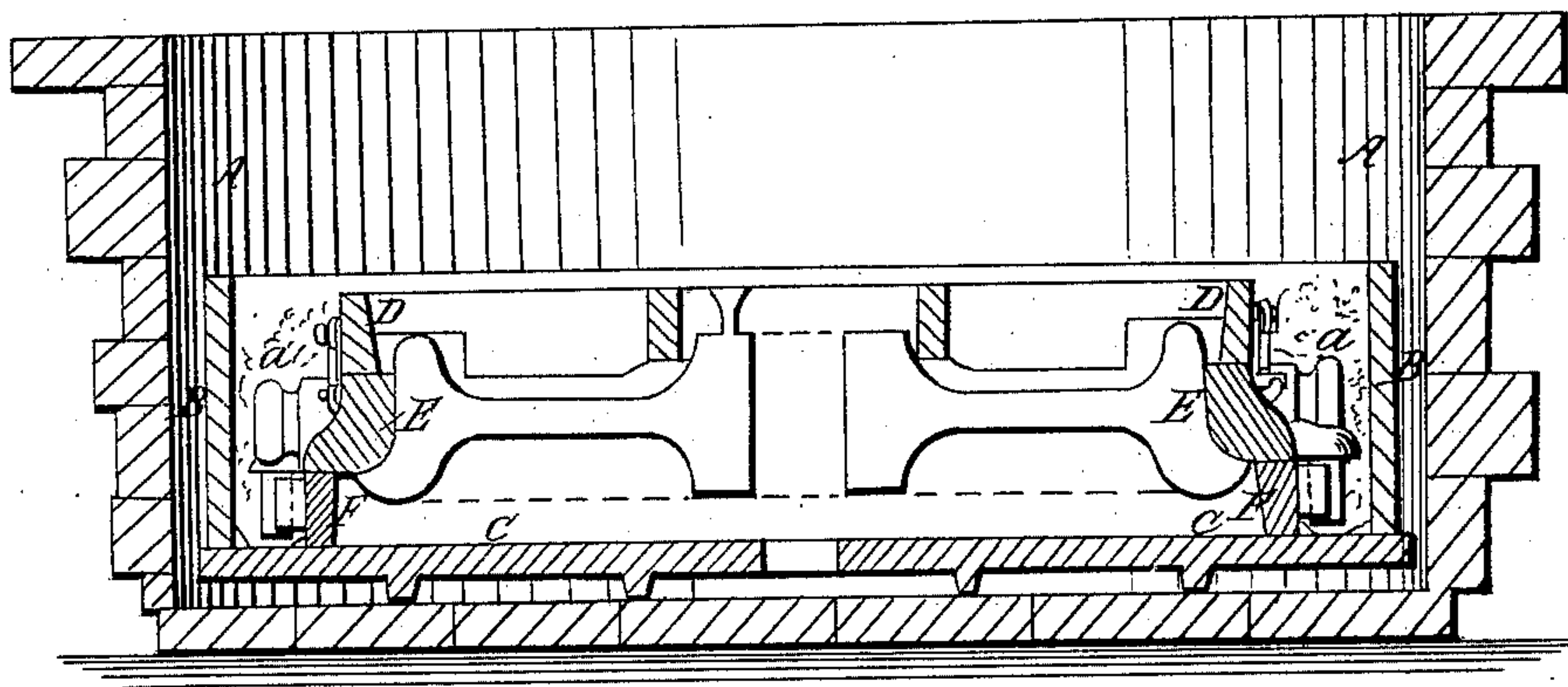


D. FINLEY.  
Annealing Iron.

No. 20,151.

Patented May 4, 1858.



# UNITED STATES PATENT OFFICE.

DAVID FINLEY, OF CHAMPLAIN, NEW YORK.

## CASTING CAR-WHEELS.

Specification of Letters Patent No. 20,151, dated May 4, 1858.

*To all whom it may concern:*

Be it known that I, DAVID FINLEY, of Champlain, in the county of Clinton and State of New York, have invented a new and  
5 useful Improvement in the Process of Cast- and Annealing Chilled Cast-Iron Railroad-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the  
10 accompanying drawing, forming part of this specification, said drawing representing a central section of the mold and all the apparatus employed in performing the process of casting and annealing a car-wheel ac-  
15 cording to my invention.

My invention consists in heating the several parts of the mold with the exception of the chill in an oven and then placing them together with the chillring in a condition to  
20 receive the molten metal and surrounding the whole with a nonconducting substance, either before the metal is poured, by the employment of a suitable bottom plate and ring, or after the complete mold with the  
25 casting in it has been deposited in the pit, which pit is afterward to be covered up. The metal when poured into a mold which has been thus heated, and surrounded with a nonconductor is cooled so slowly as to be  
30 thoroughly annealed and yet the proper operation of the chill is not interfered with, as at the time of pouring the chill ring is comparatively cold.

To enable others skilled in the art to put  
35 my invention in operation, I will proceed to describe it with reference to the drawing.

The wheel is molded in the usual manner in sand or a mixture of sand and coal dust, in an iron flask of ordinary construction.

40 F is the nowel or lower part of the flask.

E is the chill ring, and D is the cope or upper part of the flask. After the molding is performed, the nowel F and cope D and parts of the mold contained in them are  
45 placed in an oven and dried gradually.

C is a circular plate of cast iron, which, if the non-conductor is to be applied before pouring the molten iron, should be a few inches larger in diameter than the outside of  
50 the flask, upon which, when the flask and mold have been properly heated, the flask and chill ring are placed and secured together in a proper manner.

B is a ring, to be used if the nonconductor

is applied before pouring, the interior di- 55  
ameter of which is a few inches larger than the exterior of the flask. This ring is placed upon the plate C, when the flask and chill ring have been put together, and the said ring C and plate form a box with a space 60  
surrounding the flask. The above mentioned space indicated by *a, a*, in the drawing is to receive dry plaster of Paris, or any other good non-conductor of heat, and when it has been filled the metal is poured into the mold, 65  
and the box with the flask, mold and casting in it, or, the flask mold and casting in it is then lowered into a pit A that may be either dug in the ground, or built with brick or any other suitable material above it. If the non- 70  
conductor was not applied to the flask before pouring the metal, the flask in the pit may then be surrounded with the non-conductor. This pit may be deep enough to contain a number of flasks each of which may 75  
be put into a separate box C, B, or may be surrounded by the nonconductor in the pit, and when as many as the pit will hold are put in, it is to be covered up by a plate and other substance, there to remain until suffi- 80  
ciently cooled. The plaster of Paris or whatever non-conducting substance or material is used in the space *a, a*, or in the pit around the flask, may or may not be heated before its introduction. 85

The surrounding of the flask mold and casting with a non-conducting material as above described prevents the rapid escape of heat from the metal, and makes the cooling part of the process so slow that the casting 90  
is prevented from straining and is perfectly annealed in all parts except the surface of the tread, which is chilled instantaneously by the contact of the melted metal with the chill ring, which at the time of pouring 95  
would be nearly cold, as but a short time would elapse between the putting of the flask together and the pouring.

I do not claim the heating of molds in an oven or muffle before pouring the metal into 100  
them, nor do I claim the annealing of castings in their molds when that is effected by placing the molds in an oven or any receptacle that has been previously heated. But—

What I claim as my improvement in the 105  
casting and annealing of chilled railroad wheels, and desire to secure by Letters Patent, is,



The heating of the nowel and cope of the flask and parts of the mold contained therein, separately from the chill ring, then putting the whole of the flask and mold together, and  
5 either placing it in a box or its equivalent, and surrounding it with nonconducting material within the said box, and after pouring the metal into the mold burying the whole

in a pit, or, omitting the box, surrounding the flask and mold with the nonconductor in the pit substantially as herein specified. 10

DAVID FINLEY.

Witnesses:

THOS. ARMSTRONG,  
H. B. MOON.