John K. Sax.

Impt. in the Manufacture of Car Wheels.

No. 122,538. Patented Jan. 9, 1872.

Fig. 1. 2

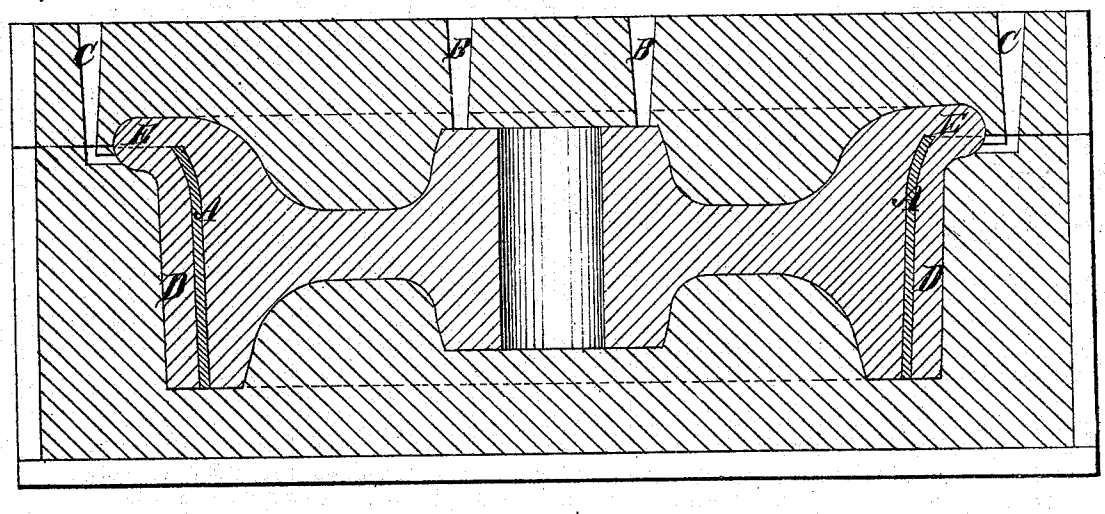
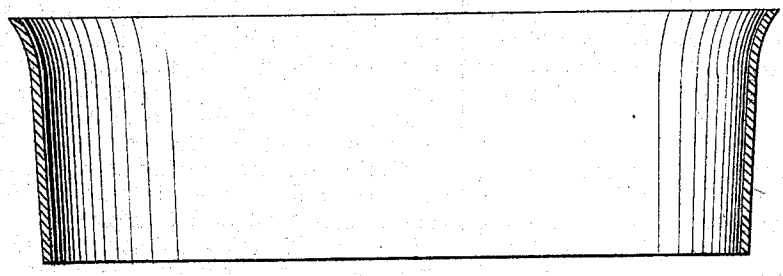


Fig. 2. 3



Witnesses.

Enos Brion.
A. K. Home.

Inventor:

John K. Sax.

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

JOHN K. SAX, OF PITTSTON, PENNSYLVANIA.

IMPROVEMENT IN CASTING CAR-WHEELS.

Specification forming part of Letters Patent No. 122,538, dated January 9, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, JOHN K. SAX, of the borough of Pittston, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Improvement, having reference to the Manufacture of Railway Car-Wheels; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

In the drawing, Figure 2 is a central cross-section of a common green-sand mold which I use in making railway car-wheels. Fig. 3 is a central cross-section of my improved partition band.

Two great difficulties with chilled car-wheels are: First, their liability to break from chill strain, which is caused by suddenly chilling the rim or tread of the wheel when the wheels are made while the center or body of the wheel is yet in a molten state, and thus shrinking the rim of the wheel before the body or center of the wheel has commenced to shrink at all, thus producing uneven shrinkage in the wheel and chill strain. Second, the necessity of subjecting them to an annealing process to remove the chill strain, which is in most cases imperfect and expensive.

The object of my invention is to remedy these difficulties and yet produce a cheap wheel. My invention consists of a circumferential iron partition band or its equivalent, for placing and retaining and uniting hard and soft iron in their proper places in a mold in a molten state in making railway car-wheels.

In order to enable others skilled in the art to make and use my invention, I now proceed to describe the same.

Car-wheels made by my improved process have a body of soft cast-iron for strength and toughness, and a tread or wearing surface of suitable thickness of hard or white cast-iron to resist wear from the rail.

In the manufacture of car-wheels by my process I proceed in the following manner:

I first make a common sand mold in the old and usual way, as shown in Fig. 2 of the drawing, which is intended to give form to the entire wheel. I also make my improved partition band of iron or its equivalent. As shown in Fig. 3 of the drawing, the outer diameter of the band is less than the diameter of the wheel mold; therefore, after the band is put in its proper position in the mold, as seen at A A, Fig. 2, there is a vacant space left between the outer circumference of the band and the outer diameter of the mold, as seen at D D, Fig. 2, which is intended for the reception of the hard cast-iron that is to constitute part of the rim and form the hard wearing surface of the tread of the wheel. The band is held in its place in the mold by chaplets similar to those used in fastening cores in molds.

All being thus prepared, the band in its proper place in the mold, the molten iron is poured in to form the entire wheel, the soft iron being poured in at the channel-ways B B, Fig. 2, and the hard or white iron at the channel-ways C C, Fig. 2, simultaneously, and the pouring is so regulated by the capacity of the channel-ways that the molten iron rises in the mold alike upon both sides of the band, the hard iron on the outside of the band and the soft iron on the inside of the band. The pouring is continued until the molten iron shall have filled the mold up to the level of the top of the band, as seen at the dotted lines E E, Fig. 2, after which the pouring at C C is stopped, and the mold is allowed to fill up from the center channel-ways B B, Fig. 2.

Thus, it will be seen that the band as used by me serves as a partition between the hard and soft iron of which the wheel is made, and operates so as to place the hard and soft iron in their proper places in the mold while in a semi-molten state.

The band is made of a suitable thickness to allow of its being rendered fluid by the heat of the cast metal surrounding it at the proper time after the mold has been filled by the molten iron, and before the molten iron shall have commenced to set or solidify in the mold, thus uniting the soft iron forming the body of the wheel with the hard iron forming the tread of the wheel while in a semi-molten state; and

there is no chill strain on wheels made by my improved process, as there is no chilling process connected with their manufacture; therefore the annealing process is entirely dispensed with.

Having thus described my invention, I claim—

The improved process of casting railway car-wheels, substantially in the manner and for the purpose herein described and set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 15th day of April, A. D. 1871.

JOHN K. SAX. [L. S.]

Witnesses:
S. D. LEWIS,
DANIEL METZGER. (122)