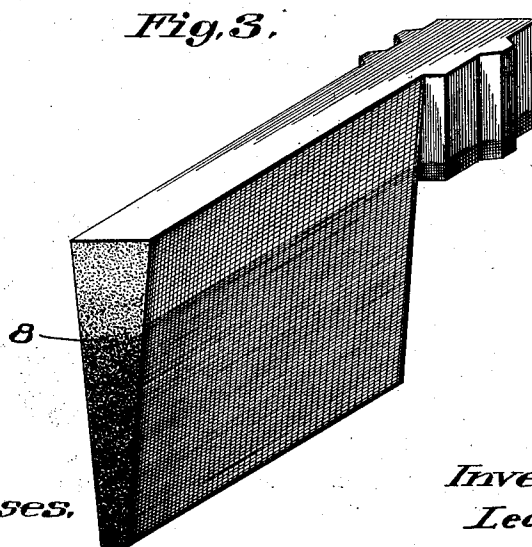
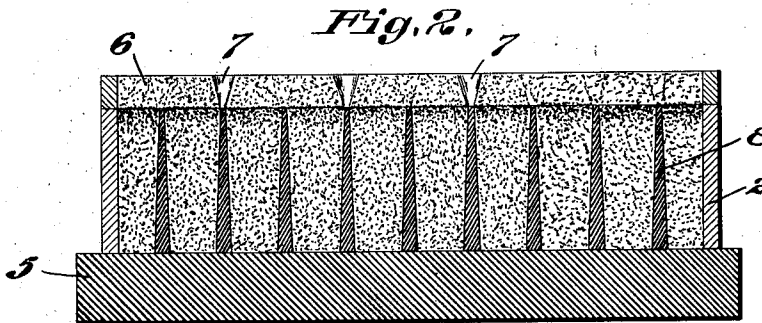
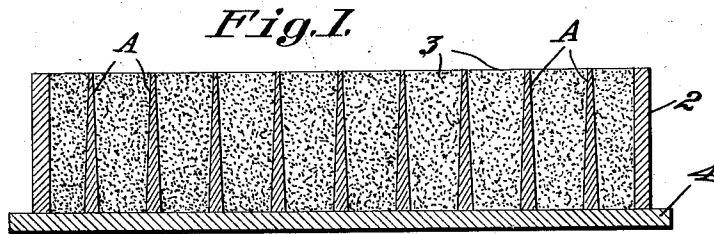


L. & P. DAVID.
PROCESS OF MANUFACTURING GRATE BARS.
APPLICATION FILED MAY 9, 1911.

1,022,773.

Patented Apr. 9, 1912.



Witnesses.

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UNITED STATES PATENT OFFICE.

LEON DAVID AND PAUL DAVID, OF SAN FRANCISCO, CALIFORNIA; SAID LEON DAVID
ASSIGNOR TO SAID PAUL DAVID.

PROCESS OF MANUFACTURING GRATE-BARS.

1,022,773.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed May 9, 1911. Serial No. 626,028.

To all whom it may concern:

Be it known that we, LEON DAVID, a citizen of the United States, and PAUL DAVID, a citizen of Switzerland, both residing at the city and county of San Francisco and State of California, have invented new and useful Improvements in Processes of Manufacturing Grate-Bars, of which the following is a specification.

10 This invention relates to grate bars, and particularly pertains to a process of manufacturing same.

It is the object of this invention to provide a method or process for manufacturing grate bars by means of which a grate bar possessing high working durability and efficiency is produced, and which process is simple and embodies a system which may be readily installed and practiced.

20 The advantage derived by manufacturing grate bars by our process resides in the production of a grate bar having an armored working face which prevents the adhesion of clinker; and also prevents scaling and wearing away of the bar, all of which are objectionable features commonly met with in the ordinary cast-iron grate bars.

30 The method or process employed in the embodiment of this invention is hereinafter more fully described and claimed and is illustrated in the drawings in which—

35 Figure 1 is a vertical section of a mold box showing the patterns as embedded in the sand therein. Fig. 2 is a similar view illustrating the manner of casting the grate bars to produce an armored or steel-hardened working face. Fig. 3 is a detail in perspective showing the product in section.

40 In carrying out the process constituting our invention a number of patterns A, conforming in shape and dimensions to the finished grate bar, are placed in a mold box 2 and are embedded in sand 3 therein, the sand 3 being rammed tightly around the sides and ends of the pattern.

45 The mold box 2 consists of a rectangular frame of a height approximately that of the patterns A and open at top and bottom, which frame is placed on a table 4 previous to the insertion of the patterns A and the

sand 3. After the sand 3 has been thoroughly packed between the patterns A, as shown in Fig. 1, the mold box or frame 2 is turned upside down and the patterns A removed. The necessary smoothing of the sand is then done, whereupon the mold box is again turned over and is placed upon a cold steel plate 5, as shown in Fig. 2. A coping 6 containing the pouring gates 7 is then placed upon the mold box 2; the gates 7 communicating with the cavities formed in the sand 3 by the removal of the patterns A.

It will be observed that the plate 5 forms a closure for the lower open ends of the molds, which ends correspond to the upper working edge of the finished grate bars, so that the metal molded against the plate 5 will form the upper face of the bar. A molten mixture of almost completely dephosphorized iron and steel, indicated at 8, is then poured in the mold through the gates 7, which molten mixture flows over the exposed surface of the plate 5 and fills the cavity in the mold thereabove, that portion of the molten metal contacting the cold plate 5 being quickly cooled. This chilling of the molten metal adjacent the plate 5 constitutes a very important feature of this invention inasmuch as it causes a certain hardening or tempering action to take place, which action affects the molten metal for some distance above the surface of the plate 5. In this manner an armored edge is formed on the portion of the grate bar contacting the plate 5, which portion constitutes the upper or working face of the bar. After the metal has been sufficiently cooled the mold 2 is lifted from the plate 5 and the molded bars 8 are removed.

By the process, just described, we are enabled to produce a grate bar which has great wearing qualities by reason of the upper or working surface thereof being hardened.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

The improvement in the manufacture of grate bars, consisting in packing sand in a mold box around the sides and ends only of grate bar patterns, withdrawing the pat-

terns to leave open slots conforming to the
shape of the patterns, fitting the mold thus
formed upon a smooth metallic plate to
form a closure of one open side and com-
5 plete the mold, forming a coping and a pour-
ing gate, filling that part of the mold con-
tiguous to the plate with dephosphorized
iron, to form a chill, and the remainder of
the mold with ordinary metal to form an in-
10 tegral structure.

In testimony whereof we have hereunto

set our hands in the presence of two sub-
scribing witnesses.

LEON DAVID.
PAUL DAVID.

Witnesses as to Leon David:

C. SCHOLZ,
W. JANSSEN.

Witnesses as to Paul David:

HENRY STERN,
G. M. PAGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
