June 17, 1969 M. M. CHECK 3,449,934

ADJUSTABLE HEAD TUMBLER CYLINDER

Filed March 13, 1967

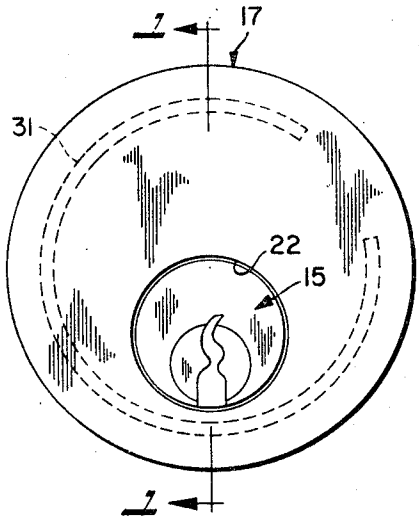


Fig. 2

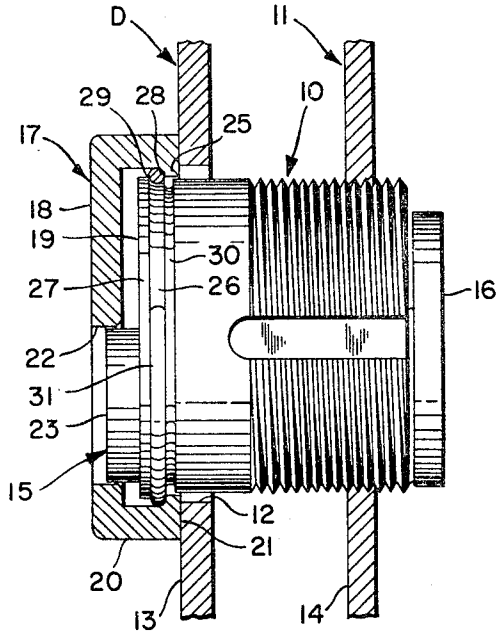


Fig. 1

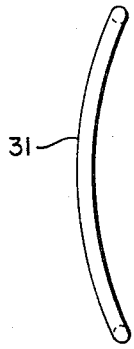


Fig. 3

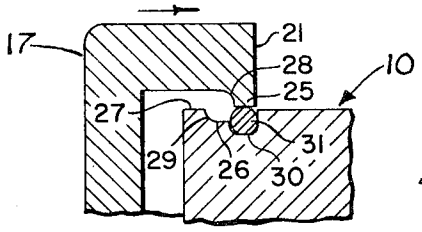


Fig. 4

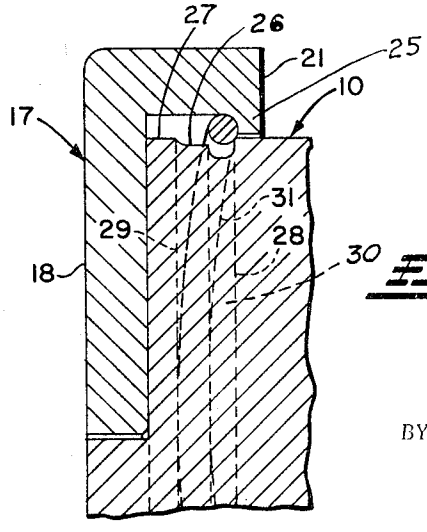


Fig. 5

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ADJUSTABLE HEAD TUMBLER CYLINDER

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U.S. Cl. 70—451 4 Claims

ABSTRACT OF THE DISCLOSURE

A cup-shaped scalp is manufactured separately from a lock tumbler cylinder and is snapped into position covering the front end of the cylinder, where it is permanently retained by a circular spring wire. The wire can yield so that the cylinder may adjust its position on the door while pressing the scalp to proper position against the door surface.

This invention relates to locks of the type adapted to be housed in a bore formed in a door or similar structure. Locks of this type are generally formed with a forward head that lies against the surface outlining the bore, so as to limit the distance the lock may be moved into the bore. In this manner, a portion of the lock remains outside the bore, and the bore is closed against access. As those skilled in the art well understand, lock tumbler cylinders are of this description, and those cylinders have a key operated plug into which a key may be inserted for positioning the tumblers.

The cylinder or lock of this type may assume different positions in the bore in which it is housed, the particular position depending on the locking structure to which the cylinder is assembled, and therefore it has been found necessary to use an adjustable ring or similar means lying under the head of the cylinder. This allows the cylinder to move somewhat to adjust its position in the bore, while the ring closes the bore against access to a tool for attacking the locking structure.

Much effort has been devoted toward the development of a suitable ring or other device that will permit adjustment between a lock cylinder and the surface outlining the bore in which the cylinder is mounted. However, so far as I know, there has been contributed no simple and positive structure that is satisfactory.

I believe that my contribution to the art is an excellent solution of the longstanding problem I have outlined. It comprises a decorative head or scalp adjustably mounted on the front end of a lock. As a feature of the invention, the scalp may be applied to a lock tumbler cylinder after the cylinder has been completely manufactured and assembled with its tumblers and key plug and is fully operative. A customer may select a scalp in the finish he requires, such as dull or polished brass, stainless steel, chromium, nickel, etc. Then, through my contribution, the head or scalp may be applied as a last operation, and once applied will be held in assembled adjustment relation to the cylinder. Because the scalp may be applied as a last operation, its finish need not be damaged by the handling that usually is required incidental to the manufacture and installation of a lock cylinder.

As a particular feature of the invention, I utilize spring means having an expansion portion that expands into position between the scalp and the cylinder, and that maintains the scalp against removal once it has been placed

in position. The spring means further include a portion that is compressive in character and that will urge the scalp toward the cylinder. In other words, by utilization of spring means, the scalp first is assembled to the cylinder and then pressed toward the cylinder. In a preferred form of the invention, the spring means is a single, bowed, radially expanding spring that contributes both retention and endwise adjustable movement of the scalp.

The cylinder scalp or head preferably is in the form of a cup that covers the entire cylinder front except the key plug. The plug protrudes in an opening of the scalp so as to be key operable. The end surface of the skirt of the cup, actually a flange, presses against the surface of the door outlining the bore into which the cylinder is placed. When the cylinder is pulled inwardly of the door through assembly to a locking structure such as a mortise lock or a night latch, as those skilled in the art will understand, it will have some movement linearly against the pressure of the spring. Because of the spring, the cylinder will have sufficient freedom of movement to assume and to hold an operative position while at the same time not disturbing the relation between the scalp and the door.

I have thus outlined rather broadly the more important features of my invention in order that the detailed description thereof that follows may be better understood, and in order that my contribution to the art may be better appreciated. There are, of course, additional features of my invention that will be described hereinafter and which will form the subject of the claims appended hereto.

Referring now to the drawings:

FIG. 1 shows a side view of a mounted lock cylinder utilizing my invention, with parts shown in section on the line 1—1 in FIG. 2.

FIG. 2 shows a front end view.

FIG. 3 shows a side view of a spring that I utilize.

FIG. 4 is a section illustrating the assembly of the scalp to the cylinder.

FIG. 5 is similar to FIG. 4 but shows the parts fully assembled.

For the purpose of describing my invention, I show in FIG. 1 a lock tumbler cylinder **10** assembled in a usual manner to a lock casing **11** within a door D. Thus, the cylinder **10** is inserted through a bore **12** in one side wall **13** of the door D, and threaded into an opening in one side portion **14** of casing **11**. I have not shown the walls at the opposed side of the door D and casing **11** because they are not important to an understanding of my invention. The cylinder **10** has a key plug **15** that is exposed at its forward end for the insertion of a key, and that is equipped at its rearward end with a cam **16** for operating lock mechanism, not shown, within the casing **11**. The relation between cylinder **10** and lock casing **11** is rather easily controlled, but it has been found in practice that the lock casings are not always installed in exactly the same relation to the bores in the side of the door. That causes the cylinders to lie in somewhat different positions in the bores, as those skilled in the art will appreciate.

In my invention, I utilize a cup-shaped cylinder head or scalp **17** having a face **18** overlying the front face **19** of the cylinder **10**, and a skirt **20** extending from face **18**. The skirt **20** covers the peripheral surface on a front end portion of cylinder **10**, but with clearance that allows movement between the scalp and cylinder. The rearward end of skirt **20** forms a flat ring **21** that is adapted to

seat against the surface outlining the bore **12** on the door, while the face **18** of the scalp has an opening **22** allowing access to key plug **15**. In the form of my invention that I do prefer, key plug **15** has a front end portion **23** protruding into the scalp opening **22**, that opening being formed to accept the end portion **23**.

As shown in FIG. 1 but perhaps better seen in FIG. 4, the rearward end of the skirt **20** on scalp **17** is formed on its inner periphery with a lip portion **25**. Further, the forward end portion of cylinder **10** has a peripheral groove **26** forming a lip portion **27**, contributing with the lip portion **25** a pair of circular spring seating surfaces **28**, **29** that are in opposed relation to each other on scalp **17** and cylinder **10**. Somewhat rearwardly of the seating surface **29**, the periphery of cylinder **10** has a relatively deep groove **30**.

Between the seating surfaces **28**, **29** I assemble a spring **31** that is formed by bending a length of wire in two directions, so as to have a shape that is circular, as seen in dotted lines in FIG. 2, and also axially bowed as shown in FIG. 3. The length of wire is such that spring **31** may nearly encircle the cylinder **10**, as will be understood from FIG. 2. The circular shape of spring **31** is formed sufficiently large that the spring will expand into position in a retaining groove that is defined by lip **25**, FIGS. 1 and 5, while spring **31** naturally may yield in both radial and axial directions.

To assemble the scalp **17** to the cylinder **10**, the spring **31** first will be pressed into the deep groove **30** on the periphery of the cylinder, the spring then being in a position shown in FIG. 4. The scalp **17** then will be slipped over the peripheral surface of the cylinder as indicated by the arrow in FIG. 4, with the lip portion **25** of skirt **20** passing over spring **31**. When lip portion **25** moves beyond spring **31**, as shown in FIG. 5, the spring by expanding will leave groove **30** so as to lie behind the lip portion **25**. At the same time, the bowed shape of spring **31** will cause it to expand in a direction endwise of cylinder **10** so as to enter the groove **26**, the spring **31** then lying in fully assembled position as indicated in dotted lines in FIG. 5.

Spring **31** now coacts with the spring seating surfaces **28**, **29** so as to press the scalp **17** endwise toward the front face of cylinder **10**. Through yielding of its bowed shape, spring **31** will enable the cylinder **10** to assume different axial and angular positions relatively to scalp **17**, all while holding the flat ring **21** of the scalp firmly against the door surface. Merely as an example, FIG. 1 shows cylinder **10** mounted in a position that is relatively far inward, or rearward as I have termed it, rather fully compressing spring **31** in axial direction while holding the scalp in proper position against the door surface.

I now call attention to the fact that spring **31**, while contributing full movement of adjustment between the scalp **17** and cylinder **10**, will very positively act to retain the scalp **17** on the cylinder. To explain, spring **31** will become flattened, much in the manner shown in FIG. 1, when scalp **17** reaches a certain limit of forward movement relatively to cylinder **10**. When so flattened, spring **31** will act effectively between seating surfaces **28**, **29** to lock the scalp and cylinder against further separating movement. Moreover, the locking action will be effective at points that are distributed around the periphery of scalp **17**, and that actually are near the periphery. The importance of this will be appreciated when it is realized that scalp **17** thereby will be more securely held and will more effectively resist attack. Also, scalp **17** will be retained even though the cylinder be mishandled or improperly installed.

Despite the fact that scalp **17**, once applied, will be securely retained on cylinder **10**, it will be understood that the application of the scalp will be a simple matter. That makes it possible to postpone the application of the scalp until such time as may offer little likelihood of injury to the scalp finish, and also makes unnecessary the manufacture of cylinders with a variety of finishes. A customer may select a scalp in the finish he wishes to have, but the scalp can be kept separately for an indefinite time, even after the cylinder has been mounted on the door and is in full operating position. The cylinder actually can be in use while construction operations are going on, and the scalp applied when the construction is complete. I wish to emphasize that I make these things possible while also enabling the cylinder to adjust its position in an effective manner, as I have described.

I believe, therefore, that the very considerable contribution of my invention will be understood, and that its merits will be fully appreciated by those skilled in the art.

I claim:

1. In a lock of the type comprising a cylinder and a key plug rotatable in a bore in the cylinder and controlled in its rotation by tumblers positioned by a key inserted into the front end of the key plug, the said front end of the key plug protruding from the front face of said cylinder, a decorative scalp or the like for said front face of the cylinder having a face overlying the face of the cylinder and formed with an opening for the protrusion of the front end of the key plug, a skirt extending from said scalp face rearwardly to cover the peripheral surface of said cylinder just rearwardly of the front face of the cylinder, said skirt terminating in a flat ring adapted to lie against the outlining surface of an opening into which the cylinder is inserted, spring means carried by the peripheral surface of said cylinder that is covered by said skirt, an expansion portion of said spring means adapted to expand in a radial direction relatively to said cylinder, a retaining groove into which said expansion portion expands in said skirt as said skirt is slipped over said peripheral surface whereby thereafter to hold said scalp against removal from said cylinder, and said spring means including a compressive portion exerting endwise pressure while in said retaining groove whereby to press said scalp toward the front face of said cylinder, said compressive portion of the spring means yielding to allow some movement of said cylinder relatively toward and away from said scalp while the flat ring of said skirt rests against the said outlining surface of the opening into which the cylinder is inserted, said spring means being a wire formed in a shape encircling substantially the peripheral surface of the cylinder, and further bowed in direction endwise of the cylinder.

2. In a lock of the type having a cylinder in which a key plug is mounted with its forward end exposed at the front face of the cylinder, a scalp overlying the front face of the cylinder and having an opening through which the key plug is accessible for the insertion of a key, said scalp including a skirt extending rearwardly with clearance over the peripheral surface on a forward end portion of the cylinder, whereby to cover said peripheral surface while enabling the cylinder to move relatively to the scalp, peripherally extending lip portions in opposed relation to each other on the forward end portion of the cylinder and on a rearward portion of said skirt, a length of spring wire assembled in position intermediate said lip portions for seating relatively to each lip portion whereby to limit the movements between the cylinder and scalp, and said spring wire being formed in a shape that is bowed in an endwise direction relatively to the cylinder so as to press the scalp toward the front face of the cylinder.

3. In claim **2**, the feature that there is a circular groove formed between the cylinder and scalp and into which the wire may be pressed to permit one lip portion to pass the wire, so that the scalp and cylinder may be assembled through a movement of the said one lip portion beyond the wire.

4. A lock adapted to be mounted in position in a bore in a door and with a forward end portion of the lock juxtaposed to the door surface, a scalp overlying

the front face of the lock and including a skirt extending rearwardly with clearance over the peripheral surface on a forward end portion of the lock, whereby to cover said peripheral surface and to seat on the door surface while enabling the lock to move relatively to the scalp, peripherally extending lip portions in opposed relation to each other on the forward end portion of the lock and on a rearward portion of said skirt, a length of spring wire assembled in positioned intermediate said lip portions for seating relatively to each lip portion whereby to limit the movements between the lock and scalp, and said spring wire being formed in a shape that is bowed in an endwise direction relatively to the

lock so as to press the scalp toward the front face of the lock.

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