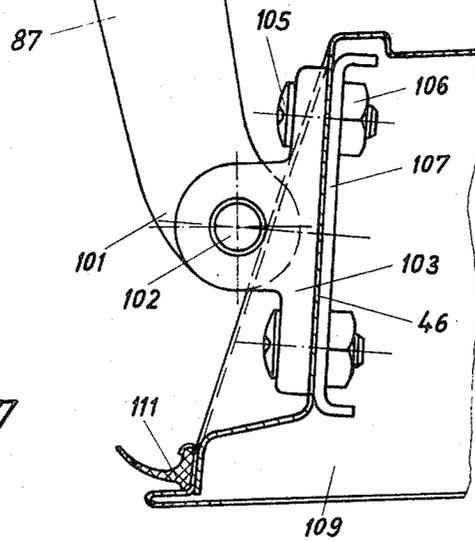


Fig. 7



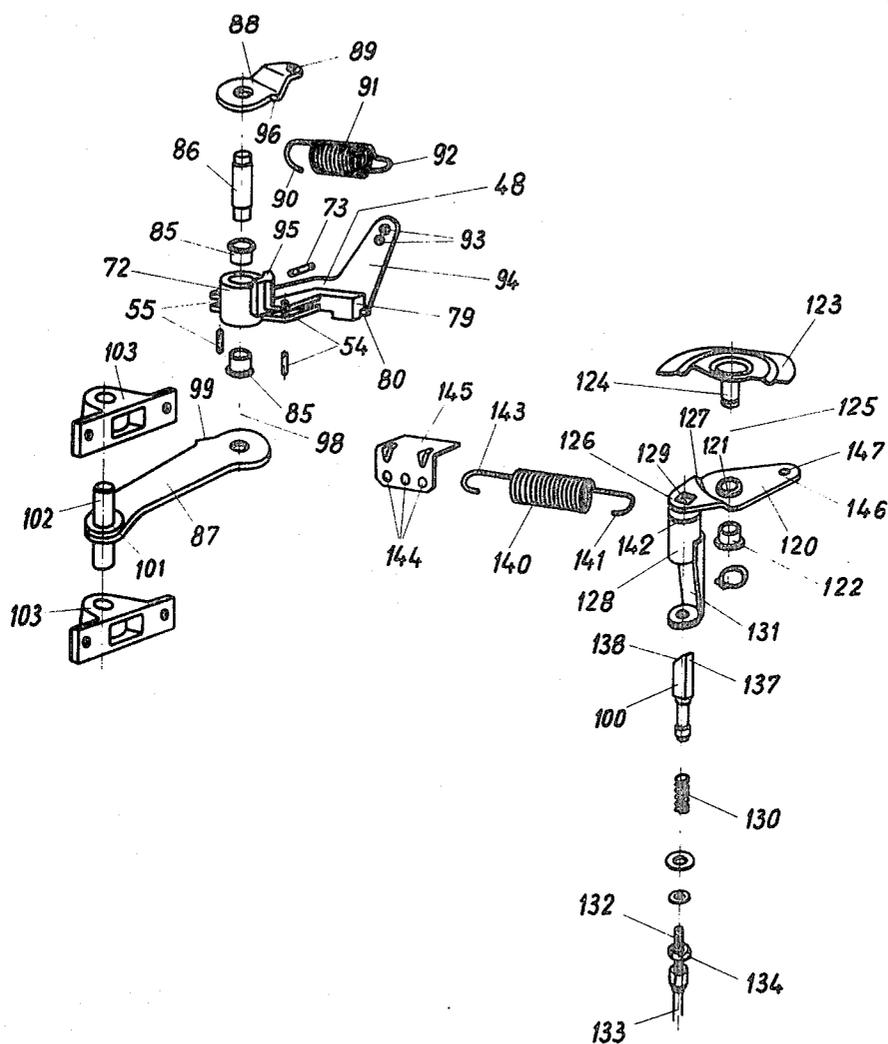


Fig. 8

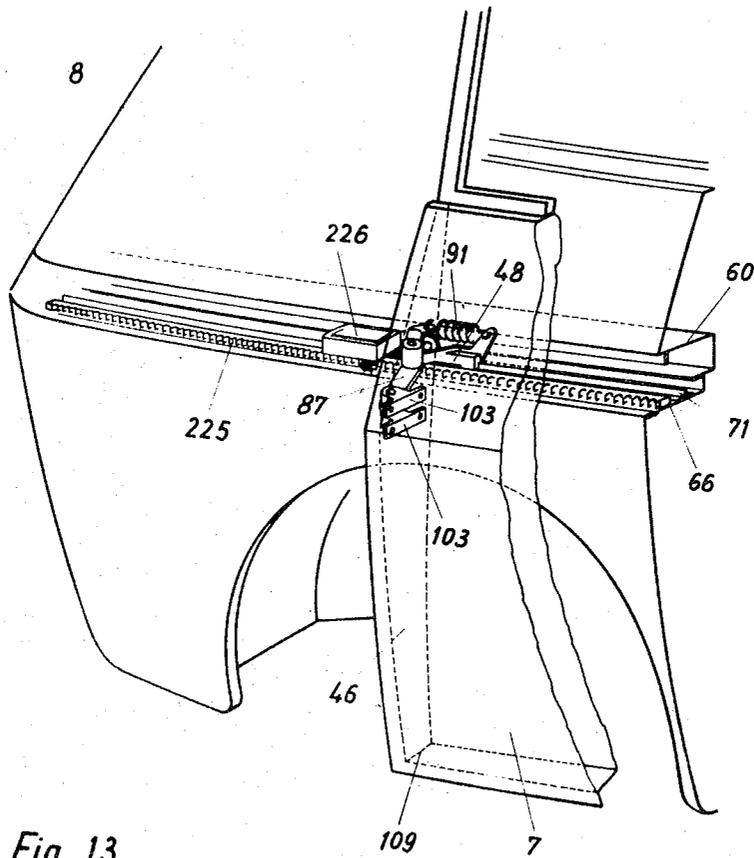


Fig. 13

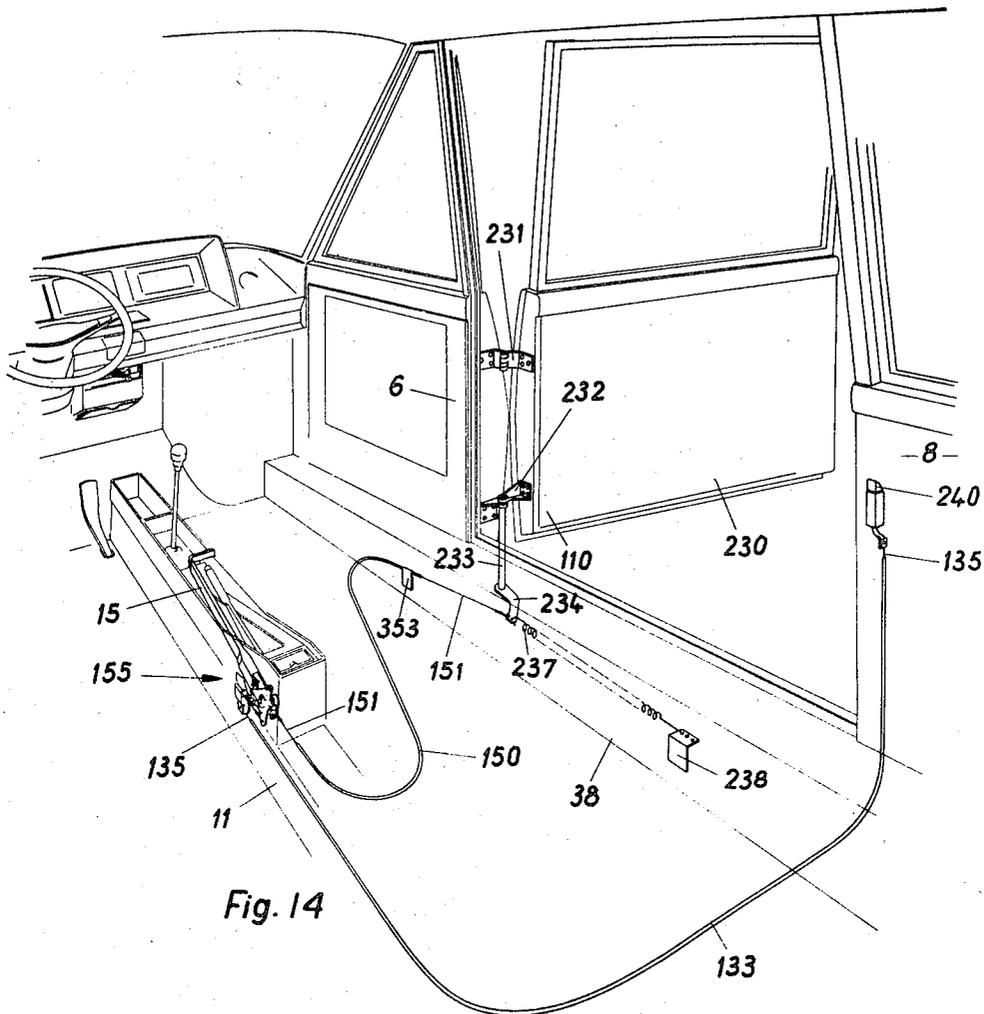


Fig. 14

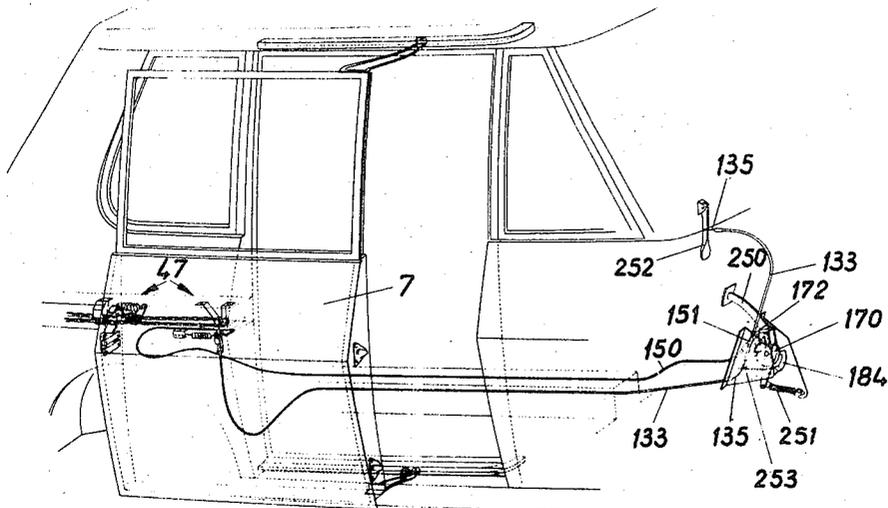


Fig. 15

ACTUATING MECHANISM FOR A DOOR OF A VEHICLE, IN PARTICULAR A TAXI

The invention relates to an actuating mechanism for a door of a vehicle, in particular a taxi.

The driver of a vehicle, particularly a taxi, often has to open the door for his passengers or especially to close it. Since the doors for the passengers are generally relatively far from the driver, he usually cannot open and close the doors from his seat, or can open and close them only by special effort by leaning over other seats. Often he has to leave his seat entirely and get out. To do this he has to wait until there are no cars passing by. In city traffic this can often take a very long time. Also if he has left his seat he cannot drive off rapidly, if necessary. If he has to lean across the vehicle to operate the doors, he cannot pay attention to traffic. Often the actuating mechanisms intended for use by the passengers are not suitable for closing the doors from the drivers seat. In particular, in fast moving city traffic it is desirable that the driver should be able to open and shut easily and quickly not only the door next to him but also at least one other door for the passengers from the drivers seat. The invention provides such an actuating mechanism. This mechanism must be simple and rugged in design and economical to manufacture, install and maintain.

A door opening and closing device has been proposed in which two handles are provided beside the drivers seat by which, through the intermediary of gear segments, bevel gears, a push rod and a pivoting lever in each side wall, a door at the back of the vehicle can be opened and closed. Before opening, the lock must also be released. This device is constructionally extremely costly. It is very sensitive with respect to mounting tolerances and, in particular, it occupies a great deal of space. The space beside the drivers seat cannot be used for a passenger seat since it is in the path of swing of the hand levers. This type of device is not suitable for sliding doors and it can also only be used for doors which have a fixed lock in one edge of the door since, due to the play of the gear transmissions, the door would otherwise flap considerably and might open partially.

The aim of the invention is to provide an actuating mechanism for a vehicle door remote from the driver which is of simple construction and avoids costly transmission and operating means and by means of which the door can easily and quickly be closed and, if necessary, opened. For this purpose the invention provides a hand or foot operated actuating element mounted on the body within reach of the driver by means of which through the intermediary of Bowden cables, flexible cables, rods or the like the mechanism is operated for closing and possibly opening at least one door in the form of a hinged or sliding door in a position remote from the driver for a sliding door. The mechanism includes a supporting and rocking lever pivotably mounted on the door and a sliding guide track on the body. In the end position of the door with the door opening just covered, this rocker lever is connected by an engaging finger or the like with a catch which is mounted on the body and is displaced in the direction of closing the door by the actuating mechanism operated by the driver.

With this type of mechanism, the driver can operate the passenger door or doors as desired without any trouble and without leaving his seat. The passenger is prevented from opening the door at an inopportune moment, which has often led to damage and accidents since the passenger is frequently not paying sufficient attention to the traffic or cannot see it because the rear view mirrors are positioned for the driver. Children cannot open the door unnoticed since the actuating element is in the drivers range of vision. Hence the actuating mechanism is also very suitable for town cars, family cars or a second car used by the mother of a family. By using a hand or foot operated element, the necessary operating force can be applied without any additional energy sources, suitable transmission being chosen so that the actuating forces remain small even in the case of large closing forces. By using Bowden cables, flexible cables or suitable rods or the like, the passenger

space is not encumbered with actuating means extending from the door to the driver. Bowden cables can easily be accommodated in the vehicle without occupying much space. If the path is simple, flexible cables without any sheath can be used.

Also suitable rods, for example corresponding approximately to the rods of gear shifts, can be used. The remote closing device is especially suitable for sliding doors since, on the one hand, their operation is not familiar to the passengers and, on the other hand, in addition to having to slide the door to and fro, which can easily be done by the passenger or a supplementary drive mechanism, the door has to be moved into the door opening on closing and moved out of the door opening on opening so that there must be suitable rocker mechanisms which come into operation at the end of the sliding motion and are particularly suitable for operation by a remote actuating mechanism. The actuating element can be in the form of a hand or foot brake lever, hand brake pull device, switch lever or switch operating rod.

The catch can be of various designs, for example a component sliding longitudinally at a suitable angle to the supporting and rocking lever. During the motion of the rocker lever there is relative movement between the engaging finger and the rocker lever which is permissible if for example the engaging finger is provided with a ball bearing rolling on the rocker lever. Relative movement of this kind is avoided if, in accordance with an advantageous embodiment of the invention, the catch is in the form of a lever the pivotal support of which is arranged coaxially with the closed end position of the rocker lever bearing on the guide carriage. Then the point of engagement of the engaging finger on the catch moves along a circular arc about the point of rotation of the rocker lever throughout the whole closing motion. Although the engaging finger or the like can also be arranged on the rocker lever, it is advantageous to mount it on the catch. The guide carriage is then free of the corresponding parts and connection of the operating means for the engaging finger or the like is simpler since the catch does not move as the door slides. The engaging finger can be of various designs, for example a pawl. In accordance with a preferred embodiment of the invention, it is in the form of a pin which can be slid in the direction of the axis of the catch against a spring bias with an engaging surface lying against a bearing surface of the rocker lever in the direction of the axis of swing and an inclined return pressure surface over which the rocker lever runs when the sliding door is moved from an open position to a position covering the door opening. In order to be able to open the door from the drivers seat by releasing the engaging finger, another feature of the invention is that the engaging finger is retracted by a separate Bowden cable or the like operated by the driver. To make sure that when the rocker lever reaches the end position the catch is also in the correct position for catching the engaging finger, a spring mounted on the body can be provided to pretension the catch in the direction of opening the door. As a sliding door is as a rule slid backwards to open, a rocker mechanism can satisfactorily be mounted at about half the height of the door opening if the actuating elements, such as Bowden cables, flexible or rods lie in the rear side wall and pull rearwards. To achieve a suitable construction, the catch is preferably in the form of a two-armed lever which is pivotably mounted at its center on the body and carries the engaging finger at one, outwardly directed end, while the other end is connected to the closing Bowden cable or the like. To bring the engaging finger near the rocker lever and, with a simple sheet metal construction, to provide a satisfactory rigid mounting for the supporting pivot of the catch, the catch is advantageously angled. Preferably the angle bend forms a stop for limiting the swinging motion of the catch. The engaging finger can also be made to engage the catch bearing plate or the like to limit the closing motion.

To avoid having to push the door out of the door opening by hand and to assure reliable cooperation between the catch and the rocker lever, in accordance with a further feature of the invention, there is a door opening spring to pretension it in a

direction to open the door. This spring should be strong so that it accelerates the heavy door out of the door opening and the momentum simultaneously ensures that the door is slid back slightly and thus when the engaging finger is released by the driver it does not engage again behind the rocker lever. A solution as to how to mount the large door-opening spring which is suitable for the restricted space in the thin wall of the vehicle and for the small guide carriage and how to achieve a stable mounting for the rocker lever is provided by mounting the latter fast on one side of the guide carriage bearing on a mounting shaft, while on the other side of the guide carriage bearing there is fixed a spring engaging lever, between the free end of which and a spring bearing on the guide carriage the door opening spring is tensioned.

The door can be locked in the closed position in a number of ways, e.g., by the swing mechanism. Then the closing Bowden cable is only loaded during the closing motion. If it is desired not only to close the door from the drivers seat but also to open it, there must be a suitable transmission system from the drivers seat to the door to carry out the unlocking and if necessary the locking of the door. This is avoided if the closing Bowden cable is locked in the closed position of the door in the region of the actuating element. But then the closing Bowden cable or the like is always loaded with the whole closing force and has to be made correspondingly strong and adjustable so that the door is always correctly closed and can be kept closed and elongations of the Bowden cable or the like or any play in the actuating mechanism can be compensated. This form of lock and the mechanism described below are suitable not only for sliding doors or sliding doors with the previously described rocker and engaging finger mechanism, but also for hinged doors.

To make the operation simple, the closing Bowden cable or the like and the engaging finger Bowden cable or the like are attached to a single actuating element, preferably a hand operated element. Depending on which way this is moved, the door can then be opened or closed. A suitable means from the point of view of attachment, application of force and achievement of the required transmission and also arrangement of the corresponding coupling components is a hand lever pivoting at one end as the actuating element for the door closing mechanism. In accordance with an advantageous embodiment of the invention, the closing Bowden cable or the like is attached to a stop lever operated by the hand operating lever and having a locking device engaging when the closed position is reached and releasable to open the door, preferably by means of the hand operating lever. The locking device can also be released in a way similar to the press button release on a hand brake lever. To close the door the hand operating lever has to travel over a considerable path if the force to be applied by hand is not to be too great. In order that it does not have to be left in the pulled-up position during travel and consequently does not impede the freedom of motion of the driver or cause injury in the case of an accident but can be returned to its initial position during travel, the stop lever is advantageously coupled with the hand operating lever by a pawl or the like in the open position of the door, while in the closed position of the door it can be separated therefrom. To achieve this with simple, light parts preferably manufactured by stamping from sheet metal, the stop lever can be in the form of a plate with two pawl notches mounted coaxially with the hand lever, in the closing notch of which a closing pawl mounted on the hand lever and pretensioned by a spring in the direction of the pawl notch is engaged in the open position of the door, and in the holding notch of which a similar spring-loaded pawl attached to the hand operating lever is engaged in the closed position of the door. To release the holding pawl to open the door by operating the hand operating lever, a cam is provided which is set in action by the hand lever on passing the rest or stop position for coupling the notched plate to the hand operating lever and pushes the holding pawl out of its rest position. To close the door the hand operating lever is then for example pulled upwards. When the holding pawl has

engaged, it can then be returned to its initial position. To open the door it is then for example pressed down slightly. To be able to draw down the engaging finger by means of the hand lever to open the door and to couple the engaging Bowden cable or the like to the hand lever to do this there is provided an opening lever which is carried along by the hand lever when the rest position of the hand lever is passed in the direction opposite to the closing direction. The engaging Bowden cable or the like is attached to this opening lever. In order to be able to open the door by drawing back the holding pawl to release the closing Bowden cable or the like at the same time that the engaging finger is actuated, the cam for disengaging the holding pawl is advantageously arranged on the opening lever since the latter is only coupled to the operating lever for the opening motion. A suitable form for the opening lever, which then automatically provides the stroke necessary to disengage the holding pawl, is to make the opening lever in the form of a plate which is pivotally mounted on the body to swing about an axis spaced from the hand operating lever bearing and has a bent side flange which the hand operating lever engages in the rest position and to open the door. An easily manufactured, compact arrangement of the individual elements of the hand operating lever is achieved if the elements for opening and closing and for holding are respectively arranged in two planes beside one another, the engaging disc and the opening plate being mounted one beside the other between two arms of the preferably U-shaped hand operating lever and the hand operating lever and engaging disc bearing pin passing through a slot in the opening plate preferably in the form of an arc of a circle or large round opening permitting rocking of the opening plate but restricting its movement. The flange of the opening plate is bent outwards under one arm of the hand lever and the profile of the essentially plane opening plate is provided with the opening cam for the holding pawl which has a side projection acted on by the opening cam. To eliminate rattle and especially to ensure that the cam of the opening disc releases the holding pawl on closing the door, the opening disc is preferably pretensioned against the opening direction by a spring mounted on the body. In this way the load is also released from the return spring of the engaging finger.

As the hand operating lever is preferably pivotally mounted at its rear end, the closing Bowden cable or the like attached below the hand lever and engaging disc bearing joint is pulled forwards. If the opening motion is to be achieved by pressing down the hand operating lever, then with the point of attachment of the engaging Bowden cable or the like preferably below the bearing point there is motion towards the rear. To be able to lead this Bowden cable, like the closing Bowden cable, downwards and under the rear seats to the rear edge of the door opening, the opening Bowden cable is preferably passed over a deflecting roller mounted on the body in the region of the hand operating lever. In this way parts projecting too far above the tunnel are avoided. The hand operating lever with its associated parts can be satisfactorily mounted and its stroke suitably restricted by means of two bearing brackets which take the main bearing pin for the hand operating lever and the engaging disc together with the mounting pins for the opening lever and the deflecting roller and which have at the top striking shoulders bent inwards so as to lie one above the other and carry a damping layer to provide a damped restriction to the travel of the hand operating lever in the closing direction. This, together with the previously described features, produces a compact unit for the hand operating lever. The hand operating lever is advantageously of a form similar to a hand brake lever and is mounted on the transmission tunnel preferably next to the hand brake lever. This is easy for the driver to reach and to apply the necessary force. In addition, with the arrangement of the gear shift lever and brake lever in the middle of the vehicle it is already impossible to have a bench seat. Furthermore the position next to the drivers seat is satisfactory from the point of view of safety in the case of an accident since operating elements in the region of the knee or

on the dashboard against which someone might fall in the case of a collision are avoided. To be able to grip the hand operating lever easily and particularly to avoid confusing it with the normal hand brake lever, it is preferably provided at the front end with a handgrip bent to one side and lying in front of the hand brake. The hand operating lever and if necessary the hand brake lever can be covered with a housing over the tunnel open at the top in the region of the levers and terminating at the rear in a container box, possibly having an ashtray for passengers in the rear seat behind the lever bearing. Thus the rigid and inflexible lever construction is surrounded with a protective shield. As the lever bearing with the mounting for the opening disc and stop requires a relatively high housing, an ashtray can conveniently be positioned in this within easy reach of passengers in the rear seat.

The door can easily be slid by hand since it is only opened when a passenger is boarding or alighting. However, in order that the driver shall be able to slide the door from his seat and thus be able to open the door rapidly for passengers in fast-moving traffic and to close the door after they have boarded or alighted without any difficulty, the door is advantageously fitted with an electromechanical, pneumatic or hydraulic drive to slide it forwards and backwards. The operating switch or press button or the like for the door drive is preferably mounted in the immediate area of the hand operating lever grip, preferably in the housing surrounding it. Then to open the door the driver presses the hand lever down and then closes the switch to move the door backwards, and when he wishes to close the door, he switches the switch to move the door forwards and when it reaches its foremost position with his hand in the same position pulls up the hand operating lever.

In accordance with an advantageous embodiment of the invention, the door drive can be in the form of a chain engaging with the guide carriage and a reversing motor preferably arranged at the rear end of the door guide. The drive motor then does not load the guide carriage and the guide. It can be made of whatever size is desired; also its energy leads do not have to be made movable. Of course there need to be a chain tensioner, intermediate bearing and at the front, or possibly at the back in the case of a different arrangement of the motor, a returning wheel for the chain. The chain drive is economical. In another embodiment of the door drive there can be a ratchet or the like engaged by a pinion driven by a reversible motor mounted on the guide carriage. The drive motor can be an electric motor with reducing gearing. This can be fed directly from the energy supply for the vehicle without any supplementary hydraulic or pneumatic devices and is easily switched to open or close the door.

Especially suitable for remote control of the door closing from the drivers seat is a sliding door suspended from three points, one sliding bearing being provided at each of the top and bottom front corners of the door and the third central sliding bearing being in the region of the middle of the rear edge of the door. The latter is connected with the closing mechanism. Thus only one closing mechanism is required for swinging the door in and out of the door opening and sliding it backwards and forwards. In addition, the three point suspension avoids tilting of the guides for the door which in the case of a mechanical door drive could cause troublesome breakdowns. The upper and lower guides for the sliding door curve inwards at the front thus directing the door into the door opening while at the rear end it is pushed into the door opening by the closing mechanism. To hold the door tight in the region of the front side of the door when it is closed, at the front side of the door there are two conical bosses projecting at an angle from the front of the door in the closing direction which engage in oval, outwardly tapering, plastic door holders arranged on the car body in the door framework.

The actuating mechanism of the invention is suitable for various different kinds of doors and particularly for sliding doors on automobiles. It is especially advantageous for use in small town cars and particularly on small taxis since in this

case the door are light and the aim is to provide a cheap, car occupying very little space which when standing between other cars allows the passengers to maneuver and board or alight with ease despite the fact that very little space is available. It is advantageous if the door on the side away from the driver is offset to the rear with respect to the door on the drivers side and is wider than the drivers door, the drivers seat being the only full-sized seat in front. The passengers can enter very quickly through the large door preferably slid backwards on the outside over the rear side wall since it is not encumbered by a seat beside the driver. The door can then be closed extremely rapidly by the driver. Thus the minitaxi can be boarded easily and quickly.

The invention will be described in more detail below with reference to drawings of preferred embodiments.

IN THE DRAWINGS

FIG. 1 is a schematic plan view of a small taxi, the part lying above the window line being omitted;

FIG. 2 is a perspective view of the dashboard, transmission tunnel with its levers and the front right-hand corner of the passenger space;

FIG. 3 is a schematic partially oblique view of the right-hand side wall of the body of the vehicle shown in FIGS. 1 and 2 with the vehicle door partially slid back and schematically depicted actuating mechanism;

FIG. 4 is a partial cross section through the closing mechanism along the line 4—4 in FIG. 3 but with the guide carriage slid all the way forwards, the chain drive being omitted for the sake of clarity;

FIG. 5 is a partial section along the line 5—5 in FIG. 4 with a side elevation of the guide carriage, the rail for the guide carriage being omitted for the sake of clarity and the catch lying in another plane being represented partially in cross section;

FIG. 6 is a partial section along line 6—6 in FIG. 4 with a plan view of the guide carriage and the catch lying under it in the closed position of the door and the closing mechanism;

FIG. 7 is a partial view of the closing mechanism corresponding to FIG. 6 but in the position of the door and the closing mechanism from which the door is pushed into the door opening at the end of the forward sliding motion;

FIG. 8 is an exploded oblique view of individual parts of the guide carriage and catch;

FIG. 9 is an oblique view of the hand operating lever together with the engaging disc and pawls at the beginning of the closing process, the opening disc being omitted and the left-hand bearing bracket being partially cut off;

FIG. 10 is a view similar to FIG. 9 with the hand operating lever and engaging disc with pawls at the end of the closing process, the rest position of the hand operating lever being represented by dotted lines;

FIG. 11 is a view similar to FIGS. 9 and 10 of the hand operating lever, but with the opening disc in place, the hand operating lever and opening disc being depicted in the rest position by full lines and in the open position partially by dotted lines;

FIG. 12 is an exploded oblique view of the individual parts of the hand operating lever together with the engaging and opening discs and associated components;

FIG. 13 is a partial oblique view of the rear side wall and the rear end of the sliding door in another embodiment for the door drive by means of a ratchet with travelling motor;

FIG. 14 is a perspective view similar to FIG. 2 but showing a modification in which the door is hinged at its forward side;

FIG. 15 is a schematic side view in which the manually operable member for the door operating mechanism is a foot pedal.

The first embodiment of the invention is depicted in FIGS. 1 to 12. FIG. 1 shows a small taxi 1 with a large bench seat 2 at the rear. At the front there is only one seat 3 for the driver behind the steering wheel 4. In the left side wall beside the drivers seat 3 there is a normal width door 5 which is hinged at

its forward side and is about 80 cm. in width. In the right-hand side wall there is a sliding door 7 about 1 m. in width and offset to the rear with respect to the left-hand door 5. The sliding door 7 can be slid to the rear on the outside of the rear side wall 8. It is arranged in such a way that it is easy to climb into the bench seat 2 and to load luggage into the space 9 beside the drivers seat. Arranged on the right-hand front side wall 6 there is an inside spare seat or child's seat 10 which can be folded up into the side wall. On the transmission tunnel 11 behind the gear lever 12 there is mounted in the usual way a hand brake lever 13 with a press button 14 for releasing the hand brake. Beside the hand brake lever 13 lies the hand operated lever 15 for the door closing and opening mechanism. At the front end 16 of the lever 15 there is a handgrip 17 bent to the right and lying in front of the hand brake lever 13. The levers 12, 13, 15 are surrounded by a housing 18. At the front end of the housing 18 there is a container box 19 while at the rear in the zone 20 the housing covers the mechanism for mounting the two levers 13 and 15. It is accordingly open at the top in the region of the hand levers 13 and 15. These levers project through an opening 21 in the upper wall 22 of the housing. The housing 18 is preferably padded and made to absorb impact energy. As its rear end 23 lies quite high, an ashtray 24 is positioned for use by passengers in the rear seat. In the upper wall 22 at the front end 25 there is a switch 26 for the electric door drive so that it can easily be operated when gripping the handgrip 17.

As can be seen particularly from FIG. 3, the right-hand passenger door 7 is in the form of a sliding door on the front upper corner 27 of which is arranged a sliding bearing lever 28 carrying a guide roller 29 which runs in an upper slide guide track 31 set in the longitudinal roof support 30. The front end 32 of the track is bent inwards. At the front bottom corner 33 of the sliding door 7 there is a similar sliding bearing lever 34 carrying a side support roller 35 and a bearing roller 36 which run in a lower slide guide track 37. This is fitted in the right-hand door step 38. The front end of the track 39 is likewise bent inwards. At the front side 40 of the door 7 and spaced from one another there are two pointed catch pins 41 which engage in plastic door holders 42 when the door is closed. The door holders 42 are mounted on the rear side 43 of the right-hand front side wall forming the jam of the door opening 108 and have conical, outwardly tapering openings 44.

At the height of the beltline 45 of the vehicle and acting on the rear side 46 of the door slightly below the center, there is a closing mechanism 47 which forms the third point of suspension for the sliding door 7. The closing mechanism 47 comprises a guide carriage 48 which is arranged to slide longitudinally in a sliding door track 49 set in the rear side wall 8. At the rear end 50 of the sliding door track 49 there is mounted an electric motor drive 51 which takes the form of a reversible motor and suitable speed reducing gear. It drives a sprocket wheel 52 on which runs a drive chain 53 for the door. The two ends of the chain are fixed at 54 and 55 to the guide carriage 48. At the front of the track, the chain runs over a return wheel 56 which is mounted to rotate freely on a bearing supported by a bracket 57. The upper rear section of side wall 58 extends down to a slide guide slot 59 and carries an approximately L-shaped slot cover 60 (FIG. 4) the upper arm 61 of which carries the bracket 57 for the return roller 56 and also chain guide holders 62 for guiding the chain in the empty space 63. The lower L-shaped arm 64 together with the upper L-shaped arm 65 of a slide track support plate 66 form a track 67 which extends over the whole length of the slide guide slot 59. The arms 64 and 65 are welded together. The slide guide support plate 66 is welded with its front bent end 68 under the inwardly directed impact arm 69 of the lower rear side wall plate 70. Instead of the design with individual plates welded to the body, box channels or the like for separate preassembly can be used, incorporating the guide parts together with the motor drive, chain, chain guides, chain tensioner etc. and mounted preassembled on the body and welded there or fixed in such a way as to be interchangeable and/or adjustable. The

assembly and adjustment is then simpler and the operation still more reliable and accurate.

Welded to the slide guide support plate 66, as can best be seen from FIG. 4, is a slide guide rail 71 formed by folding and bending suitable strip material. It extends over the whole length of the guide system. In the region of the rocker lever bearing 72, the guide carriage 48 carries on an inwardly projecting bearing pin by means of a ball bearing 74, a running and supporting roller 75, the peripheral groove 76 in which engages over the guide rail 71. The guide carriage is chiefly supported and guided by this runner roller 75. To ensure good lateral guiding, the guide carriage 48 is provided with a guide shoe 79 which is spaced from the roller 75 and has a groove 80 which opens downwards and engages over the guide rail 71. A side stop 81 formed on the guide carriage 48, shown dotted in FIG. 4 due to its position in front of the plane of the drawing, lies under the holding rail 67 and prevents the guide carriage 48 from lifting upwards when running on the guide rail 71. At the front end of the guide rail there is a stop 83 which is engaged by a stop 81 to restrict the movement of the guide carriage and door.

A support and rocker lever 87 is fixed on the lower end of a pivot pin 86 rotatably supported in the bearing 72 by a bearing sleeve 85. Fixed on the upper end of the pivot pin 86 is a spring action lever 88. While the support and rocker lever 87 projects outwards, the spring action lever 88 projects inwards. Set in a hole 89 in the spring action lever 88, is one hook 90 of the door opening tension spring 91. The other hook 92 of the spring 91 is hooked into one of the two holes 93 of an obliquely outwards and forwards projecting spring support arm 94, depending on the required closing force. In the region of the rocker lever bearing 72, the guide carriage 48 has a stop 95 which is engageable by the support surface 96 of the spring action lever 88 so as to limit the swing path of the support and rocker lever 87. In this position, a line 97 connecting the middle point of the spring anchoring hole 89 to the axis 98 of the rocker pivot pin 86 of the support and rocker lever 87 and the spring action lever 88 is inclined by about 60 degrees to the direction of the spring action and the direction of travel of the guide carriage 48. The bearing surface 99 for the engaging finger 100 is at the corresponding angle α of about 40° to a line 97' approximately parallel to the line 97.

The support and rocker lever 87 in the open position as shown in FIG. 7 has its front end 101 slightly bent forwards. It is substantially plane and carries at its front end 101 a door pivot pin 102 by means of which it is rotatably attached to bearing blocks 103 which are arranged above and below the support and rocker lever 87 and are screwed to the rear side 46 of the sliding door 7 by means of the screws 105 and nuts 106 with a reinforcement plate 107 interposed. The length of the support and rocker lever 87 and the relative position of its pivot points are chosen such that when it is swung through somewhat less than 90 degrees the sliding door 7 can swing out of the position shown in FIG. 7, covering the door opening 108 but with its rear end 109 still standing out from the opening, into the position shown in FIG. 6 in which it fits right into the door opening 108. In doing this, the front slide bearings run in the inwardly bent sections of the guide tracks 32 and 39 until the front edge 110 of the sliding door is also completely moved into the 90 108 and the pins 41 enter the openings 44 in the door holders 42. In this position the door seal 111 seals with the seat 112 on the body.

As can be seen from FIG. 4, the support and rocker lever 87 projects out through a narrow slit 113 extending over the length of the slide guide lying in the beltline 45. This slit is formed between the arm 69 of the lower side wall plate 70 and an inwardly directed arm 114 of an outer covering plate 115 removably fitted in the large slide guide slit 59.

While the door 7 is moved by the door opening spring 91 from the completely closed position in FIG. 6 to the position in FIG. 7 standing out from the opening when the engaging finger 100 permits, to push the door into the completely closed position there is an actuating lever 120. This is in the

form of a two-armed lever which has approximately in the middle a bearing hole 121 with a bearing bushing 122 rotatable on a bearing pin 124 on a bearing plate 123 fixed to the under side of the slide guide support plate 66 below the slide guide 71. The arrangement is such that the axis of swing 125 of the lever 120 is coaxial with the axis of swing 98 of the support and rocker lever 87 in the foremost position of the guide carriage 48 as limited by the stop 83. Thus the actuating lever 120 and the rocker lever 87 can swing without relative motion with respect to one another and without friction of the engaging finger 100 during the closing motion.

At the end 126 carrying the engaging finger 100 the actuating lever 120 is bent upwards so that when the lever is properly mounted, the finger 100 and its bearing in the form of an opening 129 in the lever 120 are brought up tight against the support and rocker lever 87. To limit its swing, the engaging finger 100 impinges on a corresponding profiled part of the bearing plate 123. A projection 127 on the lever 120 can also be used as stop for the swing, preferably by coming up against the corresponding profiled part of the bearing plate 123. The upwardly bent end 126 of the lever 120 carries an engaging finger guide tube 128 projecting downwards. The engaging finger 100 is square in profile over part of its length and projects through a corresponding square opening 129 in the lever 120 in an upwards direction. It can be slid downwards in the guide tube 128 against the action of a spring 130. Projecting downwards from the guide tube 128 is a holder 131 in which is adjustably mounted a screw sleeve 132 for attaching a Bowden cable 133. It can be tightened by means of a lock nut 134 after adjustment has been carried out. The outer casing of the Bowden cable is supported in the sleeve 132 while the push-pull wire 135 passes through the sleeve 132 and is attached to the engaging finger 100. The engaging finger 100 has a vertical engaging surface 137 which lies against the bearing surface 99 of the support and rocker lever 87. An upper surface 138 inclined to the engaging surface 137 acts as over-running and return surface. When the support and rocker lever 87 coming from behind meets the engaging finger 100, it runs over the surface 138 thus depressing the engaging finger against the action of the spring 130 until the engaging surface 137 is released and the engaging finger again springs up behind the support and rocker lever 87. In its initial position limited by the stop, the actuating lever 120 is held by a tension spring 140, one hook 141 of which is inserted into an annular groove 142 in the sleeve 128. The other hook 143 of the spring 140 is inserted as desired in one of several holes 144 of a spring holder 145 fixed to the body under the slide guide support plate 66. Thus the holding force of the spring can be altered to ensure that the engaging finger 100 is pushed down and the lever 120 is not swung when the guide carriage 48 coming from behind runs into the front end position. At the end 146 away from the engaging finger of the actuating lever there is a connecting hole 147 for mounting of a fork head 148 for attaching a Bowden cable 150. The push-pull wire 151 of the Bowden cable 150 is adjustably fixed to the fork head 148 and is provided with a strong sheath as it always has to bear the full closing force of the door 7. The sheath of the Bowden cable 150 is supported on the body in a way which is not shown in detail in the region of the closing mechanism. By pulling the pull wire 151 of the Bowden cable 150, the lever 120 is swung from the position shown in FIG. 7 to that shown in FIG. 6. In doing this it carries the rocker lever 87 with it by means of the engaging finger 100 and thus pushes the door 7 into the door opening 108.

As can be seen from FIGS. 3 and 4, the Bowden cable 133 which operates the engaging finger 100 hangs down vertically from the lever 120 and can therefore easily follow the rocking motion of the lever 120. As is shown in FIG. 3, it runs under the rear bench seat, not depicted here, and along the tunnel 11 to the hand operating mechanism 155. As its main movement is horizontally backwards, the Bowden cable 150 which operates the lever 120 first runs rearwards along the rear side wall 8 and then lies in a loop behind and under the rear bench

seat before likewise running along the tunnel 11 to the hand operating mechanism 155.

The hand operating mechanism 155 comprises two bearing brackets 156, 157 lying inside the housing 18, which is omitted in FIGS. 3 and 9 to 12, these brackets being fixed to the tunnel 11 by horizontally bent attachment arms 158 so that they extend vertically upwards. The hand operating lever 15 is mounted between the brackets 156, 157, either fitting tight or possibly with washers inserted between inwardly directed recesses 159. The lever 15 is bent from a plate to provide a U-cross section and has at its lower end 160 spaced arms 161 between the rear zone of which the connecting portion 162 is cut to form a slot 163. The arms 161 have holes 164 through which pass a bearing pin 165 which extends through corresponding openings 166 in the recesses 159 of the bearing brackets 156, 157 and is secured axially by a retaining ring 167 and a collar 168 at the left-hand end of the bearing pin 165. Mounted between the two arms 161 of the hand operating lever 15 directly next to each other are an engaging disc 170 and an opening disc 171 held by spring washers 169.

The circular engaging disc 170 has fixed to it an arm 172 which projects downwards, the pull wire 151 of the Bowden cable 150 being attached to this arm. To allow this to be attached despite the opening disc 171 lying beside the engaging disc, the arm 172 is bent slightly to the right. The engaging disc 170 has a holding notch 173 and, spaced therefrom a closing notch 174. As can be seen from FIGS. 9, 10 and 12, a closing pawl 175 is mounted by means of a bearing pin 176 with spacing rings 177 inserted in holes 178 of the hand operating lever 15 so as to swing in the direction of the engaging disc 170. A spiral spring 179 fixed to the hand lever 15 presses the closing pawl 175 in the direction of the engaging disc 170. A holding pawl 184 is mounted in two holes 180 at the rear ends 181 of the bearing brackets 156, 157 by means of a bearing pin 182 held by two spacing sleeves 183 so as to swing in the direction of the engaging disc. The closing pawl 175 and the holding pawl 184 lie in the same plane as the engaging disc 170. The holding pawl 184 is pressed in the direction of the engaging disc 170 by a spring 185. The holding pawl spring 185 is secured by a pin 186 to the rear eye 187 of the left-hand bearing bracket 157. The arrangement of the two pawls and notches is such that in the closed position of the hand operating lever 15 as shown in FIG. 10 the nose 188 of the holding pawl 184 engages in the holding notch 173, while in the rest position of the hand operating lever as shown in FIG. 9 and FIG. 3 the closing pawl nose 189 engages in the closing notch 174 when the engaging disc 170 is rotated back, the pull wire 151 of the Bowden cable 150 is drawn back and therefore the actuating lever 120 is rocked back. As the closing notch 174 has an inclined run 190, in the engaged position of the holding pawl 184 the closing pawl 175 can leave the closing notch 174 so that the hand operating lever 15 can be pushed out of the closing direction 191 as shown in FIG. 10 in the direction opposite to the closing direction into the reset position 15' shown by the dotted lines in FIG. 10 and, as shown in FIG. 11, into the open position 15''.

At a distance A obliquely above and behind the bearing holes 166 for the hand operating lever 15 and the engaging disc 170 are the bearing holes 195 for the opening disc bearing pin 196 on which the opening disc 171 is pivotally mounted with spacing sleeves 197. The disc 171 projects through the slit 163 in the hand operating lever 15 and has an oblong slot 198 which runs in an arc with respect to the bearing hole 199 as center. The hand operating lever and engaging disc bearing pin 165 passes through the slot 198 which is of such a length that the opening plate 171 can carry out the necessary movements. But by means of this slot 198, the angle of swing of the opening plate 171 can be limited. Instead of an arcuate slot there can be a large hole. At its front end 200 the opening plate 171 has an engaging flange 201 on which, as shown in FIG. 11, the lower edge 202 of the left-hand arm 161 of the hand operating lever 15 rests in the rest position so that when the hand operating lever is depressed in the direction opposite

to the closing direction, namely in the direction of the arrow 203, the opening disc is carried along with it and swings backwards. In the lower region of the opening plate 171 there is an opening cam profile 205 which when the hand operating lever 15 is depressed from the rest position into the opening position 15'' presses on an opening seat 206 on the left-hand side of the holding pawl 184, thus rocking the holding pawl 184 backwards so that the holding nose 188 is raised from the holding notch 173 and the engaging disc 170 is released. The closing spring 140 of the lever 120 can then swing out and the pull wire 151 of the Bowden cable 150 can be drawn back. In addition, the opening plate 171 has an arm 208 extending obliquely downwards; at the end of which is provided a hole 209 for attaching a fork head 210. Fixed to the fork head 210 is the pull wire 135 of the engaging finger Bowden cable 133. The left-hand bearing bracket 157 has a deflection roller support arm 211 projecting downwards on which a deflection roller 212 is rotatably mounted. The pull wire 135 of the engaging finger Bowden cable 133 is deflected round this roller. In this way the backwards opening motion of the opening plate arm 208 is converted into a forwards opening pull on the pull wire 135. In the arm 208 of the opening plate 171 there is also a spring attachment hole 213 in which the hook 214 of an opening plate tension spring 215 is held, the other hook 216 being inserted into a spring holder 217 fixed to the tunnel 11. This ensures that the opening plate 171 is always pulled forwards when the hand operating lever 15 lies in its rest position or above this and consequently the holding pawl 184 is released during the closing process so as to be able to engage in the holding notch 173 of the disc 170.

At the upper ends 218 of the bearing brackets 156, 157 there are stop flanges 219 bent inwards and lying one above the other. These carry a damping plate 220 of plastic, rubber or like impact absorbing material. They form a stop for limiting the swing of the hand operating lever 15 in the closing direction 191.

The mode of operation of the above-described actuating mechanism is essentially as follows:

When the sliding door 7 is in the completely drawn back wide open position, not shown in detail in the drawings, and is to be closed, the driver switches the switch 26 to forwards drive. By means of the pinion 52 through the return wheel 56 the electric motor drive 51 pulls the front run 63 of the chain 53 backwards and consequently the rear run of the chain and the guide carriage 48 forwards. This carries the sliding door through the position shown in FIG. 3 forwards until the carriage runs against a limit switch, not shown, which switches off the electric drive of the reversing motor 51. The guide carriage 48 has now reached the stop 83 and is in the position shown in FIG. 7. Shortly before this position is reached, the support and rocker lever 87 by running over the inclined surface 138 has depressed the engaging finger 100 against the action of the spring 130 until the bearing surface 99 has passed the engaging surface 137 and the engaging finger 100 springs up again to lie behind the support and rocker lever 87. Next by grasping the handgrip 17 the driver pulls up the hand operating lever 15, in the closing direction 191 out of the rest position shown in FIG. 9 in which the closing pawl 175 is engaged in the closing notch 174. In doing this the engaging disc 170 is rotated and the pull wire 151 of the closing Bowden cable 150 is pulled forward so that the actuating lever 120 is rotated in such a way against the action of the spring 140 that the engaging finger 100 moves forwards and carries the support and rocker lever 87 into the position shown in FIG. 6. The front end 110 of the sliding door 7 is thereby pushed completely into the door opening 108 so that the bosses 41 enter the associated openings 44 in the door holders 42 and finally the rear end 109 of the door 7 is swung right into the door opening 108 until the sliding door 7 assumes the position shown in FIG. 6 with the door seal 11 also in contact. In this position, the holding notch 173 has reached the holding nose 188 so that the holding pawl 184 is engaged and holds the engaging disc 170 in this closed position so that the door 7 is held closed by

the Bowden cable 150. The driver then pushes the hand operating lever 15 down into the rest position 15', thus causing the closing pawl 175 to leave the closing notch 174 and slide downwards over the circumference of the engaging disc 170. If the door is to be opened again, the driver presses the hand operating lever 15 in the direction of the arrow 203 into the opening position shown by 15''. This first pulls the wire 135 of the engaging finger Bowden cable 133 as a result of which the engaging finger 100 is drawn downwards until its engaging surface 137 has freed the bearing surface 99 of the support and rocker lever 87. The door opening spring 91 then pulls the support and rocker lever 87 outwards. The sliding door 7 swings out of the door opening 108 at the rear. Due to the swing, the guide carriage 48 pushed by the return spring of the end switch, not shown, runs backwards a little way so that the switch is released. By the depressing of the hand lever 15 simultaneously with the opening cam 205, the holding pawl 184 is pushed back and the engaging disc 170 is thereby released so that the spring 140 can pull the actuating lever 120 into its initial position shown in FIG. 7 thereby pulling the pull wire 151 of the Bowden cable 150 back and swinging the engaging disc 170. The engaging finger 100 then lies below or in front of the support and rocker lever 87 since the guide carriage 48 has run backwards slightly. The guide carriage is therefore free for the door to slide. The driver next operates the switch 26 and switches the reversing motor to pull back the door 7 so that by means of the chain 53 the door is pulled back until the guide carriage comes up against an end switch, not shown, which switches off the drive motor 51. The door is now open. On releasing the handgrip 17, the opening plate spring 215 pulls the opening plate 171 forwards and lifts the hand operating lever 15 into the rest position so that the closing pawl 175 is again engaged in the closing notch 174. The closing process can then be repeated.

FIG. 13 shows a variation of the forwards and return drive for the door. Similar parts are denoted by the same reference numbers. Here a rack 225 is arranged parallel to the guide rail 71 on the guide support plate 66. Meshing with this there is a non-depicted pinion of a motor drive 226 which is fixed to the guide carriage 48 and preferably takes the form of reversible electric motor with suitable reducing gear. The remainder of the actuating mechanism is the same as in the embodiment described above and is not shown in detail.

The drive system for sliding the door forwards and backwards can be omitted entirely and the door can be slid by hand. Also other known drive systems of an electromechanical, pneumatic or hydraulic nature can be used, provided the necessary energy sources are available. A number of other modifications can be made to the embodiment represented. Thus instead of the swinging hand operating lever very suitable for a small vehicle there could be a pull element fitted with corresponding engaging and unlocking devices for the engaging finger or the like, or a foot operated lever with corresponding devices for locking and releasing.

FIG. 14 shows a further embodiment of the invention in which the passenger door 230 in the side wall opposite the driver is a hinged door instead of a sliding door as previously described. The door 230 is hung on hinges 231 and 232 secured to the fixed wall portion 6 at the front of the door opening. The door 230 can be opened and closed by means of a vertical shaft 233 which is coaxial with the hinge pin of the lower hinge 232 and is fixed to the door portion of the lower hinge so that the door can be swung on its hinges by rotation of the shaft 233. An arm 234 fixed to the lower end of the shaft 233 lies in the door sill 38. The pull wire 151 of the Bowden cable 150 is attached to the end of the arm 234 in such manner as to pull forwardly on the arm and thereby swing the door in a closing direction. The sheath of the Bowden cable is secured to the door sill 38 by a clip 353. As in the embodiment described with reference to FIGS. 1-12 the other end of the Bowden cable 150 is attached to the arm 172 of the engaging disc 170 as described with reference to FIGS. 9-12. A tension spring 237 is attached at its forward end to the arm 234 on

shaft 233 and at its rear end it is hooked into one or another of several holes provided in a bracket 238 secured to the door sill 38 so as to pull rearwardly on the arm 234 with an adjustable force and thereby tend to swing the door in an opening direction.

In addition to being held by the Bowden cable 150, the door 230 is secured in closed position by means of a spring bolt latch 240 secured on the fixed wall portion 8 at the rear of the door opening and engageable with a suitable detent portion of the door (not seen in FIG. 14). The spring bolt of the latch 240 has an inclined cam surface over which the detent portion of the door rides when the door is closed, and a retaining surface engageable with the detent portion of the door to thereupon hold the door in closed position. The spring bolt of the latch 240 is retractable against its spring bias to release the door by means of the Bowden cable 133, the pull wire 135 of which is attached at one end to the sliding bolt of the latch. The other end of the Bowden cable 133 is attached to the door operating mechanism 155. In particular, the opposite end of the pull wire 135 is attached to the opening plate 171 as described with reference to FIGS. 9-12.

Starting with the door in open position as shown in FIG. 14, it can be closed by pulling upwardly on the hand lever 15 from a rest position to rotate the engaging disc 170 by means of the closing pawl 175 and thereby pull on the pull wire 151 of the Bowden cable 150 to swing the door to closed position in which it will be held by the holding pawl 184 while the lever 15 can be returned to rest position. The door is further secured in closed position by the latch 240. To open the door the driver moves the lever 15 downwardly from its rest position to release the holding pole 184 and also pull on the wire 135 of the Bowden cable 133 as previously described and thereby release the latch 240 whereupon the door is swung in an opening direction by the spring 237.

FIG. 15 shows another modification in which the manually operable mechanism for opening and closing the door comprises a foot operated element and a hand releasing lever. The mechanism is basically the same as that described with reference to FIG. 9-12 except that the hand operated lever 15 is replaced by a foot operated lever or pedal 250 which is swingably supported coaxially with engaging disc 170 and carries the closing pawl 175 which engages the disc 170 and rotates it in a direction to close the door when the pedal 250 is pushed forwardly. A spring 251 is connected to the lower end of the pedal 250 to swing it back to its initial rest position. The pull wire 151 of the Bowden cable 150 is attached to the arm 172 of the engaging disc 170 in the same manner as previously described. The pull wire 135 of the releasing Bowden cable 133 is attached to a hand release lever 252 which is mounted on the body in front of the driver. The other end of the Bowden cable 133 is attached to the mechanism of the door as in the embodiments previously described. The pull wire 135 of the Bowden cable 133 is also attached to a releasing arm 253 of the holding pawl 184 so that when the hand lever 252 is pulled in order to release the door it also releases the holding pawl from the engaging disc 170.

To close the door the driver pushes forwardly with his foot on the foot pedal 250, thereby rotating the engaging disc 170 by means of the closing pawl 175 to move the door to a closed position as previously described, whereupon the engaging disc 170 is held in closed position by the holding pawl 184. The foot lever 250 is then returned to the rest position by the spring 251. To open the door, the driver pulls forwardly on the lower end of the releasing lever 252, thereby pulling on the pull wire 135 of the Bowden cable 133 to withdraw the engaging finger and release the door and also moving the holding pawl 184 to released position by means of the arm 253 so as to release the engaging disc 170. The door is thereupon opened by the described spring means. It will be understood that the manual operable opening and closing mechanism illustrated in FIG. 15 is applicable to a hinged door as shown in FIG. 14 as well as to a sliding door as shown in FIGS. 1-13.

What I claim and desire to secure by Letters Patent is:

1. A passenger vehicle, in particular a taxi, comprising a vehicle body having side walls, a drivers seat mounted in the body adjacent a first side wall, a door opening in an opposite second side wall, a door for closing said door opening, means mounting said door to move laterally outwardly from a closed position in said opening and then longitudinally of said body along said second side wall, said mounting means comprising means on a first edge portion of said door and cooperating means on the body to support said first edge portion of the door and guide it into said door opening at a first side thereof, a carriage track extending horizontally away from the opposite second side of said door opening, a carriage running on said track and a rocker lever pivotally mounted on said carriage to swing about a vertical axis and pivotally connected to said door adjacent the opposite second edge thereof, actuating mechanism for opening and closing said door, comprising actuating means mounted on the body near said second side of said door opening and means for releasably connecting said actuating means with said rocker lever when said carriage is in an end position of its travel nearest said door opening to swing said rocker lever about said vertical axis in a direction to close the door and means to hold said door in the closed position and control means convenient to a driver in said drivers seat for controlling said door actuating mechanism.

2. A vehicle according to claim 1, in which said door mounting means comprises door tracks mounted on the vehicle body at the top and bottom of said door opening and extending substantially across said door opening, said tracks curving inwardly at a first side of said door opening, runners at the top and bottom of said door adjacent a first edge of said door running respectively on said tracks, said door tracks being positioned to guide said first edge of the door into the first side of said door opening when the second edge of said door is swung into the second side of the door opening by said rocker lever.

3. A vehicle according to claim 2, in which said rocker lever is spring biased in a direction to swing said second edge of said door outwardly from the door opening.

4. A vehicle according to claim 3, in which the pivotal mounting of said rocker lever comprises a bearing on said carriage, a shaft rotatable in said bearing, said rocker lever being fixed on one end of said shaft, and an arm fixed of the opposite end of said shaft, the spring biasing of said rocker lever being effected by a spring acting on said arm.

5. A vehicle according to claim 2, in which said actuating mechanism comprises an actuating lever pivotally mounted on the body to swing about a vertical axis which is aligned with the axis of said rocker lever when the carriage is at a first end of its travel nearest the door opening and means for turning said actuating lever about its pivot, and in which said releasable connecting means comprises means for releasably connecting said rocker lever with said actuation lever.

6. A vehicle according to claim 5, in which said means for turning said actuating lever comprises spring means biasing said actuating means in a direction to open said door.

7. A vehicle according to claim 6, in which said control means comprises manually operable means near the drivers seat, and in which said means for turning said actuating lever comprises flexible cable means connecting said actuating lever with said manually operable means to move said actuating lever in a direction opposite to the bias provided by said spring biasing means.

8. A vehicle according to claim 6, in which said releasable connecting means comprises a spring biased bolt carried by said actuating lever and engageable with said rocker lever.

9. A vehicle according to claim 8, in which said bolt has an inclined face to ride over said rocker lever upon movement of said rocker lever relative to said actuating lever in a direction to close the door.

10. A vehicle according to claim 8, in which said control means comprises manually operable means near the drivers seat, and in which flexible cable means connects said bolt with said manually operable means to retract said bolt and thereby

release said rocker lever from said actuating lever by operation of said manually operable means.

11. A vehicle according to claim 10, in which said manually operable means comprises an operating member with which said flexible cable means is connected, and in which latch means releasably engages said operating member to lock it in a position in which said door is held closed by said actuating lever.

12. A vehicle according to claim 11, in which said manually operable means comprises means for releasing said latch means.

13. A vehicle according to claim 2, comprising reversible motor means for moving said carriage forwardly and rearwardly on said carriage track.

14. A vehicle according to claim 13, in which said control means comprises means for controlling said motor means including means for reversing said motor means.

15. A vehicle according to claim 1, comprising interengaging means on said first edge portion of said door and said first side of said door opening to secure said first edge of the door when the door is in said door opening.

16. A vehicle according to claim 1, in which said control means comprises a single control lever adjacent the drivers seat, means connecting said control lever with said door actuating means, and means connecting said control lever with said releasable connecting means.

17. A vehicle according to claim 16, in which said control lever is movable in a first direction from a rest position to release said releasable connecting means for movement of the door in an opening direction and is movable in a second direction from said rest position to operate said door actuating means to move the door in a closing direction.

18. A vehicle according to claim 1, in which said control means adjacent the drivers seat includes means connected with said connecting means to release said rocker arm from said actuating means.

19. A passenger vehicle, in particular a taxi, comprising a vehicle body having side walls, a drivers seat mounted in the body adjacent a first side wall, a door opening in an opposite second side wall, a door for closing said door opening, means mounting said door to move laterally outwardly from a closed position in said opening and then longitudinally of said body along said second side wall, a carriage track extending horizontally away from one side of said door opening, a carriage running on said carriage track, and a rocker lever pivotally connected to said door adjacent the said edge thereof and pivotally mounted on said carriage to swing about a vertical axis, actuating mechanism for opening and closing said door comprising an actuating lever pivotally mounted on the body to swing about a vertical axis which is aligned with the axis of said rocker lever when the carriage is at a first end of its travel nearest the door opening, catch means for bringing and holding said door in closed position comprising means for releasably connecting said rocker lever with said actuating lever and control means convenient to a driver in said drivers seat for controlling said door actuating mechanism and said catch means comprising means for turning said actuating lever about its pivot.

20. A passenger vehicle, in particular a taxi, comprising a vehicle body having side walls, a driver's seat mounted in the body adjacent a first side wall, a door opening in an opposite second side wall, a door for closing said door opening, means mounting said door to move laterally outwardly from a closed position in said opening and then longitudinally of said body along said second side wall, said mounting means comprising door track means for supporting and guiding said door, a carriage track extending horizontally away from a first side of said door opening, a carriage running on said carriage track, and a rocker lever pivotally connected to said door adjacent an edge thereof and pivotally mounted on said carriage to

swing about a vertical axis, and actuating mechanism for opening and closing said door and for holding it in closed position comprising an actuating lever pivotally mounted adjacent said first side of said door opening, catch means for operatively connecting said actuating lever with said rocker lever when said carriage is in a position adjacent said first side of said door opening, manually operable means mounted in said vehicle in a convenient position to be operated by a driver seated in said driver's seat, and means connecting said manually operable means with said catch means and with said actuating lever, said manually operable means being operable in one mode to operate said actuating lever and being operable in another mode to operate said catch means.

21. A vehicle according to claim 20, in which said manually operable means comprises a pivoted operating lever movable by the driver in one direction from a rest position to operate said catch means and movable in another direction from said rest position to operate said actuating lever.

22. A vehicle according to claim 21, in which said manually operable means comprises a disc rotatably mounted coaxially with the pivot of said operating lever and having an arm, and a pawl carried by said operating lever and engageable with said disc to rotate said disc when said operating lever is swung in a first direction from said rest position, said connecting means comprising means connecting said arm with actuating lever.

23. A vehicle according to claim 22, in which said connecting means comprises second flexible cable means connecting said arm of said disc with said actuating lever.

24. A vehicle according to claim 22, further comprising a holding pawl engageable with said disc to hold it in a position to which it has been rotated by said operating lever, whereupon said operating lever is movable back to rest position while said disc is held by said holding pawl.

25. A vehicle according to claim 24, in which said manually operable means comprises a plate pivotally mounted to swing about a pivot offset from the pivot of said operating lever and engageable by said operating lever to swing said plate about its pivot, said connecting means comprising means connecting said pivoted plate with said catch means.

26. A vehicle according to claim 25 in which said plate has a cam surface acting on said holding pawl to disengage said holding pawl from said disc upon pivotal movement of said plate in a selected direction from a rest position.

27. A vehicle according to claim 26, further comprising spring means for biasing said plate to a rest position and means for limiting movement of said plate.

28. A vehicle according to claim 26, in which said connecting means comprises first flexible cable means connecting said plate with said catch means to release said catch means when said plate is swung from a rest position in a direction to release said holding pawl.

29. A vehicle according to claim 21, in which said manually operable means comprises a plate pivotally mounted to swing about a pivot offset from the pivot of said operating lever and operable by said operating lever, and said connecting means comprises first flexible cable means connecting said plate with said catch means to release said catch means when said plate is swung in a selected direction from said rest position.

30. A vehicle according to claim 29, further comprising a guide roller over which said first flexible cable means is trained, said guide roller being rotatably mounted near said plate and substantially reversing the direction of travel of said first flexible cable means.

31. A vehicle according to claim 21, in which means for pivotally mounting said operating lever comprises mounting brackets comprising impact damping means limiting the swinging movement of said operating lever.

32. A vehicle according to claim 20, in which said manually operable means comprises a foot pedal in position to be operated by a driver seated in said drivers seat.

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