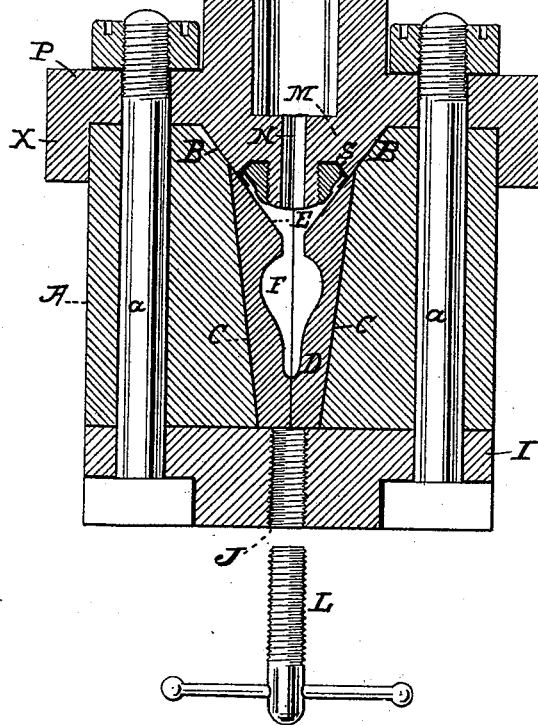


(No Model.)
B. M. ABELL & W. OSTRANDER.
MEANS FOR FORMING AND ORNAMENTS SHEET METAL ARTICLES.
No. 493,005. Patented Mar. 7, 1893.

MEANS FOR FORMING AND ORNAMENTING SHEET METAL ARTICLES.

Patented Mar. 7, 1893.



WITNESSES:
R. A. Porteous
Ed. W. Miller.

INVENTORS
Bernard M. Abell and
Willie Ostrander,
BY

Chas. C. Gill
ATTORNEY

UNITED STATES PATENT OFFICE.

BERNARD M. ABELL AND WILLIE OSTRANDER, OF NEW YORK, N. Y.

MEANS FOR FORMING AND ORNAMENTING SHEET-METAL ARTICLES.

SPECIFICATION forming part of Letters Patent No. 493,005, dated March 7, 1893.

Application filed June 28, 1892. Serial No. 438,252. (No model.)

To all whom it may concern:

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

10 The invention relates to improvements in means for forming and ornamenting sheet metal articles, such as bowls pepper and salt boxes, pitchers and cane handles, which have usually been ornamented by "snarling" and
15 other slow and tedious methods.

The invention consists in novel devices hereinafter described and claimed, whereby the article in the form of a blank having plain walls and approximating in outline the finished article may be placed within an en-
20 graved die and caused to swell into the interstices thereof, whereby at one operation the blank will receive the entire ornamentation of the die.

25 The method of ornamenting the blanks may be carried on rapidly and successfully by means of the apparatus constituting the present invention and which consists in general terms of an exterior casing or shell, a sectional die within the same and having its inner walls engraved with the configurations to be transferred to the blank, a head secured upon said casing and engaging the upper
30 edges of the said blank, and means for applying pressure for swelling the walls of the blank into the interstices of the engraved die, all as hereinafter more fully described and claimed.

Referring to the accompanying drawings
40 Figure 1 is a central vertical longitudinal section through an apparatus constructed in accordance with and embodying the invention. Fig. 2 is a like view on an enlarged scale of a detached portion of the head secured to the die and the blank to be engaged by it.
45 Fig. 3 is a like view of a detached portion of the exterior casing or shell and illustrating one method of applying the top and bottom plates thereto; and Fig. 4 is a like view of a
50 detached portion of the apparatus and illustrating a connection whereby a force pump

may be used as a means for applying pressure to the interior of the blank.

In the drawings A designates the exterior shell or casing having the inclined mouth B 55 and connecting converging walls forming a seat C for the sectional die D. The die D snugly fits the seat C and at its upper end has the inwardly inclined tapered mouth E leading to the matrix F and being in line with 60 the inwardly inclined mouth B of the casing A. The inner walls of the matrix F will be engraved with any configuration or ornament it may be desired to transmit to the walls of the hollow blank G, which will approximate 65 in outline the finished articles to be produced and be provided at its upper edge with the inclined flange H adapted to the inclination of the mouth E of the die. The blank G shown in the drawings is designed for a pepper or salt box and, as shown, is treated while 70 in an inverted position.

Upon the lower end of the casing A is provided the base-plate I, having a central internally threaded aperture J to receive the hand 75 screw L, by which at the proper time the sectional die D inclosing the blank G may be forced upward from its seat C preparatory to the removal of the die and blank from the casing and the insertion of another blank in the die prior to its return to its seat C in said casing. 80

The upper end of the casing A is provided with a head M of the shape of an inverted cone, and this head enters the inclined mouths 85 B, E, its walls being adapted to the inclination thereof, as shown in Fig. 1. The head M has a central opening N in communication with a cylinder O, and is carried by the top-plate P secured upon the upper end of the casing A. The lower end of the head M is 90 formed with a threaded stem Q and annular recess R, the latter receiving the annular packing S, and the former the internally threaded nut T, whose upper end conforms 95 with and enters the recess R, thus securely holding the packing in place. The exterior edge of the packing S has an inwardly turned annular lip V which is about on the same inclination as that portion of the head M lo- 100 cated above it; and the nut T is furnished with the annular groove W loosely receiving

said lip V of the packing S, as more clearly shown in Fig. 2. The nut T has its exterior surfaces on a slightly higher plane than that of the head M above the packing S, as indicated by the dotted lines in Fig. 2, and the purpose of this is to keep the said nut clear of the flange H on the blank G during the operation of the apparatus, and to permit that portion of the head M above the packing S to alone effect the pressure on said flange.

In the drawings the head M, top-plate P and cylinder O are shown integral with each other and with a flange X extending downward around the edge of the casing A, and the structure thus formed is removably but firmly secured upon the casing by bolts *a*, as shown in Fig. 1 or screw threads *b*, as indicated in Fig. 3. We do not however confine the invention to the special means for securing the parts of the apparatus together nor to the casting of the head, top-plate and cylinder in one piece, but where the bolts *a* are made use of they will serve also to secure the base-plate I in position. In the absence of the bolts *a*, the base-plate I may be provided with the upwardly extending flange *d* and secured to the casing by engaging threads *e*, as shown in Fig. 3. It will be found safe and convenient to cast the head M, cylinder O and top-plate P in one piece and we prefer the structure thus formed. The cylinder O contains a hydraulic plunger *f* by which pressure may be applied, as shown in Fig. 1, or said cylinder by a pipe *h* may be connected with the usual hydraulic force pump, not shown, and the pressure be thereby applied. The precise means for applying the pressure to the liquid within the blank so as to swell the latter outward into the interstices of the die are not important, and hence a hydraulic press, jack, drop or pump may be employed for the purpose in accordance with the wish and convenience of the operator.

In the use of the apparatus above-described, the blank G will be inclosed within the sectional die D and the latter then placed upon its seat C, after which the head M and connecting parts will be secured upon the casing A, thus bringing the packing S and a portion of the head firmly against the flange H of said blank. The water having been supplied and filling the blank G, the pressure is applied in sufficient force to cause the walls of the blank to swell into the crevices and interstices of the die and thus receive the ornamental configuration thereof. After the pressure has been sufficiently applied, the same is relieved and the head M and connecting parts removed, after which the die D will be withdrawn and the ornamented blank taken therefrom and finished for the market in accordance with the well known modes of treatment. Another plain blank G may then be inserted in the die and the process above indicated again followed.

During the application of the pressure the

water or other liquid or fluid will ascend around the nut T and getting beneath the lip V will press the same outward against the flange H and form a durable and efficient liquid-tight joint.

The entire apparatus is constructed with a view of great durability and efficiency, combined with simplicity and convenience in use.

In the foregoing description we have specially referred to water as a means for swelling the walls of the blank outward into the engraved interstices of the die, but the invention is not confined to the use of water since other well known liquids and fluids may be employed for this purpose if preferred.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The exterior casing, and the sectional die therein, combined with the removable head having the downwardly and inwardly inclined surfaces adapted to bear upon the downwardly and inwardly inclined flange forming a part of the blank, the packing having the downwardly and inwardly turned lip carried by said head and engaging said flange, and a source of pressure leading through said head to said blank; substantially as set forth.

2. The exterior casing and the inclosed die, said casing and die having inclined mouths B, E, respectively, combined with the removable head having the downwardly and inwardly inclined surfaces to enter said mouths B, E, and engage the flange on the blank, and the opening through said head for the pressure; substantially as set forth.

3. The exterior casing, and the die carried thereby, combined with the head, plate and cylinder integral with each other and secured on said casing, said head having the downwardly and inwardly inclined surfaces entering the die and engaging the inclined flange on the blank; substantially as set forth.

4. The exterior casing, and the die carried thereby, combined with the head, plate and cylinder integral with each other and secured on said casing, said head having the downwardly and inwardly inclined surfaces entering the die and carrying the downwardly and inwardly inclined packing lip to engage the flange on the blank; substantially as and for the purposes set forth.

5. The exterior casing, and the die seated therein, combined with the head, plate and cylinder secured to the upper end of said casing, the base-plate secured to the lower end of said casing, and the ejector screw in said base-plate; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 25th day of June, A. D. 1892.

BERNARD M. ABELL.
WILLIE OSTRANDER.

Witnesses:

CHAS. C. GILL,
ED. D. MILLER.