

UNITED STATES PATENT OFFICE.

EDWARD BROWN WILSON, OF WESTMINSTER, ASSIGNOR TO WM. BUTCHER, JR., OF SHEFFIELD, ENGLAND.

METHOD OF ANNEALING AND SWAGING CASTINGS.

Specification forming part of Letters Patent No. 33,315, dated September 17, 1861.

To all whom it may concern:

Be it known that I, EDWARD BROWN WILSON, of the city of Westminster, England, have invented a certain new and useful process or mode of treating articles composed of cast-iron or cast-steel or of malleable cast-iron for the purpose of shaping and finishing the same; and I hereby declare the following to be such a full, clear, and exact description of the same as to enable others skilled in the art to which this my invention pertains to make and use the same.

This invention relates to a peculiar process or mode of treating articles composed of cast-steel or of malleable cast-iron for the purpose of shaping and finishing the same; and it consists in, first, casting the articles in ordinary or other molds, and then, after having reheated them in a furnace, pressing them in dies or matrices of a shape corresponding to the exact shape and finish of the completed article. By this process I am enabled to manufacture railway-wheels, tires, hoops, and various other articles at a much less cost than heretofore and with a considerable saving of time, as after the article leaves the dies no further manipulation of any kind is required. Thus, for example, in the manufacture of tires I am enabled to dispense with the several processes of rolling, sawing, binding, welding, and turning. The power which I prefer to employ for compressing the dies is hydrostatic pressure; but a steam-hammer or powerful screws may obviously be used for forcing the dies together.

It is obvious that by thus treating the metal it will undergo both chemical and physical changes, which have the effect of giving it a

fibrous texture, and thereby greatly increase the strength and tenacity of the articles made from it. The reheating of the cast-iron articles effects the elimination of a certain quantity of carbon that is combined with or contained in the iron, changing its chemical composition from that of cast-iron to that of wrought-iron. By subsequent compression, in suitable molds, of the article while yet at a high temperature the particles of the iron are swaged, whereby the articles acquire a fibrous nature and become as malleable, tough, and durable as articles made directly from wrought-iron, either under the hammer or the rolls.

I do not confine myself to any particular forms, arrangements, or combinations of dies or matrices, as such will of course vary according to the nature of the articles to be shaped and finished; but

What I consider as the essential feature of my invention is—

The process herein described of treating articles composed of cast-steel or malleable cast-iron, for the purposes set forth, by first casting the articles in suitable molds, and by then, and after having reheated them in a furnace, pressing them in dies or matrices of a shape corresponding to the exact shape and finish of the completed articles.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

EDWARD BROWN WILSON.

Witnesses:

BARNARD P. BROOMHEAD,
T. F. R. HAMMOND.