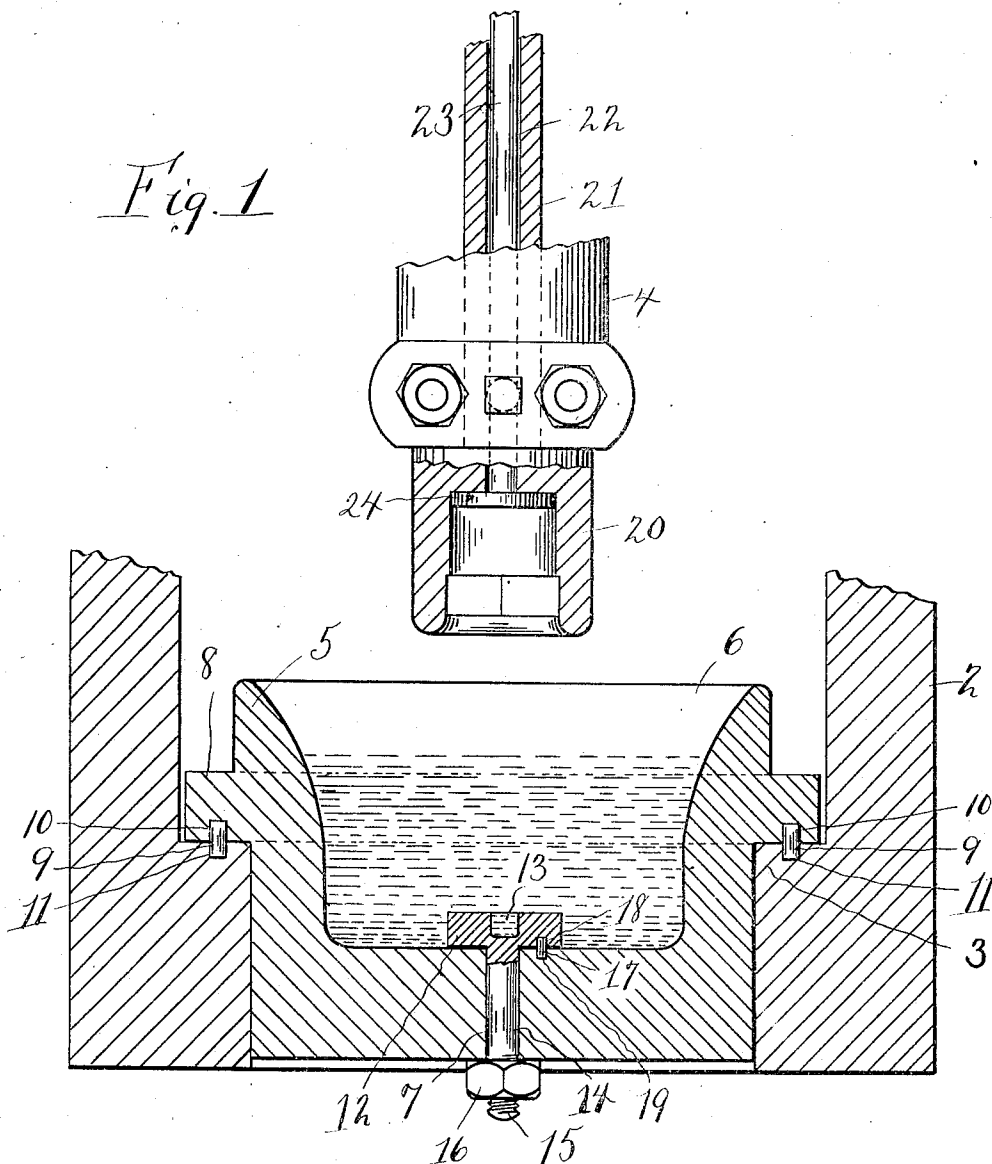


1,062,719.

2 SHEETS—SHEET 1.



Witnesses

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METHOD OF SHAPING HOLLOW METAL ARTICLES.
APPLICATION FILED JULY 13, 1912.

1,062,719.

Patented May 27, 1913.

2 SHEETS—SHEET 2.

Fig. 2.

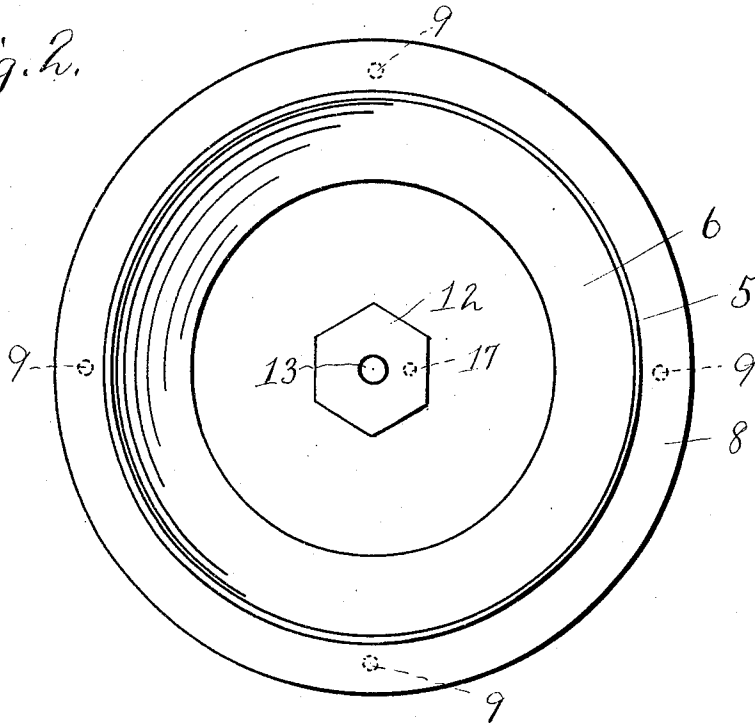


Fig. 3.

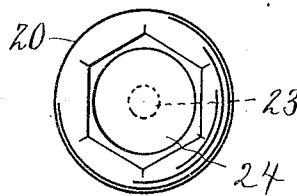


Fig. 4.

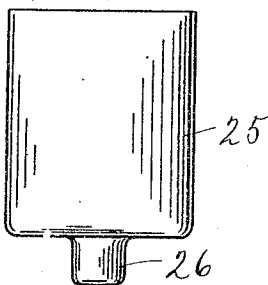
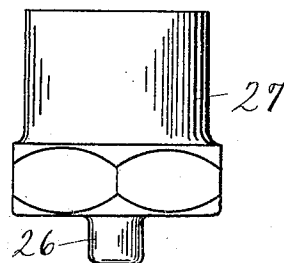


Fig. 5.



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UNITED STATES PATENT OFFICE.

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METHOD OF SHAPING HOLLOW METAL ARTICLES.

1,062,719.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed July 13, 1912. Serial No. 709,120.

To all whom it may concern:

Be it known that I, JOHN F. LEWIS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Methods of Shaping Hollow Metal Articles, of which the following is a specification.

My invention relates to a new and useful method of shaping hollow metal articles, and has for its object to so utilize water as to readily conform the article under treatment to the shape of the die without said article moving lengthwise of the die.

A further object of the invention is to fill the article to be shaped with water to seat the same so as to prevent the displacement of said water and to shorten said article by pressure upon one end thereof.

A still further object of the invention is to submerge the article to be shaped in water with an open end up, inclosing said article in a die and shortening the same by pressure upon the ends of the article.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring by numeral to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a portion of a press of any suitable construction having a reservoir bolster set thereon adapted to carry the punch and provided with a die carried by the ram. Fig. 2 is a plan view of the reservoir bolster, showing the punch mounted therein. Fig. 3 is an end view of the die with the knock-out thereon. Fig. 4 is a side elevation of a shell or casing to be formed, and Fig. 5 is a similar view of the finished article.

In carrying out my invention as here embodied, 2 represents the frame of a press of any suitable design adapted to perform the work provided with a bed plate 3, and having a ram 4. On the bed plate of the press

is mounted the reservoir bolster 5, having a water chamber 6 formed therein from which leads an opening 7 through the bottom of the reservoir bolster, and said reservoir bolster is provided with an outer flange 8 intermediate the top and bottom thereof which rests upon the bed plate 3, and is held in place by dowel pins 9 or their equivalent which fit in holes 10 in the flange and other holes 11 in the frame of the press.

12 denotes the punch which may be of any desired shape or size having an opening therein and provided with an integral bolt 14 which passes through the opening 7, the threaded end 15 of said bolt extending beyond the lower face of the reservoir bolster and having mounted thereon, a nut 16, for holding the punch in place. In order that the punch may always be placed in the same position, I provide a dowel pin 17 which fits in a hole 18 in the punch and another hole 19 in the reservoir bolster. On the ram of the press is mounted the die 20, the interior walls of which are produced in the shape desired for the exterior of the finished product, which in this particular case, is shown as the shell or casing of a grease cup, but of course it will be readily understood that I do not confine myself to the construction here shown as it is equally applicable to the manufacture of knobs or terminals of bed or fence posts, door knobs and a great variety of other hollow metal articles. The die is provided with a stem 21 which sits in the ram of the press, and running through said stem and the die to the interior of the latter, is a longitudinal opening 22 in which is slidably mounted the knock-out rod 23 carrying a knock-out plunger 24 which is fitted in the die.

Taking as an example, the shell or casing of a grease cup as here shown, the operation of the device is as follows: The water being maintained at the proper level, the articles are placed in the liquid chamber and seated upon the punch 12 in alinement with the die 20 at which time, the water will run into the article through the upper open end and when the ram moves, the articles will enter the die and the continued downward movement of the ram will force the ends of the article toward one another

shortening the article and cause that portion of said article which is smaller than the die to be forced outward until it conforms to the interior contour of the die and any portion of the article which is not within the die, will be bulged outward to the form or shape of a portion of a sphere. With the upward movement of the ram, the cup will be withdrawn from the water chamber and at a predetermined time, the knock-out plunger 24 will be operated to force the finished article from the die.

By referring more particularly to the article shown in Figs. 4 and 5, 25 represents a blank having a closed end on which is formed the axial stem 26 and to form this blank into the grease cup body 27, said blank is set with its open end upward upon the punch 12, the stem 26 registering with the opening 13 in said punch, thus alining the blank with the die 20.

In the downward movement of the ram 4, the die 20 will pass over the blank and as soon as the upper end of the blank comes in contact with the upper wall of the interior of the die, further lengthwise movement of the blank within the die will be prevented and the further downward movement of the ram will force the ends of the blank toward one another thus shortening said blank which will cause the water therein to bulge that portion of the blank which is out of contact with any portion of the die and cause said blank to conform to the interior contour of said die, thereby forming the grease cup body 27.

It will be noted from this construction that an uninterrupted supply of the liquid is maintained in the liquid chamber, so that it will be unnecessary to fill each and every blank separately, but by placing said blanks in position upon the punch, the water will readily flow therein forcing out all of the air so that it will be impossible to have air bubbles in the blank which would form an imperfect finished article.

Of course I do not wish to be limited to the exact details of construction as here shown as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful, is—

1. The method of forming hollow articles, consisting of filling a hollow article with liquid, seating it upon a surface with its open end upward and shortening said article by pressure upon the open end to cause its side walls to distend.

2. The method of forming hollow articles consisting of seating a hollow article upon a surface, filling it with liquid, and shortening said article by pressure upon the open end, thereby distending its side walls.

3. The method of forming hollow articles consisting of seating the closed end of a hollow article in a vessel filled with liquid, so that said hollow article is filled with said liquid and shortening said article causing an increase in the diameter of its side walls.

4. The method of forming hollow articles consisting of submerging a hollow article in a liquid, seating the closed end, closing the open end, and shortening the same by pressure upon the open end.

5. The method of forming hollow articles, consisting of submerging the same, seating the closed end of said article upon a punch, so that the liquid will be retained in said article, closing the open end, and shortening the article by pressure on the open end.

6. The method of forming hollow articles consisting of submerging the same in a liquid, seating the closed end of said article upon a punch, so that the liquid will be retained in said article, closing the open end of the article with a die and shortening said article by pressure on the open end until the side walls of said article conform to the shape of the die.

7. The herein described method of forming hollow articles consisting of submerging an article in a liquid contained in a receptacle, seating the closed end of said article upon a punch contained in the receptacle, placing a die over said article, closing its open end and shortening said article by pressure on the open end.

8. The method of forming hollow articles, consisting of seating one of said articles which is of greater length than the finished article, filled with liquid, upon a punch, closing the open end with a die, and shortening said article by pressure upon the open end thereby causing the sides of said article to expand to the conformity of the die by the pressure of liquid within the article.

9. The method of forming hollow articles, consisting of seating the open end of one of said articles which is of greater length than the finished article upon a punch, placing a die over the open end of said article thereby closing said open end, and shortening said article by pressure upon the open end thereby causing the water contained in the article to increase the diameter of said article.

10. The herein-described method of forming hollow articles, consisting in placing one of said articles filled with a liquid upon a punch with the open end upward causing the liquid to be retained in the article, covering said article with a die whose upper end is normally closed, and shortening said article by pressure upon its open end.

11. The method of forming hollow metal articles, which consists in, first, submerging and filling a cup-shaped blank with a liquid, second, seating the closed end of said cup-

shaped blank upon a surface, third, placing
a die over said blank to close its open end
and retain the liquid therein, and lastly, ap-
plying pressure to the open end to force the
5 ends toward one another and distend the
side walls thereof at all points where the
die does not engage the blank.

In testimony whereof, I have hereunto af-
fixed my signature in the presence of two
subscribing witnesses.

JOHN F. LEWIS.

Witnesses:

W. HAMILTON ROSE,

M. H. LO REE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
