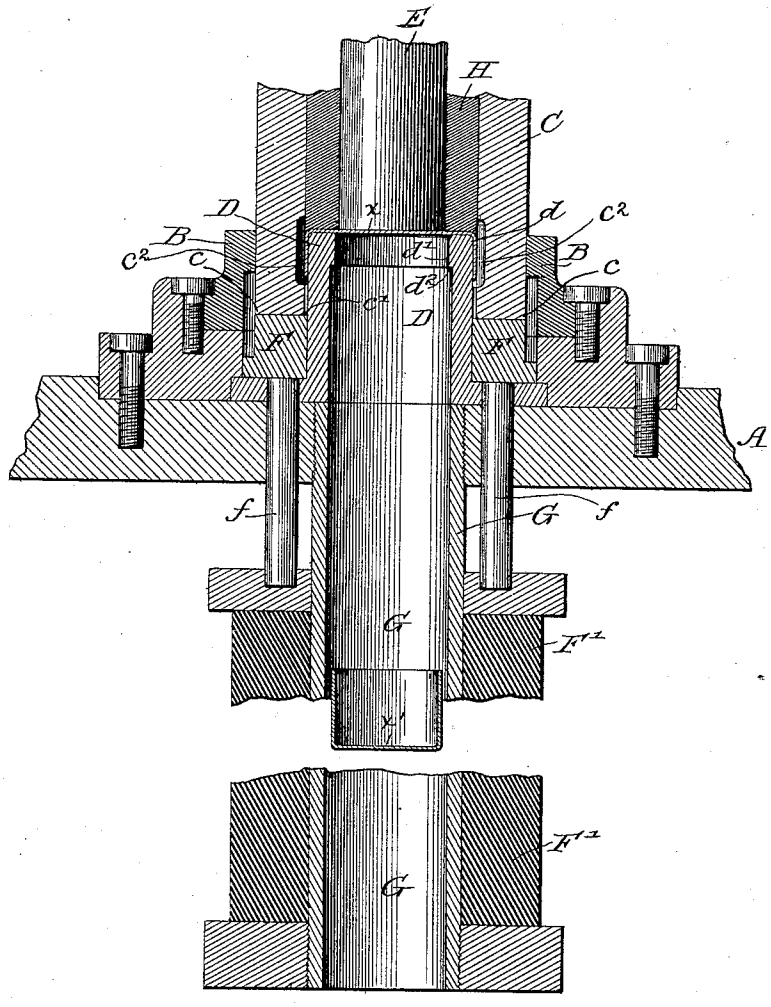
(No Model.)

E. NORTON.

DIE FOR DRAWING SHEET METAL.

No. 483,008. Patented Sept. 20, 1892.



Witnesses.

Wm. M. Rheem.

Wm. T. Fleming

Inventor.

Edwin Norton

By Munday, Evarts & Adcock

His Atty's.

THE NORRIS-PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWIN NORTON, OF MAYWOOD, ASSIGNOR TO HIMSELF, AND OLIVER W. NORTON, OF CHICAGO, ILLINOIS.

DIE FOR DRAWING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 483,008, dated September 20, 1892.

Application filed April 25, 1892. Serial No. 430,466. (No model.)

To all whom it may concern:

Be it known that I, EDWIN NORTON, a citizen of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Dies for Drawing Sheet Metal, of which the following is a specification.

My invention relates to dies for drawing sheet metal into shapes, and more particularly to the compound die for successively drawing the blank in opposite directions heretofore patented to me in Letters Patent of the United States No. 460,594, dated October 6, 1891.

My improved die is designed especially for use in drawing sheets of tin-plate into cylindrical cup shapes or cans. The tin cans so made are designed for use as packages for hermetically-sealed goods or food products.

My invention consists in a compound drawing-die—such as that described in my said former patent—provided with a relief space or recess at the inner periphery of the female die to relieve the peripheral walls of the drawn shape from pressure or friction during the succeeding or reverse drawing operation, by which the shape is turned inside out to produce a deeper shape of smaller diameter.

The nature of the improvement will be more fully understood by reference to the accompanying drawing, which forms a part of this specification, and which shows the compound reverse drawing-die of my former patent with my present improvement added thereto.

In the drawing, A is the bed-plate of the press; B, the female cutting-die; C, the female die-block, having at its outer periphery a cutting edge or die c and at its inner periphery a female drawing-die edge or face c'; D, the annular drawing-die, having an outer or male drawing-face d and an inner or female drawing-face d' and offset d^2; E, the punch or male drawing-die; F, the follower or presser-ring; F′, its spring or yielding support; f, the supporting-pins for the follower; G, the metal tube supporting the follower-spring; H, the follower or presser-sleeve, and x the drawn sheet-metal blank or shape which is to be reversely drawn in the opposite direction and turned inside out to produce the succeeding deeper shape x' of smaller diameter.

The construction and operation of the parts above mentioned are fully set forth and described in my said previous patent and are now familiar to those skilled in the art and require no detailed or further description here.

My present improvement consists in providing the female drawing-die C, which operates in conjunction with the outer or male drawing-face of the annular die D to produce the drawn shape x, with a relief space or recess c^2 above the female drawing-face c' of said die C, so that the peripheral wall of the drawn shape x may be relieved from friction or pressure between the inner periphery of the die-block C and the outer periphery of the annular die D during the succeeding reverse drawing operation performed by the punch E in conjunction with the inner or female drawing-face of the annular die D and by which the shape x is turned inside out to produce the smaller and deeper shape x'. This recess or enlargement c^2 in the inner diameter of the die-block C above the female drawing-face c' may be very slight and just sufficient to relieve the friction and pressure of the die-block C against the walls of the drawn shape x. By this means the walls of the drawn shape x are left free to flow over and draw around the end of the annular die D, and the operation of the press is very greatly facilitated and all danger of injury to the stock of the sheet-metal shape in the reverse drawing operation is entirely avoided.

I claim—

1. In a compound or reverse drawing-die for drawing shapes successively in opposite directions, the combination, with a punch, of an annular drawing-die and a female drawing-die furnished with a recess or enlargement at its inner periphery to free the walls of the drawn shape from friction or bending during the reverse drawing operation, substantially as specified.

2. The combination, with the punch or male die E, with annular drawing-die D, having outer drawing-face d and inner drawing-face d', of the hollow die-block C, having inner drawing-face c' and enlargement or relief-space c^2 beyond said drawing-face c', substantially as specified.

EDWIN NORTON.

Witnesses:
H. M. MUNDAY,
EDMUND ADCOCK.