July 15, 1958 A. S. MARTIN 2,843,413

DETACHABLE DOOR HANDLE

Filed May 24, 1954

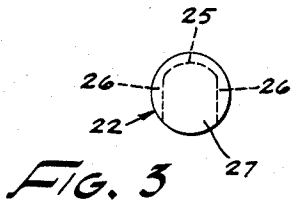


FIG. 3.

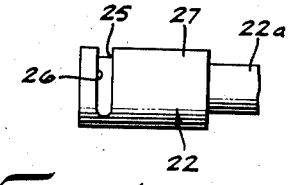


FIG. 4.

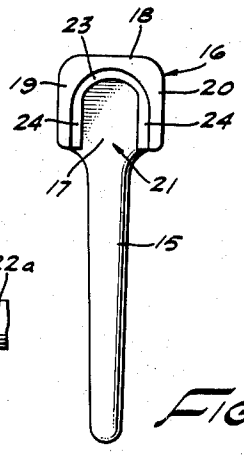


FIG. 2.

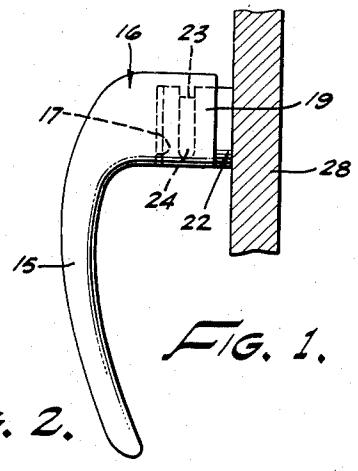


FIG. 1.

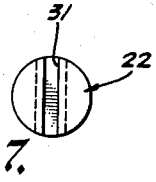


FIG. 7.

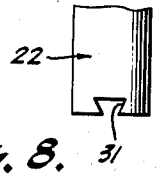


FIG. 8.

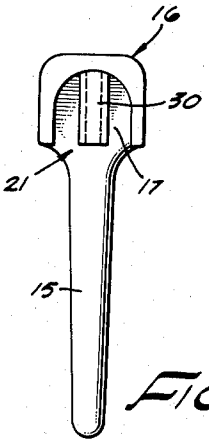


FIG. 6.

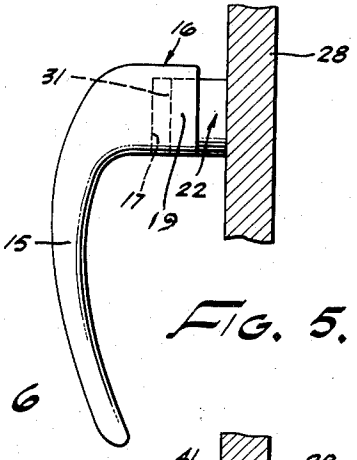


FIG. 5.

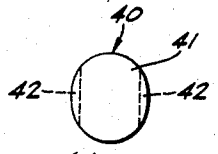


FIG. 11.

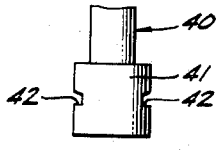


FIG. 12.

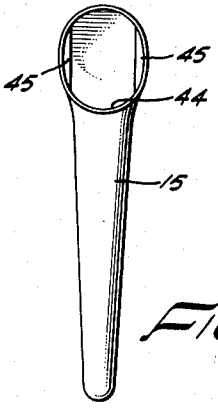


FIG. 10.

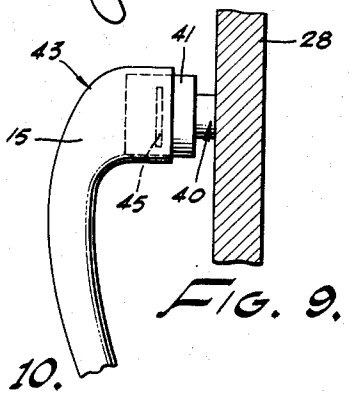


FIG. 9.

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DETACHABLE DOOR HANDLE

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Application May 24, 1954, Serial No. 431,688
5 Claims. (Cl. 292—348)

This invention relates to detachable door handles, more particularly a detachable variety of the kind of handle commonly used in automobiles for latching and unlatching the doors thereof.

It is a principal object of my invention to provide a door handle which may readily be detached from the door-latch spindle so as to leave only the spindle extending from the surface of the door. Such spindles are of small diameter, difficult to grasp, and in the absence of a handle they afford little leverage for turning the latch. By the simple act of removing the handle, it is possible to prevent children, or even adults, from opening an automobile door from the inside, either intentionally or accidentally. Thus it is possible to confine children within an automobile when it is parked, to prevent them from falling out when the car is moving, and to reduce to a minimum at least one projection upon which they may injure themselves either in play or in the event of a sudden stop.

In my Patent No. 2,488,635, issued on Nov. 22, 1949, I have described a handle having like purposes, and particularly characterized by the fact that, while removable, it is quiet and does not rattle. However, the handle therein described has certain disadvantages. To be strong enough to withstand the very considerable stress sometimes required to open a spring latch, it must either be of hard steel, instead of the softer metal usually employed for door handles and like trim, or it must gain strength by being of considerable diameter. In the latter event, the hole into which the handle fits must also be enlarged, requiring a latch spindle or a knob-fitting thereon of greater than standard size. A more important disadvantage appears to reside in the fact that a straight bar handle, fitted to a straight hole through the spindle or knob, does not leave sufficient space between itself and the door to permit the fingers to be readily placed around it for grasping it, unless the spindle extends an undue length from the door. Such an extended spindle is neither standard nor a desirable feature when the safety of small children tumbling about in an automobile is to be considered.

It is accordingly a further object of this invention to provide a detachable handle which not only is quiet but also has inherent strength without weakening the spindle to which it attaches.

Another object of this invention is to provide a detachable door handle which has the appearance and form of an ordinary handle and which may be attached to a spindle of standard length and yet be easily grasped.

Further advantages of my new handle will appear as the following specification proceeds, the specification being considered in connection with the accompanying drawing, in which by way of illustration and example

Fig. 1 is a side elevational view of one embodiment of my invention, the door panel to which the handle is secured being shown conventionally with no attempt to illustrate the connected latch mechanism;

Fig. 2 is an elevational view of the handle as viewed from the right in Fig. 1, the handle being shown detached from the knob or latch spindle;

Fig. 3 is an end view of the latch spindle shown in Fig. 1;

Fig. 4 is a side view of the latch spindle;

Fig. 5 is a side elevational view of a modification of my invention, the aspect being the same as in Fig. 1;

Fig. 6 is an elevational view of the handle shown in Fig. 5; from the same relative aspect as Fig. 2;

Fig. 7 is an end view of the latch spindle shown in Fig. 5;

Fig. 8 is a top plan view of the same latch spindle;

Fig. 9 is a side elevational view of a further modification of my invention, comparable in aspect to Figs. 1 and 5;

Fig. 10 is an elevational view of the handle shown in Fig. 9, the viewpoint being from the right of Fig. 9, with the handle detached from the latch spindle;

Fig. 11 is an end view of the latch spindle shown in Fig. 9; and

Fig. 12 is a top plan view of the same latch spindle.

Having reference now to the details of the drawing, I have shown in Figs. 1–4 a detachable door-handle having a handle or gripping portion **15** and a stem **16**. The stem **16** is hollow, having a recess **17** formed by an upper wall **18** and side walls **19** and **20**, and having an opening **21** at its lower side parallel to the axis of the stem. The recess **17** and the opening **21** admitting thereto from the bottom of the stem **16** are of such diameter and depth as to permit the stem **16** to be placed upon a latch spindle **22** by holding the stem immediately above the latch spindle and then lowering it thereupon. Within the recess **17** on the inner wall of the stem **16** is a ridge **23**, preferably extending from one margin of the opening **21** to the opposite margin thereof. The ridge **23** has end portions **24** which fit as keys into like-formed end portions **26** of a grove or key-way **25** on the latch spindle **22**. Both the key portions **24** and the keyway portions **26** are flat in their longitudinal directions to prevent turning of the handle stem **16** relatively to the latch spindle, the crest of the ridge bearing against the floor of the groove. The portion of the ridge **23** connecting the keys **24**, and the matching portion of the groove **25** are preferably curved and closely fitted so as to provide a firm interlocking support for the handle stem **16** upon the latch spindle **22**, regardless of any looseness of the keys **24** in the keyways **26**. The keyways **26** have a fixed relationship to the spindle **22** such that they are always inclined from the horizontal when the spindle is oriented in a door-latching position.

It is to be understood that while, for simplicity of illustration, I have shown the latch-spindle **22** as an integral member presumably extending from within the handle stem **16** to latching mechanism, not shown, the spindle may have a shank **22***a* of any suitable shape for interlocking with and operating the latch and have at its distal end a knob **27**, as shown in Fig. 4, containing the keyway **25**, or the knob **27** may be separable from the shank of the latch spindle and suitably secured thereto.

The handle portion **15** is in general at a right angle to the stem **16**, but curves outwardly from and then inwardly towards the door panel **28**, having the appearance of a conventional handle and providing a space for the fingers between itself and the door panel.

To remove the handle from the latch spindle **22**, it is only necessary to lift the handle so as to slide the keys **24** from the keyways **26**. The latch spindle **22** will pass through the bottom opening **21**. Replacement of the handle is obviously effected by the reverse of the same movement, the handle then staying in place by its own weight and furthermore delivering a side thrust of the ridge **23** against the sides of the groove **25** which resists

the handle rattling. I have found that the slight torque produced by the horizontally extending leverage of the handle, in conjunction with relatively large engaging surfaces of the key and keyway, has a quieting effect comparable to the cone and socket construction but straight gravitational pressure of the handle described in my aforementioned Patent No. 2,488,635. It is not necessary to have the latch spindle **22** so mounted that the keyways **26** are vertical, with the handle hanging vertically; the keyways and the handle may be at an angle from the vertical in excess of forty-five degrees, yet the handle will remain in place on the spindle, and quietly. In addition to the advantages of appearance, quietness, and accessibility for gripping, the handle portion **15** may be made large enough to be grasped comfortably and therefore also strong even though made of low-cost metal. The outward curvature of the handle **15** also permits the latch spindle **22** to be relatively short, not protruding in a dangerous or unsightly manner when the handle is detached.

The modification of my invention illustrated in Figs. 5–8 varies from the heretofore described structure only in that a key or ridge **30** at the inner end of the recess **17** is substituted for the ridge **23**, and a corresponding keyway **31** is placed in the end of the latch spindle **22** in substitution for the keyway **25**. The key **30** and keyway **31** are dovetailed to prevent relative horizontal movement. The operation of, and advantages accruing from, this construction are obviously the same as those hereinbefore set forth.

In Figs. 9–12 I have illustrated a further modification of my invention in which substantial relative rigidity of handle and latch spindle, and freedom from rattling, are further enhanced by spring action. The latch spindle **40** includes, either integral therewith or secured thereto, an enlarged knob **41** which is elliptical in cross-section with its greatest diameter in the direction in which the handle portion **15** is to lie. Keyways **42** are formed in the longer sides of the knob **41**. The handle has a stem portion **43** which is also elliptical, having a recess **44** of substantially the same minor diameter as the knob **41**, but of a larger major diameter. The stem portion **43** is made of thin material of some springiness, so that by pressure on the ends of its major diameter its longer side walls may be sprung outwardly. These longer side walls are provided with inturned flanges **45** which fit as keys within the keyways **42**. To attach or to detach the handle from the knob **41**, opposite ends of the ellipse of the handle stem **43** are compressed, to spring the flanges or keys **45** outwardly. The handle stem **43** may then be moved in the axial direction of the knob **41**, concentrically therewith. When the handle is in place upon the knob **41**, it is held free from rattling not only by its weight and torque upon the keyways, but by the spring pressure of the keys upon the keyways.

When any of the handles which I have herein described have been detached, only a small knob or latch spindle remains, affording insufficient leverage for a child to operate the latch and projecting from the door insufficiently to be either unsightly or dangerous. It will be noted that in each instance the interlocking keys and keyways are at right angles to the axis of the latch spindle and that in the embodiments illustrated in Figs. 1 and 9 the torque for turning the handle is applied to the crest of the key and to the bottom of the keyway rather than to the sides thereof, so that there is no tending to shear

the key or to spread the keyway even though the key be very thin and the metal of poor grade. In the embodiment shown in Fig. 5, there is side-pressure upon the key and keyway, but in opposite directions at the ends of the key in the manner of a screw-driver, and with the key upon the solid portion of the stem **16** and reinforced thereby, the key may be of small dimension without weakening it, and the keyway of course may be correspondingly small, to the advantage of the spindle.

I claim:

1. A detachable handle assembly comprising a latch spindle having a keyway adjacent its distal end transverse to the axis of said spindle and inclined from the horizontal when said spindle is in door-latching position, a hollow handle stem arranged to at least partly surround the distal end of said spindle and having an end opening through which said spindle may extend, a ridge transverse to the axis of said spindle on an interior wall surface of said stem and having rectilinear surfaces interlocking with said keyway so as then to prevent removal of said stem from said spindle in the axial direction of said spindle and when so interlocked adapted to turn said spindle in either direction of rotation without rotational relative movement of said spindle and said stem, and a handle on said stem extending at substantially a right angle to and to one side of said stem, so as to be capable of having its center of gravity below said stem when said ridge is in said keyway, said stem having a curved interior surface adjacent said keyway and said spindle having a curved surface concentric with said curved surface of said stem and lying in contact therewith when said ridge is fully interlocked with said keyway.

2. A detachable handle assembly as set forth in claim 1 in which said keyway is on a side of said spindle, and said ridge has a crest conforming to the floor surface of said keyway and bearing thereagainst to turn said spindle in response to rotation of said handle.

3. A detachable handle assembly as set forth in claim 2, in which the end of said spindle inclusive of said keyway is elliptical in cross section, said keyway being on a longer side of said spindle, and said hollow stem is also elliptical but of greater major diameter than said spindle and is of springy material whereby said stem may yield to pressure on its major diameter to spring said ridge outwardly from said keyway.

4. A detachable handle assembly as set forth in claim 1 in which said handle stem has a wall opening parallel to the axis of said handle stem for admission of said spindle to the interior of said handle stem, said ridge extending inwardly from said opening in the direction in which said stem moves to admit said spindle.

5. A detachable handle assembly as set forth in claim 1 in which said keyway is at the end of said spindle and said ridge is on the wall of said stem opposite said end opening.

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