

No. 748,404.

PATENTED DEC. 29, 1903.

W. MUNRO.
DOOR KNOB.

APPLICATION FILED MAY 12, 1903.

NO MODEL.

Fig. 1.

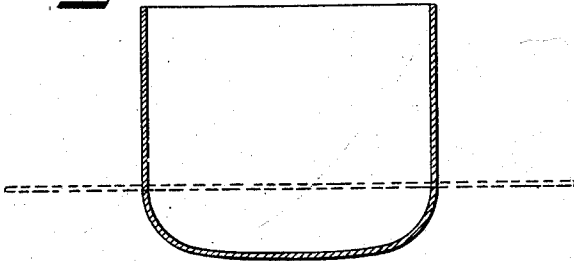


Fig. 2.

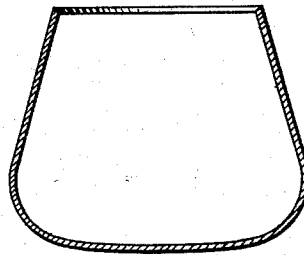


Fig. 3.

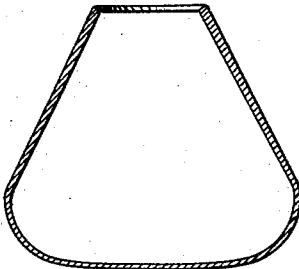


Fig. 4.

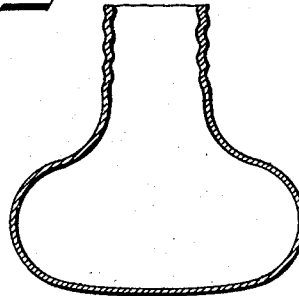


Fig. 5.

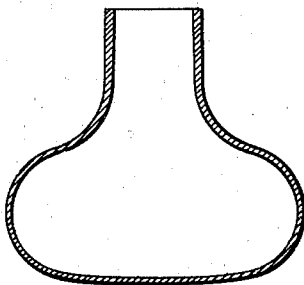


Fig. 6.

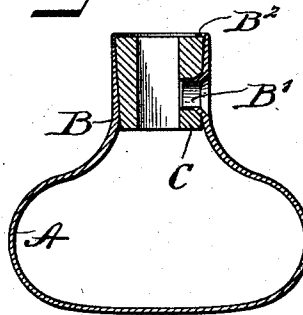


Fig. 7.



WITNESSES:

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WILLIAM MUNRO, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO P. & F. CORBIN, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

DOOR-KNOB.

SPECIFICATION forming part of Letters Patent No. 748,404, dated December 29, 1903.

Application filed May 12, 1903. Serial No. 156,755. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MUNRO, a citizen of the United States, residing at New Britain, in the county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Door-Knobs, of which the following is a full, clear, and exact description.

My invention relates to improvements in wrought-metal knobs and like articles.

The object of my invention is mainly to provide a wrought or sheet metal knob which possesses great strength and rigidity throughout and unusual strength at the shank portion and the intermediate portions between the shank and the shell, said knob being seamless throughout.

In the accompanying drawings I have shown my invention, the successive views being illustrative of steps in the process or method of construction.

Figure 1 is a section of a cup-shaped blank representing the product of the first step, the sheet of metal from which the cup-shaped blank is struck being indicated in dotted lines. Figs. 2, 3, 4, and 5 illustrate, successively, the change in shape of the original blank wrought by the steps of the process employed. Fig. 6 is a section of the finished article, the same being in this instance a door-knob. Fig. 7 is a perspective view of a detail of construction of the door-knob.

Referring to Fig. 6, A represents the shell, body, or handle portion of a door-knob. B is the shank. C is a bushing fitted and held within the shank. In the preferred form of the door-knob the shank is reamed out, so as to take a slight taper, and the bushing C is also tapered, so as to fit snugly therein. In the side of the bushing C there is a counter-sunk recess or passage C', through which the usual screw may be passed to secure the knob to the well-known lock-spindle, (not shown,) which may pass through a longitudinal opening in the said bushing C. This passage C' may also perform an added function—to wit, that of an anchorage to receive a struck-in portion B' of the metal of the shank—the purpose of which is to secure or hold the bushing C in place. The end of the shank B may

also be spun over the bushing C, as indicated at B², for the same purpose. It will be observed that the shell or body A of the knob is of one thickness, while the thickness of the metal as it approaches the shank increases. This gives greater strength to that portion of the article and prevents the twisting or bending of the shank in use. In cases where bushings are provided in the shank portion of the knob this added thickness gives an opportunity to ream out the interior of the shank to afford a tapered seat to receive the bushing without injuriously weakening the same.

The method by which this seamless wrought-metal knob is made will best be understood by referring to the unlettered views, Figs. 1 to 5. In Fig. 1 it will be seen that the first blank is formed from a piece of sheet metal, the same being indicated in dotted lines. This sheet metal is attacked by a die which gives to it a substantially cup-shaped contour. (Indicated in section in said figure.) The cup-shaped blank of Fig. 1 is then subjected to endwise swaging in a suitable machine, the die being shaped to give to the side walls of the cup-shaped member a taper substantially as indicated in Fig. 2. This swaging operation tapers the side walls of the cup, displacing the metal in such a manner as to make the opening or entrance smaller and thickening the side walls thereof. The blank of Fig. 2 may then be further subjected to endwise swaging until it may assume approximately the shape indicated in Fig. 3, the opening being still more reduced and the thickness of the metal as it approaches the opening being still more increased. This swaging process insures perfect symmetry or contour of the tapered and thickened side walls, so that by means of rolls, which I may term "rough" rolls, the final contour of the finished article may be approximately given to the body and shank portions. (See Fig. 4.) In this figure the side walls appear wavy in cross-section. Finally, finishing-rolls may be applied which transform the rough blank of Fig. 4 into the finished blank of Fig. 5. Of course this method is not limited to a definite number of swaging or rolling steps. It is,

however, essential to the uniform and rapid production of these articles that the first operations on the blank cup should be those of swaging, while the final operations should be those of rolling. What otherwise might be a weak portion of the knob—to wit, the shank—is strengthened by the thickening of the metal incidental to the manipulation thereof. The product is a knob formed of sheet metal having no seam whatever and possessing great strength and rigidity throughout and unusual strength at the shank portion and at the intermediate portion between the shank and the shell. Obviously the blanks may be annealed whenever desired to facilitate the further manipulation of the same.

By my method knobs or the like may be rapidly and economically made from sheet metal without the use of internal dies or mandrels, save in the production of the original cup-shaped blank. The finished articles are uniform and possess great strength, particularly at those points wherein ordinary knobs are the weakest.

What I claim is—

1. As an article of manufacture, a wrought-metal knob comprising a shell or body portion and a shank portion of smaller diameter connected integrally with the shell or handle portion, said parts being seamless throughout, the thickness of the metal adjacent to the shank and at the shank being greater than the thickness of the metal of the shell.

2. As an article of manufacture, a wrought-metal knob comprising a shell or body portion and a shank portion of smaller diameter connected integrally with the shell or handle portion, said parts being seamless throughout, the thickness of the metal adjacent to the shank and at the shank being greater than the thickness of the metal of the shell, a bushing carried by the shank and means for holding said parts in fixed relation to each other.

3. As an article of manufacture, a wrought-

metal knob comprising a shell or body portion and a shank portion of smaller diameter connected integrally with the shell or handle portion, said parts being seamless throughout, the thickness of the metal adjacent to the shank and at the shank being greater than the thickness of the metal of the shell, a bushing carried by the shank and means for holding said parts in fixed relation to each other, said means being integral with the shank.

4. As an article of manufacture, a wrought-metal knob comprising a shell or body portion and a shank portion of smaller diameter connected integrally with the shell or handle portion, said parts being seamless throughout, the thickness of the metal adjacent to the shank and at the shank being greater than the thickness of the metal of the shell, a bushing carried by the shank and means for holding said parts in fixed relation to each other, said means being integral with the shank, and including an inturned flange projecting over the outer end of the bushing.

5. As an article of manufacture, a wrought-metal knob comprising a shell or body portion and a shank portion of smaller diameter connected integrally with the shell or handle portion, said parts being seamless throughout, the thickness of the metal adjacent to the shank and at the shank being greater than the thickness of the metal of the shell, a bushing carried by the shank and means for holding said parts in fixed relation to each other, said means being integral with the shank, and including an inturned flange projecting over the outer end of the bushing, and a struck-in portion projecting into a recess or opening in the side of said bushing.

Signed at New Britain, Connecticut, this 9th day of May, 1903.

WILLIAM MUNRO.

Witnesses:

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