

(No Model.)

R. WALLACE.

DIE FOR THICKENING BLANKS FOR SPOONS OR FORKS.

No. 386,672.

Patented July 24, 1888.

Fig. 1

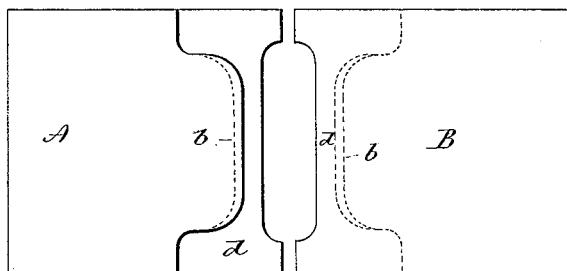


Fig. 2

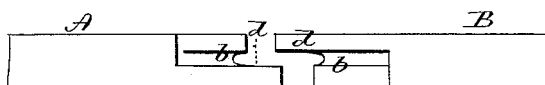


Fig. 3

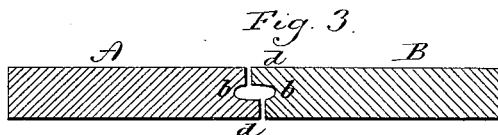


Fig. 4

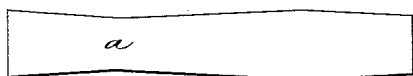


Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 11



Fig. 12

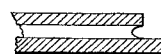
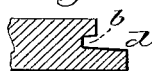


Fig. 9



Fig. 10



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ROBERT WALLACE, OF WALLINGFORD, CONNECTICUT.

DIE FOR THICKENING BLANKS FOR SPOONS OR FORKS.

SPECIFICATION forming part of Letters Patent No. 386,672, dated July 24, 1888.

Application filed April 30, 1888. Serial No. 272,249. (No model.)

To all whom it may concern:

Be it known that I, ROBERT WALLACE, of Wallingford, in the county of New Haven and State of Connecticut, have invented a new Improvement in Dies for Thickening Blanks for Spoons or Forks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a top view of the two dies entirely separated; Fig. 2, an edge view of the two dies in substantially their normal position when in working condition; Fig. 3, a central section through the two dies at right angles to the plane of the grooves in position when the two dies are closed upon the blank; Fig. 4, a blank as prepared for the thickening operation; Fig. 5, an edge view of the same; Fig. 6, a face view of the same blank after thickening; Fig. 7, an edge view of the blank after thickening; Fig. 8, a transverse section through the thickened portion of the blank, illustrating the result of the operation of thickening; Figs. 9 and 10, modifications in the construction of the dies; Figs. 11 and 12, modifications.

In the manufacture of spoons or forks from sheet metal, and such as are usually electroplated, the shank of the fork is required to be thicker than the bowl or handle portion, and instead of employing metal of the full thickness desirable for the shank portion of the handle and then rolling it down to the required thickness at the bowl or prong end and the handle end, it has been a common practice to employ metal thinner than that required for the shank, and then by means of dies apply force upon the edges of the blank, which will contract the width of the blank at the shank portion, and which lateral contraction correspondingly thickens the blank. In the usual method of thus thickening the shank a pair of jaws have been prepared, which move toward each other and in a plane corresponding to the plane of the blank, so that the edges of the blank will be compressed between the said two dies. Then other dies working at right angles thereto have been brought together upon the two faces of the blank. Under this operation the metal is thrown from the outer edges

inward. The operation of the side swaging-dies is therefore to thicken the metal more upon the edges than at the center, reliance for distribution of the metal being had upon the dies which work between the side swaging-dies.

The object of my invention is to construct a pair of dies which will work in a plane parallel with the plane of the blank, and so that they will grasp the blank at the edge and prevent the thickening of the metal at the extreme edge, consequently forcing the metal to the center, where the thickening is required, and at the same time preventing the metal from "buckling," the result of which is the saving of metal by so much as the thickening at the edge is prevented, and the work is performed by a single pair of dies; and the invention consists in the construction of dies, as hereinafter described.

The dies are best made in two solid blocks, A B. These blocks are arranged in the usual manner for die-swaging work. One may be stationary to form an anvil and the other adapted to reciprocate toward and from the stationary die, or both may be applied to reciprocating slides, which will cause them to approach and recede from each other. Both operations are too well known to require illustration of mechanism for either operation. Such mechanism constitutes no part of my invention. The two adjacent or working faces of the dies are alike, except that the dies are arranged as right and left.

In Fig. 4 I illustrate a blank as cut from sheet metal for a spoon or fork, and as prepared for operation. Fig. 5 represents an edge view of the same blank. At the shank portion *a* the metal is cut considerably wider than is required for the blank, the metal itself normally being considerably less in thickness than the required thickness of the shank.

The adjacent faces of the two dies are longitudinally rounded, as represented in Fig. 1, or of such a shape as to correspond substantially to the required shape of the blank after thickening, the representation of such blank after such operation being seen in Fig. 6. Longitudinally on the face of each die a groove, *b*, is formed. The two sides of these grooves diverge from the inside outward, so as to form outwardly-expanding grooves. The inner or

narrower portion of the grooves corresponds in width to the thickness of the edges of the blank to be operated on, and the said inner portion, or what may be called the "bottom" 5 of the grooves, is preferably made to present a concave shape in transverse section, as shown.

Each die is constructed with a projection from its face on one side of the groove to form a cheek, *d*. The cheek *d* of one die is upon the 10 side of its groove opposite the cheek of the other die, and so that as the dies come together one cheek overlaps the other, as represented in Fig. 3, the distance between the two cheeks so overlapped corresponding to the 15 thickness of the blank after the thickening operation has been performed. The two overlapping cheeks therefore form practically two sides, or top and bottom of the recess between the dies when the dies are in the closed position, as seen in Fig. 3. 20

The dies are opened or separated by being withdrawn from each other. Then the blank is introduced between the cheeks of the two sides, and so as to bring that portion of the metal to be thickened in line between the two grooves 25 *b b*. The dies are then forcibly brought together, the grooves of the dies are forced onto the edge of the blank, the rounded shape thinning the metal of the edge to some extent, and so that the opposite surfaces near each edge are grasped by the respective dies, and, as the dies then come together, the compression or contracting of the metal is between these 30 grasped portions—that is, in the central portion of the blank—and so that thickening is produced along the central portion of the blank without thickening at the edges. The overlapping cheeks prevent the metal from buckling. The throwing of the metal to the center, as I have described, thickens the blank at 40 right angles to its plane, as seen in Fig. 7, broken lines indicating the original blank before such lateral contraction and consequent thickening. Under this construction the whole 45 work of thickening the shank is produced by a single pair of dies. The dies themselves are of simple construction and adapted to be used in common and well-known machinery—such as drop or power presses.

By making the inner portion or bottom of the groove concave in section at right angles to the plane of the groove, the metal is much more easily contracted or distributed than can be done with dies which present the said inner portion or bottom flat. After the blank has been thus swaged the treatment of the blank from this time forward is that usually practiced in the manufacture of spoons or forks, and does not require particular description. 60

It will be understood that the shape of the dies longitudinally will be varied according to the particular articles required, the shape shown by the broken lines *b* in Figs. 1 and in 65 Fig. 2 being best adapted for general purposes.

I prefer the concave shape of the groove, as I have described, but other shapes may be employed—say V shape, as seen in Fig. 9, or flat, as seen in Fig. 10—but the width of the 70 said narrower portion or bottom of the groove of the die should correspond substantially to the thickness of the blank to be operated upon, so that there will be substantially no increase of the thickness at the edges. The result of this is, that the metal is so clamped at 75 its edges as to prevent its thickening, and consequently the swaging operation forces the metal to the middle or central portion of the blank. 80

While the projecting oppositely-opposed cheeks *d d* are desirable, as producing the best results, good results may be obtained by omission of the cheeks and constructing the two dies without the cheeks, as seen in Fig. 85 11; but in this case the depth of the groove in each die should be nearly equal to one-half the width of the blank after the thickening operation has been performed, and so as to prevent the buckling of the blank. While 90 therefore preferring the overlapping and opposing cheeks, I do not wish to be understood as limiting the invention to such cheeks.

I have represented the dies as each made from a single solid piece of metal; but they 95 may be made from plates, as represented in Fig. 12, one plate being the thickness of the cheek, the second plate the thickness of the groove, and the third plate the thickness of the other side of the groove, and these firmly 100 secured together, so as to produce substantially a solid die.

I claim—

1. The herein-described dies for thickening the blanks for spoon or fork handles, consisting of two parts, A B, the adjacent faces 105 of each constructed with grooves *b b*, the said grooves corresponding in length and longitudinal shape to the portion of the blank when thickened, the sides of the said grooves diverging from the inside outward, the said inner side or narrower portion of the grooves in width corresponding substantially to the thickness of the blank to be operated upon, substantially as described. 110 115

2. The herein-described dies for thickening the blanks for spoon or fork handles, consisting of the two parts A B, each part constructed with a longitudinal groove, *b*, upon their adjacent faces, each part constructed 120 with a cheek, *d*, projecting from one side of the groove, the cheek of the one part being on the side of its groove opposite the cheek of the other part, and so as to form overlapping and opposing cheeks on opposite sides of the 125 groove, substantially as described.

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Witnesses:

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