

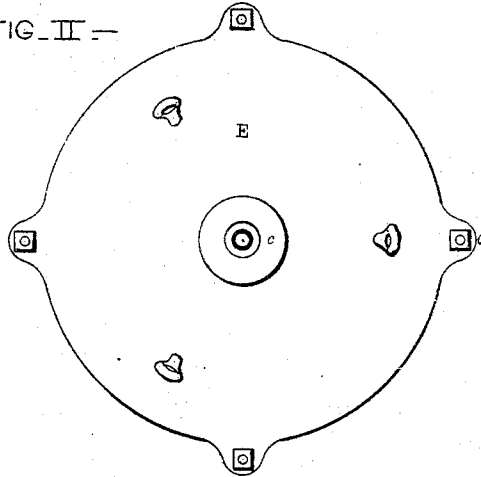
J. MATHEWS.

Apparatus for Tempering and Annealing Car-Wheels.

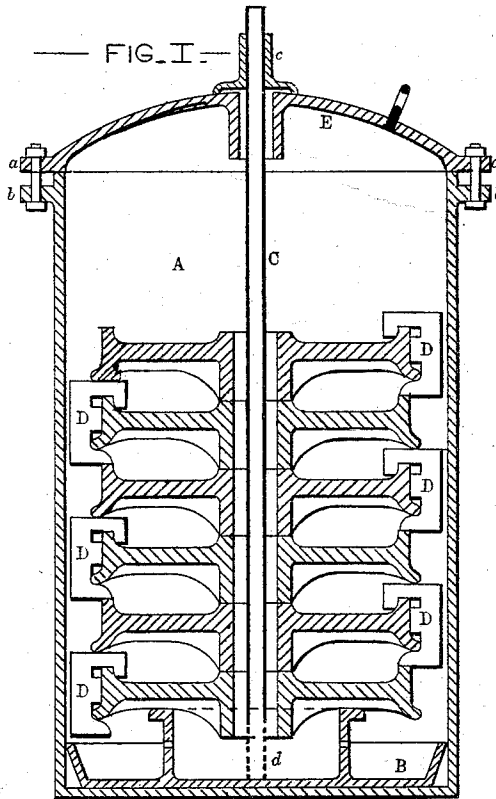
No. 147,566.

Patented Feb. 17, 1874.

— FIG. II —



— FIG. I —



— WITNESSES —

H. J. Brewster

W. W. Whorton

— INVENTOR —

John Mathews

by *G. H. W. J. Howard*

UNITED STATES PATENT OFFICE.

JOHN MATHEWS, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN APPARATUS FOR TEMPERING AND ANNEALING CAR-WHEELS.

Specification forming part of Letters Patent No. **147,566**, dated February 17, 1874; application filed January 19, 1874.

To all whom it may concern:

Be it known that I, JOHN MATHEWS, of the city of Baltimore and State of Maryland, have invented certain Improvements in Portable Pits for Annealing or Tempering Railroad - Car Wheels, of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description, reference being had to the accompanying drawing and to the letters of reference marked thereon.

To prevent deterioration in the strength of cast wheels from unequal cooling, and consequent unequal shrinkage, annealing or tempering of the entire wheel has been resorted to as a means of equalizing the tension of all the parts. The form of the wheel is necessarily such that the central portion or disk, having (compared with the rim) the smaller area of section, cools first, and in so doing the particles of the rim and central portion are liable to be separated or dragged apart, causing an incipient fracture at their line of juncture. The same may be said with reference to the said central portion of the wheel and the hub. The effect of this unequal shrinkage of the casting, consequent upon the unequal area of section of the different members of the wheel, is to greatly impair its inherent strength. The rim and the lines of juncture of the different members of the wheel are caused to become brittle from the stretching and dislocation of the particles, and, therefore, liable to sudden fracture from various and commonly-occurring causes.

My invention relates to that class of pits in which the wheels are placed one upon the other, and from which pits vent is given to the heat and gases cooled from the mass of incandescent metal composing the wheels in the pit. My invention consists, first, in a removable false bottom placed at the bed of the pit, which bottom is designed to receive the sand and scale falling from the wheels.

Great difficulties have heretofore been found in cleaning pits not having removable bottoms. These difficulties are entirely overcome by the use of this part of my invention, the bottom and its contents being readily removed.

My invention consists, secondly, in a straight, vertical, and removable or adjustable pipe, adapted, in the manner hereinafter described,

as a vent, through which the heat and gases escape from the pit.

Efforts have been made to anneal and temper car-wheels in pits in which the heat and gases are not allowed to ascend immediately through the pit, but compelled first to seek the bottom of the pit, and then ascend through a vertical pipe, necessarily having an elbow or horizontal branch connecting with the pit.

While it is here unnecessary to inquire into the respective merits of pits having a lower vent and those having an upper one, it is evident that much inconvenience must arise from the use of a lower vent-pipe, since it must, to be vertical, have a bend or elbow leading to and connecting with the pit, for the sand and scale from the wheels will soon find their way into the elbow and choke up the vent, either entirely or to such an extent as to render the pipe almost useless for the purpose for which it is designed. The pipe to be cleaned of its obstructions must be first removed from the pit, and then subjected to a shaking or the insertion of some cleaning instrument, or be blown through. For, if an attempt be made to clean the pipe by any of these means while connected with the pit, the result is only to cause a removal of the dust, &c., from the vertical to the horizontal portion of the pipe. I obviate all these inconveniences by the use of the vent-pipe hereinafter fully described.

My invention consists, thirdly, in a clamp, three or more of which are fitted to the rims of the wheels before they are lowered into the pit, the said clamps fitting sufficiently near to the inner diameter of the pit to enable the wheels to rest upon each other, thus preventing their liability, when in the heated condition in which they are lowered into the pit, to change from or be subjected to any undue or uneven strain to which they might be exposed were they not placed in the pit in such regular and even order.

In the further description of my invention which follows, due reference must be had to the accompanying drawing, in which—

Figure 1 is a vertical section of an annealing or tempering pit having my improvements, and Fig. 2 a plan of the same.

Similar letters of reference indicate similar parts of the invention in both views.

A represents the pit, made of chilled or white iron, having a uniform thickness of about one and one-half inch, a depth of about six feet, and a diameter of about three feet. The pit may be portable or stationary, but is preferably portable, and placed above ground in convenient proximity to the apparatus used for lowering and hoisting the wheels into and from the pit. B is the false bottom. The lowest wheel rests upon a ring cast upon the upper face of the false bottom. C is the escape-pipe, also resting upon the false bottom, and is perforated at its lower end, to allow the passage of the gases. D D are the clamps, three or more of which are attached to each wheel, to guide it to, and maintain it in, its proper position. The pit is closed at its upper end by a cover, E, of concavo-convex form, and held down by bolts, which connect the lugs *a* with the corresponding lugs *b* on the pit. The concavo-convex formation of the cover C tends to prevent its becoming warped or injured. As the aperture in the cover is large enough to

allow of pipe of a greater diameter than that shown being used, I close the space around the pipe by means of the bonnet *c*, which is formed to fit the pipe closely.

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. The removable false bottom adapted to the pit, as set forth.

2. The straight, vertical, and adjustable escape-pipe C, placed centrally of the pit and cover E, the lower end of the said pipe having perforations, as specified.

3. The guiding-clamps D, as and for the purposes set forth.

In testimony whereof I have hereto subscribed my name, in the city of Baltimore, this 13th day of January, in the year of our Lord 1874.

JOHN MATHEWS.

Witnesses:

J. H. N. ONION,
WM. T. HOWARD.