2 Sheets—Sheet 1.

E. L. BURDICK.

Uniting Supplementary Piece to Casting.

No. 211,698. **Patented Jan. 28, 1879.**

FIG. 1.

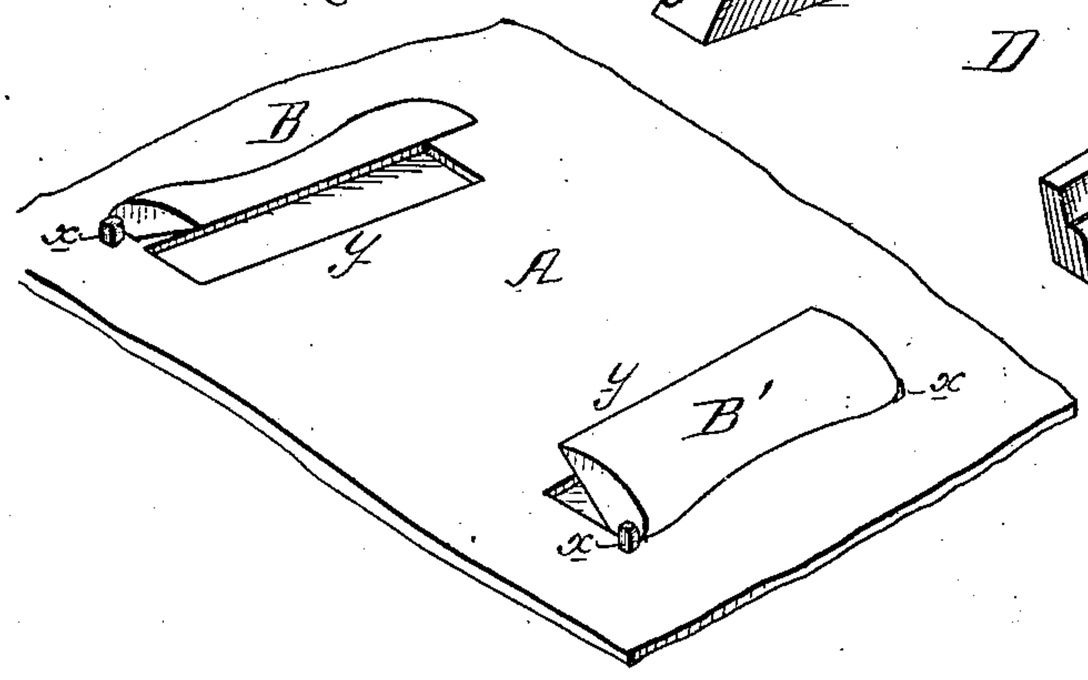


FIG. 2.

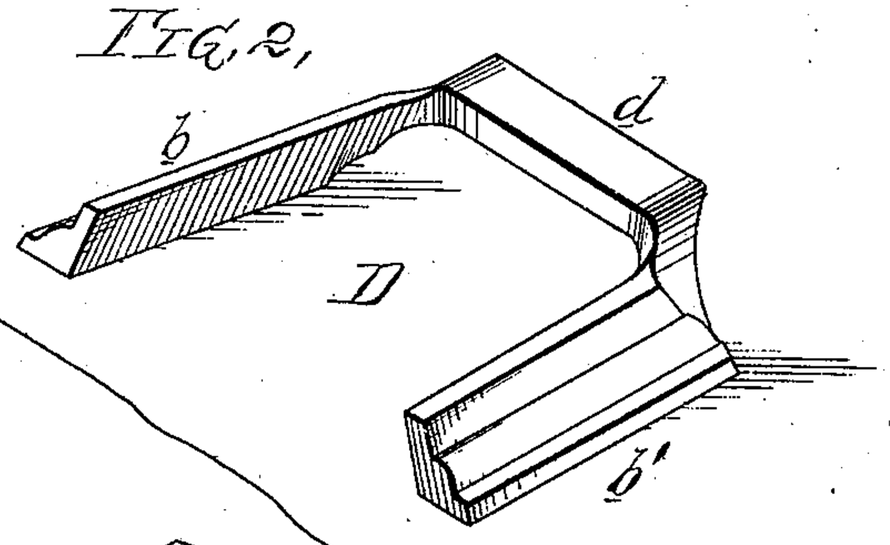


FIG. 3.

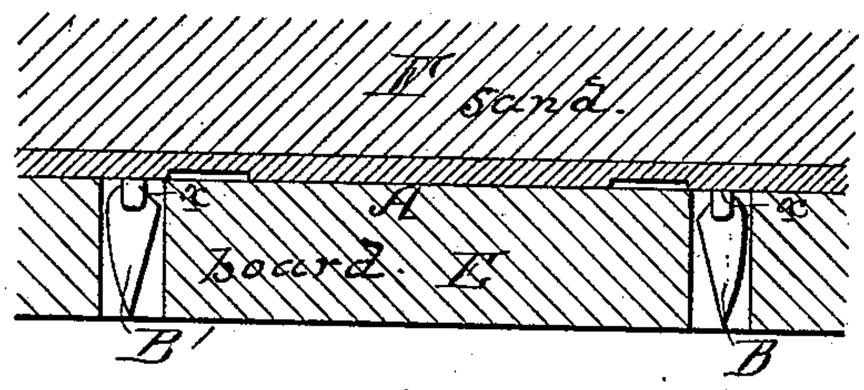


FIG. 4.

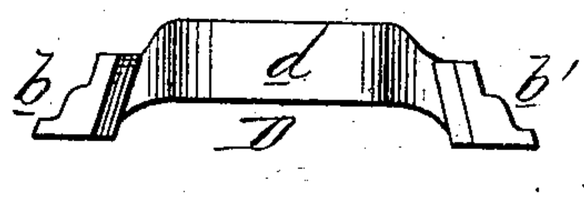


FIG. 5.

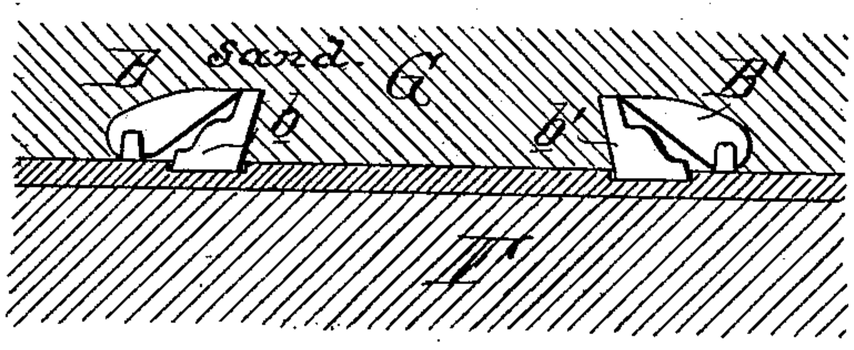


FIG. 6.

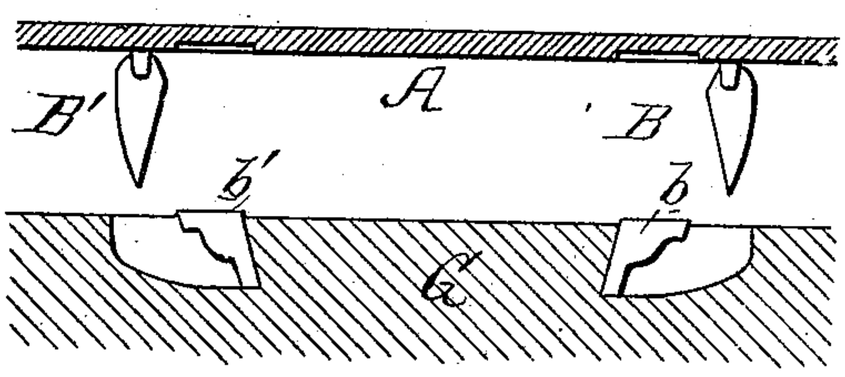
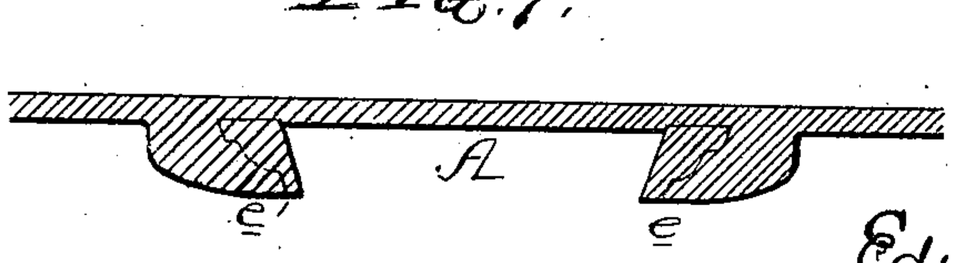


FIG. 7.



Witnesses
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Harry Smith

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by his Attorneys
Howson and Son

2 Sheets—Sheet 2.

E. L. BURDICK.

Uniting Supplementary Piece to Casting.

No. 211,698. **Patented Jan. 28, 1879.**

FIG. 8.

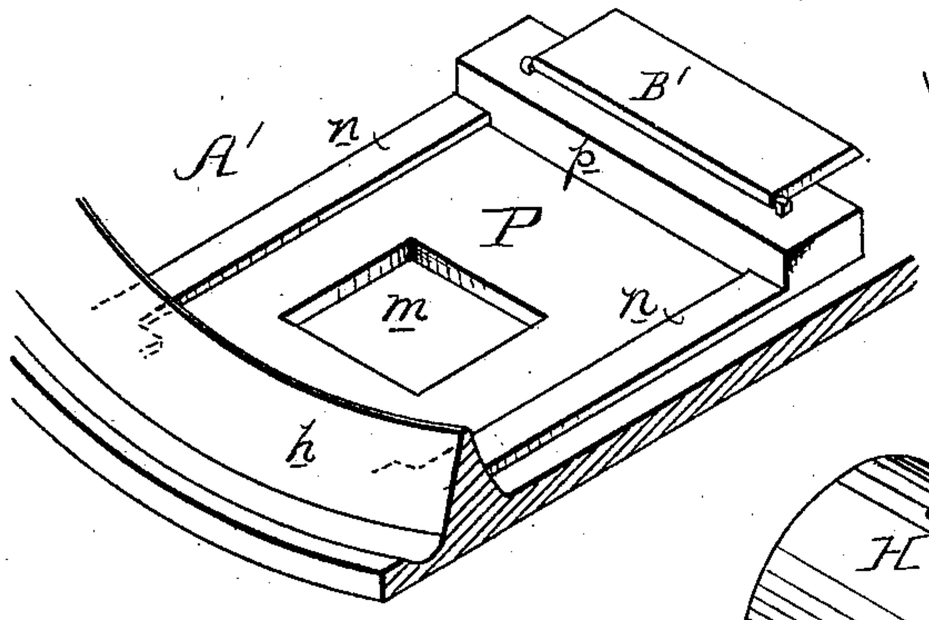


FIG. 16.

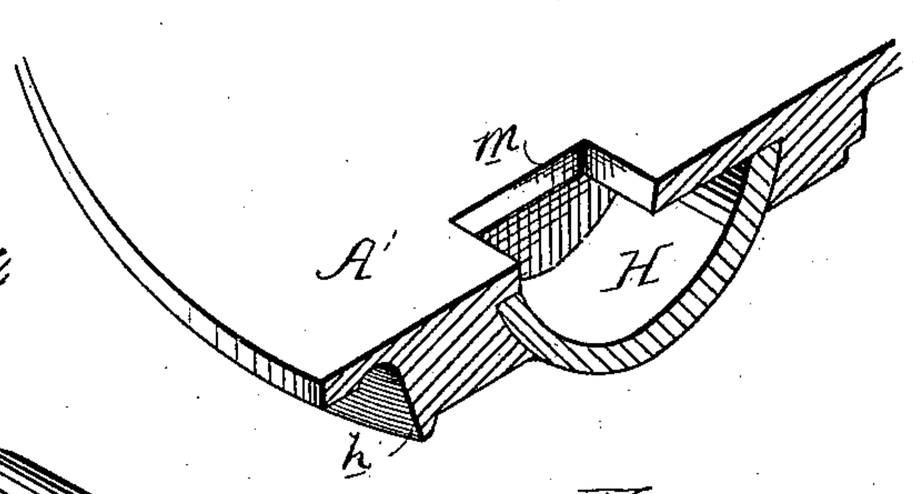


FIG. 10.

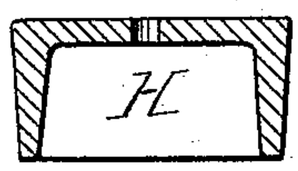


FIG. 9.

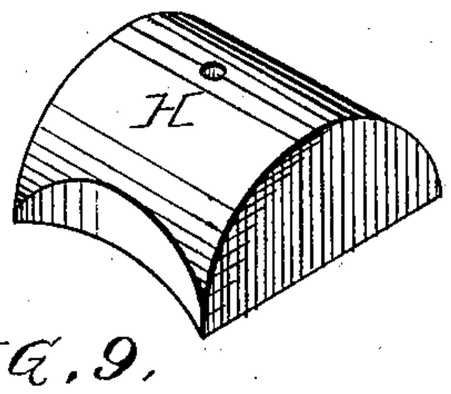


FIG. 11.

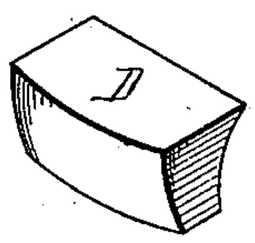


FIG. 12.

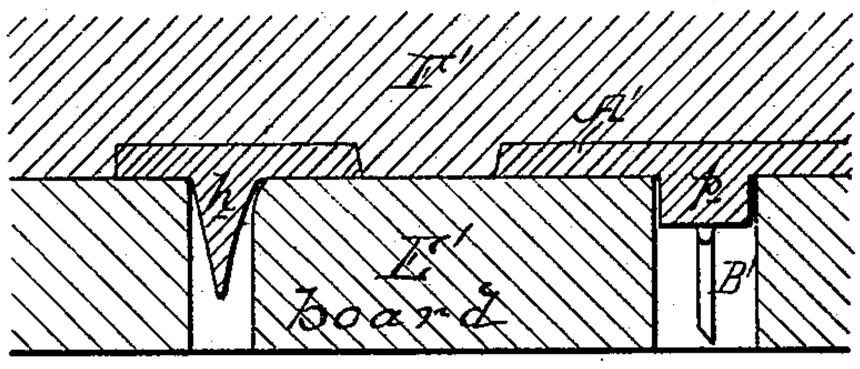


FIG. 13.

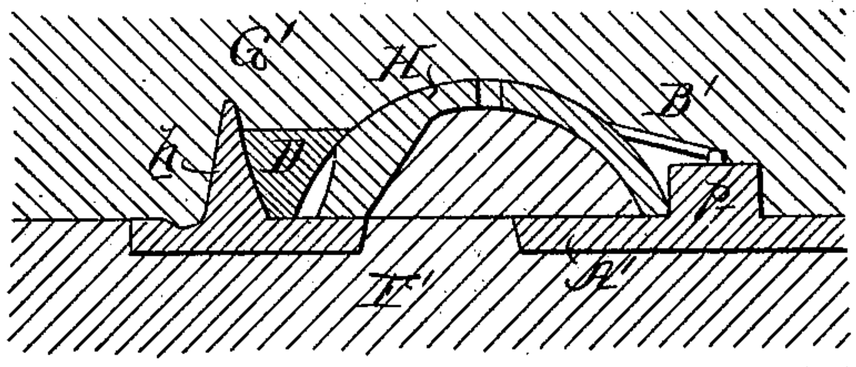


FIG 14

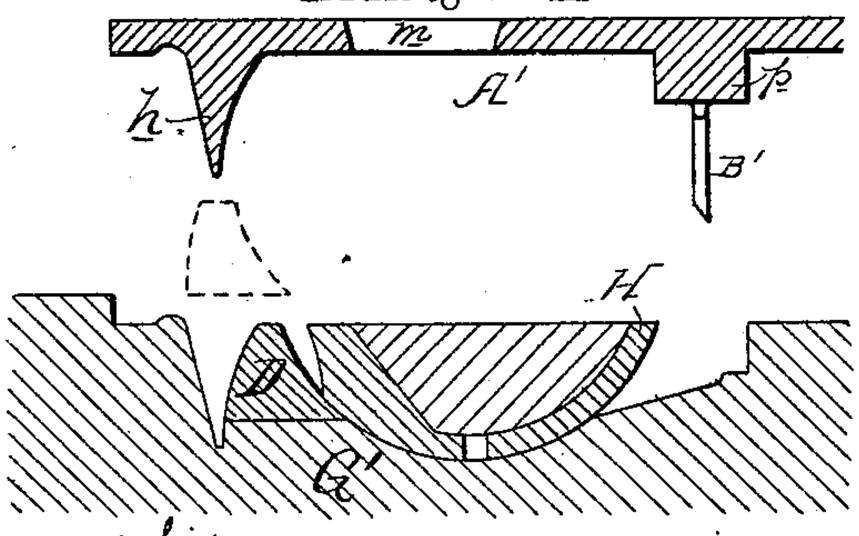
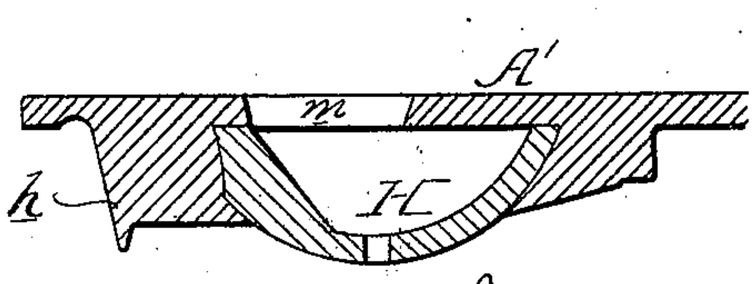


FIG. 15.



Witnesses
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Harry Smith

Inventor
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by his Attorneys
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UNITED STATES PATENT OFFICE.

EDWIN L. BURDICK, OF SING SING, NEW YORK.

IMPROVEMENT IN UNITING SUPPLEMENTARY PIECES TO CASTINGS.

Specification forming part of Letters Patent No. **211,698,** dated January 28, 1879; application filed September 6, 1878.

To all whom it may concern:

Be it known that I, EDWIN L. BURDICK, of Sing Sing, Westchester county, State of New York, have invented new and useful Improvements in Molding and in Patterns for the Same, of which the following is a specification:

The object of my invention is to permanently unite supplementary pieces of metal to castings; and this object I attain in the following manner, reference being had to the accompanying drawings, of which Sheet 1 illustrates the application of my invention to the casting of dovetails on the base-plates of stoves for receiving the projections of the legs, Sheet 2 showing the application of my invention to the casting of "bowls" on stove-hole covers.

In Sheet 1, Figure 1 represents a perspective view of the under side of the pattern of part of a base-plate, A, of a stove; and B B′, two lugs, each of which is pivoted at its opposite corners *x x* to the plate, so that they can be thrown back, as explained hereinafter, the lugs being inclined horizontally and beveled inwardly at their inner edges, so that a dovetailed space shall be formed between them. There are on the under side of the base-plate pattern as many of these pairs of lugs as there are feet to be attached to the casting made from the pattern. Before this pattern is used the molder must have at hand any number of the supplementary castings D, (shown in the perspective view, Fig. 2,) each casting consisting of two bars, *b b′*, connected together at the ends by a cross-piece, *d*. The bars are inclined horizontally and beveled at both edges, so as to fit snugly between the lugs B B′ in recesses or pockets *y y* in the pattern. These bars have to be united to and practically incorporated with the casting made from the pattern of the base-plate, the cross-piece *d* being broken off after the casting is complete, its only use being to temporarily maintain the two bars in their proper relation to each other, to the lugs, and to the dovetailed portion of the stove-foot, which has to be driven between them after they are united to the plate.

The molder has to prepare the mold with this pattern and the supplementary castings D, in a manner which can be best explained by reference to the series of vertical sections shown in Figs 3, 4, 5, 6, and 7.

The pattern A is first placed on the usual board E, Fig. 3; a flask is placed above it, and this flask rammed with sand F. The flask and its sand with the pattern are then inverted, as shown in Fig. 4, and the lugs B B′ turned back, so that the supplementary casting D may be deposited in its place between the lugs, the bars *b b′* of the casting being lodged in the recesses *y y*, by which they are retained in their proper positions. After this the lugs are turned over against the bars *b b′*, preparatory to the next step of the process. A second flask is placed on the inverted flask containing the rammed sand F, and the sand G rammed into this second flask and onto the pattern, as shown in Fig. 5, after which the said second flask, with its pattern, is inverted and the pattern raised from it, as shown in Fig. 6, the pivoted lugs falling back so as to be clear of the bars *b b′*, which are retained by the sand G packed between them.

The flasks, after the withdrawal of the pattern, are adjusted to each other, and metal poured into the mold, when the bars *b b′* will, with the metal which finds its way into the spaces left by the pivoted lugs, constitute the two lugs *e e′*, Fig. 7, and these lugs form the dovetailed space for receiving the dovetailed projection on the foot of the stove. By this manner of forming dovetails on the base-plates of stoves, perfect uniformity in the width and taper of the said dovetails is assured; all the dovetails must be alike, and hence no tedious fitting of the lugs will be required; any lug will fit any dovetail, and much of the loss due to the discarding of castings with imperfect dovetails will be obviated.

My invention may be adopted in molding stove-hole covers in the manner illustrated in Sheet 2 of the drawings.

The cover-pattern A′, of which a portion is shown in perspective and inverted in Fig. 8, has the usual opening *m* for receiving the end of the lifter, and a rib, *n*, Fig. 8, on each side of the said opening, the two ribs, with a projection, *p*, forming a pocket for receiving a portion of the supplementary bowl H, of which a perspective view is shown in Fig. 9, and a transverse section in Fig. 10.

To the projection *p* of the pattern is hinged a lug or plate, B′, which, as will be seen hereinafter, performs precisely the same duty as

the lugs B B′ on the pattern of the base-plate described above.

The molder of stove-hole covers has at hand a number of supplementary castings of bowls, H, and also of wedge-shaped blocks D, (shown in perspective in Fig. 11,) and proceeds to prepare the mold in the manner shown in the series of vertical sections, Figs. 12 to 15 inclusive.

The pattern is placed face uppermost on the board E′, Fig. 12, and a flask placed above it, this flask being tightly rammed with sand F′, after which the flask and its pattern are inverted, as shown in Fig. 13. The supplementary bowl H, having its cavity filled with sand, is now fitted in the recess P, formed by the ribs *n n* and projection *p*. The pivoted lug or plate B′ is turned onto one end of the bowl, and the wedge-shaped block D introduced between the opposite end of the bowl and the annular rib *h*, with which every stove-hole cover is furnished.

It may be remarked here that I should use a pivoted plate or lug, B′, in place of this detachable wedge-shaped block, but for the desired proximity of the bowl to the said annular rib *h*.

A second flask is now adjusted to the first, and rammed with sand G′, after which both flasks are again inverted and the upper flask removed, thereby exposing the pattern, which the molder now draws from the sand G′, as shown in Fig. 14, in doing which the pivoted lug B′ will yield and clear the end of the supplementary bowl, which will be retained in the sand G′, because its opposite edges are inclined, as shown in Fig. 10. After the withdrawal of the wedge-shaped block D, which may be easily done, the first flask is adjusted to the second, and the metal poured into the mold, the permanent junction of the supplementary bowl with the cover being insured during the casting of the latter, as shown in Fig. 15, and in the sectional perspective view, Fig. 16. This may appear to be an elaborate plan of forming on stove-hole covers the recessed bowls for receiving the end of the lifter; but many covers are lost in casting them, owing to the blowing of the iron about the bowl by reason of the sand being too closely rammed at that point, and by the washing of the sand—difficulties which I obviate by the above-described plan.

The process may be practiced in connection with many different castings, the above being given as two instances only of the application of my improvements.

I do not desire to claim, broadly, the uniting of supplementary pieces to castings by forming on the same dovetailed edges, around which the metal runs in casting; nor do I claim a pattern provided with pivoted plates which form openings in the mold and clear themselves as the pattern is withdrawn; but

I claim as my invention—

The combination, in a sand mold, of a supplementary piece of metal with a pattern and with pivoted or detachable plates or blocks which are adapted to the edges of the piece, and are so constructed that they can be withdrawn from the mold without disturbing the sand, thereby leaving in the mold spaces into which the metal flows in casting, so as to hold the supplementary piece in place, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN L. BURDICK.

Witnesses:

HENRY C. NELSON,

A. HYATT.