

UNITED STATES PATENT OFFICE.

ROBERT POOLE, OF BALTIMORE, MARYLAND, ASSIGNOR TO HIMSELF AND
GERMAN H. HUNT, OF SAME PLACE.

IMPROVEMENT IN CASTING CAR-WHEELS.

Specification forming part of Letters Patent No. 20,022, dated April 20, 1858.

To all whom it may concern:

Be it known that I, ROBERT POOLE, of the city and county of Baltimore, and State of Maryland, have invented certain new and useful Improvements in Casting Railroad Car-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the same, and of that which distinguishes it from what has heretofore been done, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical central section through the flask, and showing the wheel and chill in place. Fig. 2 represents a top plan of the cope.

Similar letters of reference, where they occur in the separate figures, denote like parts of the flask in both of them.

All cast wheels, unless regularly cooled, exist with a strain, which is caused by unequal contraction of the metal. Two methods have been essayed to obviate this evil, both of which are objectionable, because the evil continues to exist to a greater or less degree, whichever of the methods may be used to obviate it. Some attempt to overcome this strain by a subsequent annealing process, and others by adopting curved shapes in the web of the wheel to give or spring to the strain. These plans are both defective, the first softening the chill and injuring the strength of the wheel by endeavoring to remove in a degree a strain that is already in the wheel. The second plan is equally objectionable, as it produces a wheel having the strain in it, but the shape arranged so as to make it less apparent; but so far as strength is concerned, when compared with the weight of the wheel, it is found to be an injudicious application of metal. My object and aim is to make a wheel which shall be regularly cooled in all its parts, and thus be produced free from strain within itself, and at the same time preserve the chill from being softened, which objects heretofore were attempted to be remedied or overcome by annealing or by the adoption of curved shapes in the web of the wheel, as above stated, and which, all experience has proven, detracts from the strength and quality of the wheel.

In the plans heretofore practiced in making

cast-iron car-wheels an evil was produced which had to be overcome by some subsequent means or effects, as I have stated. In my plan the evil does not exist—that is to say, I do not produce it—and consequently do not have to resort to any means to remedy it. I avoid it by the manner in which I cast and cool the wheel, and which will be explained in connection with the drawings.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents the base-plate or bed of the flask, and which is composed of an inner and an outer section, marked, respectively, *a b*, both furnished with openings or holes, as shown in the drawings. The inner section, *a*, is held to the outer one by one or two pivots, *c*, at its perimeter, which fit into open recesses in the outer section, and a single pin, *d*, which passes through holes in the flanges on the under side of said sections, the object of this being that the central section, *a*, of the bed may be dropped by simply withdrawing the pin *d*.

e is a vertical flange on the bed-piece, and at its top there projects inward horizontally another short flange, *f*, as shown in Fig. 1. *g* are handles or arms for lifting or handling the flask.

On top of the base A rests the central part of the flask, B. This piece B is a ring furnished with handles *h*, and a flange at its top and bottom, *i i*, and filled in between these flanges by some good non-conducting material. (Represented by sectional lines in red.) Over the central piece, B, is placed the cope C. This cope is made in two sections—an inner one, *k*, and an outer one, *l*—the two being held together by pins *m* passing through their respective flanges *n n n*. The center of the cope is an open hub, *o*, from which radial arms *p* extend to the rim of the inner section, and the rims of the outer sections of the cope are also united by arms *q*.

The object in making the cope in sections is that either of the sections may be removed without disturbing the remaining one. *r* are the handles for removing or replacing the cope.

D represents the car-wheel in the flask, and F represents the chill or head, which also is

furnished with projections or pins *s*, for placing or removing it from the flask. It will be perceived that the chill *F* rests upon the flange *f* of the base *A*, and that the flange *t* of the cope rests upon the top of said chill *F*, so that it is safely held in its proper position in the flask, while it is free to expand when the molten metal is poured into the flask. As soon as the iron becomes "set" the outer section, *l*, of the cope is removed, first withdrawing the pins *m*, which confine the outer and inner sections together. The chill *F* is then removed from the flask and the outer section, *l*, again replaced. The central member, *B*, of the flask being lined with a non-conductor, and the molding-sand remaining in the outer section of the cope, the wheel is effectually protected from the action of the external atmosphere and is left free to cool equally in all its parts; but, as the tendency to contraction and cooling is greater or more rapid at the circumference than toward the center of the wheel, it becomes requisite at the proper time to provide for a more rapid cooling at the central parts. This I attain by removing the inner section, *k*, of the cope, as well as the inner section, *a*, of the bed. All

this must be done before the iron in the wheel becomes rigid, and by very little practice the cooling process can be so managed as to insure uniform cooling and contraction and produce a wheel free from strain.

The wheels, after remaining in their flasks a proper length of time, are placed in a pit and remain there until cold.

Having thus fully described my invention, what I claim is—

1. The base *A* of the flask, made in sections so that the center one may be removed without disturbing the remaining one, for the purpose set forth.

2. The sectional cope *C*, so made that either section may be removed without disturbing the other one, for the purposes set forth.

3. In combination with the sectional base and cope, the central member, *B*, of the flask, with a lining of some non-conducting material, substantially in the manner and for the purpose described.

ROBT. POOLE.

Witnesses:

LEWIS B. TEBBETTS,
WM. S. TYLER.