To all whom it may concern:

Be it known that I, SANTIAGO LUIS BROWN, subject of the Emperor of Austria-Hungary, and having declared my intention of becoming a citizen of the United States, residing at New York, N. Y., have invented a new and useful Process of Hardening Iron or in Heating Iron to Render it Equal in Hardness to Steel, of which the following is a full, clear, and exact description.

My process consists in forming the iron article into the proper shape, heating it to a white heat and then immersing it when thus heated into a vat of boiling sodium chlorid or common salt. In preparing this salt place in a suitable receptacle any kind of common commercial salt and heat it to a boiling point, with the addition of a small amount of water if found desirable; the amount of water to be used should be as small as possible, it not being for the purpose of dissolving the salt, but for preventing adhesion or sticking of the salt to the bottom of the receptacle. If the salt be fine it may actually fuse or melt, but if the salt be coarse it may not actually melt.

The receptacle may be heated by any suitable means. A fire may be placed beneath it, electrical heating means may be used or the heating may be done by steam injected directly into the mass of salt; if thus heated by steam there is no necessity of adding water to the salt, since the proper amount of moisture is furnished by the steam. When the vat of salt is prepared and heated to the proper point, the iron article to be treated is immersed therein and the article is kept in the boiling salt for a few minutes. The time may be five minutes more or less; it is in any event short, but it depends to a great extent upon the thickness of the article. When removed from the vat and cooled, the iron is found to have become hard like steel capable of taking an edge or being treated in other ways like steel.

The iron used may be any kind of commercial or other iron, the term iron being herein used in its ordinary sense and in contradistinction to what is usually understood as cast iron or as steel. The same process may also be applied to copper or other metals, although the result is not the same: that is, the metal will not be hardened in the case of copper or other metals allied to it; it should be scoured after treatment and will not tarnish as readily as before; with the metals the result will be varied depending upon the particular metal; furthermore articles of metal other than iron can not so highly be heated as iron, the temperature being dependent upon the particular metal.

Having thus described my process what I claim is:

1. The process of hardening iron which consists in heating the iron and then immersing the same when heated into a vat of boiling salt (sodium chlorid).

2. The process of hardening iron which consists in heating the iron to a white heat and then immersing the same into a vat of boiling sodium chlorid (common salt).

3. The process of hardening iron which consists in heating the iron to a white heat and then immersing it into a vat of boiling salt, (sodium chlorid) retaining the iron in said vat for a short period of time.

4. The process of treating metals which consists in heating the metal and then immersing it when heated into a vat of boiling sodium chlorid.

In testimony whereof I apply my signature.

SANTIAGO LUIS BROWN.