

# UNITED STATES PATENT OFFICE.

C. V. WILSON, OF NEWARK, NEW JERSEY.

## IMPROVED COMPOSITION FOR CARBONIZING IRON.

Specification forming part of Letters Patent No. 43,732, dated August 2, 1864.

*To all whom it may concern:*

Be it known that I, C. V. WILSON, of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Composition for Carbonizing Iron; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to composition by which iron of any description—cast, wrought, or malleable—can be hardened to any desired depth by placing the same in a case which is packed with said composition and heating it for from one to ten hours, according to the depth to which it is intended to harden the same.

The composition consists of prussiate of potash, salt, wood-ashes, and charcoal, and these ingredients are mixed together in about the following proportions: prussiate of potash, five parts; common salt, one part; wood-ashes, one part; charcoal, three parts. Each of the ingredients is finely pulverized, and they may be applied separately or in a combined state.

I have obtained good results if I place the iron in the case, which is made of sheet metal or cast-iron, according to convenience, and surround it (the iron) first with the pulverized prussiate of potash. Then I add the salt, and after this the wood-ashes, and finally the charcoal, and after the case has been closed I insert it in a good fire and heat it from one to ten hours. In this operation care must be taken to heat the case uniformly throughout, and it must be kept at a bright red heat. If removed after the lapse of one hour, it is found

that the composition has penetrated to the depth of about one thirty-second of an inch, and by continuing the heat for ten hours the composition will penetrate to the depth of about three-eighths of an inch or more. The scale produced on the surface of the iron by this operation is composed of steel, and can be hardened in the same manner.

Instead of applying the ingredients of my composition separately, one after the other, to the iron, they may be mixed together and packed round the iron in a mixed state. Under all circumstances, however, it is desirable to apply my composition in combination with the case. If used without the case, it produces very little effect, and the scale produced by applying the composition to the red-hot surface of the iron and heating it again with the iron is so thin that it is of very little account. In using the composition with the case the depth of the scale can be regulated by increasing or decreasing the term of heating.

I do not claim as my invention the use of prussiate of potash for hardening iron; but

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

The employment of a composition made of the ingredients herein specified, which are applied in about the proportion above set forth, in combination with or without a case.

CHARLES V. WILSON.

Witnesses:

W. HAUFF,  
J. F. BUCKLEY.