

UNITED STATES PATENT OFFICE.

FRANZ WILHELM SCHILLING, OF ESSEN-ON-THE-RUHR, GERMANY, ASSIGNOR TO
FRIED. KRUPP AKTIENGESellschaft, OF ESSEN-ON-THE-RUHR, GERMANY.

SAFE OR STEEL-VAULT WALL.

1,026,461.

Specification of Letters Patent.

Patented May 14, 1912.

No Drawing.

Application filed April 6, 1910. Serial No. 553,810.

To all whom it may concern:

Be it known that I, FRANZ WILHELM SCHILLING, a subject of the Emperor of Germany, and a resident of Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Safe or Steel-Vault Walls, of which the following is a specification.

The present invention relates to a safe or steel-vault wall which cannot be melted through by the blow-pipe flame of oxyhydrogen gas, acetylene, et cetera.

It is old to employ a special kind of cast iron for the production of such walls. However in that case it is necessary to take into account the disadvantage of brittleness incident to all cast irons.

The object of this invention is to remove this disadvantage. This object is attained by using an iron-carbon alloy having the composition of the steel to which is added a sufficient amount of chromium.

The smaller the carbon content is the greater must the chromium content be. In alloys which, aside from the chromium, contain no other addition affecting the resistance of the alloy against melting the minimum content of chromium must be about 6.5% for 0.7% C., about 5.5% for 1.0% C., about 4.3% for 1.4% C., about 4.0% for 2.0% C.

Generally the necessary minimum content of chromium amounts to

$$\frac{5.42}{\sqrt{c}}\%$$

if C indicates the percentage of carbon.

Under certain circumstances it is preferable to add tungsten (W) or silicon besides

chromium (Cr). In both instances the required minimum content of the chromium becomes smaller. As silicon is cheaper than chromium the alloy can be made at less cost when an addition of silicon is used. The addition of tungsten further offers the special advantage that the alloy becomes naturally hard if the content of chromium is not too small. This property is possessed, for instance, by an alloy which contains more than 1% C, 9% Cr and 3% W.

Having thus described the invention what is claimed and desired to be secured by Letters Patent is:

1. A safe or steel-vault wall made from an iron-carbon alloy having the composition of steel and containing such a high amount of chromium, that it cannot be melted through by the blow-pipe flame of oxyhydrogen gas.

2. A safe or steel-vault wall made from an iron-carbon alloy having the composition of steel and containing such a high amount of chromium and tungsten, that it cannot be melted through by the blow-pipe flame of oxyhydrogen gas.

3. A safe or steel-vault wall, made from an iron-carbon alloy having the composition of steel and containing more than 1% carbon, more than 9% chromium and more than 3% tungsten.

The foregoing specification signed at Barmen, Germany, this 22nd day of March, 1910.

FRANZ WILHELM SCHILLING. [L. s.]

In presence of—
OTTO KÖNIG,
CHAS. J. WRIGHT.