

JOHN HARRINGTON.

Improvement in Dies for Forging Axles.

No. 115,196.

Patented May 23, 1871.

fig. 1

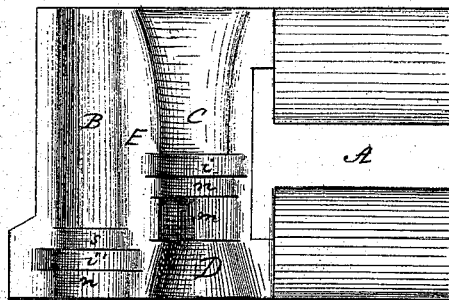


fig. 4

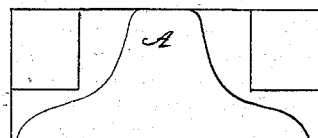


fig. 2

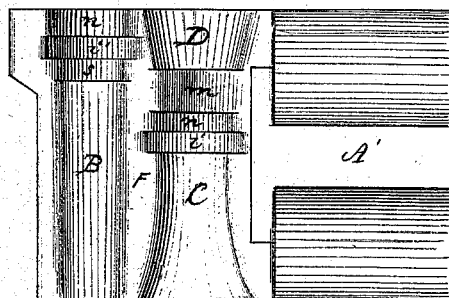


fig. 5

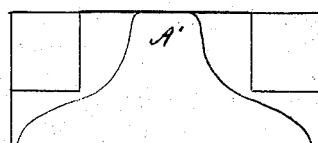
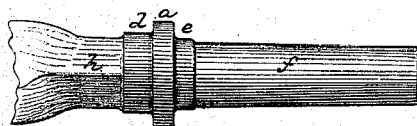


fig. 3



Witnesses.  
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# UNITED STATES PATENT OFFICE.

JOHN HARRINGTON, OF BRIDGEPORT, CONNECTICUT.

## IMPROVEMENT IN DIES FOR FORGING AXLES.

Specification forming part of Letters Patent No. 115,196, dated May 23, 1871.

*To all whom it may concern :*

Be it known that I, JOHN HARRINGTON, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new Improvement in Dies for Forging Axles; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a face view of the lower die; Fig. 2, a face view of the upper die; Fig. 3, a side view of the axle as it comes from the dies; and in Figs. 4 and 5, respectively, end views of the lower and upper dies.

This invention relates to an improvement in dies for forging axles, and especially that class called coach-axles, as shown in Fig. 3, formed with a collar, *a*, a cylindrical portion, *d e*, each side of the collar, and an arm, *f*, the part *h* back of the cylindrical portion *d* formed square. The object of this invention is the construction of dies whereby the axle may be thus formed at a single heat; and it consists in the construction of dies for this purpose, as more fully hereafter described.

The ends *A A'* of both the lower and upper die are formed as seen in Figs. 4 and 5, leaving narrow meeting-surfaces on both sides, as seen in Figs. 1 and 2. Next adjoining this portion of the die is formed the die for shaping the collar and the square portion for the axle *i*, being a recess corresponding to the collar *a*. *n* is a second recess, corresponding to the cylindrical portion *d*, and a recess, *m*, of V shape, corresponds to the square portion *h*. Each way, *C D*, from these parts the die is formed to simply contract the metal. Then the finishing-die is constructed with a recess, *B*,

to form the arm, and recesses *i''*, *n'*, and *s* to form, respectively, the collar *a* and the cylindrical portion *d e*.

The bar from which the axle is to be formed is heated and placed in the recess *C D* of the lower die, and the upper die caused to strike successive blows upon the blank, the operator turning the bar, between each stroke, one-fourth around, until the collar *a*, cylindrical portion *d*, and square portion *h* are shaped. Then the blank is taken from the die and that part of the bar which extended into the recess *C* of the die is placed on the anvil *A*, and then, by the action of the upper die, is drawn out until in suitable position to be placed in the finishing-die. It is then placed in the finishing-die, the square portion outside, and the blank constantly turned while the upper die is operating until the arm *f*, collar *a*, and cylindrical portion *d e* are all finished to the required size, and this operation I am enabled to perform by these dies at a single heat.

To save a multiplicity of dies I make the blocks *E F*, within which the shaping-dies are formed, detachable from the anvil *A*, so that other dies for different-sized axles may be substituted.

I do not broadly claim dies for shaping axles, and I do not wish to be understood as broadly claiming the dies *B S i n* and *D m n i c* and the breaking-down die *A*.

I claim as my invention—

The dies *B S i n* and *D m n i c* jointly with the breaking-down die *A* connected therewith, substantially as described.

JOHN HARRINGTON.

Witnesses:

L. M. SLADE,  
C. M. HATCH.