S. Truscott,

Casting Car Wheels.

No. 7,515. Patented July 16, 1850.

Fig. 1.

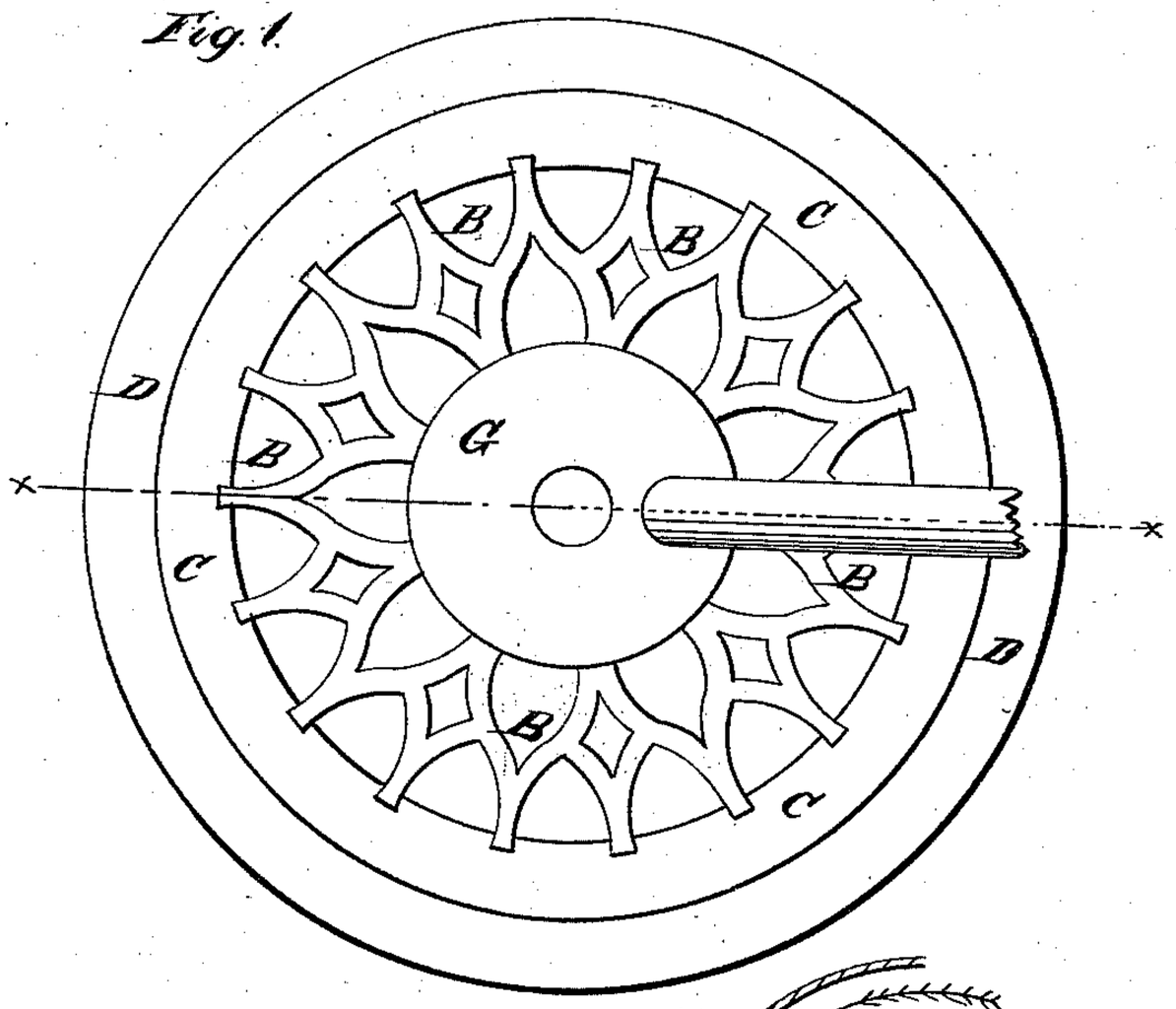


Fig. 2

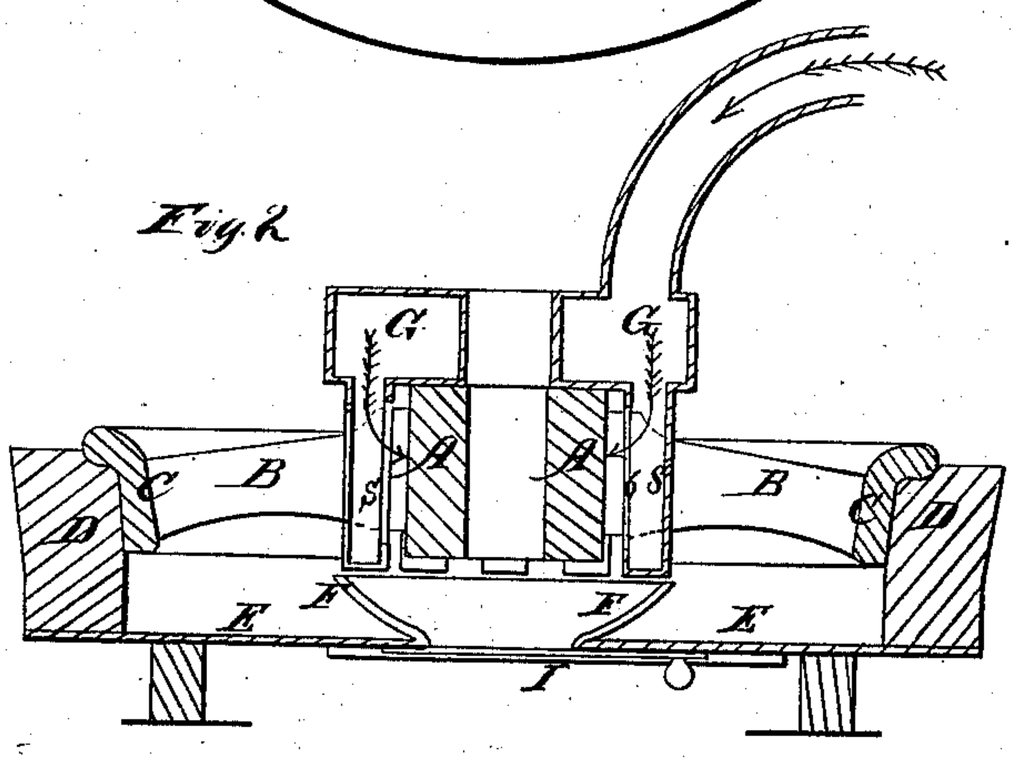
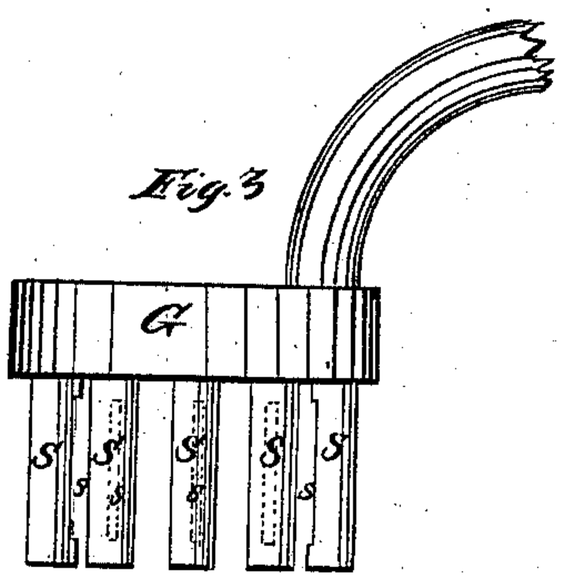


Fig. 3



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

UNITED STATES PATENT OFFICE.

SAMUEL TRUSCOTT, OF COLUMBIA, PENNSYLVANIA.

IMPROVED APPARATUS FOR REGULATING THE CONTRACTION OF CAR-WHEELS.

Specification forming part of Letters Patent No. **7,515**, dated July 16, 1850.

To all whom it may concern:

Be it known that I, SAMUEL TRUSCOTT, of Columbia, in the county of Lancaster and State of Pennsylvania, have invented a new and useful improvement in the mode of cooling the hubs of cast wheels to prevent fracturing the arms or dividing the hub, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

The nature of my invention and improvement consists in the gradual cooling of the hub of cast-iron by directing centripetal streams of cold air or water against the outside surface of the hubs of wheels cast in a chill.

Figure 1 is a plan showing the chill and a cast wheel before being removed from the chill, the cooling apparatus being in its proper place. Fig. 2 is a vertical section of the same on the line *x x* of Fig. 1. Fig. 3 is a side elevation of the cooling apparatus.

The arrows show the direction of the cooling-fluid.

Similar letters in the several figures refer to corresponding parts.

A is the hub of the wheel; B, the arms; C, the rim; D, the metallic part of the mold or chill in which the tread of the wheel is cast.

E is a cast-iron bed-plate upon which the chill is placed.

F is a cast-iron guide-plate or discharge-tube through which the sand that may be around or under the hub when cast is discharged.

I is a horizontal slide-valve to prevent the descent of the sand from the hub through the discharge-tube during the molding and casting operations, and by withdrawing it permitting the sand to descend from around the hub and pass down through the discharge-tube, the discharge of the sand taking place as soon as the metal becomes sufficiently cool, which is generally in about twelve or fifteen minutes. The sand being thus let down, the hub and the inner portions of the arms are exposed, while the remainder of the wheel is yet covered with the sand and the chill.

G is the reservoir for air or water, supplied through a pipe inserted into the same.

S are pipes inserted into the bottom of the reservoir in a circle, open at the upper ends, and closed at the lower ends, and perforated or slit in the side or periphery for the water or air to pass through in a direction toward the center of the hub, in order to throw the cooling-fluid against the outside of the hub in a multiplicity of streams, *s* showing said slits or perforations. The iron ring D, called the "chill," is made of sufficient depth to receive the wheel-pattern in which the wheels are cast, being neatly turned on the inner side conversely to the shape of the tread of the wheel. The wheel-pattern, of any desired form, is made to fit the ring D neatly all around. The whole interior of the wheel is molded in sand commonly used for molding in foundries by the pattern. The moment the molten iron or other metal strikes against the chill it becomes partially cooled and hardened, and commences contracting all around the rim of the wheel while the interior of the wheel is yet in a fluid state, and especially the hub, it being the heaviest body, the contraction of which takes place after the rim; and if some remedy be not applied the contraction of the hub will cause a strain on the arms or spokes, which will result in a fracture; hence it has been a common plan to divide the hub into three or four sections, allowing the arms or spokes to separate the segments of the hub at pleasure as the contraction takes place.

To obviate the dividing of the hub, I use the following plan or mode for cooling it, namely: As soon as practicable after the wheel is cast I remove the molding-sand from about the hub and the core by letting the same descend through the opening in the plate on which the chill is placed. The sand being removed, the hub is immediately exposed to the action of the atmosphere, while the other parts are kept covered and unexposed to retain the heat, to keep the rim of the wheel as much expanded as possible. This being done, I place the receiver or reservoir G, with its tubes S attached, on top of the hub, the tubes extending down between the arms or spokes—there being a tube for every space between the arms or spokes—each tube having a slit or oblong opening on the side next the center for the air or water to pass through and strike against the hub, and closed at their lower ends. Through these openings in the side of the tubes I force streams of cold air or cold water centripetally—the air by bellows or fan or any apparatus that will afford sufficient pressure, the water by its weight from a hydrant or any fixture to give pressure—which, being forced against the hub

in continuous fresh streams, causes it to cool so completely and regularly that the dividing of the hub is unnecessary, as it will not crack or fracture when cooled in this manner.

The cooling of hubs of various kinds of cast-iron wheels that are not chilled is by no means new. In fact, it is almost as old as the iron business itself.

I am aware that a patent was recently granted for cooling the hubs of car-wheels by a current of air passed through the bore of the hub, requiring several hours to produce the required result.

I am also aware of other modes of cooling the hub, and that water has been used; but I am not aware that any plan similar to mine has ever been used. By my mode the hub is cooled in less than one hour from the moment of letting on the streams of air or water against the outer side of the hub, and does away with a great deal of expensive apparatus, and simplifies the mode of cooling the hub by first exposing the hub to the atmosphere, and then forcing cold air or water immediately against the outside surface of the hub in centripetal streams, the effect of which is easily comprehended. If, for example, a hollow column of iron be heated to any given heat, and streams of cold air or water are brought in immediate contact on the outside surface, there is no waste of the cooling properties; but if these streams of water or air are applied through the center the cooling properties will be diminished by becoming heated before it has passed through.

Having thus described the nature of my invention and improvement, and disclaimed the invention of casting car-wheels in a chill and cooling the hub by air or water applied to the eye, what I do claim as my invention and improvement, and desire to secure by Letters Patent, is—

1. The combination of the apparatus for directing the cooling-fluid centripetally against the outside surface of the hub when constructed in the manner herein set forth, with the apparatus for letting the sand descend from around the hub and retaining it over and about the arms and rim, as described.

2. The combination of the bed-plate, made with the curved conductor and slide to confine and discharge the sand, with the circular iron ring, which forms and chills the tread of the wheel.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

SAMUEL TRUSCOTT.

Witnesses:
ISAAC VAUGHEN,
I. W. FISHER.