(No Model.)

N. BURDICK & J. A. SANDFORD.

DEVICE FOR FORMING DOVETAILS FOR STOVE PLATES.

No. 273,252. Patented Mar. 6, 1883.

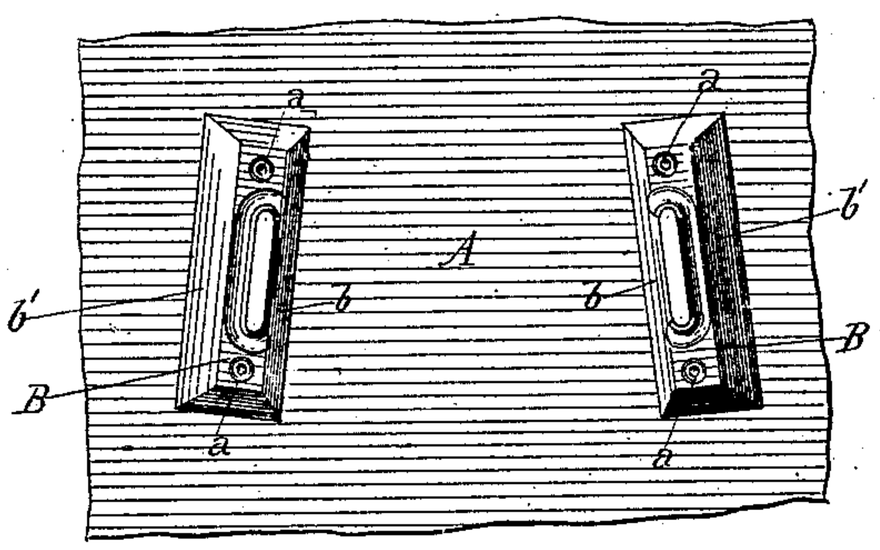

Fig. 1.

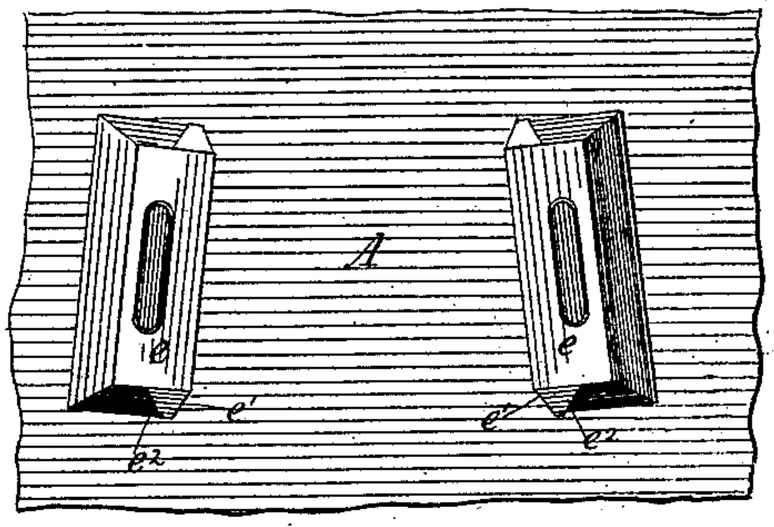

Fig. 2.

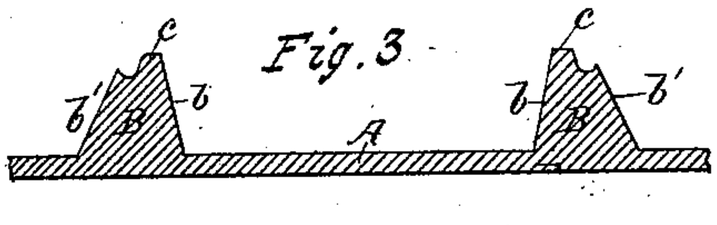

Fig. 3.

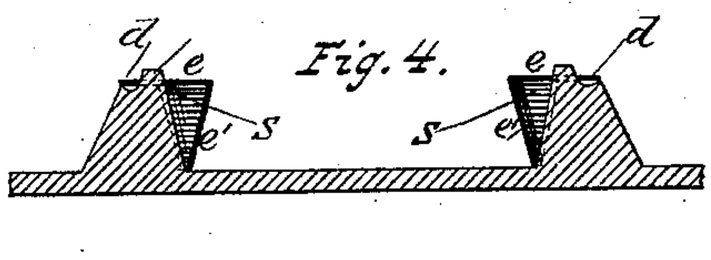

Fig. 4.

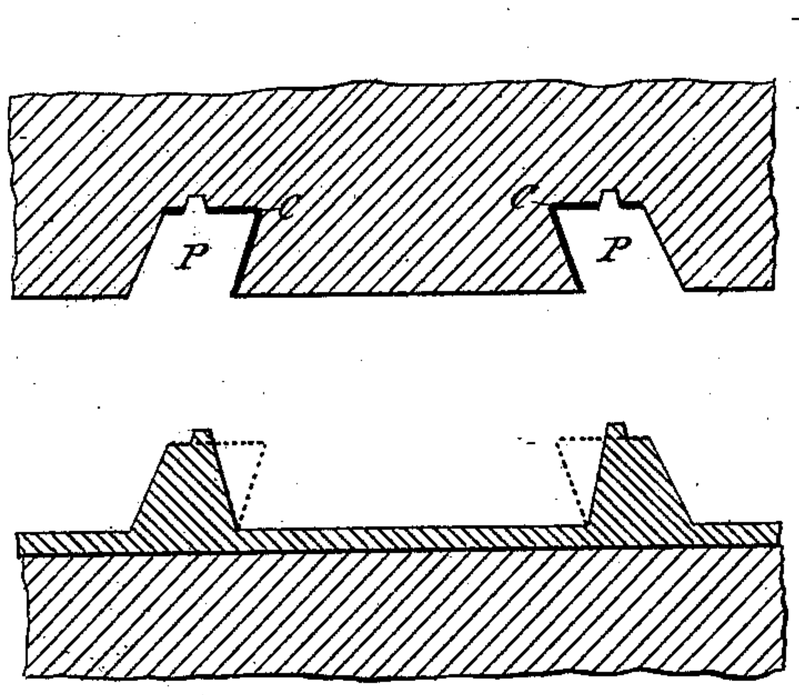

Fig. 5.

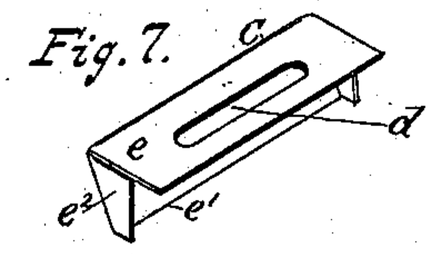

Fig. 7.

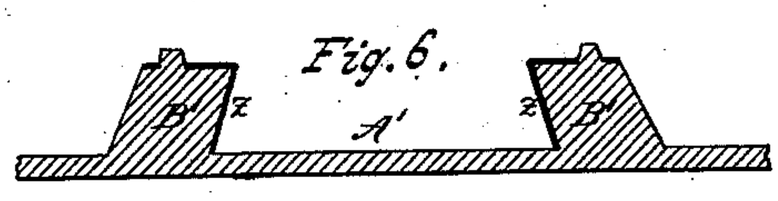

Fig. 6.

Witnesses.
Charles Serrick
James McShattuck

Norman Burdick
James A. Sandford.
Inventors.
by their Attorney
Alex. Peltenk.

UNITED STATES PATENT OFFICE.

NORMAN BURDICK AND JAMES A. SANDFORD, OF SING SING, NEW YORK.

DEVICE FOR FORMING DOVETAILS FOR STOVE-PLATES.

SPECIFICATION forming part of Letters Patent No. 273,252, dated March 6, 1883.

Application filed October 2, 1882. (No model.)

To all whom it may concern:

Be it known that we, NORMAN BURDICK and JAMES A. SANDFORD, both of Sing Sing, in the county of Westchester and State of New York, have invented certain new and improved shell dovetails for use in combination with patterns of stove-plates for forming dovetails for stoves and other articles, of which the following is a specification.

Our invention relates to improved shell dovetails which are used in connection with the patterns of a stove-plate (for forming molds for plates to be cast with dovetails) and left in the mold when the pattern is withdrawn from the sand to be united with the cast plates by the molten metal partially fusing with said shell dovetails; and it consists of the shell dovetail hereinafter specifically described, in combination with the cleat-prints of a pattern of a dovetail of a stove-plate, as hereinafter described and set forth.

The object of our invention is to provide shell dovetails made of soft sheet metal, which will be adapted to be used with patterns having fixed dovetail cleat-prints and be steadied from the same when being molded, and readily part from said cleat-prints when said pattern is drawn from the sand, and be united with the metal of the cast plate, when cast in a secure manner, when the molten metal is poured into the mold, and thereby produce a dovetail in which its inclined tapering sides will be of soft metal and free from scale and uniformly the same throughout the entire surfaces of said sides. We accomplish this object by means of the devices illustrated in the accompanying drawings, in which similar letters of reference refer to like parts throughout the several views.

In the drawings, Figure 1 represents a plan view of a pattern (a section) with cleats employed in the practice of our invention. Fig. 2 is a perspective view of a pattern with permanent cleats and shell-cleats in position preparatory to molding the pattern. Fig. 3 is a sectional elevation of patterns, taken at line No. 1 in Fig. 1. Fig. 4 is a sectional elevation of the same with shell-cleat in position for molding. Fig. 5 illustrates a sectional elevation of the cope and drag portions of the mold. Fig. 6 is a sectional elevation of a cast plate having a dovetail made with the same in accordance with the practice of this invention. Fig. 7 is a perspective view of a shell-cleat employed in the practice of our invention.

In the drawings, A represents a section of a pattern from which molded cast-iron plates having dovetails are to be taken or made. B B are cleats for making prints in the sand mold for dovetails. The said cleats are made with a vertical thickness of about three-eighths of an inch, more or less, and with about the same width at its base, as shown in Fig. 3, and with a length of about one and a quarter inches, more or less. The said cleats are permanently secured to pattern A at opposite angles in relation to each other, as shown in Fig. 1. The ends *a* and sides *b'* of said cleats are beveled and made with inclines running downward and outward, as shown. The inner facing sides, *b*, of said cleats are made with inclines running downward and toward each other, as shown in Figs. 3 and 4. Cleats B B operate to support the shell-cleat C, Fig. 7, when they are placed in position shown in Figs. 4 and 7. To hold said shell-cleat in place and from shifting when the sand is introduced and being rammed, we provide with each cleat B a vertically-projecting tongue, *c*, made solid to or affixed to each of said cleats from their top sides, as shown in Figs. 1, 3, and 4. The shell-cleats C are each made of thin malleable sheet-iron bent in the form shown in Figs. 2, 4, and 7, so as to form a horizontal top or side *e*, downwardly and inwardly inclined side, *e'*, and end piece or wings, e^2, as shown. In the top portion, *e*, of each shell dovetail is made a perforation, *d*, corresponding in size and form with tongue *c*, made with cleat B. The inclined side *e'* of said shell-cleat is made with a length of downwardly projection sufficient to carry its lower edge down to the upper surface of pattern A, when said shell-cleat is placed in position shown in Fig. 4, with tongue *c* of cleat B entering orifice *d* of said shell-cleat, and the end wings, e^2 e^2, of the said shell closing over the ends of the empty chamber *s*, Fig. 4, between the inner inclined wall of the cleat and the inner surface of the oppositely-inclined side portion, *e'*, of the shell.

In the practice of our invention the shell-cleat C is placed in position, as illustrated in

Figs. 2 and 4, with tongue *c* projecting upward through openings *d* in said shell, and with the end wings closing over the ends of chamber *o*, and inclined sides supported by the corners formed by the upper plane horizontal surface of the pattern and the inclined sides *b* of cleats B. In said position the drag portion of the flask is "rammed up" with sand, in the usual manner, when the said portion of the flask is inverted and the upper half or "cope" of the flask is adjusted in position and rammed up with sand. When the cope is lifted from the "drag" and the pattern is removed from the same, the shell-cleats will remain in the cope, and there will be formed in the sand of the drag the cleat-prints P of the dovetail, as illustrated in Fig. 5. The parts of the flask with the mold are then united, and the molten metal is introduced into the mold, and when the mold is broken and the casting is removed the casting will be in the form illustrated in Fig. 6, with the cleats B′ B′ made solid with plate A, and with the inner side surfaces of the shell-cleat securely united by its partial fusion with said cleats, so that the beveled or inclined holding-faces *z z*, Fig. 6, of said dovetail cleats will be soft and malleable and uniformly even.

The advantages attending the practice of the above-described new mode of forming dovetails are these: The cleats B are made permanent with the pattern, so that they are not required to be placed and arranged at each molding of the pattern; also, the shell-cleats readily part from the cleats and remain in the cope when the mold is parted, and the holding-faces of the dovetails are uniformly soft and even, and uniformly the same in size and form.

In a former invention, for which Letters Patent of the United States were granted to Norman Burdick, the sheet-metal shell described therein to be employed does not form a portion of the cleat-print in the pattern, as in this invention, but a surface-lining in the mold for union with the plate by its partial fusion while the metal is in a molten state, so as to produce a dovetail which will have the holding sides of its cleats of soft and malleable iron and uniformly even. We therefore do not broadly claim in this invention the use of thin sheet-metal shells to be united with the cleats of cast-metal dovetails by partial fusion. Our invention relates to shell-form cleat-prints made of thin sheet malleable metal in connection with permanent cleats made with the patterns for supporting the shell cleat-prints while being molded, and which will part from the patterns and remain in the mold and become a part of the cleats of the dovetails when the plate is cast.

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

The shell dovetail C, provided with perforations *d*, in combination with cleat B, provided with tongue *c*, and secured to pattern A, whereby said shell dovetail will be supported and held from shifting when said pattern is being molded, substantially as set forth.

NORMAN BURDICK.
JAMES A. SANDFORD.

Witnesses:
CHARLES SELKIRK,
ALEX. SELKIRK.