

(No Model.)

2 Sheets—Sheet 1.

B. W. MORFOOT.

DIE FOR CUTTING AND SHAPING CAN HEADS.

No. 518,724.

Patented Apr. 24, 1894.

Fig. 1.

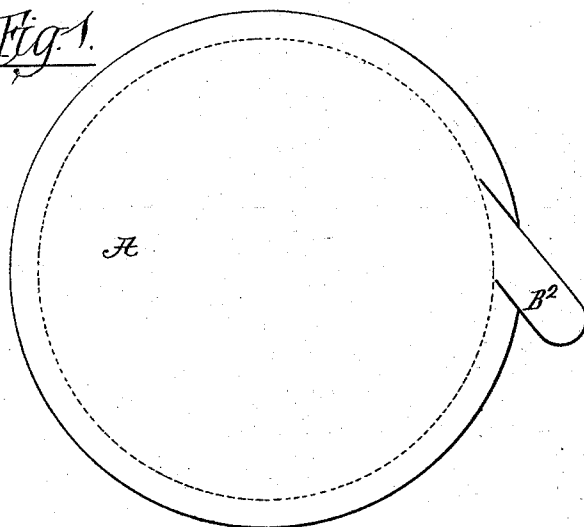


Fig. 2.

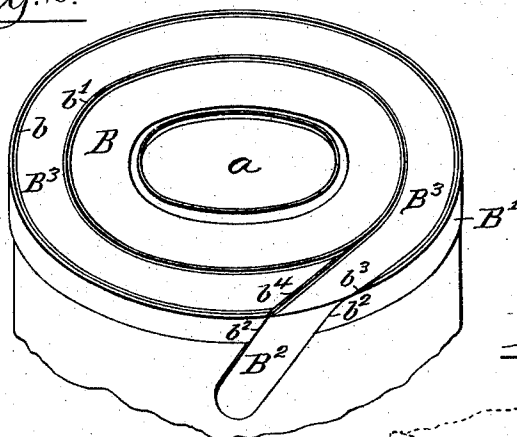


Fig. 9.

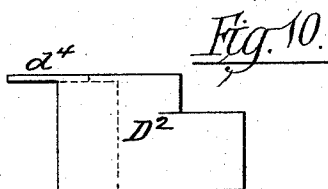
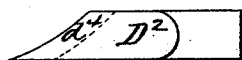


Fig. 7.

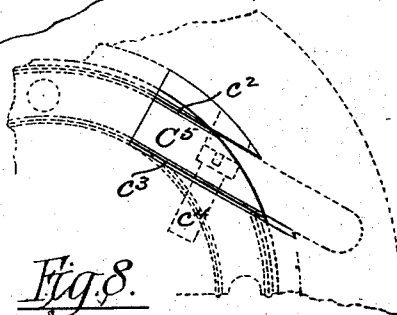
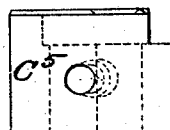


Fig. 8.



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Inventor:

Benjamin W. Morfoot.

By: Dayton, Pohl & Brown,
his Attorneys.

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Fig. 3.

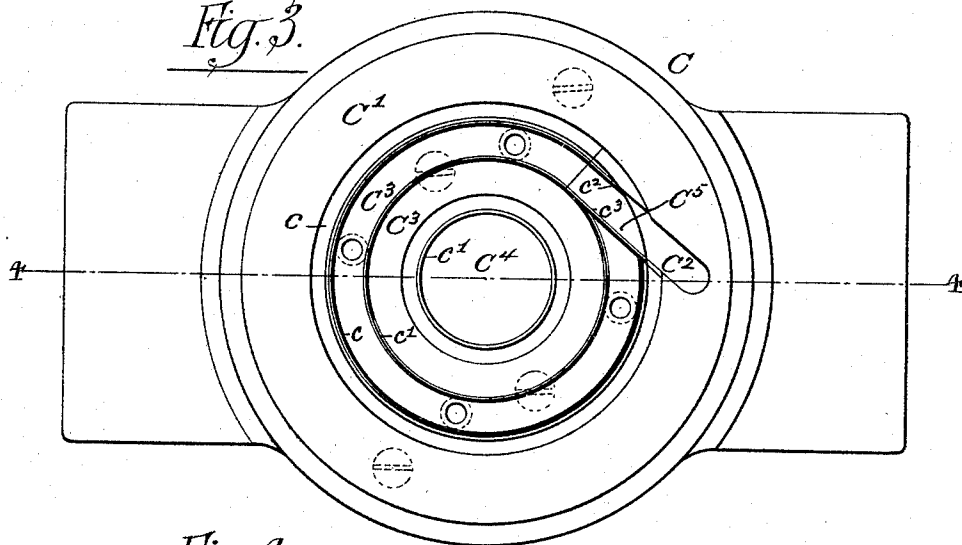


Fig. 4.

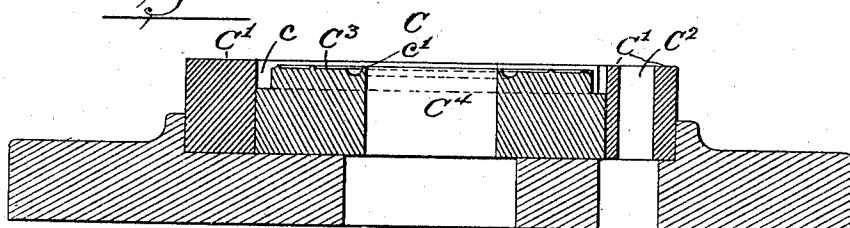


Fig. 5.

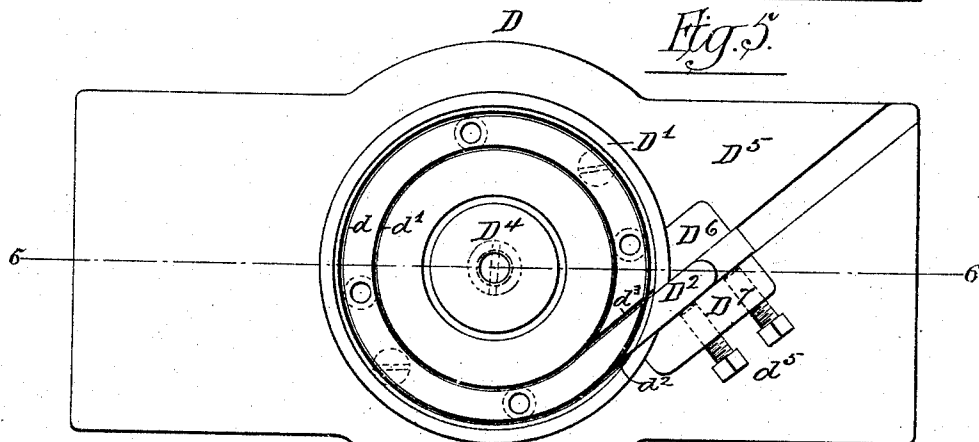
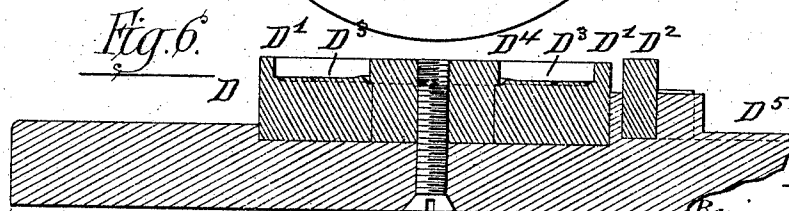


Fig. 6.



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UNITED STATES PATENT OFFICE.

BENJAMIN W. MORFOOT, OF CHICAGO, ILLINOIS.

DIE FOR CUTTING AND SHAPING CAN-HEADS.

SPECIFICATION forming part of Letters Patent No. 518,724, dated April 24, 1894.

Application filed August 4, 1893. Serial No. 482,342. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN W. MORFOOT, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dies for Cutting and Shaping Can-Heads having Detachable Strips; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The invention has for its object to provide a practical construction in dies for preparing, at a single stroke from a flat sheet of metal, flanged can heads having an annular detachable strip in its flat face, which strip has an outward extension terminating in a free tongue which extends beyond the flange of the head.

In the accompanying drawings which illustrate my invention, Figure 1 is a plan of the blank as cut by the dies during the first part of their inoperative movement. Fig. 2 is a perspective of the completed can head as finished by the dies in their complete operative movement. Fig. 3 is a face view of the lower or matrix die. Fig. 4 is a section in the line 4-4 of Fig. 3. Fig. 5 is a face view of the upper or punch die. Fig. 6 is a section in the line 6-6 of Fig. 5. Fig. 7 is an enlarged detail showing the separate block inserted in the matrix die. Fig. 8 is a detached view of said separate block of the matrix die. Fig. 9 is a face view of the separate tongue punch of the cutting and forming or upper punch die, and Fig. 10 is a side view of the added tongue punch, detached.

A represents the blank as cut from a flat sheet of tin or other metal during the first part of the movement of the dies and before the formation of the flange or of the weakened lines therein, and B the completed flanged cover provided with the weakened lines $b\ b'$ as it emerges from the dies after their full operative movement.

B' designates the flange and B² represents the protruding tongue formed on the blank. The two parallel concentric weakened lines $b\ b'$ form the borders of the body of the detachable strip B³ of the completed can head, and each of said weakened lines $b\ b'$ has an

outwardly directed prolongation, (b^3, b^4 , respectively,) preferably tangential to its general course and also preferably terminating in a slit b^2 which is continuous with the adjacent side edge of the tongue B² and which slit extends either partially or wholly across the flange B' of the completed can head. When the outer of said weakened lines, b , is at the angle of the flange with the body of the head, the deflected or tangential prolongation thereof will of course be obliterated if the slit extends to said line, but this construction is intended to be included in my appended claims. It will be observed that the inner of the two weakened lines, b' , is continuous but that the outer line b extends only to the opposite sides of the deflection or branch of the detachable strip.

When the cover B is applied to the can body it is placed externally upon the latter and the tongue B², or its end portion at least, is free to be seized by a suitable instrument for tearing out the detachable strip. The slits b^2 extending into or across the flange of the cover facilitate the starting of the detachable strip and also favor the admission of solder beneath the tongue in soldering the head to the body. Now describing the dies by which this can head is formed, C represents the lower or matrix die and D the upper or punch die. The die C comprises the outer annular portion C' the inner edge of which assists in cutting the outer circular edge of the blank A before said blank is bent. This annular portion C' of the die C contains the recess C² the edges of which assist in cutting the tongue B² of said blank. Within the annular portion C' and removed therefrom by a space c equal to the proposed depth of the flange B' of the can head is a concentric, central portion C³ the outer edge of which is a continuous circle, this center C³ being somewhat below the plane of the outer portion C'. The edge c' of the central hole C⁴ is concerned in cutting the filling hole a in the cover. The upper or punch member of the die comprises the raised cutting and forming rim D' together with the lateral, and in this case tangential, branch or punch D², the former fitting as a punch within the ring C' and the latter as a punch within the recess C² of the opposite die D so as to cut the blank A from a

sheet. The inner edge of the rim D' fits as a former over the raised part C^3 of the die C so as to form the flange B' of the can head by bending down the edge of the blank A into the recess c . The die D is further shown as having the central punch D^4 which fits the hole C^4 of the die C. The bringing together of the members of the die, as so far described, therefore first cuts the blank A of Fig. 1 and second cuts the filling hole and turns down the flange and the tongue of the blank to form the can head of Fig. 2. The depressed surface of the recess D^3 of the punch die D and the raised surface C^3 of the matrix die C have opposing grooves and ribs for producing the weakened lines already described as present in the can head. Preferably, as I have found, the ribs are on the raised surface of the member C and the grooves on the opposing depressed surface of the die D, and they are so herein shown, c c' being the circular portions of said ribs and c^2 c^3 the deflected or tangential extensions of said ribs. Correspondingly d d' are the opposing grooves in the upper die member D and d^2 d^3 the deflected or tangential extensions of said grooves. As a preferable construction the matrix die C is composed of three parts, to wit, the outer annular portion C' , the inner portion C^3 , and the separate part C^5 bearing the straight or deflected portions c^2 and c^3 of the ribs which are concerned in forming the weakened lines, said third part C^5 being inserted in a marginal notch or recess cut in the main central portion of the die, as shown in Fig. 3 and in the detail Fig. 7. This block C^5 is shown detached in Fig. 8 and it is desirably held firmly in place by a screw c^4 inserted laterally through it into the other part of the central portion of the die. The punch die D, if including the center punch D^4 , is preferably formed in three parts, to wit, the main circular portion D' D^3 , the tongue punch D^2 , and the center punch D^4 . The tongue punch D^2 is shown detached in Figs. 9 and 10, in which, Fig. 9 is a top view, and Fig. 10 a side view. This tongue punch D^2 is desirably more elevated than the surface of the body of the die to which it belongs and therefore is shown as having an overhanging lip d^4 which, when in place, rests upon the marginal cutting and forming rim D' , and will usually terminate flush with the inner edge of said rim. The holding block D^5 for the die D is recessed, as shown in the sectional Fig. 6, to receive the die, said holding block being provided with the lugs D^6 and D^7 between which the tongue-punch D^2 is secured by one or more set screws d^5 . If the die is constructed, as shown, to form the filling hole a in the can head, the die members are also adapted, as indicated, to form the usual groove to receive the edge of the cap which is to be applied after the can has received its contents.

By the construction of the members of the die in parts, as above described, its cost is materially lessened. For example, the main

central portion of the die carrying the ribs may be first given a complete circular form by turning in a lathe and the ribs may also be turned continuously thereon and then a portion of the die may be cut out to receive the block C^5 which carries the tangential or otherwise deflected portions of said ribs which may also be more simply and inexpensively formed on a separate piece by planing or otherwise. In the opposite member the grooves may be made continuous by turning and the deflected or tangential portions subsequently planed or cut therein. The periphery may also be turned to a circle, the tongue punch being separately made and secured in its proper place in the manner described. In the case of a "square" can which invariably has rounded corners, each corner portion of the die may be a separate inset segmental piece in or upon which the grooves or ribs may be formed by turning, the straight portions of said ribs or grooves being formed on the body of the die by planing.

The construction of the can head having the weakened lines and depending tongue, as herein shown and described, forms the subject of a separate application for patent, Serial No. 475,902, filed May 29, 1893. The only departure here made from the construction therein described consists in the provision of the slits b^2 in continuation of the side edges of the tongue partially or wholly across the flange B' . These slits are formed by the die above described although there are no cutting edges opposed to the overlapping lip d^4 of the punch D^2 . I claim herein the can head having this added feature as a characteristic of the product of the die described when provided with the elevated tongue punch having the inward extension. By making the tongue punch D^2 with its face in the same plane with that of the cutting and forming rim D' these slits b^2 will not be produced, and I, therefore, make a special claim intended to cover the construction of the die in which the tongue punch is elevated, as distinguished from other claims under which it may or may not be thus raised.

I claim as my invention—

1. The can head, cutting and bending dies described, having the recess and punch for forming the tongue and, upon the surface of one of the members, the ribs adapted to form weakened lines in the top of the cover and branches thereof directed to the edges of the tongue-forming devices.
2. The can head, cutting and bending dies described, having the recess and punch for forming the tongue and, upon one member, ribs and in the opposing member grooves, adapted to form parallel weakened lines in the top of the cover and branches thereof directed to the edges of the tongue-forming devices.
3. The die member C having the rim C' provided with the outwardly directed recess C^2 , in combination with the opposing member D

having the rim D' and the punch D², the latter fitted to co-act with the recess C² to form the tongue on the can cover.

4. The die member C having the rim C' provided with the recess C², in combination with the opposing member D having the rim D' and the punch D², the latter projecting beyond the face of the rim D' and being fitted to the recess C², substantially as and for the purposes set forth.

5. The die member C having the rim C' provided with the recess C² and having also the less raised center separated from the rim C' by the annular space c, in combination with the opposing member D provided with the rim D' adapted to enter the space c and provided with the branch D² adapted to enter the recess C², the opposing members being provided one with ribs and the other with grooves having branches directed to the edges of the said branch punch D² and recess C², substantially as and for the purposes set forth.

6. The die member having the branched ribs for forming weakened lines in a metal sheet, the branches of said ribs being formed on a piece separate from the body of the die and suitably fastened in place, in combination with an opposing die member, the whole being adapted for cutting and forming a can head having weakened lines producing a detachable strip.

7. The die member D having the rim D' and the tongue punch D² formed of a separate piece secured in place, in combination with an opposing die member, the whole being for cutting and forming a can head having a detachable strip and a projecting tongue.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

BENJAMIN W. MORFOOT.

Witnesses:

M. E. DAYTON,

TAYLOR E. BROWN.