



# United States Patent Office.

ISAAC GALE BATCHELLER, OF WALLINGFORD, VERMONT.

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## IMPROVEMENT IN MACHINES FOR BENDING FORKS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, ISAAC GALE BATCHELLER, of Wallingford, in the county of Rutland and State of Vermont, have invented a new and improved Machine for Bending and Shaping Forks; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in machines for bending and shaping forks, and consists in a pair of bending and shaping-blocks or dies of novel construction and arrangement for operation, all as hereinafter more fully described.

Figure 1 is a longitudinal sectional elevation of my improved machine;

Figure 2 is a plan view;

Figure 3 is a transverse section of the shaping-blocks, one being sectioned on the line  $x x$  of fig. 2, and the other on the line  $y y$ ; and

Figure 4 is a plan view of the face of the upper shaping-block.

Similar letters of reference indicate corresponding parts.

A represents one of the shaping-blocks, and B the other.

The former is mounted on a support, C, which has a slight vertical movement, and the latter is mounted on a reciprocating carrier, D, moving over block A and resting thereat, while the block A moves up against it and back again; then block B moves back again.

The shaping-block A has a raised portion,  $a$ , which has the exterior form at the end  $b$  and the sides  $e$  required for the inside of the tines of the fork, or the outer tines of forks having more than two, and between the sides  $e$  it has one or more grooves,  $f$ , for the intermediate tines, when the forks have such, according to the number of the same the fork is to have. The bottom of the groove is formed on the convex line shown in fig. 1, corresponding to the concave shape required for the front of the fork-tines. The walls of the part  $a$ , at the end  $b$  and sides  $e$ , have convex shoulders,  $g$ , coinciding horizontally with the bottom walls of the grooves  $f$ ; and fronting the end  $b$  of the raised part is a descending projection  $h$ , with a groove in it leading up to the mouth of the groove  $f$ .

The block B is the counterpart of A, with a hollow space, B, between two curved projections, F, the latter fitting over and around the block A, as shown in the cross-section, fig. 3, when the blocks are together performing the shaping operation.

The sides F have concave shoulders,  $i$ , corresponding to and fitting above the shoulders  $g$  of block A,

and, for forks having intermediate tines, one or more thin concave ribs, G, are provided in the hollow space E of the block B, according to the number of grooves  $f$  in block A, and fitted to work in the said grooves upon the intermediate tines, the said ribs preferably having a groove in the lower edge.

At the end  $k$  of the block B is a projection,  $l$ , corresponding to the groove in the projection  $h$ .

The ends of the sides F of block G are provided with friction-rollers, H, for acting upon the tines to be bent around the block A; but they will work well with grooves to slide on the tines.

The support C, for the die-block A, has a vertically-projecting plate, I, working in suitable ways on the frame of the machine, and is raised at the proper time by the cam K, on the shaft L, suitably geared with the driving-shaft M.

The support D of the die-block B is arranged in horizontal ways, N, for sliding forward over the block A and back again, and is connected, by the rod O and a wrist-pin, with the disk P, also operated by the driving-gears.

The end of the rod O, connecting with the support D, is slotted for the pin Q, connecting it with the support D, for the purpose of allowing the block B a period of rest at the end of the movement of B when over A, to allow the latter to rise and press the fork against B and move down again. This resting of the block B takes place while the rod O moves backward the length of the slot R. It is necessary for block B to rest while block A is in contact with it, on account of the concave parts of the one and the convex parts of the other, which prevent the backward movement while the two blocks are together.

To perform the bending and shaping operation, the fork-blank is placed, when heated, with the intermediate tine or tines in the groove or grooves  $f$ , with the points of the straight rod  $p$  on the rests  $g$ , and the tang or shank  $r$  projecting above the grooved projection  $h$ . The block B is then moved forward, and the rollers H or the ends of the sides F forced against the rod  $p$ , bending it around the end  $b$  and sides  $e$  of block A, after which the block B rests, as above stated, and the block A raises and presses the outer tines vertically between the walls  $g i$ , and the intermediate tines between the ribs G and the bottom walls of the grooves  $f$ , finishing the operation; then the block A goes down, and the block B goes back to the starting point, in readiness for the application of another blank, the finished fork being discharged from the block A by a rod, S, resting on a beam, T, of the frame, and rising up through holes in the support C and block B to the central groove  $f$ , so as to be caused to project above the bottom of the groove when the block goes down.

It is manifest that, by substituting other forming-blocks of suitable form in the walls *e* and end *b*, and provided with two or more grooves, *f*, also corresponding blocks B, I may shape forks with any number of intermediate tines upon the same plan. For this purpose both the blocks are connected detachably to their supports, the one by the set-screws U, and the other by the screws V, or it may be by any other suitable means; and I propose to provide pairs of blocks adapted for bending and shaping forks having one or more intermediate tines, and for attachment to the supports C and D; or forks with two tines only may be bent and shaped in like manner, the intermediate grooves and ribs not being used.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The particular construction, herein described, of the dies A and B jointly, with the arrangement of them relative to one another, and to mechanism to reciprocate the one and elevate and depress the other, as set forth.

2. The combination of reciprocating die B, vertically-moving die A, cam K, shaft L, bar O, and operating gears, arranged substantially as shown and described.

ISAAC GALE BATCHELLER. [L. s.]

Witnesses:

FRANKLIN POST,  
HARVEY SHAW.