

UNITED STATES PATENT OFFICE.

J. SCOVILLE, OF BUFFALO, NEW YORK.

IMPROVEMENT IN THE MANUFACTURE OF CAR-WHEELS.

Specification forming part of Letters Patent No. **55,916**, dated June 26, 1866.

To all whom it may concern:

Be it known that I, J. SCOVILLE, of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in the Manufacture of Car-Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to fully understand and make use of the same.

There are two principal defects which seriously impair the quality and utility of all cast-iron car-wheels as heretofore made. One of these is that the "tread" of the wheel, or that part which is chilled, is not of sufficient hardness and solidity to withstand the successive shocks to which it is subjected in striking against the ends of the rails, and which shocks cause the chilled part to crumble out and to become detached from the other and softer parts of the wheel, and the surface of the wheel is thereby made rough and uneven, and the wheel consequently becomes useless. Another is found in the plates of the car-wheel—that is to say, in the portion not chilled. This portion should be soft, tough, and of sufficient elasticity to prevent cracking when subjected to a succession of shocks from the ends of the rails of a railway-track. Iron that is capable of taking a high chill when run into a plate of the thickness required for a cast-iron car-wheel is apt to lose that peculiar softness of grain which is requisite for strength and elasticity. The grain becomes close, hard, and short, and is always more or less brittle. This is particularly the case when old wheels are remelted, or where iron containing sulphur is used, or in the case of iron that is melted with sulphurous coal. Such wheels are very liable to crack while in use, because the iron of the plates lacks softness and elasticity.

My invention relates to a refined process by which these defects in car-wheels are cured. This process consists in introducing a portion of spiegeleisen into the cupola or other fur-

nace in admixture with the charge of iron to be melted for casting car-wheels, the whole being in admixture during the process of melting. The spiegeleisen can be added in the ladle after the iron is melted, if such a course is preferred; but since this is inconvenient and less effective than admixture in the cupola, I prefer to mix it in the cupola or other furnace, because the resultant admixture is more perfect and more time is given for the chemical changes which occur. The portion of spiegeleisen used is about from three to ten per cent. of the charge in the cupola or other furnace. The spiegeleisen which I prefer to employ is that which is composed of, iron, eighty per cent.; manganese, twelve per cent.; carbon, seven per cent. There are other varieties of spiegeleisen, containing some a greater and some a smaller percentage of manganese. In using such the charge of spiegeleisen must be increased or diminished as circumstances require. In many instances, and with spiegeleisen of twelve per cent., manganese from five to seven per cent. will be found sufficient if properly mixed in the cupola.

The iron of car-wheels so treated is cured of the defects above mentioned, and the tread can be chilled to a perfect hardness, equal to the hardest tempered steel, while the plates or the portions of the wheels which are not chilled are made to possess softness and increased toughness and elasticity.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of spiegeleisen and iron in the manufacture of car-wheels, in the manner herein described.

The above specification of my invention signed by me this 31st day of August, 1865.

J. SCOVILLE.

Witnesses:

MYRON E. BROWN,
N. J. SCOVILLE.