S. H. Whitaker,

Casting Car Wheels.

No. 70,486. Patented Nov. 5, 1867.

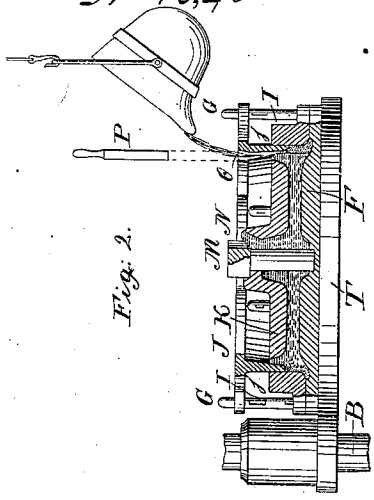

Fig: 2.

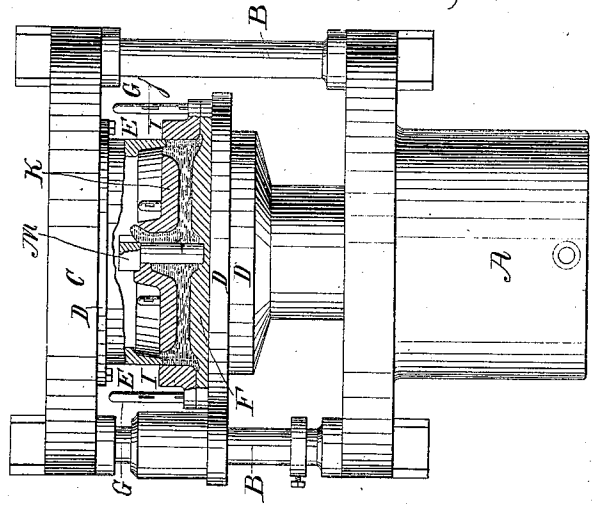

Fig: 3.

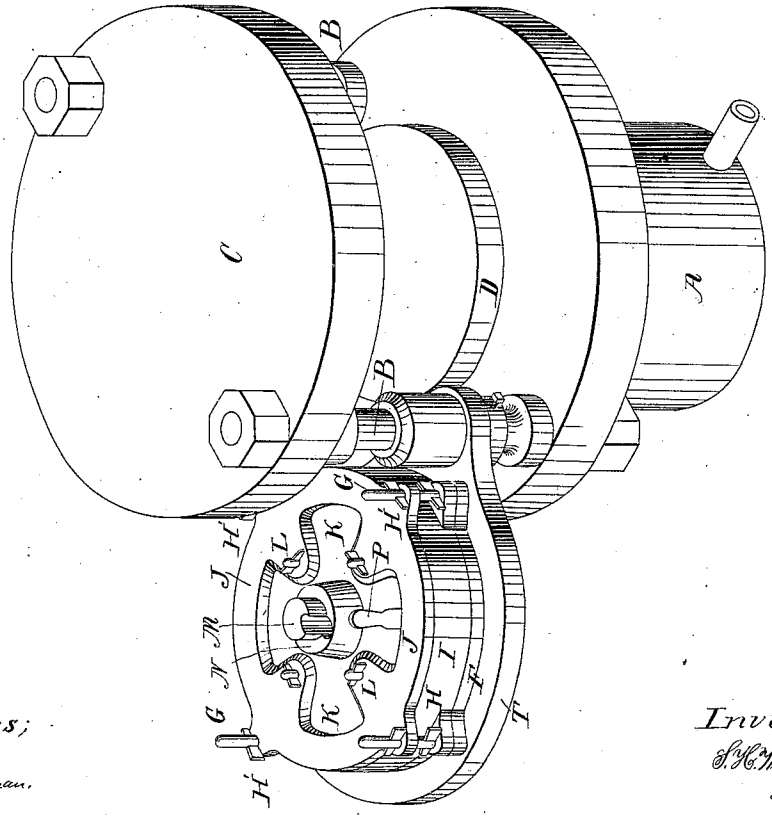

Fig: 1.

Witnesses;

James H. Layman.
H. G. Webber

Inventor;

S. H. Whitaker
Knight Bros
Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SAMUEL H. WHITAKER, OF COVINGTON, KENTUCKY.

IMPROVEMENT IN APPARATUS FOR CASTING CAR-WHEELS.

Specification forming part of Letters Patent No. **70,486**, dated November 5, 1867; antedated October 16, 1867.

To all whom it may concern:

Be it known that I, SAMUEL H. WHITAKER, of Covington, Kenton county, Kentucky, have invented a new and useful Mode of Casting Car-Wheels, and other objects of iron and steel combined; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

This is an improved mode of manufacturing car-wheels, projectiles, and other articles of cast-iron and steel combined, whereby the component metals are more perfectly welded together, more homogeneous, of greater and more uniform density, and more free from flaws, blow-holes, and other imperfections.

I have selected, to illustrate my invention, an arrangement of flask and press combined, employed by me to manufacture railroad-car wheels, of which flask and press—

Figure 1 is a perspective view, showing the apparatus in condition to receive the molten iron, of which substance the wheel is principally composed. Fig. 2 is an axial section of the flask, taken at that particular stage in the operation which immediately succeeds the casting of the iron portion, the steel portion being shown in the act of casting. Fig. 3 is an axial section of the entire apparatus in the act of pressing.

A is a cylinder, B the columns, C the platen, and D the follower, of a hydrostatic press. Projecting from the under side of the platen C is an annular rim, E, whose dimensions precisely correspond to those of the steel tire to be compressed.

Swung upon one column of the press is a table, T, which supports the lower member or drag F of my flask. To this drag is secured, by bolts G and keys H, the curb or ring I, and a peculiarly-formed flanged disk, J, which I style the "cope" or "cut-off," and from which a head, K, is temporarily suspended by means of bolts L.

The cope J has an annular flange, *j*, which temporarily cuts off the extreme outer portion or periphery of the interior space, the same being the part destined to receive the molten steel.

M is the central core for the axle, which core is, with the adjacent portion of the head, gated, N, for the admission of the molten iron. The cope and adjacent portion of the head are gated, O, for the admission at the proper moment of the molten steel. Until the moment of pouring the steel the gate O is closed by a plug, P.

The operation is as follows: The interior surfaces of the flask being coated with clay or other non-conductor, and all the parts being in position, as shown in Fig. 1, molten iron is poured in through the gate N, and while the iron is yet in a semi-molten condition the keys H and H' are drawn, and the cope is slowly lifted, while the molten steel is poured in at the gate O, so as to entirely fill with steel the annular space surrounding the iron portion. (See Fig. 2.) The now fully-charged flask is then swung around into the press, which, being brought into action, causes the rim E to bear with great force down upon the partially-congealed steel tire, so as to reduce the same to a compact, dense, and homogeneous mass, and to cause it to adhere or weld firmly to the semi-molten mass of iron which it encircles, so as to make, in effect, a single casting.

Although the form here shown is that preferred by me for the manufacture of car-wheels, the invention is susceptible of various modifications. For example, the power of steam or of compound levers, in combination with a screw or otherwise, may take the place of the hydrostatic press, or the compression may be effected in whole or part by rolling.

I am aware that steel and iron have been compressed together at a welding heat, and therefore claim only my specific construction and mode of operation.

I claim herein as new and of my invention—

1. A flask for casting together two or more metals, consisting of the drag F, curb I, cope or cut-off J *j*, suspended head K, and gates N and O, the whole being combined and adapted to operate as set forth.

2. In the described combination, the flask F I J *j* K N O and press A B C D E, or their equivalents, for casting a steel rim, and compressing and welding the same around an iron web or body while in a semi-molten condition, as set forth.

3. The parts A, B, C, D, and E, forming a press for compressing the steel tire of a car-wheel while in a semi-fluid condition, as set forth.

In testimony of which invention I hereunto set my hand.

SAML. H. WHITAKER.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.