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Enne et al.

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[54] LOCKING MEANS

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[58] **Field of Search**.....70/19, 58, 168, 211, 230, 232, 70/370, 371, 165, 167, 169, 416, 417; 220/25, 55 P

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[57] **ABSTRACT**

A locking means is disclosed for the locking of the end portion of a tubular member by means of a cylinder lock. The tubular member is provided with an internal radially extending stop face. A cylinder lock carrying a rotatable locking member is nonrotatably fitted in the end opening of the tubular member and the locking member is turned into a locking position axially behind the stop face. The locking means can also be used to lock the attachment screws of an outboard motor.

2 Claims, 2 Drawing Figures

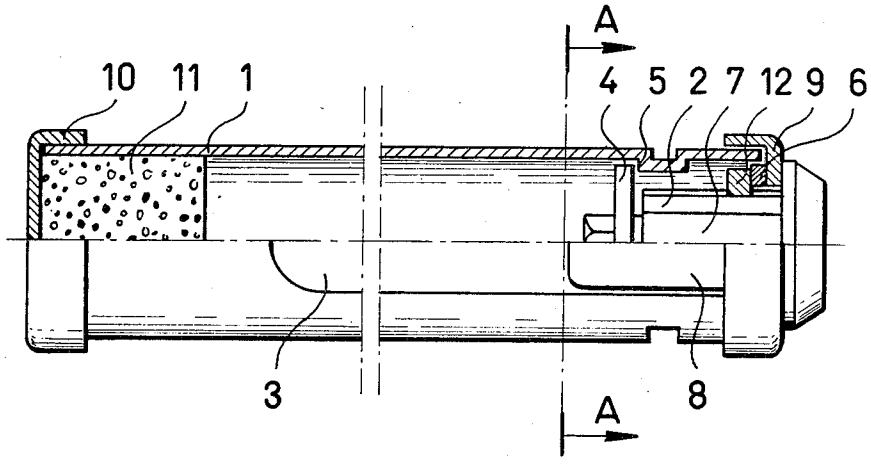


Fig. 1

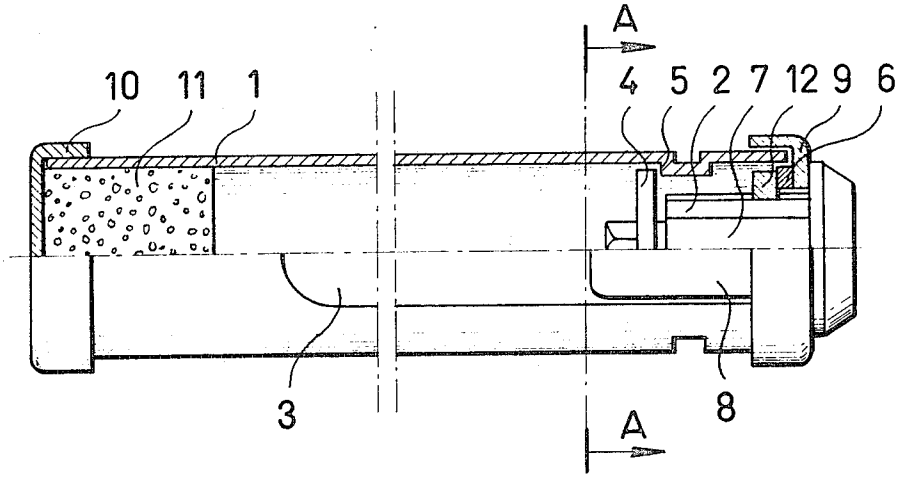
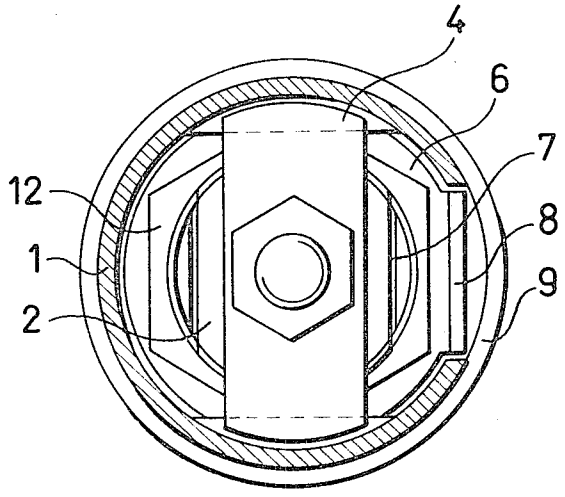


Fig. 2



LOCKING MEANS

The invention relates to a locking means for the locking of the end portion of a tubular member by means of a cylinder lock.

A locking means of the kind referred to can be used for many different purposes. For example, it can be used for the locking of the opening of a container or the tubular member can be arranged to enclose other parts to be locked, for instance the heads of the attachment screws of an outboard motor.

An object of the invention is to provide an inexpensive and reliable locking means which is based on the use of a cylinder lock and which is generally suitable for the locking of the end portion of tubular members.

The invention is characterized in that the tubular member is provided with an internal radially extending stop face, said stop face extending along only a part of the inner periphery of said tubular member, thus leaving a free passage for a locking member, said locking member being carried by a cylinder lock and operable by said cylinder lock into a locking position axially behind said stop face, said cylinder lock being nonrotatably fitted at the end of said tubular member.

A locking means according to the invention is reliable and easy to manufacture. In addition to the cylinder lock it comprises only a few very simple auxiliary elements which preferably are made of sheet material.

In a preferred embodiment of the invention the stop face comprises two parts situated diametrically opposite each other. The locking member operated by the cylinder lick is in this embodiment a short barlike member which in the middle is attached to the turning cylinder of the cylinder lock. The free ends of the locking member are in their locking position axially behind said two parts of the stop face. By operating the cylinder lock the locking member can be brought into its releasing position in which the ends of the locking member are able to pass between the two parts of the stop face, thus allowing the cylinder lock to be removed from the end of the tubular member. The described embodiment gives the advantage of a symmetrical load on the locking means.

The stop face is preferably made by giving the wall of the tubular member a distinct inwards-directed deformation at one or several places.

In order to secure the cylinder lock nonrotatably to the tubular member an axial recess can be made in the end portion of the tubular member. In this recess a rigid part of the cylinder lock or a part of an attachment member nonrotatably secured to the cylinder lock can be inserted. By this means a reliable attachment of the cylinder lock is obtained at low cost.

In order to make it difficult to break a locking means according to the invention, the end of the tubular member can be provided with a freely rotating protecting case.

If a locking means according to the invention is used, for instance to lock the attachment screws of an outboard motor, the tubular member should be provided with a long axial slot which can receive the shafts of said attachment screws but which does not allow the heads of said screws to pass. The cylinder lock blocks the open end of the slot of the tubular member and thus the heads of said attachment screws are completely enclosed and locked by the tubular member which forms a reliable locking means of appealing design.

In the embodiment just described it is suitable to use the axial slot also as an attachment recess for the nonrotatable attachment of the cylinder lock. The cylinder lock is preferably provided with an attachment member having an axial projection which is received by the axial slot and which is long enough to cover the cylinder lock and the locking member.

In the following an embodiment of the invention will be more fully described with reference to the attached drawing, in which:

FIG. 1 is a side view partly in section of a locking means according to the invention intended for the locking of the attachment screws of an outboard motor; and

FIG. 2 the section taken along line A—A of FIG. 1.

In the drawing, 1 indicates a tubular member, 2 a cylinder lock and 3 an axial slot made in the side of the tubular member 1. At the end of the turnable cylinder of the cylinder lock 2, a locking member 4 is attached which in its locking position has its end portions situated behind a pair of stop faces 5 provided in the tubular member. The stop faces are made by pressing two opposite parts of the sidewall of the tubular member inwards. When the locking member 4 is turned about 90° it is brought into its releasing position with its ends between the stop faces 5. When the locking member 4 is in this position the cylinder lock 2 can be removed from the tubular member 1.

The turning of the cylinder lock 2 is prevented by means of an attachment plate 6 which by means of the side planes 7 of the cylinder lock is nonrotatably fixed to the cylinder lock. Axially the attachment plate 6 is secured by means of a nut 12. The attachment plate 6 is provided with an axial projection 8 which is received in the axial slot 3 and by this means prevents the turning of the cylinder lock. The projection 8 covers the cylinder lock 2 and the locking member 4.

At that end of the tubular member which is locked by the cylinder lock there is a freely rotating protecting case 9 which protects the end portion of the tubular member and the locking mechanism. At the opposite end of the tubular member there is a corresponding protecting case 10 but the attachment of this case has no influence on the security of the locking means because removal of this case would be of no influence on the function of the locking means. Consequently, this protecting case can be attached for instance by means of gluing.

When the illustrated locking means is used for the locking of the attachment screws of an outboard motor the tubular member 1 is pushed from the side over the heads of the attachment screws with the shafts of the screws extending through the axial slot 3. In order to reduce the noise produced by the vibrations of the motor, the closed end or possibly both ends of the tubular member can be provided with a pad 11 of soft material, for instance foam plastic or the like.

We claim:

1. The combination of a hollow tubular member with an open end portion, and a locking means for locking said end portion, said locking means including a locking member, said tubular member being provided with an internal radially extending stop face, said stop face extending along only a portion of the inner periphery of said tubular member, thus leaving a free passage for said locking member, said tubular member being provided with an axial slot open at said end portion, said locking means including a cylinder lock carrying said locking member, said locking member being turnable by said cylinder lock into a locking position axially behind said stop face, said locking means further including a separate element nonrotatably connected to said cylinder lock and fitted in said axial slot to prevent rotation of said cylinder lock with respect to said tubular member, said separate element comprising an attachment portion connected to said cylinder lock and a protecting portion having sufficient length to cover said cylinder lock and said locking member, said cylinder lock and said attachment portion of said separate element being provided with interacting guide surfaces preventing rotation of said cylinder lock with respect to said element, said locking means further including means for securing said element axially to said cylinder lock.

2. The combination as claimed in claim 1 wherein said stop face is constituted as a radial deformation of a portion of said tubular member said deformation extending radially inwards from the inner periphery of said tubular member and forming a substantially flat, plane surface acting as said stop face.

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