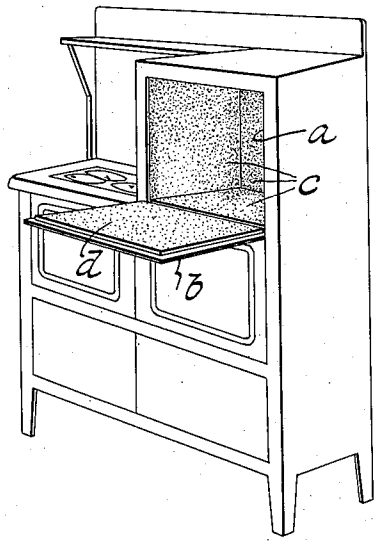
July 22, 1930. W. J. LAFFREY 1,770,930

OVEN LINING

Filed March 18, 1926



Inventor

William J. Laffrey,

By Byrnes, Townsend & Brickenstein

Attorneys.

Patented July 22, 1930 1,770,930

UNITED STATES PATENT OFFICE

WILLIAM J. LAFFREY, OF DETROIT, MICHIGAN, ASSIGNOR TO CENTRAL ALLOY STEEL CORPORATION, OF CANTON, OHIO, A CORPORATION OF NEW YORK

OVEN LINING

Application filed March 18, 1926. Serial No. 95,787.

My invention relates to a sheet of iron or steel provided with a tightly adherent thin coating of zinc or an alloy of zinc produced by subjecting the sheet to a galvanizing operation conducted in such manner that the sheet is not permitted to cool too rapidly after it leaves the galvanizing pot.

These sheets have been prepared by galvanizing the sheets according to well known methods, preferably by passing the sheets through a bath of molten lead maintained at a temperature above the melting point of zinc, and then through a superincumbent bath of molten zinc. The galvanized sheet as it leaves the pot is prevented from too rapid cooling by direct or indirect application of heat from a flame or flames for a suitable length of time, due care being taken to apply the heat as uniformly as possible over the surfaces of the sheet. Preferably, the rate of cooling of the hot coated metal is effected by predetermined gradations of temperature.

The thus treated sheet has a remarkably adherent or tight coating, and can be submitted to the usual bending and forming operations without cracking the coating.

I have further discovered that these sheets have the property of being remarkably resistant to high temperatures and to corrosion from fumes, and it is this property which makes the sheets as above described particularly suitable for oven linings in gas-stoves and other like locations.

I have illustrated in the accompanying drawing one of the more important uses of these sheets. The single figure is a perspective view of an oven provided with a lining of the aforementioned sheets.

An oven *a* is shown with all of its walls lined with sheets *c* of the heat, smoke, and fume resisting material. A door *b* is provided for closing the open side of the oven and has a lining *d* of the same material as the wall lining. It can be seen that the oven is completely lined with the resistant material and no deterioration of the oven walls can take place.

Long continued tests have shown that these sheets will withstand almost indefinitely the action of the heat, smoke and fumes in an oven in which cooking is conducted, without substantial impairment or peeling of the coating.

Thus these sheets after being subjected in a gas range to the steam and fumes from a strong salt water solution for 8 or 9 hours a day for 21 days (a test more severe than two years of household use) were found to be satisfactorily resistant.

The sheets produced by the delayed cooling, as above described, can be given a dull or matte surface coating substantially free from the spangles characteristic of rapidly cooled galvanized sheets.

By a "thin" coating I mean that the combined weight of the coatings applied to both sides of the sheet is not more than from about 0.3 to 1.25 ounces per square foot. A coating containing about ½ an ounce or less per square foot is usually sufficient.

As is well known, the coatings obtained on iron or steel sheets passed through a zinc bath are composed of a layer of zinc-iron alloys between the base sheet and the outer layer which may be substantially zinc.

Microscopic examination of sections of the same sheet, one portion of whose surface was spangled and another portion having the fine grained or matte surface, has disclosed that the thickness of alloyed material, which term is used to apply to any compound or solid solution of zinc and iron existing as a discrete layer is practically the same in the brightly spangled and in the matte surface material. This zinc layer in the case of the dull gray or matte surface is only approximately one-half as thick as in the case of the spangled material. This condition is not dependent, as far as I am aware, upon the percentage of iron in the coating. The controlling factor in the production of my improved plate, I believe to be the rate of cooling.

I claim:

1. The combination with an oven of an oven lining sheet comprising a sheet of galvanized iron or steel having a closely adherent thin coating applied by galvanizing in the manner described, said coating being

resistant to heat, smoke and fumes, and having a matte surface extending with substantial uniformity over the surface of the sheet.

2. In combination, a gas oven, and a lining therefor comprising sheets of galvanized iron, each sheet having a closely adherent, malleable, thin sheet of zinc and zinc-iron alloy, said coating having a matte surface and being resistant to heat, smoke and fumes.

3. The combination with an oven, of means for preventing the deterioration of the oven walls comprising a lining for said walls including sheets of galvanized iron in which the coating consists of a malleable film of zinc-iron alloy and zinc, said film being resistant to all of the deteriorating agencies developed in said oven.

In testimony whereof, I affix my signature.

WILLIAM J. LAFFREY.