Dec. 10, 1929. O. N. WISWELL 1,738,862

PULL HANDLE WITH AUTOMATIC LOCK

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Fig. 1.

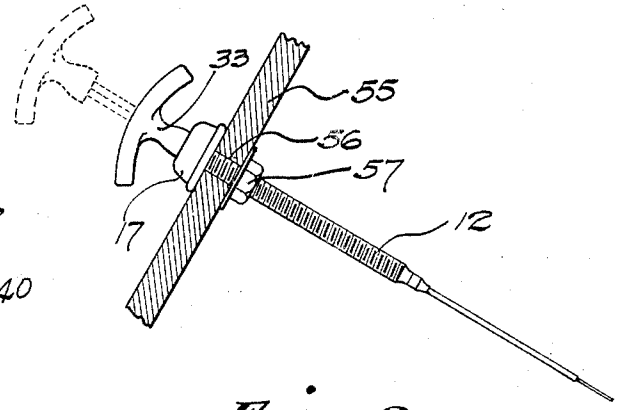


Fig. 5.

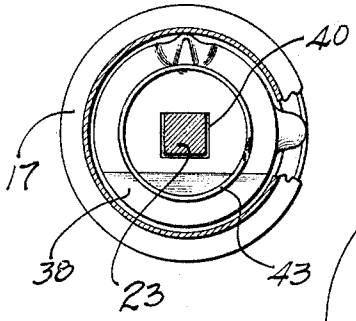


Fig. 2.

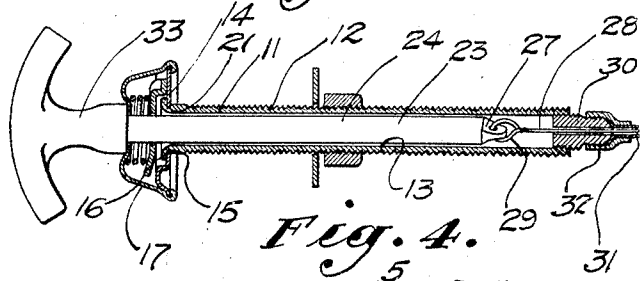


Fig. 3.

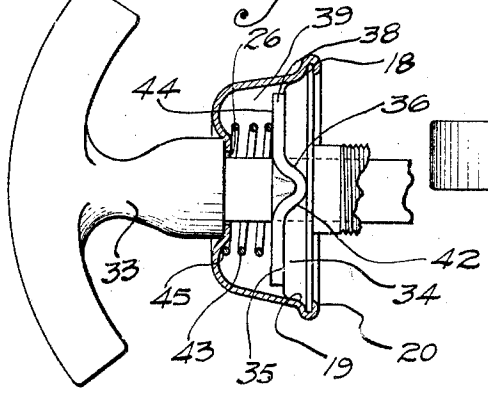
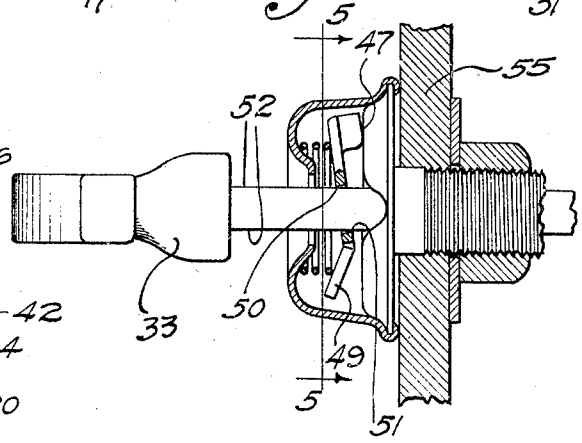


Fig. 4.



INVENTOR:
OZRO N. WISWELL,
BY
Fred W. Lamb
ATTORNEY.

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Fig. 8.

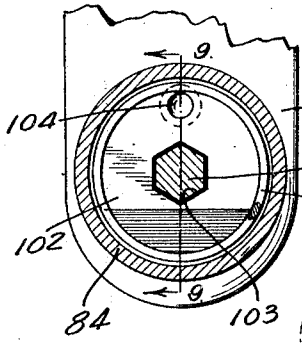


Fig. 11.

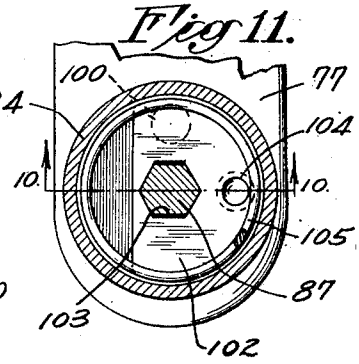


Fig. 6.

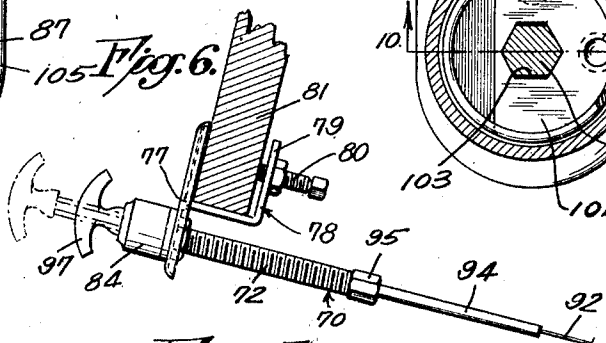


Fig. 7.

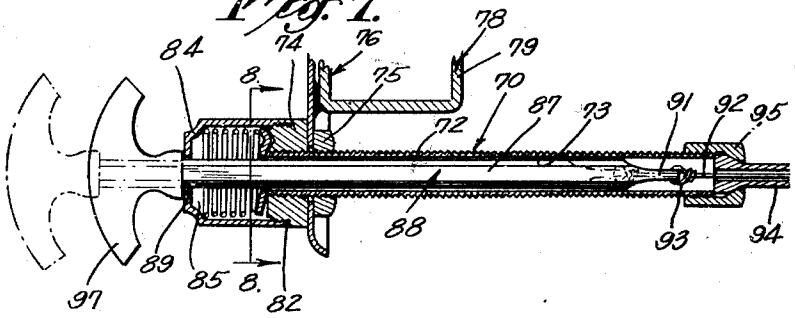


Fig. 10.

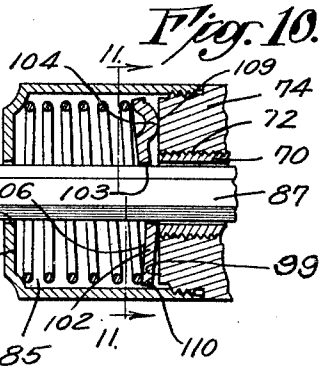
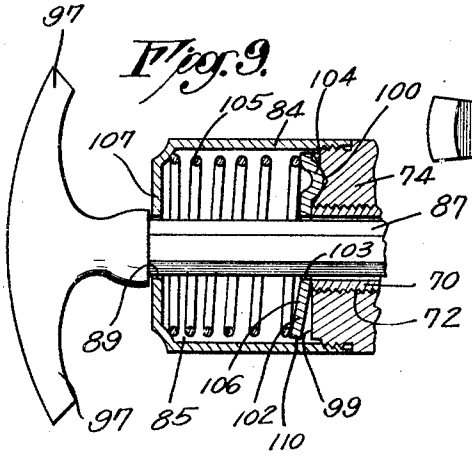


Fig. 9.



INVENTOR
OZRO N. WISWELL
By
ATTORNEY

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UNITED STATES PATENT OFFICE

OZRO N. WISWELL, OF LOS ANGELES, CALIFORNIA

PULL HANDLE WITH AUTOMATIC LOCK

Application filed April 17, 1928. Serial No. 270,730.

This invention relates to pull handles. Pull handles of the type to which my invention appertains are useful on automotive vehicles, for muffler controls, ventilator controls, carburetor controls, and for many other purposes. As it is desirous to adjust these devices into numerous positions, a control to be most favorable for this use should be capable of providing this adjustability.

It is an object of this invention to provide a pull lever having means for locking the pull member thereof in any position within its extension.

It is another object of this invention to provide a pull lever of this character in which a locking means is actuated by a rotation of the pull member.

It is a further object of this invention to provide a pull lever which is economical to produce, yet very reliable and effective in its operation.

Other objects and advantages of the invention will be made evident hereinafter.

Referring to the drawings which are for illustrative purposes only:

Fig. 1 is an elevational view showing a device embodying the features of my invention installed on a dashboard.

Fig. 2 is a vertical sectional view through the device.

Fig. 3 is an enlarged fragmentary view showing locking means provided by the invention, this locking means being shown in non-locking position in this view.

Fig. 4 is a view similar to Fig. 3, but showing the locking member disposed in locking position.

Fig. 5 is a section taken substantially as indicated by the line 5—5 of Fig. 4.

Fig. 6 is an elevational view showing another form of my invention.

Fig. 7 is a vertical sectional view through the device shown in Fig. 3.

Fig. 8 is a section taken on the line 8—8 of Fig. 7.

Fig. 9 is an enlarged sectional view taken on the line 9—9 of Fig. 8.

Fig. 10 is an enlarged sectional view showing the locking member of this form of the device in locking position, this view being taken on the line 10—10 of Fig. 11.

Fig. 11 is a sectional view taken on line 11—11 of Fig. 10.

As shown in Figs. 1 to 5, the pull lever may comprise a tubular body 11 having a threaded external portion 12, and a central passage 13. A cam plate 14 having a central opening 15 is extended over a lip portion 16, after which said lip portion 16 is outwardly bent, as shown in the drawings, so as to secure the cam plate member 14 against the shoulder 21 of the body 12. A bell-shaped housing member 17 is provided which is secured to the peripheral lip 18 of the plate 14 by being clamped against the internal rounded face 19 of the housing 17 by means of a lip 20 thereof.

A square bar 23 of the pull member 24 extends through an opening 26 in the housing 17 and into the passage 13 of the body 11. The rightward end of the bar 24 is flattened at 27, and has a wire 28 attached thereto, as shown at 29, this wire 28 extending through a plug 30 secured to the end of the body 12 and through a flexible tube 31 which is secured to the body 30 by means of a connector 32. At the left end of the bar 23 there is a pull handle 33 which is situated to the exterior of the housing 17, as shown, this handle being T-shaped and suitable for convenient gripping by a hand.

Locking means provided by this invention includes a cam portion 34 which is shown as being formed on the plate 14, this cam portion 34 providing a flat cam face 35 and a dipped or recessed place 36.

A locking member 38 is situated in the chamber 39, provided by the housing 17, this locking member having a square opening 40 through which the squared bar 23 of the pull member 24 extends. The locking member 38 has a humped or cam follower portion 42, formed thereon, as shown. The locking member 38 is forced into engagement with the cam portion 34 by means of a spring 43, which is compressed between the face 44 of the locking member 38 and the portion 45 of the housing 17. When the locking member rests so that the follower portion 42 rests in the recessed portion 36 of the cam face, the lock-

ing member 38 rests in flat or non-locking position, the locking member 38 being held in this position by the spring 43. The pull member 24 is at this time free to move in either direction.

When it is desired to effect a locking of the pull member in a certain position, the pull member 24 is rotated by manipulation of the handle 33 in a manner to rotate the locking member 38 and to cause the follower 42 of the locking member 38 to ride upwardly on the side of the depression or dip portion 36 onto the flat portion 35 of the cam, substantially as shown in Fig. 4, this movement taking place in opposition to the action of the spring 43. As shown in Fig. 4, it will be seen that when the locking member 38 is in locking position, it fulcrums on the extreme lower point 47 of the follower portion 42 in a manner to swing the member 38 from a flat or non-locking position into skewed or locking position.

The portion 49 of the locking member 38 is bent to the left, as shown in Figs. 2 and 4, so as to permit the member 38 to assume the position shown in Fig. 4. It will be seen that the corners 50 and 51 of the opening 40 are gripped against the opposite faces 52 of the bar portion 23. The pull member 24 may be pulled outwardly when in locking position, due to the fact that an outward pull tends to release the locking engagement between the corners 50 and 51 of the member 38 and the face 52 of the bar 23. The pull member, however, cannot be forced inwardly due to the fact that an inward force on the member 24 tends to rotate the locking member 38 on the follower portion 42 and to effect a tighter gripping of the bar portion 23.

As shown in Fig. 1, the pull device may be secured to a dashboard, as indicated at 55, by extending the body portion 12 through an opening 56 in the board 55, and screwing a nut 57 into the threaded portion 12 of the body 11 against the board 55.

The second form of my invention shown in Figs. 6 to 11 inclusive, embodies the same principle as the form of the invention just described, but is designed so that most of the parts may be made on or screwed to the machine.

Referring to these figures, the device is a tubular body or tubular member 70 having an externally threaded portion 72 and a central passage 73. Screwed on to one end of the tubular body 70 is a nut 74. The nut 74 cooperates with a nut 75 to clamp the tubular body 70 to a bracket 76.

The bracket 76 is shown in Fig. 6 as a clamp plate 77 which is engaged by the nuts 74 and 75, to which plate 77 a U-shaped member 78 is attached. One leg 79 of the U-shaped member 78 is provided with a clamping screw 80 by means of which the bracket 76 may be attached to a dashboard 81. It is, of course, obvious that other tubes or attaching means may be employed for suitably supporting the pull handle of the invention. The nut 74 provides external threads 82 and secured upon these threads 82 is a housing 84. The housing 84 forms a chamber 85 at the end of the tubular body 70. A hexagonal bar 87 of the pull member 88 extends through an opening 89 in the housing 84, through the chamber 85, and into the passage 73 of the tubular body 70. The rightward end of the bar 87 is provided with a flattened portion 91, and has a wire 92 attached thereto as shown at 93 in Fig. 7. The wire 92 extends through a tube 94 to the device which is to be operated by the pull handle of my invention.

The tube 94 is clamped against the end of the tubular body 70 by a connector nut 95. At the left end of the bar 87 is a pull handle 97, which is situated to the exterior of the housing 84 as shown, this handle being T-shaped and suitable for convenient gripping by the handle.

The locking means of this form of the invention includes a cam portion or cam face 99, which is shown as being formed on the face of the nut 74 which defines one end of the chamber 85. This cam portion 99 has a recess 100 formed at one part of it, as shown clearly in Fig. 9.

The locking member 102 is situated in the chamber 85. This locking member has a hexagonal opening 103 through which the hexagonal bar 87 extends, this hexagonal opening 103 being of larger area of cross section than that of the bar 87 so that the locking member 102 may tilt relative to the bar 87. The locking member 102 has a humped or cam follower portion 104 formed thereon, as shown in Figs. 8, 9, 10 and 11. This cam follower portion 104 is formed by expressing a portion of the locking member. The locking member 102 is forced into engagement with the cam face 99 by means of a coil spring 105, which is compressed between a face 106 of the locking member and a portion 107 of the housing 84. When the locking member rests so that the cam follower portion 104 is in the recess 100, the locking member occupies a flat or non-locking position, the locking member 102 being held in this position by the spring 105. The pull member is at this time free to move in their direction.

When it is desired to effect a locking of the pull member 88 in a certain position, this pull member is rotated by manipulation of the handle 97 in a manner to rotate the locking member 102 from the position shown in Figs. 8 and 9 into the position shown in Figs. 10 and 11. When the locking member is thus rotated the cam follower portion 104 rides upward on the side of the recess 100 on to the flat portion of the cam face 99. When the locking member is in this position, as is clearly shown in Fig. 11, it fulcrums on the

extreme lowest point 109 of the cam follower portion 104 in a manner to swing the locking member 102 from a flat or non-locking position into a skewed or locking position.

The portion 110 of the locking member 102 is bent away from the cam face 99 as shown best in Figs. 9 and 10, so as to permit the locking member 102 to assume the position shown in Fig. 10. When the locking member is in locking position, the wall defining the opening 103 is caused to grip adjacent faces of the pull rod 88, thus preventing the pull rod 88 from moving in a direction to the right in the drawing. The pull member cannot be forced inwardly because of this locking, but it may be pulled outward.

From the foregoing description it will be seen that the two forms of the invention are designed so that either device may be economically produced. The locking action of the device is readily accomplished by a slight rotation of the pull member. The feature of locking the pull member in any desired position by merely rotating the pull member, is a salient part of the invention.

I claim as my invention:

1. In a device of the class described, the combination of: a pull member having a bar portion; a locking member having an opening through which said bar is freely slidable when said locking member is in normal position, said bar and said locking member cooperating for unitary rotation; a spring engaging said locking member; and means actuated by a rotation of said pull member for causing said locking member to move against the tension of said spring to a tilted position in which said spring tension will cause said locking member to lock said pull member against return movement.

2. In a device of the class described, the combination of: a pull member having a bar portion; a locking member having an opening through which said bar is freely slidable when said locking member is in normal position, said bar and said locking member cooperating for unitary rotation; a cam face; a spring urging said locking member towards said cam face and a follower portion formed on said locking member, said follower portion riding along said cam face when said pull member is rotated in a manner to cause said locking member to move into a tilted locking position against the tension of said spring, whereby said spring exerts its tension to cause a one-way gripping engagement between said locking member and said bar.

3. In a device of the class described, the combination of: a pull member having a bar portion; a locking member having an opening through which said bar is freely slidable when said locking member is in normal position, said bar and said locking member cooperating for unitary rotation; a cam face; a follower portion formed on said locking member, said follower portion riding along said cam face when said pull member is rotated in a manner to cause said locking member to move into locking position; and tension means for holding said cam and said follower in engagement.

4. A device as defined in claim 3 in which said cam face has a depression in which said follower portion rests when said locking member is in non-locking position.

5. A pull handle comprising: a tubular member; a non cylindrical bar extending into said tubular member; a handle on one end of said bar; means forming a cam face around said bar and a recess formed in said cam face; a locking member surrounding said bar, said locking member having a cam follower portion; and a spring for forcing said locking member toward said cam face.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 14th day of April, 1928.

OZRO N. WISWELL.