

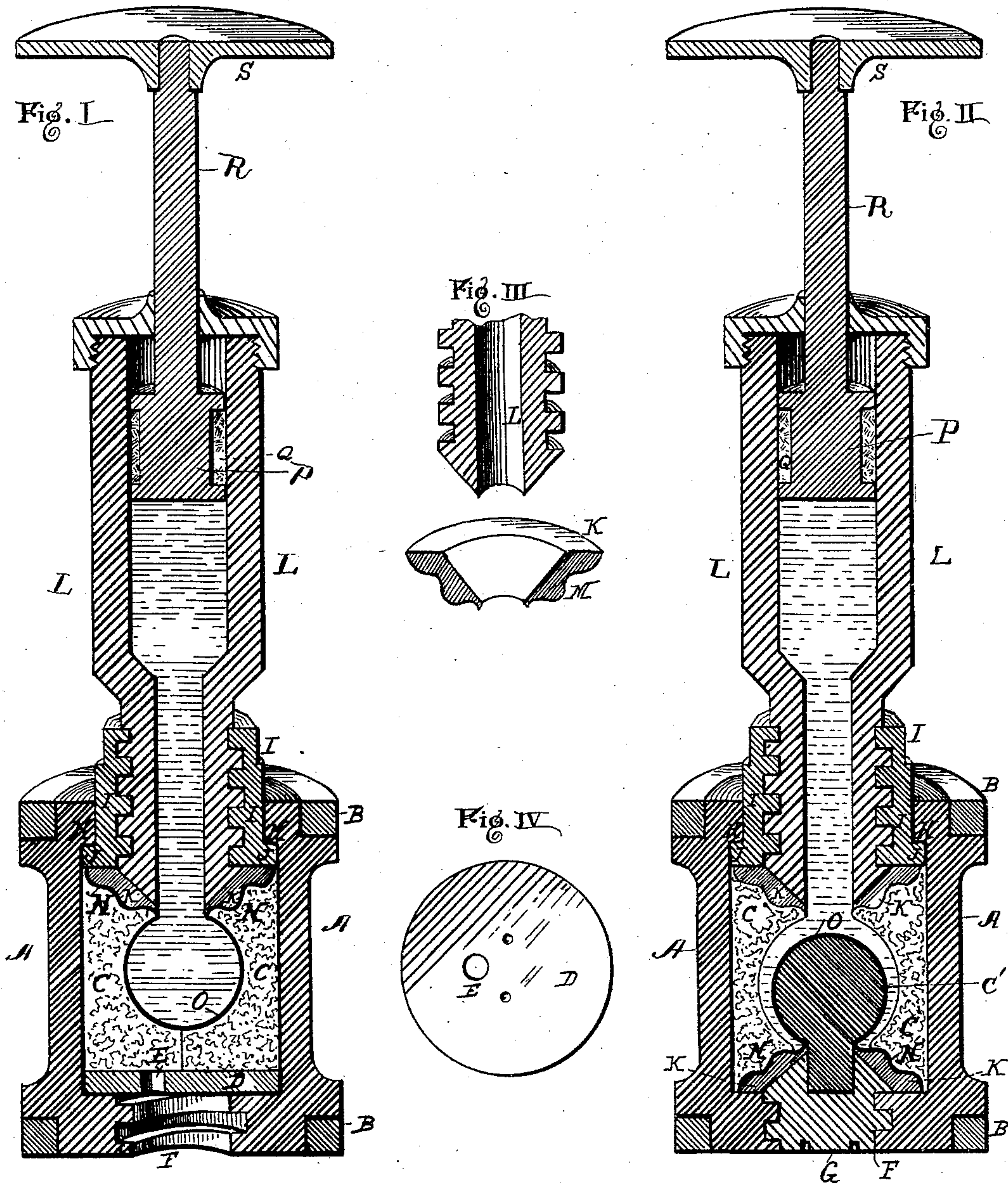
(No Model.)

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MEANS FOR ORNAMENTING SHEET METAL ARTICLES.

No. 444,413.

Patented Jan. 13, 1891.



WITNESSES:

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MEANS FOR ORNAMENTING SHEET-METAL ARTICLES.

SPECIFICATION forming part of Letters Patent No. 444,413, dated January 13, 1891.

Application filed November 11, 1890. Serial No. 371,114. (No model.)

To all whom it may concern:

Be it known that I, BERNARD M. ABELL, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Means for Ornamenting Sheet-Metal Articles, of which the following is a specification.

The invention relates to improvements in means for ornamenting sheet metal; and it consists in the novel devices hereinafter described and claimed, whereby sheet-metal articles—such as silver bowls, pitchers, and the like—may have imparted to their surfaces either in relief or *in intaglio* the beautiful ornamental designs and effects which are now in the larger silver-ware factories produced by the slow and tedious process known as “snarling.”

In accordance with my invention I take the “blank” which approximates the size and general shape of the bowl or other article to be made and subject it to the action of the devices constituting my invention, whereby its surfaces or walls are by means of the pressure of water internally or externally applied caused to conform to the surfaces of suitable dies and thereby to receive the proper ornamental designs either in relief or *in intaglio*.

The particular nature of the devices constituting my invention will be set forth hereinafter, and are illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical sectional view of the devices when arranged to apply the pressure of water within the silver bowl for the purpose of forcing the walls of the latter outward against the surfaces of the sectional die inclosing the same; Fig. 2, a like view of same when arranged to apply the pressure of water without the silver bowl for the purpose of forcing the walls of the latter inward against the surfaces of the sectional die inclosed by the same; Fig. 3, a detached sectional view, slightly in perspective, of the lower end of the water-cylinder and the clamping-ring, hereinafter referred to; and Fig. 4, a detached plan view of a casting-plate, also hereinafter referred to.

In the drawings, A designates a casing or holder of metal and made in a suitable number of sections held together by means of the

rings B B. The interior of the casing A forms a chamber to receive the sectional die C, whose matrix is made to bear the ornamental designs it is desired shall be imparted to the sheet-metal articles. The die C may, if desired, be formed of soft metal directly in the casing A, and to this end in the lower part of the casing is provided the casting-plate D, having the gate E and being capable of rotation. In casting the sections of the die C within the casing A the metal for the sections will in succession be poured through the gate E, the plate D being turned as one section is formed a sufficient distance to enable the metal to form the adjoining section.

In order to secure the finest ornamental effects in the finished article, I prefer to impart to the matrix of the die C an electrotypes surface, since this will permit of very fine chasing, and then to give said matrix a steel finish in order that its surface may be hard and durable and the fine chasing be capable of transmission to the silver bowl or other article without danger of injury to the die.

The lower end of the holder or casing A is provided with the threaded aperture F to receive, when desired, the externally-threaded plug G, for the purposes hereinafter explained, and the upper end of the casing or holder A is open and provided with an inwardly-projecting annular shoulder H.

Within the open upper end of the holder A is arranged the internally-threaded nut I, having upon its lower end the outwardly-projecting annular shoulder J, which when in position comes against the lower surface of the annular shoulder H, as shown, and thereby the nut is held securely in place. Beneath the nut I and within the casing A is provided the steel collar or ring K, which bears against the shoulder J and has an upper surface which tapers downward to the outer edges of a central opening passing through said collar, said tapering surface forming a seat for the lower correspondingly-tapered end of the water-cylinder L, as shown. The lower surface of the collar K has concentric elevated and depressed rings M, which engage a correspondingly-ribbed flange N around the neck of the blank O, to be made into a bowl or other article, said flange N resting upon and engaging the up-

per surface of the sectional die C, having ribs which correspond with those of said flange and collar. The water-cylinder L has an externally-threaded lower end, which is
 5 screwed into the nut I, bringing the tapered extremity of said cylinder firmly against the tapered surface of the collar K, and thereby forming a water-tight joint, while at the same time permitting the extreme lower edge of
 10 said cylinder to almost enter the mouth or neck of the blank O. At a suitable point above the nut I the diameter of the cylinder L is increased, and in this enlarged portion of said cylinder is the plunger P, which has
 15 suitable packing Q, and is connected with the rod R, extending upward through the head of the cylinder, and having the plate S upon its upper extremity.

In the employment of the devices above described, referring particularly to Fig. 1 of the drawings, the sections of the casing A are brought together with the sectional die C, collar K, and nut I in position, the blank O having previously been inclosed within the
 20 sections of the die C. The parts of the casing A having been brought together and inclosing the said blank O, die C, collar K, and nut I, said parts are secured by means of the rings B B, whereupon the lower end of the
 25 cylinder L is screwed into the nut I until its lower tapered extremity is firmly seated upon the tapered upper surface of the collar K. When the parts are in this position it will be apparent from an inspection of the drawings
 30 that the water within the cylinder L will fill the blank O and form a column above the same. The plunger P will then be depressed by means of suitable power applied upon the plate S or upper end of the rod R, the effect
 35 of which will be to transmit the pressure through the body of water to the walls of the blank O, and thereby cause the latter to expand and fill all of the outlines previously formed in the matrix of the sectional die C, whereby the walls of said blank O will receive the proper ornamental outlines or figures from said matrix. It will thus be observed that by means of the pressure of water within the blank O the surfaces of said
 40 blank will at one operation receive the entire ornamental figures or designs previously cut into the matrix of the sectional die.

It is important to note that by reason of the ribbed flange N encircling the neck of the blank O the said blank may be securely held between the collar K and the upper end of the sectional die C, and that by reason of the arrangement of the said collar K with the nut I and annular shoulder H the device is
 55 rendered exceedingly strong and durable and capable of withstanding great pressure applied to the plunger P for the purpose of expanding the walls of the blank O into the crevices of the matrix in the die C.

65 The main object of the construction illustrated in Fig. 1 is to ornament the walls of the blank O in relief; but there are many

instances in which it is desirable to apply ornamental figures to the blank *in intaglio*, and in such instances the sectional die C will
 70 be made with a matrix having plain surfaces, as illustrated in Fig. 2, and the blank O will be reversed as to its position and receive a sectional die C' within it, the walls of which sectional die will have *in intaglio* the out-
 75 lines it is desired shall be applied to the blank O, as shown in Fig. 2. When the sectional die C' is placed within the blank O, its protruding portion will be seated in a recess formed in the upper end of the screw-plug G, whose up-
 80 per tapered surface will be screwed firmly against the lower tapered surface of the additional collar K, which will hold the ribbed flange N closely against the lower end of the die C in the same manner as said flange N in
 85 Fig. 1 is held against the upper edge of the die C.

Upon reference to Fig. 2 it will be noted that a chamber is formed around the blank O, and that upon pressure being applied to
 90 the plunger P the force thereof will be expended over the exterior surfaces of the blank O, causing the walls of the latter to be forced into the crevices or outlines cut in the surface of the die C', and thereby producing on
 95 said blank O the ornamental figures *in intaglio*.

By means of my invention I am able through the pressure of water to ornament the blank O either in relief or *in intaglio*, and
 100 at the same time the blank will be very securely held and the parts of the device so arranged as to be capable of withstanding the great pressure which in use will be brought
 105 against it without danger of becoming impaired or of spoiling the product. After the blank O has been sufficiently treated the rings B B may be removed, when the parts of the casing A will separate and leave the dies and blank in condition to be withdrawn. The
 110 flange N may be detached from the blank O where the nature of the article to be produced does not require it.

When it is desired to cast the sections of the die C within the casing A, the parts of
 115 said casing will be assembled and inclose the collar K, nut I, plate D, and blank O, (see Fig. 1,) whereupon the soft metal will be poured through the gate E in said plate D, said plate being turned from time to time as the
 120 sections of the die C are in succession cast. The metal being soft and hot, the turning of the plate B may be readily accomplished and such metal as may have remained in the gate E will by the turning of said plate be cut off.
 125 It will not be necessary, however, to cast the sections of the die C within the casing A unless it is desired to do so; but when the sections of said die are so cast the blank O will then serve as a pattern and must have pre-
 130 viously received the ornamental configurations it is desired shall be formed in the matrix of the said die C, in order that upon the removal of said pattern and the completion

of the die the matrix will bear the ornamental figures and be capable of imparting the same to subsequent blanks O, which will have plain surfaces, and which it is desired shall be ornamented by the expansion of their walls into the said matrix.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The casing containing the die whose matrix incloses the blank, combined with the threaded nut at the upper end of said casing, the water-cylinder held in said nut and supporting a column of water in contact with the walls of said blank, and the plunger in said cylinder, substantially as and for the purposes set forth.

2. The casing containing the die whose matrix incloses the blank, combined with the threaded nut at the upper end of said casing, the collar or ring between said nut and said die, the water-cylinder held in said nut and seated on said collar, and the plunger in said cylinder, substantially as set forth.

3. The casing containing the die whose matrix incloses the blank, said casing having the shoulder H, combined with the internally-threaded nut I, having the shoulder J, the

roller K between said die and said nut, the externally-threaded water-cylinder L, held within said nut, and the plunger within said cylinder, substantially as set forth.

4. The casing containing the die whose matrix incloses the blank, combined with the collar which grips the flange of said blank against said die, the internally-threaded nut in the end of said casing, and the water-cylinder screwed into said nut and containing the plunger, substantially as set forth.

5. The casing containing the die whose matrix incloses the blank, combined with the internally-threaded nut at one end of said casing, the screw-plug and collar at the other end of said casing, the die within said blank, the water-cylinder held in said nut and supporting a column of water in contact with said blank, and the plunger in said cylinder, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 8th day of November, A. D. 1890.

BERNARD M. ABELL.

Witnesses:

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