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MANUFACTURE OF DUST CAPS FOR TIRE VALVES AND THE LIKE.

APPLICATION FILED FEB. 3, 1905.

FIG. 1.

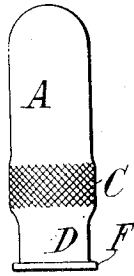


FIG. 2.

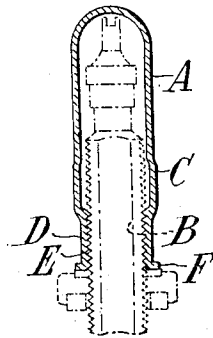


FIG. 3.

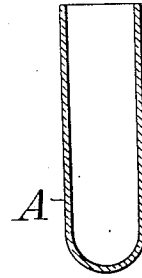


FIG. 4.

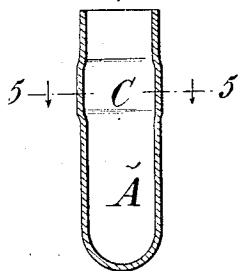


FIG. 6.

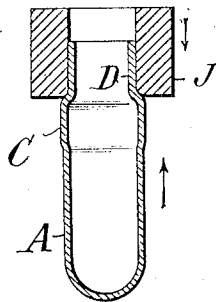


FIG. 7.

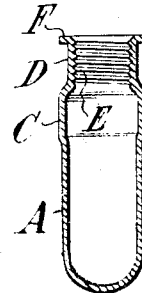


FIG. 5.

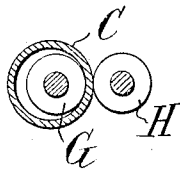


FIG. 8.

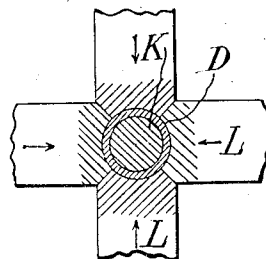
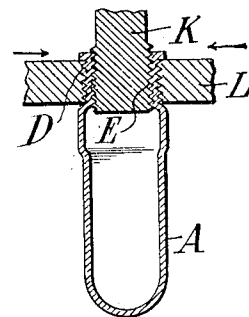


FIG. 9.



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MANUFACTURE OF DUST-CAPS FOR TIRE-VALVES AND THE LIKE.

No. 851,781.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, MAXIMILIAN CHARLES SCHWEINERT, residing at West Hoboken, in the county of Hudson and State of New Jersey, and HENRY P. KRAFT, residing in the borough of Brooklyn, county of Kings, city and State of New York, citizens of the United States, have invented certain new and useful Improvements in the Manufacture of Dust-Caps for Tire-Valves and the Like, of which the following is a specification.

These dust caps are tubes closed at one end designed to inclose the entire valve, including the ordinary valve cap, and arranged to screw on an external thread extending throughout substantially the greater portion of the valve casing. The dust cap, therefore, in order to accommodate the valve, should have a very long screw thread, as long as or slightly longer than the exposed or projecting portion of the valve, and a bored portion of slightly less diameter beyond said screwthread; or if provided with a short screwthread near its mouth, it must have a diameter beyond the screwthread great enough to accommodate easily the larger portion of the valve.

Caps for the purpose stated have previously been made from a solid rod, either by cutting the internal screwthread throughout nearly the full length of the cap and forming a slightly smaller bore beyond; or by cutting a screwthread only near the mouth of the cap and counterboring the portion beyond the thread sufficiently to accommodate the largest portion of the valve. Each of these processes involved considerable labor and expense to take out all the solid core of the rod, especially with tools for cutting screwthreads, it being well understood that such tools work more easily in cutting a thread within a hollow pipe than into a solid rod. The old processes were also slow, and used a considerable quantity of metal for each cap.

According to our improvement the cap is made very quickly by a succession of drawing and compressing operations, and a very easy thread cutting operation on the inside of a tube. By this operation the cap can be made more quickly, of a much less weight of metal, and of a more ornamental appearance than by the old processes. Certain other advantages are referred to in detail hereinafter.

The accompanying drawings illustrate caps and the process of making them according to the invention.

Figure 1 is an elevation of a cap; Fig. 2 shows a cap in section, the position of the valve being indicated in dotted lines; Figs. 3 to 7 inclusive illustrate the successive steps of forming the cap. Figs. 8 and 9 illustrate a variation in one of the steps.

Referring to the embodiment illustrated, the tubular body A is slightly greater in diameter and longer than a portion of the valve B which lies therein. A knurled ring C forms the portion of the cap at the lower end of the body portion A. The knurled ring in the process of formation may be slightly enlarged in its lateral diameter. The mouth D of the cap is of smaller diameter than the knurled portion, and preferably also than the body portion A. The contracted mouth D is internally screwthreaded as at E, the screwthread terminating at the point where the enlarged diameter of the knurled ring begins. A sharp-edged rib F surrounds the mouth making a broad flat bearing end or washer surface for the cap, and with the contracted portion D of the knurled ring C contributing to the ornamental appearance of the cap.

In the manufacture of a cap, a tube of brass or other suitable metal is drawn in the form shown in Fig. 3; of a uniform diameter equal to the desired diameter of the body portion A of the finished cap. Then a portion of the tube is embraced between a pair of rotating rolls G and H, the outer one of which has such a configuration as to form the knurling. This annular rolling action at the same time stretches the metal somewhat, and forms the tube of slightly larger diameter at this point. The portion of the tube between the knurled ring C and the end is then contracted to a diameter smaller than that of the rest of the tube, forming the portion D. The contraction for example may be effected by forcing the end of the tube into a die J (Fig. 6). The rib F is then formed by upsetting the edge and the thread E is cut in the contracted portion D of the tube. The thread cutting tool has to remove only a small quantity of metal. The portion D is contracted to such an extent that the thread shall be perfect, with as little excess of material to be cut away as is practicable. The

enlarged diameter beyond the screwthread, and especially immediately beyond it within the knurled ring C, facilitates the action of the thread cutting tool. It will be seen therefore that practically all the metal used goes into the making of the cap. There is no waste of metal, and there is no waste of power and time in cutting away a quantity of metal. The work of the several tools is very light, and the product is of graceful shape and may be made very light.

The contracted portion D of the screw-threads may be formed in one operation. For example Figs. 8 and 9 show an inner mandrel K fitting in the mouth of the tube and upon which the metal is contracted by means of outer dies L; the faces of the mandrel and dies being threaded so as to contract the tube on the mandrel and to form the screw-threads at the same time.

Though we have described with great particularity of detail a certain specific process, yet it is not to be understood that the invention is limited to the specific embodiments disclosed. Various modifications may be

made by those skilled in the art, without departure from the invention.

What we claim is:—

The process of forming a cap for tire valves and the like designed to inclose an externally threaded valve casing, and having a tubular body portion, an enlarged knurled ring at the end of said body portion, and a screwthreaded end of smaller diameter than said body portion which consists in drawing a tubular body of metal of a uniform diameter greater than that of the threaded casing, enlarging a portion of said body intermediate its ends by annular rolling and simultaneously knurling the same by the configuration of the outer roll.

In witness whereof, we have hereunto signed our names in the presence of two subscribing witnesses.

MAXIMILIAN CHARLES SCHWEINERT.
HENRY P. KRAFT.

Witnesses:

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THEODORE T. SNELL.