MEANS FOR MOUNTING A CYLINDER IN A PADLOCK

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The present invention concerns cylinder locks, and is particularly applicable to padlocks and presents a novel and improved way of fitting the cylinder into the lock casing.

In known padlocks of the cylinder type the shanks of the shackle have been slidably and turnably fitted into boarings made in the lock casing or lock body or in special bearings or guides of different shapes. The fitting and centering of the cylinder into the lock casing has been difficult. If for instance, the lock casing has been made of hardened steel it has proven to be difficult to center the cylinder in the proper place and at the same time arrange for a practically convenient space for the shanks of the shackle, which results in a heavy design and large frictional surfaces for the movable parts, thereby creating unnecessary high frictional resistances when the lock is operated by the key so that in cold weather it might even be impossible to open the frozen lock.

The aim of the invention is to obviate these disadvantages. The cylinder lock according to the invention, is of such a design, that the contact surfaces of the moving part are very small, and thus the lock is operable even in cold weather. The cylinder can be easily centered in the casing by use of a centering plate fitted into a groove in the cylinder wall or by two centering plates, of which one might be fitted into a groove in the cylinder and the other further into cut-outs in the casing or both fitted into grooves in the wall of the cylinder. Also several centering plates can be fitted to the cylinder, or some to the cylinder and some to the casing.

The invention is described in greater detail in the following description with reference to the accompanying drawings, wherein:

FIG. 1 is a sectional view showing the centering plate from the underside attached to the cylinder as shown in the line 4-4 in FIG. 2;

FIG. 2 shows a side view of the centering plate attached to the cylinder with its locking disks with the disk springs between; the cylinder being partly broken away at the top end;

FIG. 3 shows the cylinder and the attached centering plate from above;

FIG. 4 shows a side view of the centering plate;

FIG. 5 shows a top view of the centering plate;

FIG. 6 shows another variant of the lock where the housing and the cylinder with its inside elements are cut along the line VIII—VIII in FIG. 8;

FIG. 7 and FIG. 8 are respective end and side views of the variant shown in FIG. 6;

FIG. 9 shows the variant of FIG. 6 from above;

FIG. 10 and FIG. 11 show a side view and a top view of a modified centering plate intended for the variant according to FIGS. 6-9;

FIG. 12 shows still another variant with a straight cylinder mantle, partly cut, without an enlarged top end, and with the groove or the grooves for the centering plate cut directly in the outer mantle surface; and

FIG. 13 shows in perspective view a complete lock employing the variant of FIGS. 1-5 partly cut away.

The different lock parts have been designated with the same numerals throughout.

The lock cylinder 1, in FIG. 2, has an enlarged top end 2, in which is cut a groove 3, in which the centering plate 4 is turnably seated. The ends 4a of the centering plate 4 have such a contour, that it tightly follows the curvature of the inside surface of the casing 11 and is thereby sidable therein. The casing 11 may be made for example of pressed and hardened steel plate. The centering plate 4 as seen in FIGS. 4 and 5, is provided with an aperture or cutout 4b in the center part, allowing the centering plate to be pushed into the groove 3 in the enlarged top end of the cylinder. The centering plate is further provided with two holes 5 for the shanks of the shackle.

Another variant of a lock based on the invention is shown in FIGS. 6-9 with two centering plates 10 of the same shape and separately shown in FIG. 10 and FIG. 11. In this variant the two centering plates are held in position relative each other by a housing 9. When the cylinder 1 has been attached to the centering plates, which have the outline shown in FIG. 10 and FIG. 11, the assembly is pushed sideways, in FIG. 6, into the housing 9. The ends of the centering plates come to rest in the cut-outs 9a of housing 9. The housing is then inserted into the casing, whereby a bottom plate is secured to the casing to maintain the housing, centering plates and lock within the casing.

Each centering plate 10 is provided with a groove 7a as shown in FIG. 11, corresponding to the groove 7, FIG. 5, and for the same purpose. Namely, a disk locking bar 6 is partly accommodated in a groove 8 in cylinder 1 and in groove 7 in plate 4 in the variant of FIGS. 1-5, and the grooves 7a in the variant of FIGS. 6-11 to lock the cylinder in the plates. To unlock the cylinder, the locking bar is withdrawn from groove 7 or grooves 7a thereby freeing the cylinder for rotation in the centering plates.

The principle of centering the cylinder in its casing in padlocks as described can be applied to other applications of cylinder locks within the scope of the invention by giving the centering plate the shape required by the casing.

I claim:

1. A padlock comprising a casing, a centering plate slidably mounted in said casing, said plate having a central aperture, a lock cylinder having a circumferential groove, said lock cylinder extending perpendicular to the plate and being turnably mounted in the aperture of said plate with the latter engaged in said circumferential groove, such that the groove provides the only friction surface between the turnable cylinder and the stationary centering plate, said plate having an outer contour corresponding to the inner surface of the casing, and a locking bar for selectively locking the lock cylinder and the plate against rotation, said plate having a groove opening into said aperture for receiving a portion of the locking bar when the plate and cylinder are locked.

2. A padlock as claimed in claim 1 comprising a second centering plate extending parallel to the first plate, one plate being attached to one end of the cylinder and the other to the opposite end of the cylinder, said plates being arranged to rest against the inside surface of the
lock casing, thus centering and fixing the cylinder in relation to the casing.

3. A padlock as claimed in claim 1 wherein said cylinder has an end of enlarged size in which said circumferential groove is provided.

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