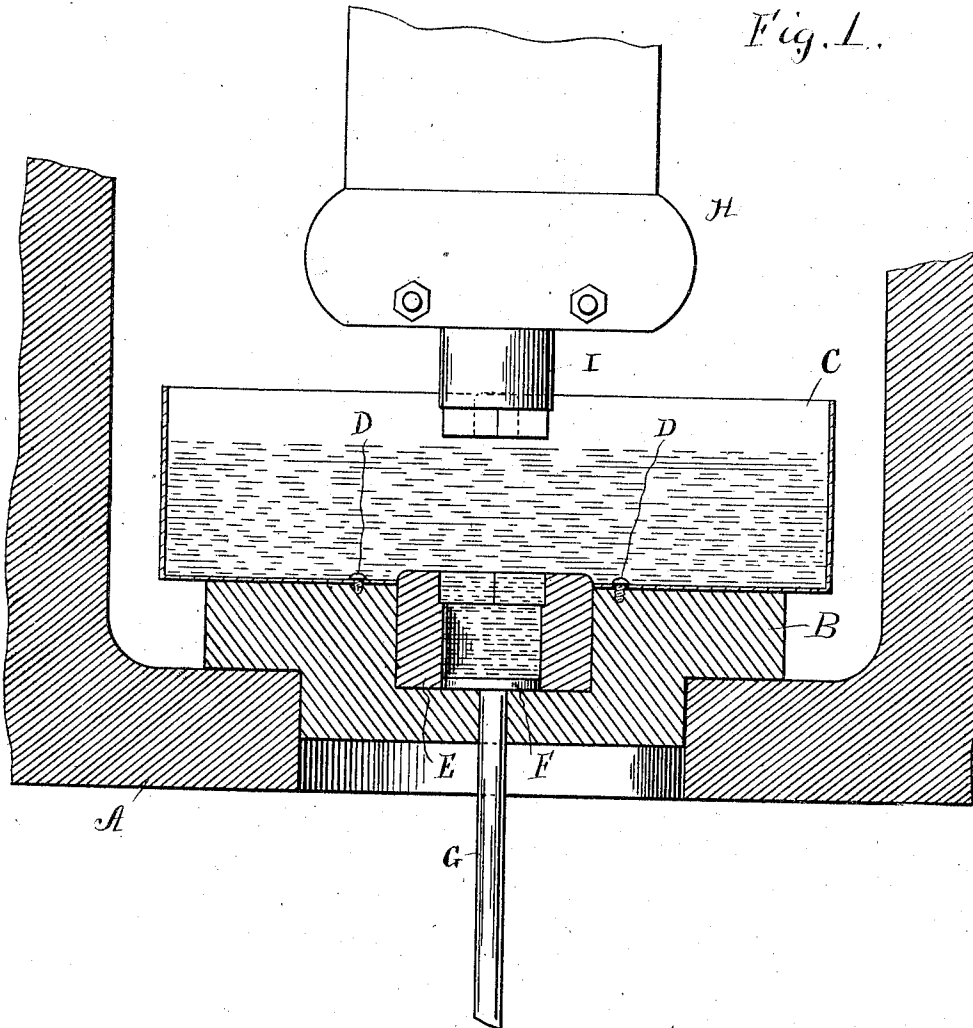


J. F. LEWIS.
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APPLICATION FILED MAR. 26, 1910.

1,016,507.

Patented Feb. 6, 1912.

2 SHEETS—SHEET 1.



WITNESSES:

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J. Williamson

INVENTOR.

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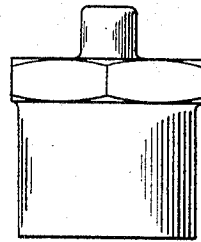
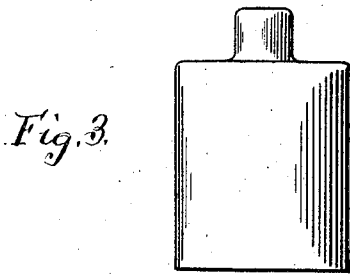
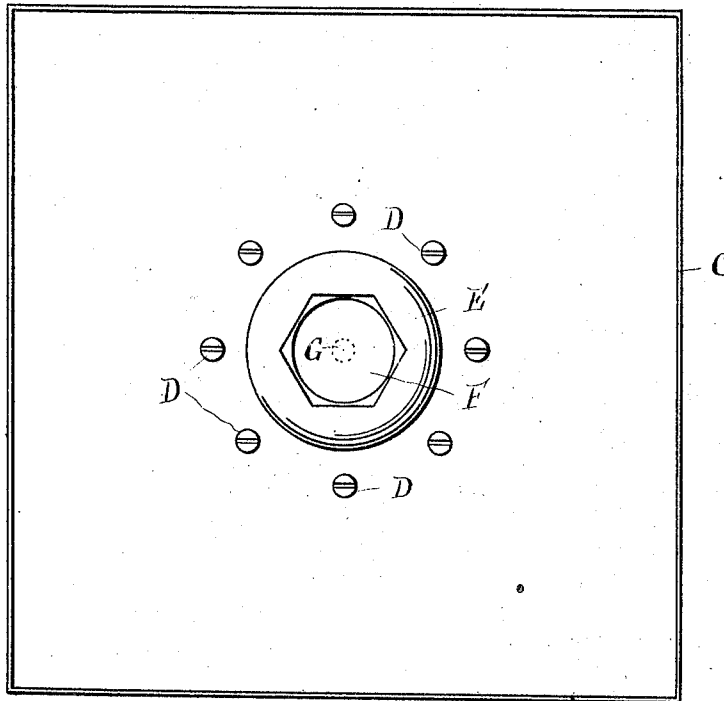


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN F. LEWIS, OF PHILADELPHIA, PENNSYLVANIA.

METHOD OF SHAPING HOLLOW METAL ARTICLES.

1,016,507.

Specification of Letters Patent.

Patented Feb. 6, 1912.

Application filed March 26, 1910. Serial No. 551,709.

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 a certain new and useful Improvement 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.

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 letter 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 bolster or bed plate set thereon in which the lower die is secured, also showing the pan or water receptacle. Fig. 2, a plan view of the water pan and die. Fig. 3, a side view of a shell or casing to be formed, and Fig. 4, a similar view of the shell or casing after it has been formed.

In carrying out my invention as here embodied, A represents a portion of a press of any suitable design adapted to perform the work, and on the bed of this press is located the bolster or bed plate B, and to this bed plate is secured the water pan or receptacle C by means of the screws D or in any other suitable manner.

In the bed plate is set the die E, the interior walls of which are of 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 I do not wish to confine this to my present invention, as it is equally applicable to the manufacture of a great variety of hollow metal articles.

In the die is fitted a plunger F secured upon the upper end of the rod G and the

latter may be attached to a foot treadle or other device by which the plunger may be elevated when it is desired to eject the work from the die.

H is the reciprocating plunger of the press, in which the upper die or former I is secured in any well known manner, and this former is intended to shape the top surface of the shell and at the same time is expanding the sides thereof in the lower die E as will be hereinafter set forth.

Taking as an example the shell or casing of a grease cup as here shown, the operation of the device is as follows: Water being maintained in the pan C at a proper level the interior of the die E will be filled with water, and for convenience the articles to be formed are placed in the pan in considerable numbers and are one by one filled with water, inverted and set in the die E and the former I forced downward upon the top of the shell or casing, and as the bottom edge of said shell rests upon the plunger F and it cannot be forced farther into the die, it follows that the upper portion of the shell will be forced downward, which through the medium of the water contained in the shell will expand the shell until it accurately conforms to the interior contour of the die. After the former I has moved upward, the finished shell may be ejected by forcing the plunger F upward, as will be readily understood.

In practice I have found that it is not necessary to pack the rod G, for when the plunger F is in its lowest position it will seal the opening around this rod, and when said plunger is moved upward, the tendency is to act as a pump piston and draw in air around the rod G so that there is no tendency for the water to flow out at this point, and in its downward movement the plunger reaches its seat before the article being formed is entirely ejected, thus preventing the outflow of the water with this movement.

I am aware that water has been used for the formation of hollow articles, but the great disadvantage attendant upon the devices heretofore using water for this purpose, has caused the operations to be slow and expensive, as in such devices the water has been supplied through an upper open end of the article being formed, and this required the packing of the plunger and other means for preventing the outflow of the wa-

ter and also necessitated the movement of the shell or article being treated upon the inner surface of the die, whereas by submerging and inverting the article to be formed in water, I have overcome all these disadvantages.

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 a liquid, inverting the same and seating its open end upon a surface thereby closing said opening and shortening said article by pressure upon the closed end.

2. The method of forming hollow articles consisting of seating and closing the open end of a hollow article in a vessel filled with a liquid, so that said hollow article is filled with a liquid and foreshortening said article, causing its side walls to expand.

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

4. The method of forming hollow articles consisting of submerging and inverting the same in a liquid, seating said article in a die so that the liquid will be retained in said article and shortening the article by pressure on the closed end.

5. The herein described method of forming hollow articles, consisting of filling a hollow article with liquid and seating said article filled with a liquid, in an inverted position in a die, said die closing the open end of the article and shortening said article

by pressure on the closed end until the side walls of said articles conform to the shape of the die.

6. The herein described method of forming hollow articles, consisting of submerging a number of said articles in a liquid contained in a receptacle, inverting said articles one at a time and seating them in a die having communication with the receptacle, said die closing the open end of the seated article and shortening the article in the die by pressure on the closed end.

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

8. The herein described method of forming hollow articles consisting in placing one of said articles filled with a liquid in an inverted position in a die whose lower end is normally closed, thus causing the liquid to be retained in the article and shortening said article by pressure upon its closed end.

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

JOHN F. LEWIS.

Witnesses:

S. M. GALLAGHER,
EDW. W. ANSTICE.