April 4, 1950 R. H. WRIGHT 2,502,812

VALVE HANDLE

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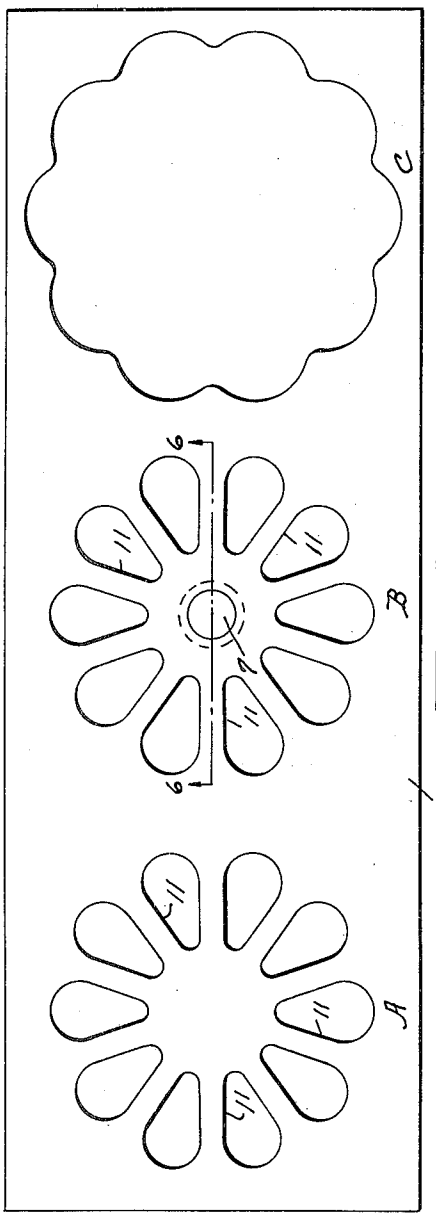


Fig. 1.

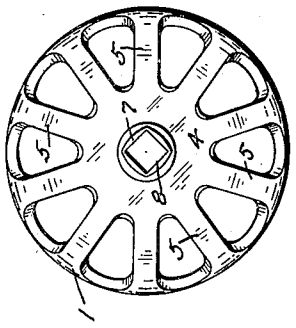


Fig. 5.

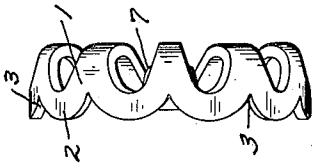


Fig. 4

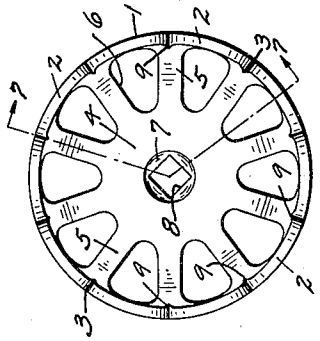


Fig. 3.

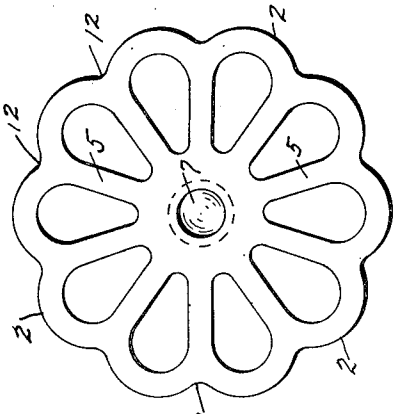


Fig. 2.

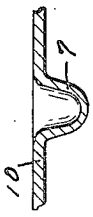


Fig. 6.

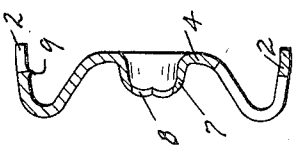


Fig. 7.

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VALVE HANDLE

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1 Claim. (Cl. 74—553)

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My present invention relates to the art of manufacture of valve handles of the type in which the handle is removably applied to the operating end of the spindle of a valve, and usually held in place on the spindle by the employment of a washer and suitable screw fastening.

Heretofore in the art, valve handles of the kind to which I refer have been largely made by casting the same, and they comprise units made up of a furrowed peripheral portion to facilitate grasping the handle, and spokes leading from the peripheral portion to the spindle socket at the center of the handle.

The primary object of my invention has been to produce a handle of the above general nature which is made from a metal stamping, and to this end forming the stamping with a rolled peripheral portion from which lead spokes or webs to the central portion, at which the spindle socket is formed. In the manufacture of a stamping type handle such as described I have found that it is impracticable to use ordinary drawing or forming dies in the customary way when the flat stamping has been produced of circular form and it is attempted to roll the peripheral portion to provide the ultimate round handle portion of the article of manufacture. When a stamping is made in round form preliminary to the production of the handle with the peripheral portion to be grasped and the spokes leading to the central socket portion, if it is attempted to roll the metal of the peripheral round portion of the flat stamping after the latter is blanked out with openings forming the so-called spoke portions, the pressure of drawing or forming dies to cause the rolling effect at the peripheral portion of the stamping will be such as to cause breakage of the metal at the spoke portions intermediate the length of the latter. The foregoing is doubtless due to the fact that a greater pressure of the dies for rolling the peripheral portion is required than the tensile strength of the metal at the spoke portions will permit in the forming operation, and therefore the spoke portions yield and will break in the forming of the periphery of the handle.

My invention therefore not only involves a new article of manufacture in regard to the handle structure itself, but a novel method of producing the handle of the type to which I refer and by which method I cut away in a peculiar manner the outermost or peripheral portion of the stamping used from which the article of manufacture is blanked out, so as to provide clearance spaces into which the peripheral portions of the stamped blank of material may be crowded together as to

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the various sections of such peripheral portion without requiring that great amount of pressure that will overcome the tensile strength of the spoke portions and effect a breaking action on the latter.

A full understanding of the construction of my novel valve handle, and the method of producing the same, will be had upon reference to the following detail description of these features of my invention, in conjunction with the accompanying drawings, in which:

Figure 1 shows in plan view a section of flat metal illustrating the progressive steps of blanking out the same for producing the handle blank which is to be subjected to the action of suitable forming or drawing dies in order to make the final product of my invention.

Figure 2 illustrates the blank of material produced as a result of the stamping out operation shown or depicted in Figure 1, with the central area or portion of the blank in the preliminary form in which it is pressed to provide a socket ultimately to be stamped for the formation of the handle socket for the spindle to which the valve handle is to be applied, said socket being more clearly depicted in the fragmentary sectional view of Figure 6.

Figures 3, 4, and 5 are, respectively, bottom plan, side elevation, and top plan views of my completed valve handle.

Figure 6 is a fragmentary section view, previously referred to, and showing the socket which is formed by a suitable forming die, as a part of the second operation depicted in Figure 1 of the drawing.

Figure 7 is a central cross sectional view of the valve handle as it is seen in Figure 4, in the condition of its final production, the section being taken on the line 7—7 of Figure 3.

I shall first describe the structural design of my handle and thereafter set forth the novel method of producing the same, included in my invention. Referring first to Figures 3, 4, and 5, I note that the handle member shown is comprised of a peripheral portion 1 which in the ultimate form depicted has at the under edge portion thereof a series of scallop-like parts 2 which are separated at the edge in part by angular indents 3. From the peripheral portion of the handle said portion is bent or rolled in the direction of the central area 4 to provide the spoke members 5, which are obtained, of course, by stamping out of the flat metal approximately triangular shaped openings 6. The central area or body 4 of the handle is formed at its middle portion with the

socket member 7, which socket member is ultimately stamped out to provide a square spindle fitting aperture 8.

As seen best in Figure 7, the peripheral portion 1 of my handle is rolled inwardly and downwardly in the direction of the central area 4 in order to provide the latter and the spoke portions 6, and therefore the socket portion 7 is formed in a direction extending oppositely to the direction of formation of the periphery 1.

Figures 3 and 7 of my drawings show how the metal of the peripheral portion of the handle at the point of the angles intermediate the scallop edges 2 is squeezed or displaced laterally slightly incident to the rolling of the peripheral portion into the shape shown, the designations 9 showing the places where the metal has been squeezed inwardly from the inner side of the peripheral portions 1.

I now pass to the method of producing a handle of the construction typified in Figures 3 to 5 inclusive as above set forth. In Figure 1 there is shown a piece of flat metal which is utilized by progressive stamping and drawing and cutting operation to produce the blank shown in Figure 2.

The first operation on the metal blank designated 10 in Figure 1 is to cut out the approximately triangular openings 11 that form the intermediate spokes 5 of the final handle or wheel member. This first operation is designated generally at A in Figure 1.

The second operation is shown at B in Figure 1 and includes the advancing of the metal strip or blank 10 and the forming of the projection or spindle portion 7, the latter being produced by a suitable forming die and virtually constituting a hollow tit extending from the plane of the metal blank 10, see Figure 6. The part 7 is closed at one end as a result of the second operation designated B.

The third operation, shown at C in Figure 1, is to blank out the handle or wheel unit in the form in which it is shown in Figure 2. Thereupon this blank unit of Figure 2 is passed to the press and subjected to the action of suitable forming dies. It is noted that in its condition of Figure 2 the edge portion of the handle unit is a general scalloped formation with edge parts between the scallops curved on a relatively long arc as indicated at 12.

Now in the forming of the final shape of the handle under the action of the forming dies, the peripheral portion 1 of the handle is rolled as seen best in Figures 4 and 7, and in this rolling action the actual periphery of the handle, speaking in regard to its edge periphery, is contracted by the squeezing of the material or metal from which the article is produced and the gradual curved portions 12 between the scallop portions 2 become sharp angles as in Figure 4. Certain portions of the metal in this operation of forming are pressed inwardly from the peripheral portion 2 as shown at the parts 9 in Figures 3 and 7, and previously referred to.

At the time of the final forming operation to produce the formation of the ultimate handle as seen in Figures 3 to 5 inclusive, the projection or laterally extending hollow protuberance 7 is stamped out to provide the square openings 8 which will fit over the square portion of the spindle of the valve whilst the rounded remaining portion will fit over the round portion of such spindle, in an obvious manner.

As hereinbefore promised, the forming of the article of Figures 3 to 5 inclusive, under the action of the forming dies effecting a rolling of the peripheral portion 2 into the shape seen in Figure 7 is produced with sufficient pressure to obtain the desired curvature but not enough pressure is necessary to be exerted such as would cause breakage of the spoke portions 6 of the handle or wheel member. The necessary contraction of the peripheral portion 2 providing the shape described is allowed for by the indents at 12 as seen in Figure 2 which ultimately become sharp angles as the contraction of the metal takes place.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

As a new article of manufacture, a stamped valve handle comprising a central metal body area formed with a central hollow spindle receiving projection extending from one side thereof, said body area curving outwardly and laterally, laterally to an extent approximately at least equal to the depth of the projection, and a peripheral portion at the outer portion of the body curved oppositely to the said projection with the edge of the peripheral portion of scalloped outline and contracted to provide a gripping surface, the metal body being stamped out to provide openings radial to the said projection and extending from a point adjacent to the projection to a point spaced a short distance from the rim of the body, so that the radial openings continue into the curved peripheral portion for grasping advantage, and form spokes extending from the central portion of the body into and forming a part of said periphery, the peripheral portion of the handle being substantially continuous and parallel to the walls of the central projection between the outer ends of the said openings and said edge.

RICHARD H. WRIGHT.

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