

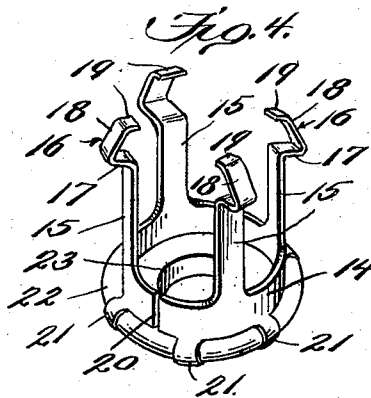
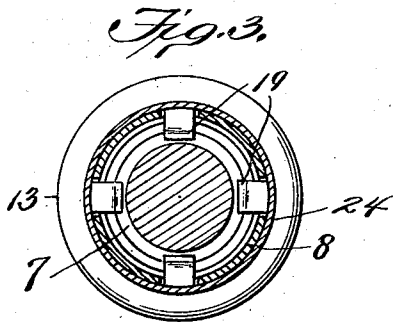
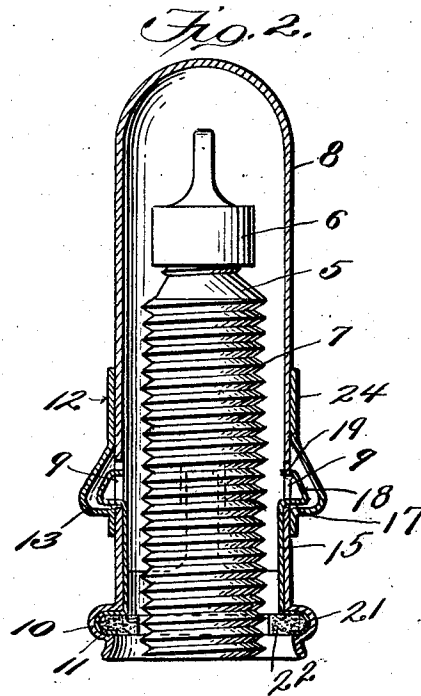
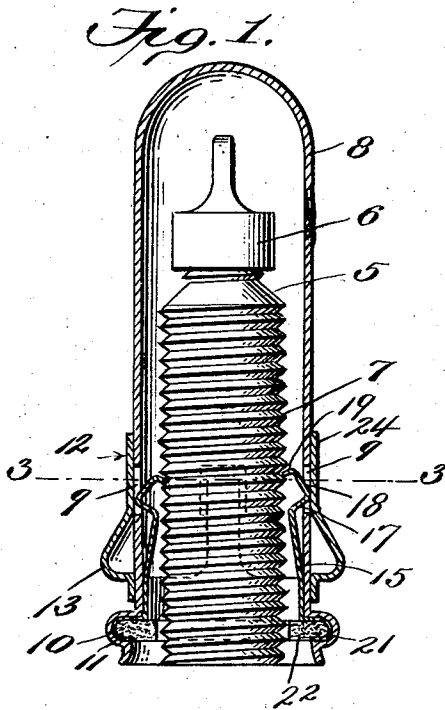
Feb. 8, 1927.

F. W. BENTON

1,617,299

MEANS FOR SECURING DUST CAPS FOR VALVE STEMS

Filed Aug. 5, 1926



Inventor
Frank W. Benton

By *Charles L. Patton*
Attorney

UNITED STATES PATENT OFFICE.

FRANK W. BENTON, OF WILSON, NORTH CAROLINA.

MEANS FOR SECURING DUST CAPS FOR VALVE STEMS.

Application filed August 5, 1926. Serial No. 127,397.

This invention relates to detachable dust caps for tire valve stems and has for one of its objects to improve the general construction of devices of this character by embodying in the organization thereof means for locking the cap in positive association with the valve stem to resist loosening and accidental detachment thereof, and also to include in the improvement exteriorly located means for releasing the cap when it is desired to detach the same for giving access to the valve stem.

A further object of the invention is to provide a detachable dust cap for valve stems having securing means for the cap carried by and removable with the cap from the valve stem, and also to provide means in connection with the securing means for excluding dust, grit and the like from the valve stem.

With the foregoing and other objects and advantages in view, the invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawing:

Figure 1 is a transverse vertical section of the improved dust cap and fastening and dust excluding means carried thereby and shown applied and in locked position relatively to a valve stem of well known form;

Fig. 2 is a view similar to Fig. 1, showing the locking means released;

Fig. 3 is a horizontal section on the line 3-3, Fig. 1; and

Fig. 4 is a detail perspective view of the locking means and dust excluding washer associated therewith.

The numeral 5 designates a valve stem of usual form having a removable cap 6 at its upper end, the body of the stem being formed with exterior screw-threads 7 as in the ordinary type of device of this class. The general form of the dust cap 8 is similar to caps ordinarily used with the exception that the body thereof near the lower extremity is formed with a plurality of slots 9 and the lower extremity has an outstruck circumferential groove 10 to provide a seat 11. On the outer side of the cap a vertically movable slide ring 12 is applied and has near its lower end an outstruck corrugation 13 of substantially semiconical shape, the said slide ring at all times forming an exterior closure for the slots 9 in the dust cap. The slide ring 12 frictionally fits the exte-

rior of the dust cap but may be readily operated to effect a locking attachment or a release of the dust cap relatively to the stem 5.

The most essential feature of the present invention consists of locking means mounted within the dust cap and removable and also replaceable with said cap when the latter is withdrawn from or applied over the valve stem. This locking means comprises a circular base band 14 having vertically extending arms 15 continuous with and rising from the upper edge thereof. The upper extremities of the arms 15 are formed as catch members 16 of practically the same contour as the semi-conical corrugation 13 of the slide ring, each catch member having a lower base 17 approximately at right-angles to its arm and continuing into an upwardly and inwardly inclined bend 18, which terminates in an inwardly, approximately right-angular grip 19, which is adapted to be pressed into a portion of the threads 7 of the stem 5. The base band 14, arms 15 and catch members 16 are formed of spring metal of suitable thickness, and in their normal position the arms 15 stand vertically with relation to the base band 14, and when the arms 15 and member 16 are pressed inwardly to engage the threads 7 of the stem 5, such adjustment of these parts will be in opposition to the tendency of the same to return to a vertical or upright position as just explained. The base ring 14 is vertically cut through or slitted as at 20, to permit the same to contract for insertion in the lower portion of the lower extremity of the dust cap 8, and when seated in the said cap, the upper catch extremities of the arms 15 normally spring outwardly through the slots 9, as clearly shown by Fig. 2, the lower right-angular bends or bases 17 of the catch members being in close proximity to the lower terminal walls of the slots 9. The slots 9 are of greater length than the vertical extent of the catch members so that there will be no obstruction to the free action of the said catch members in performing their locking function, or when released with relation to the threads 7 of the stem 5. The base ring 14 also has a plurality of grips 21, which are preferably formed integral therewith and depend a requisite distance below the same and are bent around and secure a suitable dust washer 22 closely against the lower ends of the said base ring 14. This

dust washer has a central opening 23 of such diameter that it will closely fit against the threads of the lower extremity of the stem 5 and exclude passage of dust or grit to the said stem below the location of the washer. The washer 22 fits in and is held in place by the circumferential corrugation 10 at the lower extremity of the cap 8, as clearly shown by Figs. 1 and 2, and the arms 15 normally lie in close engagement against the inner surface of the dust cap.

The operation of the improved dust cap fastening or locking means is very simple. When the ring 12 is drawn upwardly to bring the semi-conical corrugation 13 over the slots 9, the catch members 16 of the arms 15 are free to spring outwardly through the said slots into the circumferential seat formed by the said semi-conical corrugation. When the ring 12 is forced downwardly, the upper straight portion 24 of the ring will engage the upper terminal portions of the inwardly inclined bends 18 of the catch members 16 and gradually force the members inwardly until the grips 19 are fully in engagement with the threads 7 of the stem 5, and under these conditions the angular bends between the bases 17 and the inclined bends 18 of the said members 16 will be in contact with the straight portion 24 of the ring above the semi-conical corrugation 13 and thereby the grips 19 will be positively retained in engagement with a portion of the threads 7 of the stem 5. It will be seen that when the catch members 16 are in normal position or have moved outwardly through the slots 9 into the semi-conical corrugation 13, the cap 8 will be free to be withdrawn from the stem and with the cap the washer 22 is also simultaneously withdrawn and the ring 12 remains in the upwardly moved adjustment thereof while the cap is removed, or must be so positioned prior to application of the cap 8 to the stem 5, when the cap may then be again secured against accidental displacement as hereinbefore explained.

The improved dust cap fastening or locking means as hereinbefore explained is wholly carried by the cap and the most essential feature thereof, or the arms 15 and catch members 16, are wholly contained within the cap and the ring 12 which serves as the means for permitting release and effecting securement of the catch means relatively to the threads of the valve stem.

The slide ring 12 has heretofore been described as having an outstruck corrugation of substantially semi-conical shape. It will be understood, however, that changes in the shape of this corrugation may in some instances be adopted without in the least departing from the spirit of the invention, it only being necessary to provide means for permitting the catch members 16 to freely

spring outwardly through the slots 9 of the cap 8 for the purpose of positioning said catch members in release relation to the threaded valve stem 5.

What is claimed as new is:

1. A device of the class specified comprising in combination with a valve stem, a dust cap having slots in the lower portion thereof, a sliding ring on the outer side of the cap and movable over the said slots, the said ring having a circumferential outstanding corrugation formed therein, and locking means inserted within and enclosed by the cap and comprising a band and arms projecting therefrom and provided with angular catch members movable through the slots of the cap into the corrugation of the ring by moving the latter in one direction and also projectible inwardly to engage portions of the stem by a reverse movement of the ring.

2. In a device of the class specified, the combination with a valve stem having exterior threads, of a dust cap removably mounted over the stem and having slots, a ring slidably mounted on the exterior of the dust cap over the slots and formed with an outstruck portion, and spring locking means within the cap and provided with catch extremities which are movable outwardly through the slots into the outstruck portion when the latter is over the slots, said catch extremities being depressible inwardly to engage a portion of the threads of the stem when the ring is moved to shift the outstruck portion away from the slots.

3. In a device of the class specified, the combination with an exteriorly screw-threaded valve stem, of a dust cap having slots therethrough in the lower portion thereof, locking means consisting of a yieldable base band having arms projecting upwardly therefrom and provided at their upper terminals with angular catch members which are movable outwardly through the slots of the cap, the said base band also having clips for engagement with a dust washer held against the lower edge of the band by said clips, the locking means being inserted within the lower portion of the dust cap and having the dust washer in engagement with the said corrugation, and a ring slidably mounted on the outer side of the dust cap and movable over the said slots of the latter, the ring being provided with an outstruck corrugation in the lower portion thereof and an upper straight portion to respectively permit release and effect an inward depression of the catch members, the catch members when depressed engaging a portion of the threads of the valve stem and locking the cap in positive enclosing position over the valve stem.

4. A device of the class specified, comprising in combination with a valve stem, a dust

cap having slots in the lower portion thereof, a sliding ring on the outer side of the cap and movable over the slots, the said ring having a circumferential, outwardly projecting seat formed therein, and locking
5 means inserted within and enclosed by the cap and comprising a base member and arms extending upwardly therefrom at intervals and having catch devices movable through
the slots of the cap and into the said seat of
the ring by moving the latter in one direction and also projectible inwardly to engage
portions of the stem by a reverse movement
of the ring.
In testimony whereof I have hereunto set
15 my hand.

FRANK W. BENTON.