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## Handle device for vehicle


### Abstract

A door handle device for a vehicle includes a handle base fixed to a door of a vehicle, and an operation handle rotatably coupled to the handle base. The operation handle includes a coupling protruding portion that is provided at an end portion on a rotation center side of the operation handle. The handle base includes an elastically deformable elastic piece that is adjacent to the coupling protruding portion. Movement of the operation handle toward a rotation tip end is restricted by elastically engaging a stopper protruding portion formed on any one of the coupling protruding portion and the elastic piece with a stopper fitting portion formed on the other by using elastic deformation of the elastic piece. Movement of the elastic piece in a disengagement direction of the stopper protruding portion is restricted by a clip mounted on the handle base.



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## Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS (1) The present application is a continuation application of PCT/JP2022/022565 that claims priority to Japanese Patent Application No. 2021-094114 filed on Jun. 4, 2021, the entire content of which is incorporated herein by reference.

TECHNICAL FIELD
(1) The present disclosure relates to a door handle device for a vehicle.
BACKGROUND ART
(2) As a handle device for a vehicle in which an operation handle is coupled to a handle base fixed to a door in advance with a sliding operation, a handle device described in JP2006-063575A is known.
(3) In this related-art example, the operation handle includes a support arm at a tip end portion

thereof, and bearing holes are formed in the support arm. Inclined groove portions are each formed in a region from a tip end of the support arm to the bearing hole such that a peripheral edge of the bearing hole is at the highest position.
(4) On the other hand, the handle base is provided with a columnar shaft portion protruding from a tip ends of thin plate-shaped bending portions, and the shaft portion is guided to the groove portion of the handle base when the operation handle is slid. Thereafter, when the operation handle is further moved forward, since a tip end of the shaft portion rides on the inclination of the groove portions, the bending portions bend and pass over the groove portions, and when the shaft portion matches the bearing holes, the shaft portion falls into the bearing holes due to an elastic restoring force of the bending portions, and the operation handle is rotatably coupled to the handle base.
SUMMARY OF INVENTION
Technical Problem
(5) However, in the above-described related-art example, when a force for pulling out the operation handle rearward is applied, a rearward force is applied to the shaft portion fixed to free ends of the bending portions on a front end surface of the shaft portion and at a position closer to the operation handle from coupling portions of the bending portions.
(6) The bending portion having the thin plate shape receives a force in a twisting direction by the force applied to the shaft portion, and there is a concern that the engagement with the bearing holes is released. In particular, when a pull-out force is applied in a state where the force in the twisting direction is applied, the bending force applied to the bending portions also increases, and there is a problem that detachment of the operation handle easily occurs.
(7) The present disclosure has been made to solve such a problem, and relates to a handle device for a vehicle in which detachment of an operation handle from a handle base is less likely to occur.
Solution to Problem
(8) A door handle device for a vehicle according to the present disclosure is as follows.
(9) The door handle device for a vehicle includes: a handle base **1** fixed to a door of a vehicle; and an operation handle **2** rotatably coupled to the handle base **1**, in which
(10) movement of the operation handle **2** toward a rotation tip end is restricted by elastically engaging a stopper protruding portion **5** formed on any one of a coupling protruding portion **3** that is provided at an end portion on a rotation center (C**2**) side of the operation handle **2** and elastically deformable elastic pieces **4** that are adjacent to the coupling protruding portion **3** in the handle base **1** with a stopper fitting portion **6** formed on the other by using elastic deformation of the elastic pieces **4**, and
(11) movement of the elastic pieces **4** in a disengagement direction of the stopper protruding portion **5** is restricted by a clip **7** mounted on the handle base **1**.
Advantageous Effects of Invention
(12) According to the present disclosure, since the elastic deformation of the elastic piece is further restricted by the clip, the stopper protruding portion is not inadvertently detached from the stopper fitting portion.

## Description

BRIEF DESCRIPTION OF DRAWINGS
(1) FIG. **1** is a front view showing a handle device for a vehicle of the present disclosure;
(2) FIGS. **2**A and **2**B show views of the handle device for a vehicle of the present disclosure, in which FIG. **2**A is a view taken in the direction of an arrow **2**A in FIG. **1**, and FIG. **2**B is a partially enlarged view of FIG. **2**A when viewed in the direction of an arrow **2**B;
(3) FIG. **3** is a cross-sectional view taken along a line **3**A-**3**A in FIG. **1**;
(4) FIGS. **4**A to **4**C show views of an operation handle, in which FIG. **4**A is a plan view, FIG. **4**B is

a cross-sectional view taken along a line **4**B-**4**B in FIG. **4**A, and FIG. **4**C is a view taken in the direction of an arrow **4**C in FIG. **4**A;
(5) FIGS. **5**A to **5**C show plan view of a handle base, in which FIG. **5**A is a plan view showing a front end portion of the handle base, FIG. **5**B is a view taken in the direction of an arrow **5**B in FIG. **5**A, and FIG. **5**C is a view taken in the direction of an arrow **5**C in FIG. **5**A;
(6) FIGS. **6**A to **6**C show cross-sectional views taken along a line **6**A-**6**A in FIG. **5**A showing a process of mounting the operation handle, in which FIG. **6**A is a view showing a state where a coupling protruding portion is inserted into the handle base, FIG. **6**B is a view showing a state where the operation handle is slid forward, and FIG. **6**C is a view showing a state where the mounting is completed;
(7) FIGS. **7**A to **7**C show views of a clip, in which FIG. **7**A is a plan view, FIG. **7**B is a view taken in the direction of an arrow **7**B in FIG. **7**A, and FIG. **7**C is a cross-sectional view taken along a line **7**C-**7**C in FIG. **7**A;
(8) FIGS. **8**A and **8**B show views of a state where the clip is held at a restraint position, in which FIG. **8**A is a cross-sectional view taken along a line **8**A-**8**A in FIG. **2**B, and FIG. **8**B is a partially enlarged view of a detent stop portion;
(9) FIGS. **9**A and **9**B show views of a state where the clip is held at a restraint release position, in which FIG. **9**A is a view corresponding to FIG. **8**A, and FIG. **9**B is a partially enlarged view of the detent stop portion;
(10) FIG. **10** is a perspective view showing a state where the clip is held at the restraint release position at a predetermined angle;
(11) FIGS. **11**A to **11**C show cross-sectional views of FIG. **8**A, in which FIG. **11**A is a cross-sectional view taken along a line **11**A-**11**A in FIG. **8**A, FIG. **11**B is a cross-sectional view taken along a line **11**B-**11**B in FIG. **11**A, and FIG. **11**C is a cross-sectional view taken along a line **11**C-**11**C in FIG. **11**A;
(12) FIGS. **12**A and **12**B show views of another embodiment of the present disclosure, in which FIG. **12**A is a diagram corresponding to FIG. **8**A, and FIG. **12**B is a view taken in the direction of an arrow **12**B in FIG. **12**A;
(13) FIGS. **13**A to **13**C show views of a clip, in which FIG. **13**A is a plan view, FIG. **13**B is a view taken in the direction of an arrow **13**B in FIG. **13**A, and FIG. **13**C is a cross-sectional view taken along a line **13**C-**13**C in FIG. **13**A;
(14) FIG. **14** is an enlarged perspective view of a main portion showing a state where the clip is mounted, as viewed from a back surface direction;
(15) FIGS. **15**A to **15**C show cross-sectional views of FIG. **12**A, in which FIG. **15**A is a cross-sectional view taken along a line **15**A-**15**A in FIG. **12**A, FIG. **15**B is a cross-sectional view taken along a line **15**B-**15**B in FIG. **15**A, and FIG. **15**C is a view corresponding to FIG. **15**B in a state where the clip is at a restraint release position; and
(16) FIGS. **16**A to **16**C show views of the clip at a restraint release position, in which FIG. **16**A is a view corresponding to FIG. **12**A, FIG. **16**B is a cross-sectional view taken along a line **16**B-**16**B in FIG. **15**A, and FIG. **16**C is an enlarged perspective view of a main part viewed from the back surface direction.

## DESCRIPTION OF EMBODIMENTS

(17) As shown in FIG. **1** and FIGS. **2**A and **2**B, a door handle device for a vehicle is formed by coupling an operation handle **2** to a handle base **1** in a rotatable way about a rotation center (C**2**). In order to prevent the handle base **1** from being exposed to an outside of a vehicle, the handle base **1** is fixed to a back surface of a door panel (not shown), and the operation handle **2** is coupled from the outside of the vehicle after the handle base **1** is attached to the vehicle.
(18) In this embodiment, the operation handle **2** is disposed so as to cover an entire surface of the handle base **1**, and when a cylinder lock **13** is provided on the handle base **1**, a key operation opening **1***a* for exposing a key insertion opening **13***a* of the cylinder lock **13** to the outside is

formed as shown by a chain line in FIG. **1**.

(19) Hereinafter, in the present specification, a rotation center (C**2**) side of the operation handle **2**, that is, a left side in FIG. **1** is referred to as a "front side", an opposite direction thereof is referred to as a "rear side", an axial length direction of the rotation center (C**2**), that is, an upper-lower direction in FIG. **1** is referred to as "upper and lower", a pull-out direction of the operation handle **2**, that is, a near side of a paper surface in FIG. **1** is referred to as a "front surface", and an opposite side is referred to as a "back surface". An operating lever **14** is coupled to a rear end portion of the handle base **1** so as to be rotatable about a rotation axis (C**14**), and rotation operation of the operating lever **14** is transmitted to a door lock device **16** for maintaining a door-closed state via a cable device **15** or the like to operate the door lock device **16**. A counterweight **14***a* is fixed to the operating lever **14** to cancel out an inertial force when a side collision force is applied to the vehicle and prevent inadvertent opening of a door.

(20) On the other hand, as shown in FIG. **3** and FIGS. **4**A to **4**C, the operation handle **2** has a coupling protruding portion **3** at a front end and an operating leg **2***a* at a rear end, a first arc surface **3***a* is formed at a front end of the coupling protruding portion **3**, a second arc surface **3***b* concentric with the first arc surface **3***a* is formed on a surface-side wall surface thereof, and a stopper protruding portion **5** is formed at the center of the first and second arc surfaces **3***a*, **3***b*.

(21) As shown in FIGS. **4**A to **4**C, a front half of the stopper protruding portion **5** is formed with inclined surfaces **5***a* whose protrusion dimension gradually increases toward a rear, and a rear end portion of the coupling protruding portion **3** is formed with handle-side restricting protruding portions **3***c*.

(22) As shown in FIG. **3**, in a state where the operation handle **2** is coupled to the handle base **1**, the first circular arc surface **3***a* abuts on a front end abutting piece **1***b* formed on the handle base **1**, and the second circular arc surface **3***b* abuts on a coupling protruding portion supporting wall **1***c* of the handle base **1**. When the operation handle **2** is pulled out in the direction of an arrow (P) in FIG. **3** in this state, the operation handle **2** rotates about the center of the first and second arc surfaces **3***a*, **3***b* as the rotation center (C**2**) while the first and second arc surfaces **3***a*, **3***b* are in sliding contact with the corresponding wall surfaces **1***b*, **1***c*.

(23) Further, as shown in FIGS. **1** and **3**, a locking step portion **2***b* that protrudes forward from a free end of an operating leg **2***a* in a state where the operation handle **2** is coupled to the handle base **1** is locked to a locking rod **14***b* that protrudes from the operating lever **14**, and the operating lever **14** rotates about the rotation axis (C**14**) in accordance with the rotation of the operation handle **2**.

(24) In the above description, the stopper protruding portion **5** is disposed on the rotation center (C**2**) of the operation handle **2**, but the stopper protruding portion **5** may be disposed at a position deviated from the rotation center (C**2**). In this case, a clearance in a rotation direction is set between the stopper protruding portion **5** and a stopper fitting portion **6** to be described later to allow the rotation of the operation handle **2**.

(25) As shown in FIG. **3**, the operation handle **2** is mounted to the handle base **1** by inserting the coupling protruding portion **3** and the operating leg **2***a* of the operation handle **2** into the door through a handle mounting opening **1***d* formed in front and rear portions of the handle base **1** and a handle mounting opening portion (not shown) of a door panel, and then sliding the entire operation handle **2** forward as indicated by an arrow (S) in FIG. **3**.

(26) In order to couple the operation handle **2**, the handle base **1** is provided with the stopper fitting portion **6** into which the stopper protruding portion **5** of the operation handle **2** is fitted. As shown in FIGS. **5**A to **5**C and FIGS. **6**A to **6**C, the stopper fitting portion **6** is formed as an opening provided in a pair of elastic pieces **4** extending rearward in a cantilever shape from a front end portion of the handle base **1**.

(27) The pair of elastic pieces **4** are disposed at an interval slightly wider than an interval between upper and lower surfaces of the coupling protruding portion **3** of the operation handle **2** and narrower than an interval between tip ends of the stopper protruding portion **5**, and guide inclined

portions **4***a* whose interval between the elastic pieces **4** gradually increases toward the tip ends are formed at free end portions of the elastic pieces **4**, respectively. Further, upper and lower wall surfaces of the handle base **1** are provided with an introduction opening **1***e* into which a slide core enters, the sliding core forming the stopper fitting portion **6** to be undercut at the time of molding by a mold in which a front surface and an opposite surface (back surface) direction thereof are set as a mold splitting direction.

(28) In the present embodiment configured as described above, as shown in FIG. **6**A, in a state where the coupling protruding portion **3** of the operation handle **2** is set in the handle mounting opening **1***d*, the guide inclined portions **4***a* of the elastic pieces **4** are positioned on a movement path of the stopper protruding portion **5** of the operation handle **2**. When the operation handle **2** is slid forward from this state, the inclined surface **5***a* of the stopper protruding portion **5** comes into contact with the guide inclined portion **4***a*, and when the operation handle **2** is further slid, as shown in FIG. **6**B, the facing elastic pieces **4** are elastically deformed so as to retreat by the stopper protruding portion **5** to allow passage of the stopper protruding portion **5**. The stopper protruding portion **5** is elastically restored at a position corresponding to the stopper fitting portion **6**, and as shown in FIG. **6**C, the stopper fitting portion **6** is elastically engaged with the stopper protruding portion **5**.

(29) As shown in FIG. **3**, the front end abutting piece **1***b* formed on the handle base **1** is formed in a cantilever shape protruding from a front surface side to a back surface side and is formed to be elastically deformable. In a state where the stopper protruding portion **5** of the operation handle **2** is fitted into the stopper fitting portion **6** of the handle base **1**, the front end abutting piece **1***b* is slightly bent forward, and the operation handle **2** is pressed backward by an elastic restoring force of the front end abutting piece **1***b*, and the stopper protruding portion is brought into press-contact with a rear end edge of the stopper fitting portion **6**, thereby preventing the operation handle **2** from rattling.

(30) Further, a torque around the rotation axis (C**14**) is applied to the operating lever **14** by a torsion spring (not shown), and the locking rod **14***b* is pressed to the back surface side in FIG. **3**. As a result, the operation handle **2** is biased toward an initial rotational position side shown in FIG. **3**, thereby preventing rattling.

(31) In this state, as shown in FIG. **6**C, when a rearward pulling operation force is applied to the operation handle **2**, a rearward force is applied to the stopper fitting portion **6**. As a result, only a tensile force acts on the elastic pieces **4** extending rearward with the front side as a base end via the stopper fitting portion **6**, and a force of compression and bending is not added, so that high fracture and deformation resistance can be expected.

(32) Further, as shown in FIG. **6**C, the handle base **1** is provided with base side restricting protruding portions if so as to face the handle-side restricting protruding portions **3***c* of the operation handle **2** in a state where the operation handle **2** is coupled to the handle base **1**, thereby restricting swinging of the operation handle **2** in the upper-lower direction.

(33) A clip **7** is mounted on the above handle base **1**. As shown in FIGS. **7**A to **7**C, the clip **7** is provided with a columnar coupling shaft portion **10** elongated in the upper-lower direction and formed at one end thereof, a pair of restraining pieces **8**, **8** disposed behind the coupling shaft portion **10** and coupled to each other by a coupling piece **7***a*, leg portion support pieces **7***b* extending from one ends of the respective restraining pieces **8**, **8** and in parallel to the coupling piece **7***a*, and base locking legs **7***c* erected on the respective leg portion supporting pieces **7***b*. An operation piece **7***d* for operating the clip **7** is provided on an opposite surface of the leg portion support piece **7***b* on which the base locking leg **7***c* is erected.

(34) Two sets of shaft holding portions **11** are formed at a predetermined interval in the handle base **1** in order to hold upper and lower end portions of the coupling shaft portion **10**. As shown in FIGS. **5**A to **5**C, each of the shaft holding portions **11** includes a back-surface-side support piece **11***a* that protrudes from the front end of the handle base **1** and supports the coupling shaft portion **10** from a

back surface direction, and a front-surface-side support piece **11***b* that supports the coupling shaft portion **10** from the front surface side, and the back-surface-side support piece **11***a* and the front-surface-side support piece **11***b* are disposed at positions slightly shifted in the upper-lower direction.

(35) As shown in FIG. **5**A, on the front surface of the back-surface-side support piece **11***a* and the rear surface of the front-surface-side support piece **11***b*, shaft portion support surfaces **11***c* having substantially the same curvature as that of the coupling shaft portion **10** are formed, each shaft portion support surface **11***c* extends forward, and extension portion cooperate with the shaft portion support surfaces **11***c* to form a shaft introduction portion **11***d* that is open forward in a front view. An upper-lower interval of the shaft introduction portion **11***d* is set to be slightly narrow at an open tip end so that the coupling shaft portion **10** can pass therethrough.

(36) The mounting of the clip **7** on the handle base **1** is performed by pushing both ends of the coupling shaft portion **10** into the shaft holding portion **11**, and when the coupling shaft portion **10** is pressed against the shaft introduction portion **11***d* of the shaft holding portion **11**, the front and back side support pieces **11***a*, **11***b* are elastically deformed to receive the coupling shaft portion **10**, and in this state, the coupling shaft portion **10** is supported by the shaft portion support surfaces **11***c*. In a state where the coupling shaft portion **10** is coupled to the handle base **1**, the clip **7** is rotatable about the coupling shaft portion **10** and is temporarily held without being detached from the handle base **1**.

(37) The coupling shaft portion **10** of the clip **7** and the shaft holding portions **11** of the handle base **1** are provided with a detent stop portion **12** such that the clip **7** temporarily held by the handle base **1** does not rotate inadvertently. As shown in FIGS. **8**A and **8**B, the detent stop portion **12** includes detent stop protruding portions **12***a* formed at both ends of the coupling shaft portion **10** and detent stop bosses **12***b* formed on the shaft holding portion **11** and protruding on a movement path of the detent stop protruding portion **12***a* when the clip **7** rotates. Two detent stop bosses **12***b* are formed at an interval substantially equal to a dimension of the detent stop protruding portion **12***a* in a width direction so that the detent stop protruding portion **12***a* can be sandwiched therebetween.

(38) When the clip **7** rotates in a direction of FIG. **9**A at a restraint release position where the movement of the elastic pieces **4** by the restraining pieces **8** is not restrained as described later, the detent stop protruding portion **12***a* abuts on one detent stop boss **12***b*, and when the clip **7** further rotates, the shaft holding portion **11** is elastically deformed to allow the detent stopping protruding portion **12***a* to pass between the detent stop bosses **12***b*. Thereafter, the detent stop protruding portion **12***a* moves between the detent stop bosses **12***b* while giving detent sensation as shown in FIG. **9**B. At this position, the detent stop protruding portion **12***a* is held at the rotation position since movement thereof to both left and right is restricted by the detent stop bosses **12***b*.

(39) When the operation piece **7***d* is pushed from this state and rotates counterclockwise in FIG. **9**A, the restraining piece **8** of the clip **7** enters the handle base **1** and moves to a restraint position shown in FIGS. **8**A and **8**B. As shown in FIGS. **6**A to **6**C and FIG. **10**, the handle base **1** is provided with clip-restricting walls **9** so as to face the elastic pieces **4**, and the restraining piece **8** of the clip **7** enters a space formed between the elastic piece **4** and the clip-restricting wall **9**.

(40) As shown in FIG. **11**A, the clip-restricting wall **9** of the handle base **1** is formed with a clip-locking step portion **9***a* using the above-described introduction opening **1***e*, and when the clip **7** rotates, as shown in FIG. **11**B, a locking hook **7***e* formed on the base locking leg **7***c* of the clip **7** is locked to the clip locking step portion **9***a* and held at the restraint position.

(41) As shown in FIG. **11**C, at the restraint position, the restraining piece **8** of the clip **7** sandwiches the elastic piece **4** from above and below together with the coupling protruding portion **3** of the operation handle **2**, and restricts the movement of the elastic piece **4** in the upper-lower direction, that is, in the direction in which the stopper fitting portion **6** is detached from the stopper protruding portion **5**. In this state, the movement of the restraining piece **8** in the upper-lower direction is restricted by the clip-restricting wall **9** of the handle base **1**, and the elastic piece **4** does

not move even when a large force in the upper-lower direction is applied.
(42) Further, the locking of the locking leg **7***c* is released by the clockwise rotation of the clip **7** that is at the restraint position in FIG. **8**A by operating the operation piece **7***d*, so that the clip **7** can be easily moved to the restraint release position shown in FIGS. **9**A and **9**B.
(43) FIGS. **12**A and **12**B and the following show another embodiment of the present disclosure. In the description of the present embodiment, components that are substantially the same as those of the above-described embodiment are denoted by same reference numerals in the drawings, and description thereof will be omitted.
(44) As shown in FIGS. **13**A to **13**C, in the present embodiment, the clip **7** includes the pair of restraining pieces **8**, **8** coupled by the coupling piece **7***a*, the leg portion supporting pieces **7***b* extending from one ends of the respective restraining pieces **8**, **8** and in parallel to the coupling piece **7***a*, the base locking legs **7***c* erected on the respective leg portion support pieces **7***b*, and temporary holding locking legs **7***f* erected from the respective front end edges of the leg portion support pieces **7***b*. A locking hook **7***e* is provided on the base locking leg **7***c*. FIG. **14** is an enlarged perspective view of a main portion showing a state where the clip **7** is mounted, as viewed from the back surface direction.
(45) The coupling of the clip **7** to the handle base **1** is performed by pushing the clip **7** from the back surface side of the handle base **1** toward the direction of the front surface as shown in FIG. **16**C. As shown in FIG. **16**B, in order to restrict the insertion direction of the clip **7**, the handle base **1** is provided with two guide protrusions **1***g*, **1***g* for guiding front and rear side wall surfaces of the base locking leg **7***c* of the clip **7**.
(46) Further, the handle base **1** is formed with a clip temporary holding step portion **1***h*, and as shown in FIG. **16**B, when the temporary holding locking leg **7***f* is elastically locked to the clip temporary holding step portion **1***h* to be held at the restraint release position, loss of the clip **7** can be prevented.
(47) Further, as shown in FIG. **15**C, the handle base **1** is formed with restricting step portions **17** for restricting the movement of the base locking legs **7***c* to the surface side of the locking hook **7***e* when the clip **7** is at the restraint release position, and the clip **7** is restricted from being inadvertently moved from the restraint released state to the restraint position.
(48) When the operation piece **7***d* is pushed from the restraint release position, the base locking leg **7***c* is elastically deformed and the locking hook **7***e* climbs over the restriction step portion **17**, thereafter, the locking hook **7***e* is elastically locked to the clip locking step portion **9***a* of the handle base **1** similarly to the above-described embodiment, and thereafter, the clip **7** is held at the restraint position where the movement of the elastic piece **4** is restricted.
(49) Further, the locking of the locking leg **7***c* is released by operating the operation piece **7***d* to pull the clip **7** at the restraint position to the back surface side, so that the clip **7** can be easily moved to the restraint release position shown in FIG. **16**A.
(50) As described above, the door handle device for a vehicle according to the present disclosure is configured as follows.
(51) The door handle device for a vehicle includes: the handle base **1** fixed to a door of a vehicle; and the operation handle **2** rotatably coupled to the handle base **1**. The movement of the operation handle **2** toward a rotation tip end is restricted by elastically engaging the stopper protruding portion **5** formed on any one of a coupling protruding portion **3** that is provided at an end portion on the rotation center (C**2**) side of the operation handle **2** and the elastically deformable elastic pieces **4** that are adjacent to the coupling protruding portion **3** in the handle base **1** with the stopper fitting portion **6** formed on the other by using elastic deformation of the elastic pieces **4**, and the movement of the elastic pieces **4** in a disengagement direction of the stopper protruding portion **5** is restricted by the clip **7** mounted on the handle base **1**.
(52) In the present disclosure, the handle base **1** is provided with the elastically deformable elastic pieces **4** adjacent to the coupling protruding portion **3** of the operation handle **2**, and one of the

coupling protruding portion **3** and the elastic pieces **4** is provided with the stopper protruding portion **5**, and the other is provided with the stopper fitting portion **6** with which the stopper protruding portion **5** is engaged.

(53) The movement of the operation handle **2** toward the rotation tip end (the opposite end to the rotation center (C**2**)) side is restricted by fitting the stopper protruding portion **5** into the stopper fitting portion **6**. Fitting of the stopper protruding portion **5** into the stopper fitting portion **6** is performed by once elastically deforming the elastic pieces **4** to move the operation handle **2** to the coupling position and then elastically restoring the elastic pieces **4**.

(54) Coupling of the operation handle **2** can be performed by sliding the operation handle **2** on the rotation center (C**2**) side to the coupling position, and in this case, after the stopper protruding portion **5** interferes with a member in which the stopper fitting portion **6** is formed in accordance with the sliding of the operation handle **2** and the elastic pieces **4** are elastically deformed, the elastic pieces **4** return to the original position at a portion where the stopper protruding portion **5** and the stopper fitting portion **6** coincide with each other, and the stopper protruding portion **5** falls into the stopper fitting portion **6** and is elastically fitted.

(55) The clip **7** is mounted in a state where the stopper protruding portion **5** is fitted into the stopper fitting portion **6**, and restricts the movement of the elastic pieces **4** in a fitting and detaching direction of the stopper protruding portion **5** and the stopper fitting portion **6**, that is, in an elastic deformation direction during the coupling of the operation handle **2**, so that the elastic pieces **4** are prevented from being elastically deformed in a lock release direction of the stopper protruding portion **5** inadvertently to prevent the operation handle **2** from being detached from the handle base **1**.

(56) The stopper protruding portion **5** can be formed on either the elastic pieces **4** or the coupling protruding portion **3** of a handle body, but when the stopper protruding portion **5** is formed on a handle body side, it is possible to increase a strength when a load of the operation handle **2** applied to the rotation tip end side. That is, in the case where the stopper protruding portion **5** is provided on the elastic pieces **4** which is generally formed thin in order to impart elasticity as in the related-art example described above, there is a possibility that the elastic pieces **4** are torn off from a base end portion of the stopper protruding portion **5** due to a load of the operation handle **2** applied to the rotation tip end side, and when the stopper protruding portion **5** protrudes from the coupling protruding portion **3** that can be expected to have sufficient strength, resistance to the above-described breaking mode is improved.

(57) The clip **7** can be press-fitted and mounted in an appropriate press-fitting space formed in the handle body, for example, but when the clip **7** is configured to be elastically locked to the handle base **1** so as to be maintained in the mounted state, it is possible to enhance mounting operability and prevent inadvertent detachment.

(58) Further, when the handle device for a vehicle is configured in which the clip **7** includes the restraining piece **8** for restraining the movement of the elastic pieces **4** in the mounted state, and the handle base **1** is provided with the clip-restricting walls **9** for sandwiching the restraining piece **8** of the clip **7** in cooperation with the coupling protruding portion **3**, the movement of the elastic pieces **4** can be restricted without excessively increasing the rigidity of the restraining piece **8** of the clip **7**.

(59) Further, when the handle device for a vehicle is configured in which the clip **7** is movable between the restraint position for restraining the movement of the elastic pieces **4** and the restraint release position, and is temporarily held at the restraint release position, it is possible to couple the clip **7** until the handle device for a vehicle is assembled to the vehicle, so that it is possible to prevent inadvertent dissipation of parts.

(60) In this case, the handle device for a vehicle can be configured in which the clip **7** is rotatably coupled to the handle base **1** between the restraint release position and the restraint position at the coupling shaft portion **10**.

(61) When the handle device for a vehicle is configured in which the handle base **1** is provided with the shaft holding portion **11** configured to rotatably hold the coupling shaft portion **10** of the clip **7**, and the shaft holding portion **11** and the coupling shaft portion **10** are provided with a detent stop portion **12** that detent-stops the clip **7** at the restraint release position at a predetermined angle. Since the clip **7** at the restraint release position can be restricted to the predetermined angle, it is possible to prevent a fault in which the clip **7** becomes an obstacle when the handle device is attached to the door.
(62) Although various embodiments have been described above with reference to the drawings, it is needless to say that the present disclosure is not limited to such embodiments. It is apparent to those skilled in the art that various variations or modifications can be conceived within the scope described in the claims, and it is understood that the variations or modifications naturally fall within the technical scope of the present disclosure. Further, the components described in the above embodiments may be freely combined without departing from the spirit of the disclosure.

## Claims

1. A door handle device for a vehicle comprising: a handle base fixed to a door of a vehicle; and an operation handle rotatably coupled to the handle base, wherein the operation handle includes a coupling protruding portion that is provided at an end portion on a rotation center side of the operation handle, wherein the handle base includes an elastically deformable elastic piece that is adjacent to the coupling protruding portion, wherein movement of the operation handle toward a rotation tip end is restricted by elastically engaging a stopper protruding portion formed on any one of the coupling protruding portion and the elastic piece with a stopper fitting portion formed on the other by using elastic deformation of the elastic piece, and wherein movement of the elastic piece in a disengagement direction of the stopper protruding portion is restricted by a clip mounted on the handle base.
2. The door handle device for a vehicle according to claim 1, wherein the clip is elastically locked to the handle base and maintained in a mounted state.
3. The door handle device for a vehicle according to claim 1, wherein the clip includes a restraining piece configured to restrain movement of the elastic piece in a mounted state, and wherein the handle base is provided with clip-restricting walls configured to sandwich the restraining piece of the clip in cooperation with the coupling protruding portion.
4. The door handle device for a vehicle according to claim 1, wherein the clip is movable between a restraint position configured to restrain the movement of the elastic piece and a restraint release position, and is temporarily held at the restraint release position.
5. The door handle device for a vehicle according to claim 4, wherein the clip is rotatably coupled to the handle base between the restraint release position and the restraint position at a coupling shaft portion.
6. The door handle device for a vehicle according to claim 5, wherein the handle base is provided with a shaft holding portion configured to rotatably hold the coupling shaft portion of the clip, and wherein the shaft holding portion and the coupling shaft portion are provided with a detent stop portion configured to detent-stop the clip at the restraint release position at a predetermined angle.