

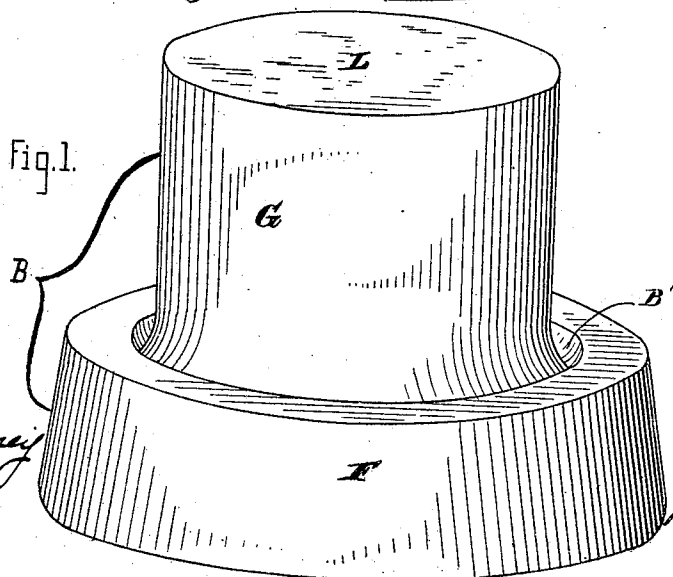
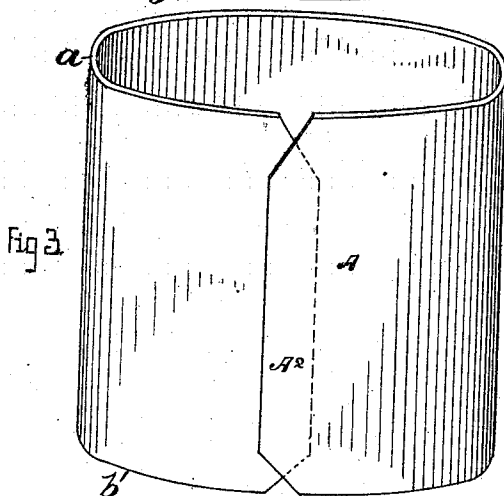
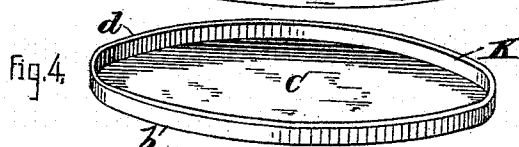
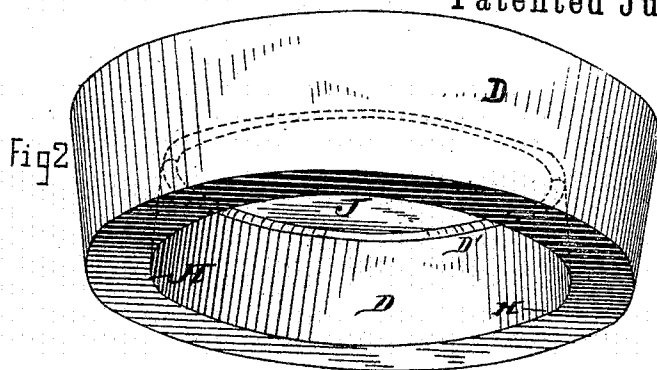
(No Model.)

C. KIND.

3 Sheets—Sheet 1.

DIE FOR THE MANUFACTURE OF SHEET METAL HOLLOW WARE.
No. 321,822.

Patented July 7, 1885.



Witnesses

H. M. Conroy

M. J. Kellum

Inventor,
Clement Kind,

per *Brown Bros.*

Attorney.

(No Model.)

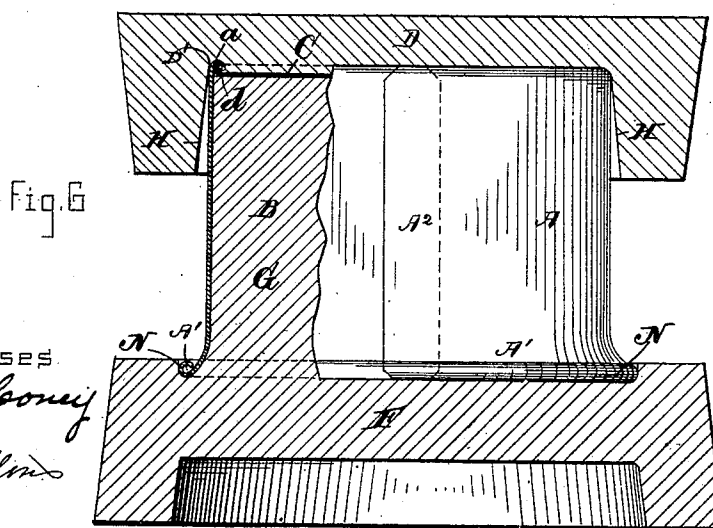
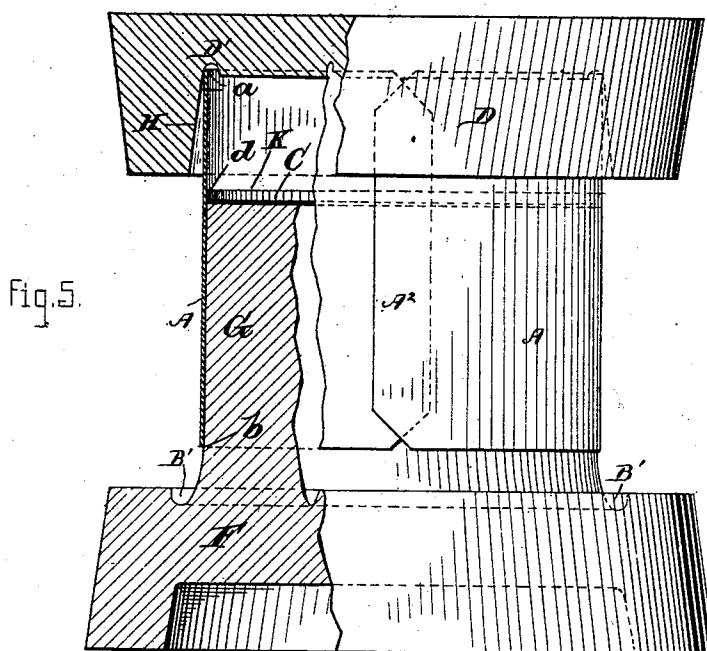
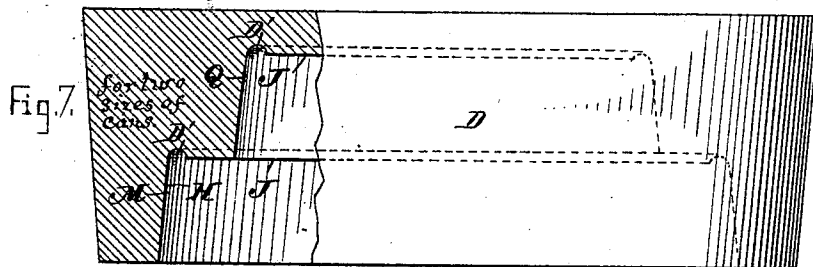
3 Sheets—Sheet 2.

C. KIND.

DIE FOR THE MANUFACTURE OF SHEET METAL HOLLOW WARE.

No. 321,822.

Patented July 7, 1885.



Witnesses
H. M. Connelley
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(No Model.)

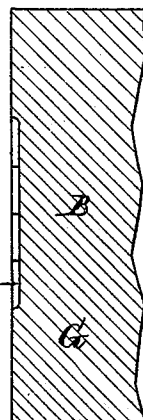
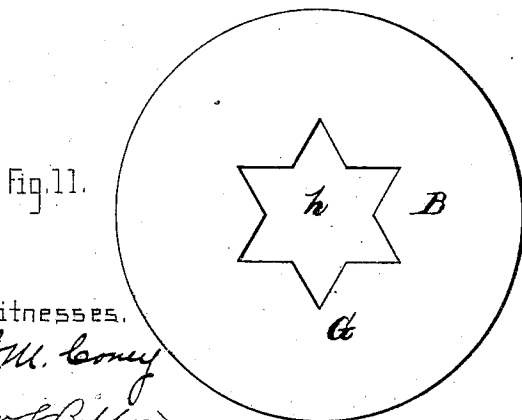
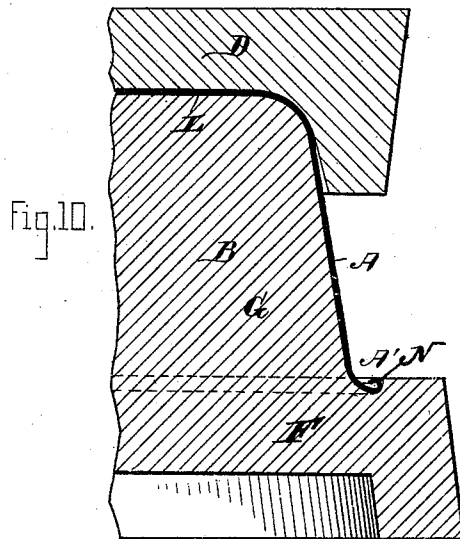
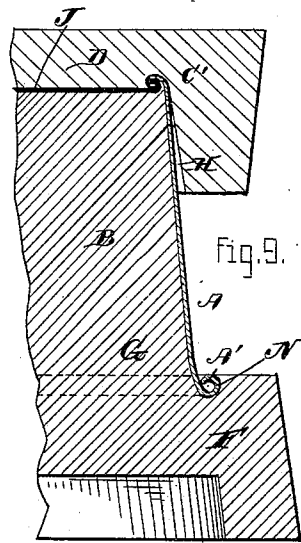
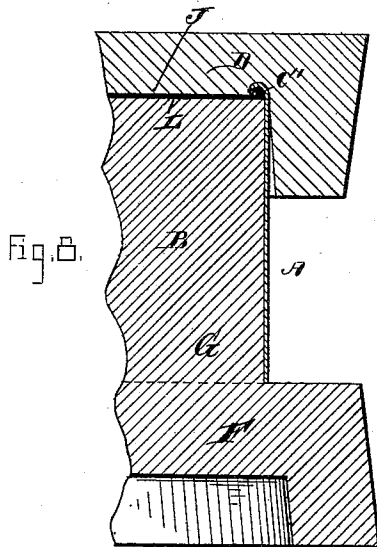
3 Sheets—Sheet 3.

C. KIND.

DIE FOR THE MANUFACTURE OF SHEET METAL HOLLOW WARE.

No. 321,822.

Patented July 7, 1885.



Witnesses.

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Attorneys

UNITED STATES PATENT OFFICE.

CLEMENT KIND, OF ADDINGTON, CANTERBURY, NEW ZEALAND, ASSIGNOR
TO CHARLES B. TAYLOR, OF SAN FRANCISCO, CALIFORNIA.

DIE FOR THE MANUFACTURE OF SHEET-METAL HOLLOW WARE.

SPECIFICATION forming part of Letters Patent No. 321,822, dated July 7, 1885.

Application filed April 25, 1884. (No model.) Patented in New Zealand April 22, 1881, No. 522; in Victoria July 31, 1883, No. 3,512; in New South Wales December 21, 1883, No. 1,345, and in England May 5, 1884, No. 7,340.

To all whom it may concern:

Be it known that I, CLEMENT KIND, of Addington, Province of Canterbury, in New Zealand, have invented certain new and useful Improvements in Dies for the Manufacture of Sheet-Metal Hollow Ware, of which the following is a full, clear, and exact description.

This invention relates to dies for the manufacture of hollow ware—such as pans, cans, dippers, &c.—from sheet metal or any suitable sheet material; and the invention consists of two dies suitably constructed and arranged to operate together to secure the bottom or top to the sides of hollow ware of sheet metal or of any suitable sheet material—such as pans, cans, dippers, &c.—by a close and firm joint, and also to turn over the edge of the sides of such hollow ware, all substantially as hereinafter fully described, reference being had to the accompanying sheets of drawings, in which—

Plate 1, Figures 1 and 2, represent, respectively, in perspective a male and female die. Figs. 3 and 4 represent in perspective the side or body portion and the bottom or top, respectively, of a can, &c., prepared to be secured together and to be operated upon by the dies in Figs. 1 and 4. Plate 2, Fig. 5, represents in side view and partial vertical section the dies in position, with the body portion and bottom or top of the can, &c., placed thereon to be operated upon. Fig. 6 is a view in partial side elevation and section showing the can, &c., as having been operated upon by the dies. Fig. 7 shows in side view and partial vertical section one of the dies as adapted for two sizes or diameters of cans, &c. In Plate 3, Figs. 8, 9, 10, 11, and 12 are detail sectional views, to be hereinafter referred to.

In the drawings, B represents a male die, and D a female die. The male die B has an enlarged base, F, and a central vertical portion, G. The lower part of the central portion, G, on its outer surface, is connected with the base F by a groove, B', substantially circular in cross-section. The interior periphery, H, of the female die D tapers inwardly slightly, as shown, and terminates with a groove, D', substantially circular in cross-section, joining

the inner flat surface, J, of the die D. As shown, the dies are constructed for a cylindrical can, &c., with flat or square ends.

The operation of the dies is as follows: The sides or body portion A of the can, &c., is first bent or formed into the desired shape and of a diameter internally to correspond to the diameter of the central portion, G, of the die B, and of the proper length or height, its ends preferably being lapped and secured together by solder, or in any suitable manner, as shown at A², Fig. 3. The bottom C is then prepared by striking it up, or in any suitable manner, to form a narrow rim or flange, K, as shown in Fig. 4, its external diameter corresponding to the internal diameter of the side portion, A. The side portion, A, is then placed over the central portion, G, and the bottom C inserted therein with its flanged rim uppermost, its side l resting upon the upper end of the die B. The die D is then placed over the end a of the can, all as shown in Fig. 5, and the whole placed in any suitable press, and the two dies forced toward each other, and as they are so pressed together the edge b of the can, &c., is forced down to and into the groove B' and along its line of curve, and finally being bent into the form shown in Fig. 6 at N. At the same time the edge a of the can is forced up to and into the groove D' of the die and along its line of curve, and finally over the edge d of the flange K of the top c, and when the dies are closely and firmly pressed together the bottom C comes to rest on the upper surface or end, L, of the die B, the joint of the bottom and sides will be closely pressed together, all as shown in Fig. 6 more particularly. The dies are then removed from the press, and the die D being removed from the die B, the can, &c., can be removed from the die B, when it is ready for use, as desired.

The central portion, G, of the die B is of a diameter to correspond to the internal diameter of the can, &c., desired, and its height or length to the height or length of the can allowing for the turning over of the edges, as stated, so that with the two dies brought together with the can, &c., pressed therein, as described, the two outer edges, a

b, of the can will be properly turned, as described; also, the dies and the width and depth of their grooves are arranged according to the thickness of the sheet metal used.

5 In Fig. 7 the die D is shown as having two parts, M and Q, so that two diameters or sizes of cans, &c., could be made by this die.

If desired, the groove B' can be dispensed with and the die D only used where the edge 10 *b* is not to be turned, and only the bottom secured to the sides, as shown in detail in cross-section in Fig. 8; also, the sides or body of the can, &c., can be more or less conical or tapering, the central portion, G, of the die B being 15 correspondingly so, as shown in Fig. 9 in detail cross-section; also, the bottom and sides of the can, &c., can be in one piece struck up or formed in any suitable manner and straight or more or less conical or tapering, and in such 20 case only the outer edge, *b*, operated upon, as shown in detail cross-section in Fig. 10; also, any sizes as to diameter or height or depth of cans, &c., can be made, the dies being constructed accordingly; also, any suitable sheet 25 material may be used, and after formation, as described, handles, &c., may be secured, if desired.

In Figs. 11 and 12 is shown the end L of 30 central portion, G, as having a depression, *h*, therein, as shown, in the form of a star, by which and a corresponding elevation on D such star form can be formed or pressed in the bottom C, when forming the can, &c.

A can, &c., formed of sheet metal, &c., in 35 accordance with this invention has many ad-

vantages. It obviates the necessity of a wire at the outer edge. The bottom is secured so as to make a close and tight joint—one that will not leak, doing away with the soldering of the same, which is objectionable when the 40 can is to be used for materials containing acids, and the whole is all accomplished in one operation.

As is obvious, the dies can be constructed to operate on cans, &c. of other shapes than 45 cylindrical—such as square, triangular, &c.—but in such cases the edges *a* and *b* would probably not be continuous as a break would be likely to occur at the junction of the sides, so it is preferable to have the sides cylindrical 50 or circular in cross-section, or approaching thereto, as is obvious.

Having thus described my invention, what I claim and desire to secure by Letters Patent, 55 is—

1. The combination, with a die, F, having a central portion, G, and groove B', of a die, D, having a groove, D', substantially as and for the purpose specified.

2. A die, D, provided with two or more 60 parts, M Q, each provided with a groove, D', substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

Addington, February 21, 1884.

CLEMENT KIND. [L. S.]

Witnesses:

J. F. WARD,

CHAS. GARTRY.