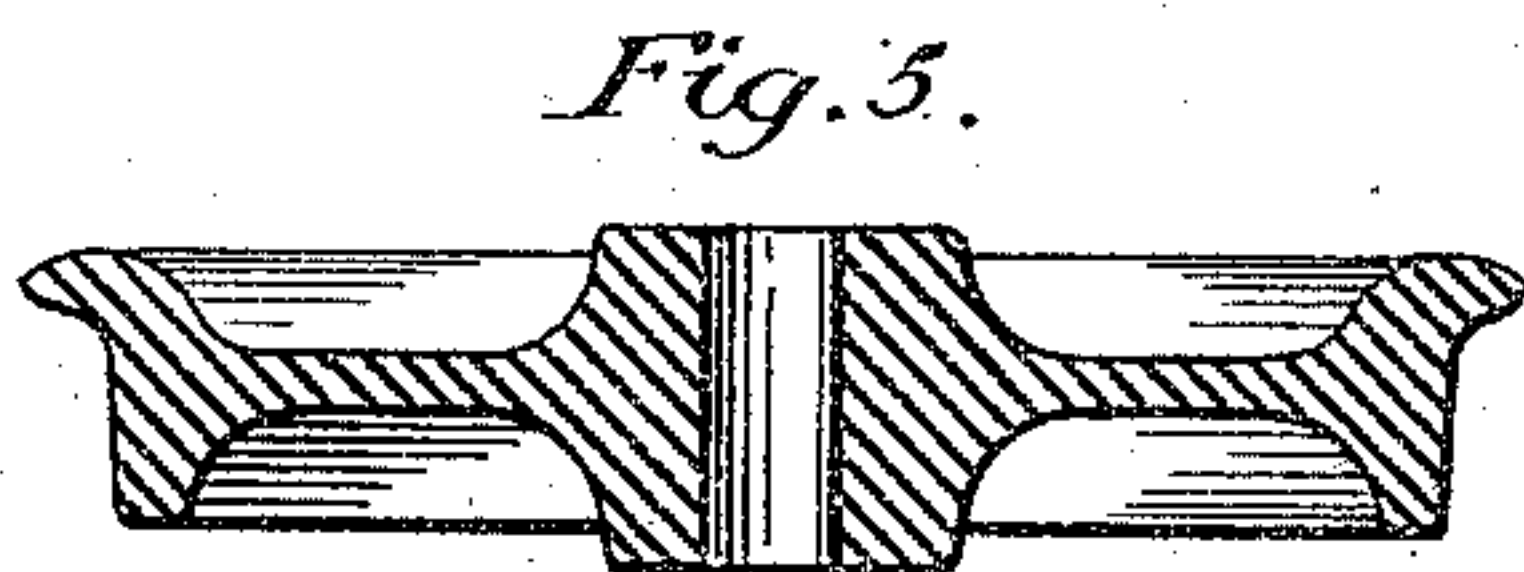
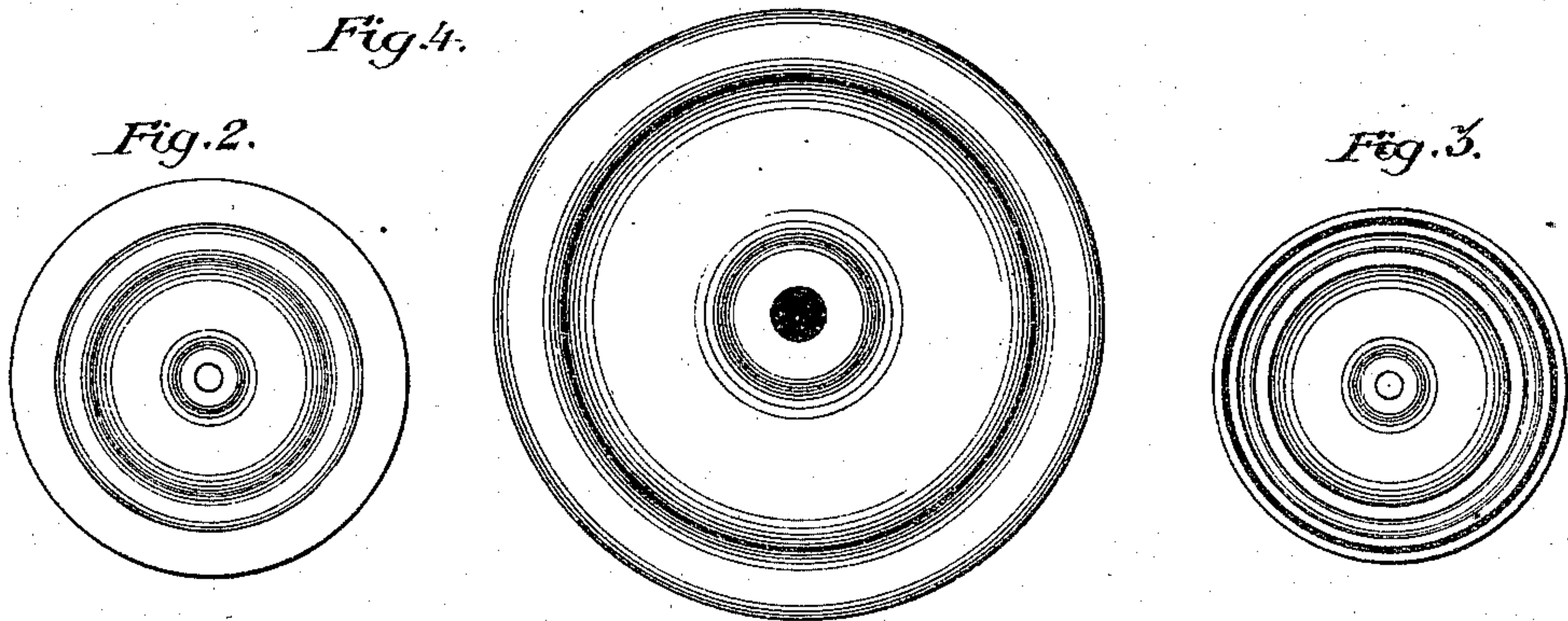
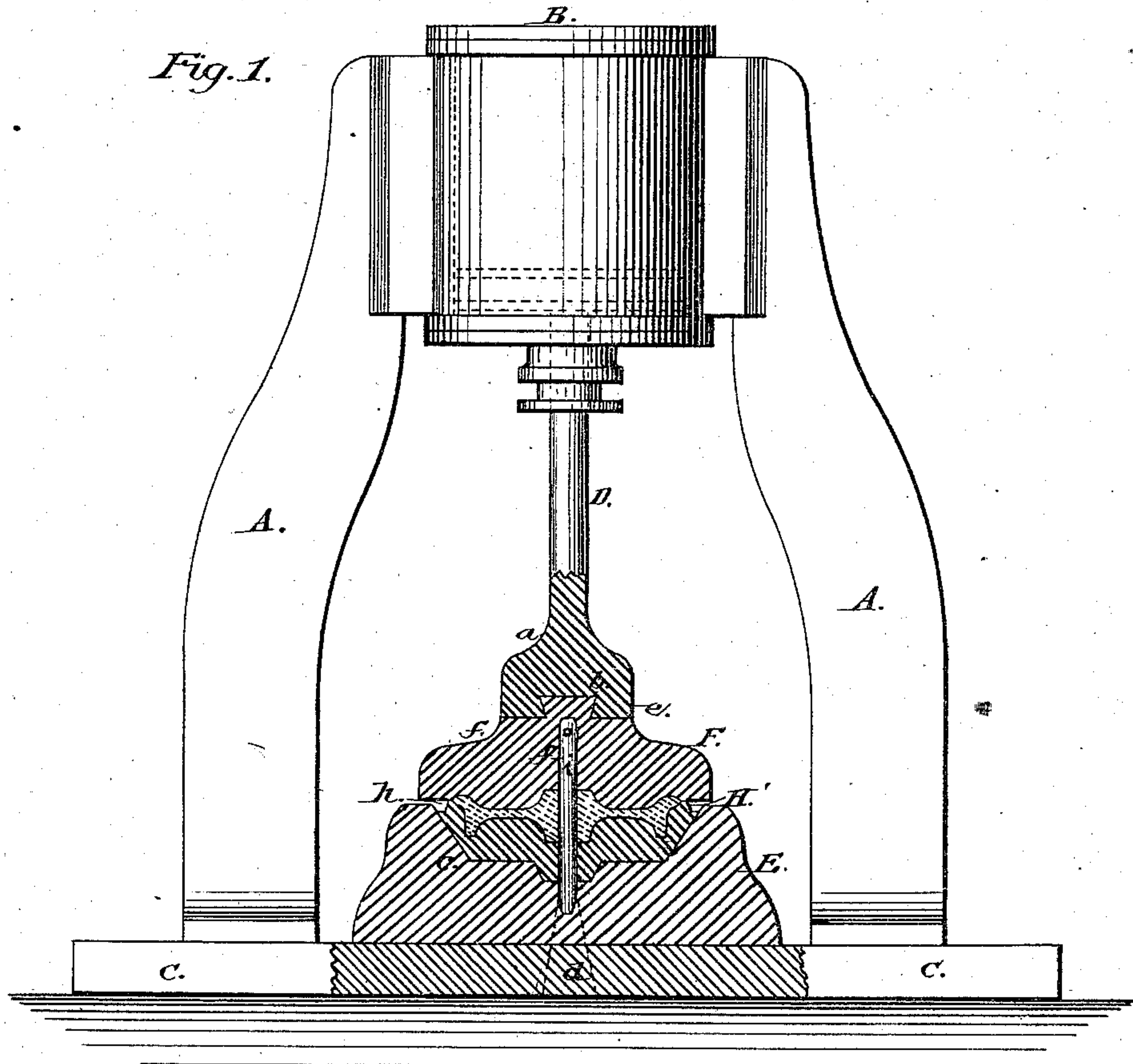


A. L. BLACKMAN.

Machine for Swaging Car-Wheels.

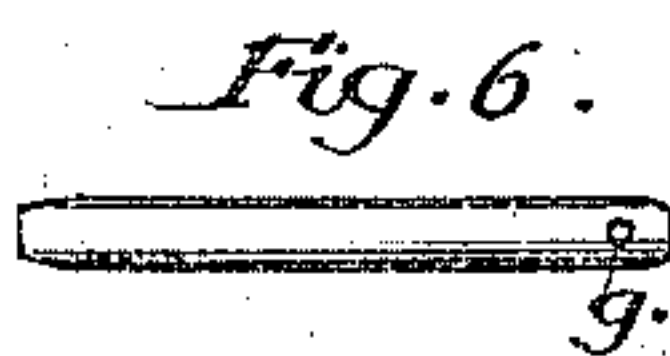
No. 160,566.

Patented March 9, 1875.



Witnesses:
Edw. M. Down
Henry Tanner

Inventor:



Albert L. Blackman

UNITED STATES PATENT OFFICE.

ALBERT L. BLACKMAN, OF NASHVILLE, TENNESSEE.

IMPROVEMENT IN MACHINES FOR SWAGING CAR-WHEELS.

Specification forming part of Letters Patent No. **160,566**, dated March 9, 1875; application filed February 23, 1875.

To all whom it may concern:

Be it known that I, ALBERT L. BLACKMAN, of Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in the Process of and Machinery for Manufacturing Railroad-Car and other similar Wheels; 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 which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention is intended to furnish an improvement in machinery for the manufacture of railroad-car wheels in one piece from wrought-iron or steel by means of a direct-action steam-hammer operating through suitable dies, a mandrel-punch, and properly-constructed anvil; and consists in forming a matrix in the shape and dimension of the wheel required by bringing together an upper and lower die, thereby, from a piece of properly-heated metal, forming a perfect wheel, and at the same time, with a suitable and properly-arranged mandrel, punching and completing the axle-hole in the hub, and supplying an escape through the bottom of the anvil for the scale and the surplus metal punched out of axle-hole.

Figure 1 is a front elevation of the entire machine, showing the hammer-dies, anvil-mandrel, and matrix for a car-wheel. Fig. 2 is a view of the interior of the upper or hammer-face die for forming railroad-car wheels. Fig. 3 is a plan of the lower die-plate for forming railroad-car wheels. Fig. 4 is a side elevation of the completed car-wheel. Fig. 5 is a view of a section of a railroad-car wheel. Fig. 6 is a mandrel with coniform ends and a hole or eye at one end.

Similar letters of reference indicate corresponding parts.

Two powerful upright arms, A, having their base firmly secured and bedded in anvil-block C, grasp and hold in their upper ends a steam-cylinder, B, the piston-rod of which, D, answering as the handle of and conveys motion and power to a direct-action hammer, *a*. In the face of hammer *a* is a dovetail mortise, *b*.

An anvil, E, rests on and is firmly secured to bed C. Immediately under the hammer *a* in the top of this anvil is a basin-shaped cavity, *c*, for the purpose of holding and sustaining the lower die. From the bottom of this cavity, passing downward and out through the bottom of the anvil, is a reversed funnel-shaped or conical hole or escape, *d*, into which the mandrel may pass, and through which the scale and surplus metal collected on the end of the mandrel, when forming the axle-hole, may pass out and be got rid of. A die-plate, F, which answers as an adjustable face for hammer *a*, has on one side a trapezoidal tenon, *e*, corresponding with mortise *b* in the hammer-head, into which it fits. The other side of it is intaglio—that is to say, it is a die for one side of the wheel required to be made. Immediately in the center of the face of this die-plate, but not passing completely through it, is a hole, *f*. This hole is sufficiently large to receive and lightly hold mandrel *i*, guiding it down into the metal beneath. H is a counter or lower die, forming the other side of the wheel, its flange, and tread. Through the bottom of this die is also a hole, corresponding with hole *f* in the upper die, through which the mandrel *i* may pass, carrying with it any scale or surplus metal that may form on its end while passing through the metal when forming the axle-hole in the hub. On the sides of this die are eyes, loops, or ears, by which it may be handled with derrick-chains. This die rests in and is supported by the basin cavity *c* in the anvil E, Fig. 6, is a mandrel the size of the axle-hole required through the hub of the wheel. It is coniform on its ends, and has at one end an eye, *g*, into which may be hooked derrick chains to handle it, or it and the wheel, into which it has been pressed, and to lift the wheel from the die.

The machine having been constructed as described, the upper die attached to the hammer by slipping tenon *e* into mortise *b*, the lower die placed into the cavity C in the anvil, and the mandrel *i* inserted into the hole *f* I place a slab of metal of the proper weight and heated to a proper heat into die H, and, by applying the steam or other power to piston D, force the upper die down onto the metal, forcing mandrel *i* down into and through it,

where it will remain until the wheel is completed, and, by the rapid powerful strokes from hammer and die *a* and *F*, forge or swage the metal into a perfect wheel.

When the wheel has been forged it may be removed from the lower die *H* by attaching a derrick-chain through eye *g* in mandrel *i*, and the mandrel subsequently pressed out of the hub, leaving a perfect and complete wheel.

Having now described my invention, so that those skilled in the art can manufacture and use the same, what I deem and esteem as my invention, and desire to protect by Letters Patent, is—

A combination of mandrel *i*, its eye-hole *g*, and conical-shaped ends with the hole *f* in die-plate *F*, the dies *F* and *H*, escape-hole *d*, and the anvil *E*, when constructed in the manner and for the purposes set forth and described.

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

ALBERT L. BLACKMAN.

Witnesses:

M. GARDNER,
EDW. W. DONN.