

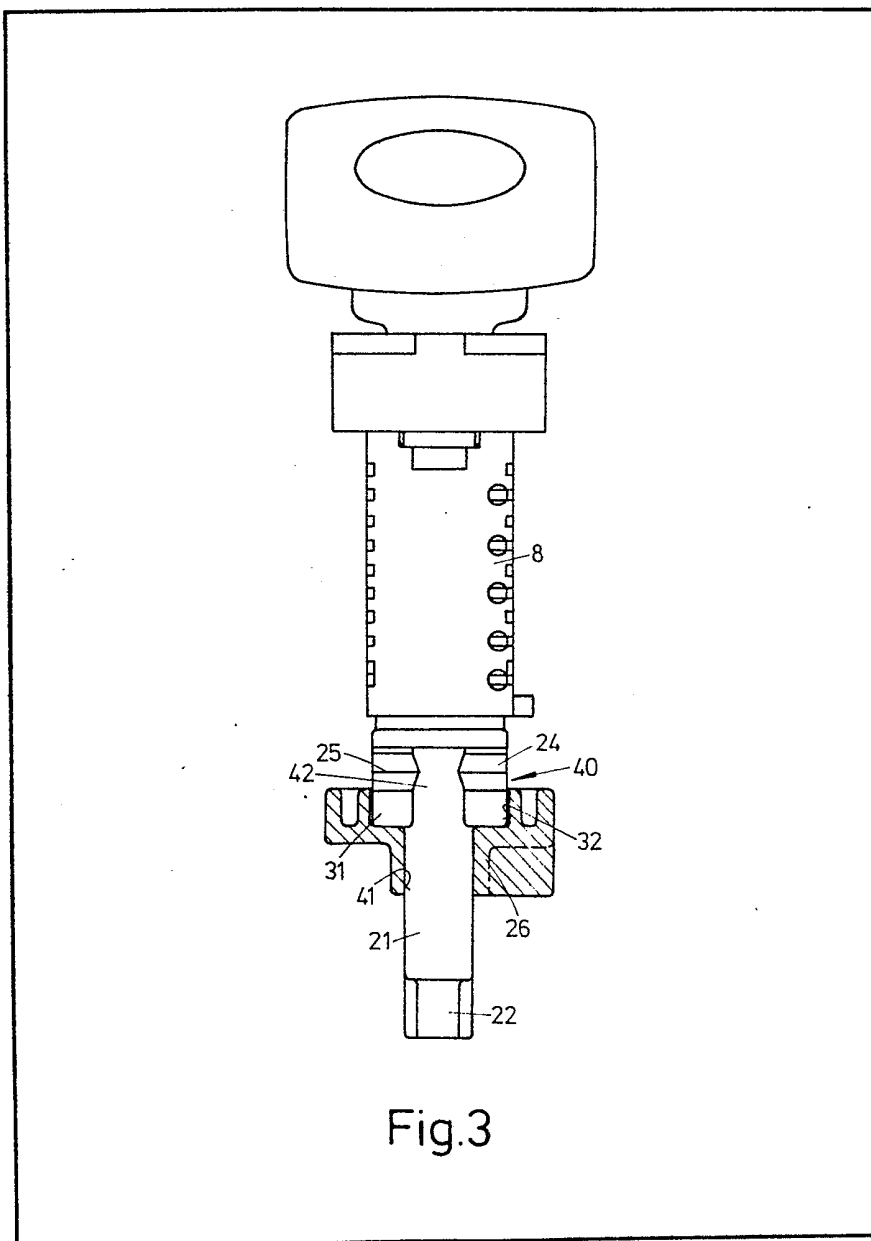
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(54) **Vehicle Steering Lock**

(57) In a steering column lock, the lock barrel 8 operates the ignition switch (not shown) and lifts the locking bolt

(also not shown) through a coupling element 21, 22, 26. This coupling element consists of a metal switch-drive shaft 21 carrying a plastics bolt-lifting cam 26.



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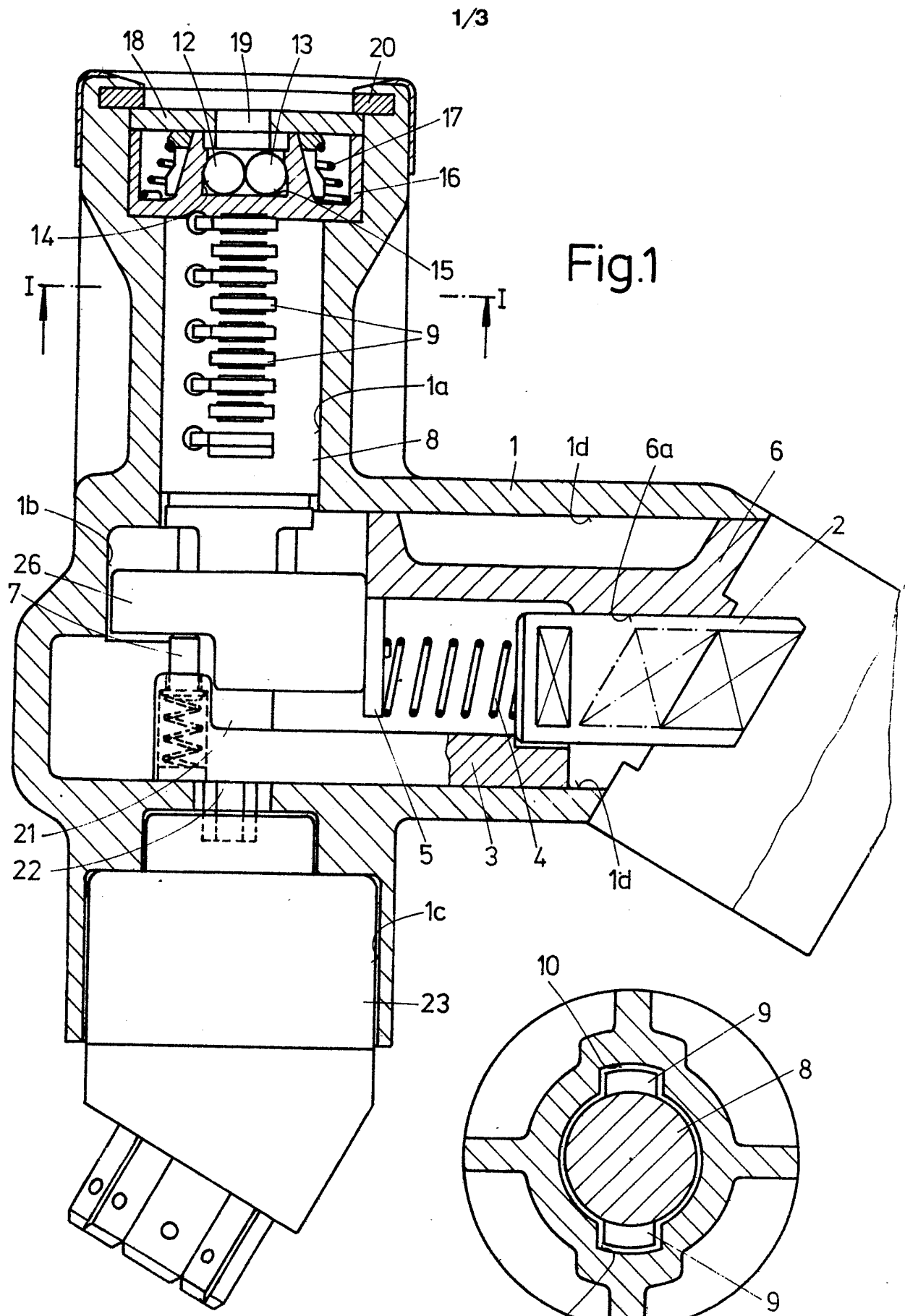


Fig.1

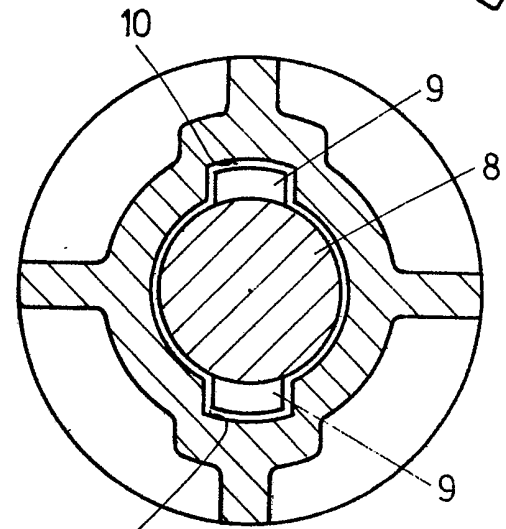


Fig.2

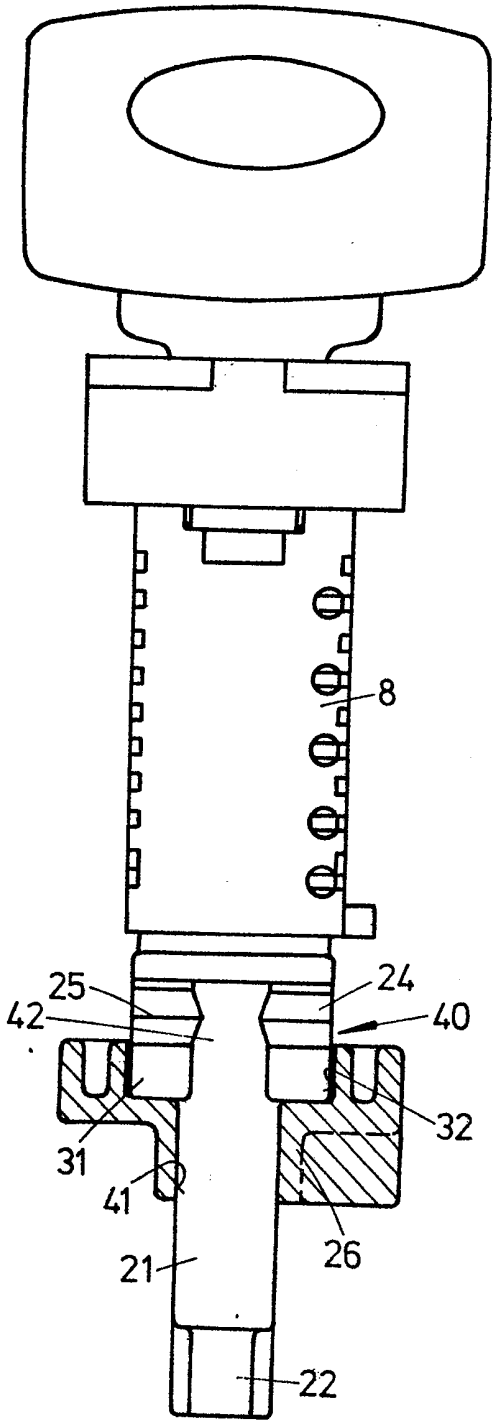


Fig.3

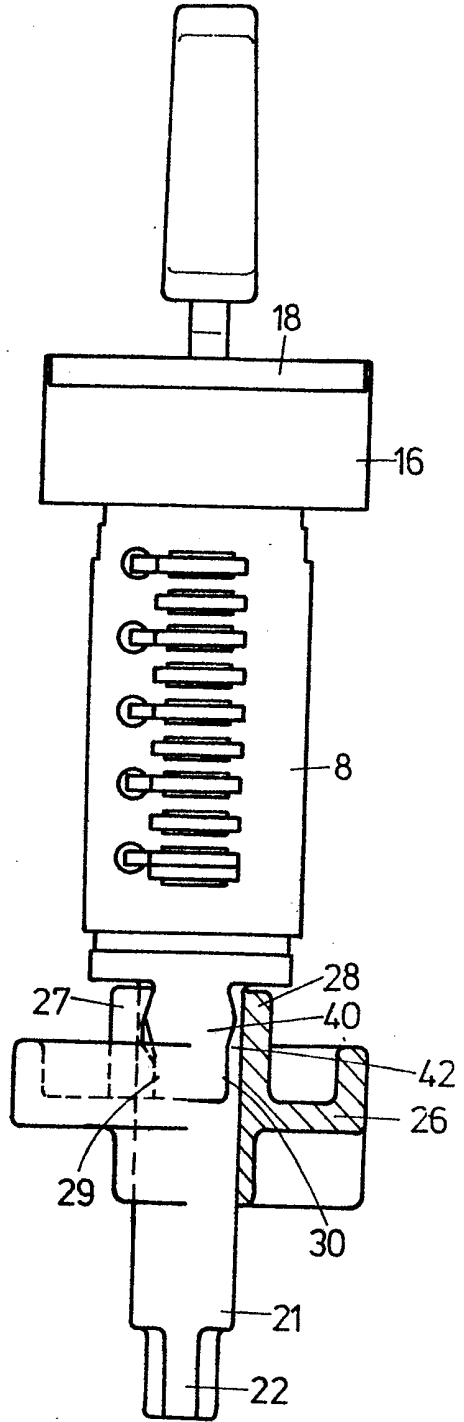


Fig.4

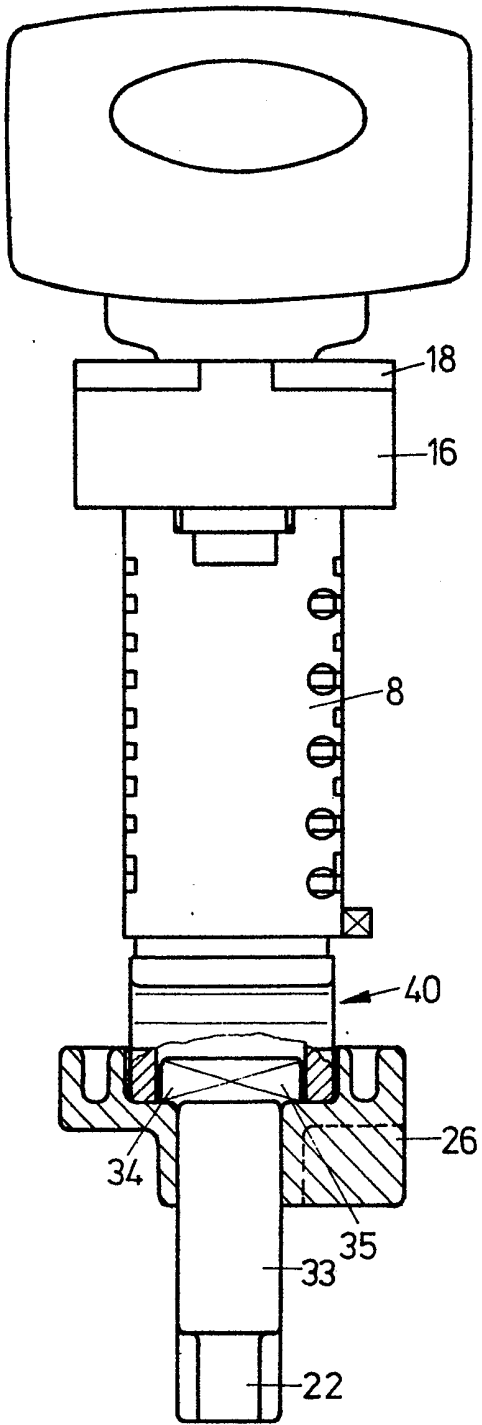


Fig.5

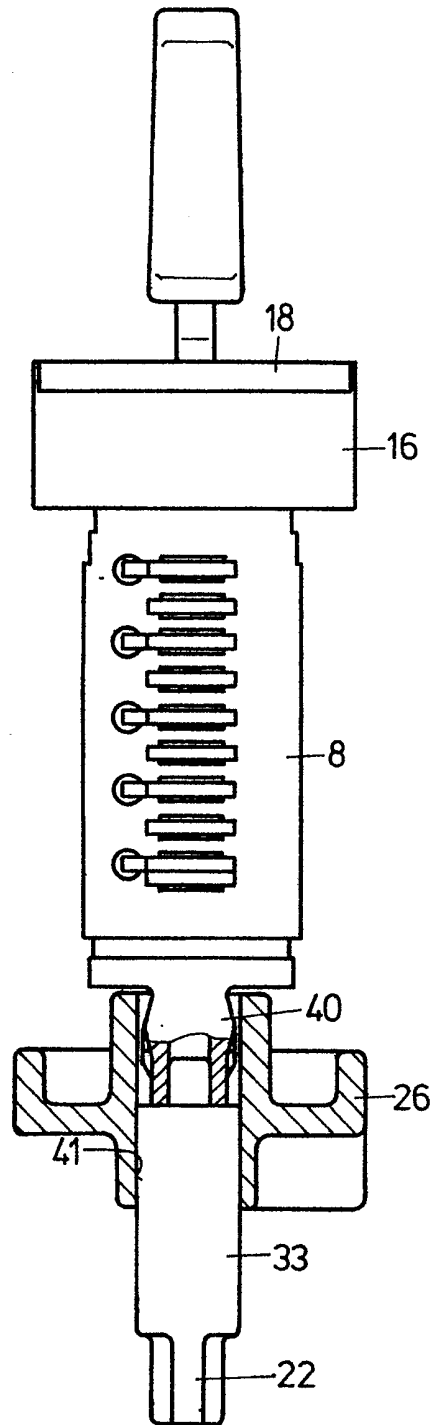


Fig.6

SPECIFICATION

Vehicle Steering Lock

The invention relates to a steering lock for motor vehicles which is provided with a cylinder core, which is rotatably mounted in a cylinder housing and to which there is coaxially secured a switching barrel, which consists of a first part which acts on the ignition starter switch and whose diameter is equal to or smaller than that of the cylinder core, and a second part which actuates the locking bolt and surmounts the cylinder core in diameter.

From DE AS 24 41 463 there is known a steering lock wherein the switching barrel acting on the locking bolt and including the part that acts on the ignition starter switch is formed by a lug of the cylinder core. Associated with the cylinder core is a cylinder housing which has axial locking channels in which, after the withdrawal of the key, the plate tumblers engage and lock the cylinder core in the direction of rotation. Furthermore, the parts required for the axial displacement of the cylinder core are received in the cylinder housing and are secured against any interference from outside by special cover caps. During the steering lock assembly, this lock cylinder unit is introduced into the steering lock body with the pre-assembled locking bolt and is secured in known manner against axial displacement in the steering lock body by means acting on the lock cylinder housing.

The advancing development in the automotive industry makes it necessary, particularly in the case of small-sized models, to construct smaller dimensioned accessories of less weight and at a lower cost.

It is the object of the invention to provide a steering lock which, while providing the same degree of safety, consists of fewer parts and has smaller external dimensions and can be produced with simple means.

According to the invention, this problem is solved in that for the connection of the second part to the remainder of the switching barrel and/or to the cylinder core during assembly, the second part is constructed so as to be separate from the remainder of the switching barrel.

Advantageously, due to this construction, the switching barrel portion that surmounts the cylinder core in its radial dimensions can be assembled through the assembly hole required for the locking bolt in the steering lock body and an additional cylinder housing can be dispensed with, since the keyend cylinder reception aperture can be smaller than this portion of the switching barrel and the necessary locking channels for the tumblers and the other stops are integral parts of the steering lock body which adjoins the cylinder core.

Another advantage results from the fact that the portion which actuates the ignition starter switch is a fixed integral part of the cylinder core or can be added thereto in a rotation-proof material so as to be interlocked in the direction of

65 rotation, the mounting being effected in the axial direction with fastening means of the newly designed switching barrel portion.

This construction renders possible the installation of the locking bolt from the steering lock side that is directed towards the steering assembly. Advantageously, it is by this means possible to dispense with the end cover, which is susceptible to external interference, on the side that is directed away from the steering assembly. Compared to the known steering lock constructions, there comes about a configuration of the steering lock that is considerably lower in cost.

Two exemplified embodiments are shown in the drawings and will be described hereinafter. In the drawings:—

Figure 1 shows a longitudinal section through a steering lock;

Figure 2 shows a section along the line of intersection I—I in Fig. 1;

Figure 3 shows the lock cylinder core with a partly sectioned switching barrel;

Figure 4 shows the lock cylinder with the switching barrel shown in Fig. 3 and rotated through 90° about its longitudinal axis;

Figure 5 shows the lock cylinder with the switching barrel in a second construction, and

Figure 6 shows the lock cylinder with the switching barrel shown in Fig. 5 and rotated through 90° about its longitudinal axis.

The steering lock comprises a steering lock body 1 with cylindrical coaxial recesses 1a, 1b, 1c for the cylinder core 8, the switching barrel 21, 22, 26 and the ignition starter switch 23. In the zone of the switching barrel, the steering lock body 1 comprises a radial extension which is open towards the steering assembly and in which the locking bolt catch 3 is displaceably guided and in which a locking piece 6 has been positively inserted at the steering assembly end. The locking piece 6 has a cylindrical recess 6a for the locking bolt 2 which, at its side that is directed away from the steering assembly, is positively received by the locking bolt catch 3. The locking bolt 2 is acted on by the spring 4 in the direction of the steering assembly. The locking bolt catch 3 comprises in known manner a pin 7, which is spring-loaded in the direction of the lock cylinder, for providing the ready-to-lock position with the cylinder core and lock parts. In the portion of the steering lock body 1 that is directed towards the driver, the cylinder core 8, including the tumblers 9 in the shape of small plates, is axially displaceably and rotatably mounted so that this portion of the steering lock body simultaneously assumes the function of a cylinder housing and the additional cylinder housing of the known constructions is thus dispensed with. The steering lock body has locking channels 10, 11 (Fig. 2), into which the spring-loaded tumblers 9 positively penetrate after the withdrawal of the key and lock the cylinder core in the direction of rotation.

At the key introduction end, there are associated with the cylinder core 8 formed parts

(rollers) 12, 13 which are mounted forward of the keyhole mouth and which are supported on the controlling faces 14, 15 of the abutment ring 16, which is penetrated by portions of the cylinder core 8 and is acted on by the spring 17 which is supported in a front-end groove in the cylinder core. Positively associated with a cup-shaped abutment ring 16 is a preferably hardened steel plate 18 which has an aperture 19 which corresponds to the dimensions of the key shank. The cylinder core 8 is prevented from being pulled from the steering lock body 1 by a ring 20 which is fixedly connected to the steering lock body 1 and with its internal dimensions partly covers the abutment ring 16 and the steel plate 18.

As can be seen in Figs. 3 to 6, the switching barrel, which is coaxially secured to the cylinder core 8 at the locking bolt end, comprises two parts: a) a cylindrical shank-shaped first part 33 which extends over the entire length of the switching barrel and is made of metal and whose diameter is smaller than that of the cylinder core and which has a transverse part (Figs. 5 and 6) which forms projections 34, 35 which surmount the outer surface on opposite sides, and which lies in an interlocked manner in a correspondingly shaped recess in a coaxial pin-shaped projection 40 of the cylinder core at the locking bolt end and which projects, with the free end 22, in an interlocked manner into an ignition starter switch 23 for the actuation thereof; b) a disc-shaped second part 26 which has the shape of a flat cylinder and is made of plastics material and whose diameter is smaller than the inside dimensions of the recess 1d and is larger than that of the cylinder core 8 and which has a central aperture 41 of the same diameter as that of the first part 21, in which aperture the second part 26 lies, and which is provided at the locking bolt end with a cam face for the actuation of the locking bolt catch 3 and with two clamping jaws 27, 28, which are moulded on at the cylinder core end and which bilaterally embrace the coaxial projection 40, which is rectangular in cross section, on the cylinder core as a snap connection (direct elastic straddling connection), the engaging snap action coming about by respectively one elevation or curvature (detent cam) 24, 25, which are provided transversely to the cylinder core longitudinal axis, in the opposite surfaces of the projection, which is approximately lozenge-shaped in cross section, and corresponding recesses in the clamping jaws 27, 28 which can be spread away from each other. The first and second parts are thus secured to the cylinder core so as to be axially undisplaceable and secured against rotation.

While, in the exemplified embodiment shown in Figures 5 and 6, the shank-shaped first part 33 is held on the cylinder core 8 by the second part 26, the edge of the central aperture 41 forming stops for the projections 34, 35, in the exemplified embodiment shown in Figures 3 and 4, the first part 21 is integrally formed with the cylinder core or is undetachably secured thereto.

In the exemplified embodiments, the diameter of the first part 21, 33 is larger than the width of the narrow side of the projection so that the first part 21, 33 surmounts the projection 40 laterally with partly cylindrical surfaces 42, for which corresponding partly cylindrical recesses are provided in the jaws 27, 28.

For the assembly of the lock, the second part 26 of the switching barrel is pushed, together with the assembly unit consisting of the locking bolt catch 3, the locking bolt 2, the compression spring 4 and the locking piece 6, through the recess 1d into the steering lock body 1. Thereafter, the cylinder core 8, including the inserted first switching barrel part 21, is inserted into the recess 1a in such a way that the first part 21 penetrates the central aperture 41 of the second part and, with its front end 22, enters the ignition starter switch 23 and the recess 1c respectively. Thereupon, the ring 20 is inserted and is fixedly connected to the steering lock body by caulking or in a like manner.

Claims

1. A steering lock for motor vehicles which is provided with a cylinder core which is rotatably mounted in a cylinder housing and to which there is coaxially secured a switching barrel which consists of a first part, which acts on the ignition starter switch and whose diameter is equal to or smaller than that of the cylinder core, and a second part which actuates the locking bolt and surmounts the cylinder core in diameter, characterised in that for the connection of the second part to the remainder of the switching barrel and/or to the cylinder core during the assembly, the second part is constructed separately from the remainder of the switching barrel.
2. A steering lock as claimed in Claim 1, characterised in that the second part is detachably secured to the rest of the switching barrel and/or to the cylinder core.
3. A steering lock as claimed in Claim 1 or 2, characterised in that the second part is non-rotatably connected to the rest of the switching barrel or to the cylinder core by an elastic straddling connection.
4. A steering lock as claimed in one of Claims 1 to 3, characterised in that the second part is made of plastics material.
5. A steering lock as claimed in one of Claims 1 to 4, characterised in that the second part has a central aperture through which the first part penetrates.
6. A steering lock as claimed in Claim 5, characterised in that a lug or projection, which is moulded onto the cylinder core, lies additionally in the aperture.
7. A steering lock as claimed in one of Claims 1 to 6, characterised in that the first part is detachably secured by the second part to the cylinder core on a cylinder core lug (projection) or to a switching barrel section which is secured or moulded to the cylinder core.

8. A steering lock as claimed in one of Claims 1 to 7, characterised in that for the introduceability of the second part through the recess in the steering lock body, which recess is necessary for the locking bolt, the diameter of the second part is smaller than the inside dimensions of the recess.
9. A steering lock as claimed in one of Claims 3 to 8, characterised in that the second part has two opposite clamping jaws which embrace a more especially pin-shaped projection or lug of the cylinder core.
10. A steering lock as claimed in Claim 9, characterised in that the projection or lug has elevations which lie in recesses in the clamping jaws.
11. A steering lock as claimed in one of Claims 1 to 10, characterised in that the cylinder core is rotatably mounted directly in the steering lock body.
12. A method for the production of a steering lock as claimed in one of Claims 1 to 11, characterised in that the second part of the switching barrel, together with the assembly unit consisting of the locking bolt catch, the locking bolt, the compression spring and the locking piece, is inserted through the recess provided for the locking bolt in the steering lock body and in that only thereafter the other part of the switching barrel is introduced, more especially together with the cylinder core, through the recess in the steering lock body, which recess receives the cylinder core.
13. A steering lock for motor vehicles substantially as described with reference to the accompanying drawings.
14. A method for the production of a steering lock substantially as described herein.