J. R. FORTUNE.

PROTECTING CAP FOR FURNACE BRIDGE WALLS.

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941,569. **Patented Nov. 30, 1909.**

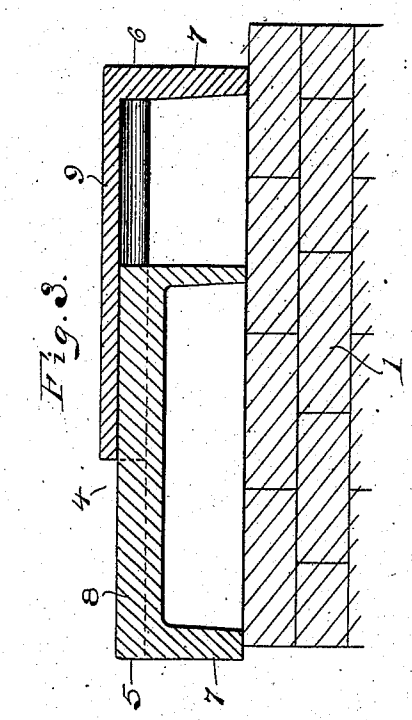

Fig. 3.

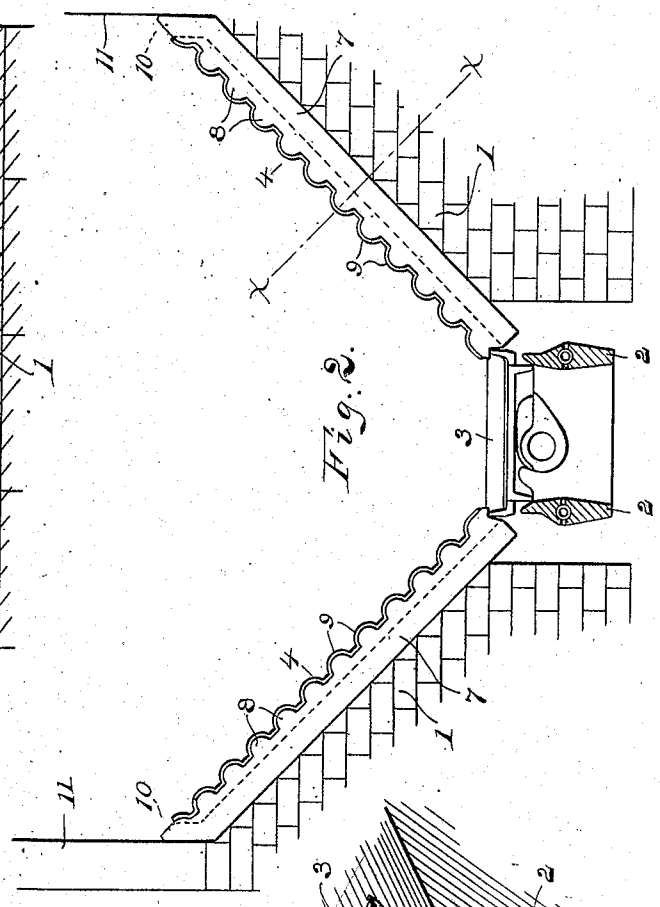

Fig. 2.

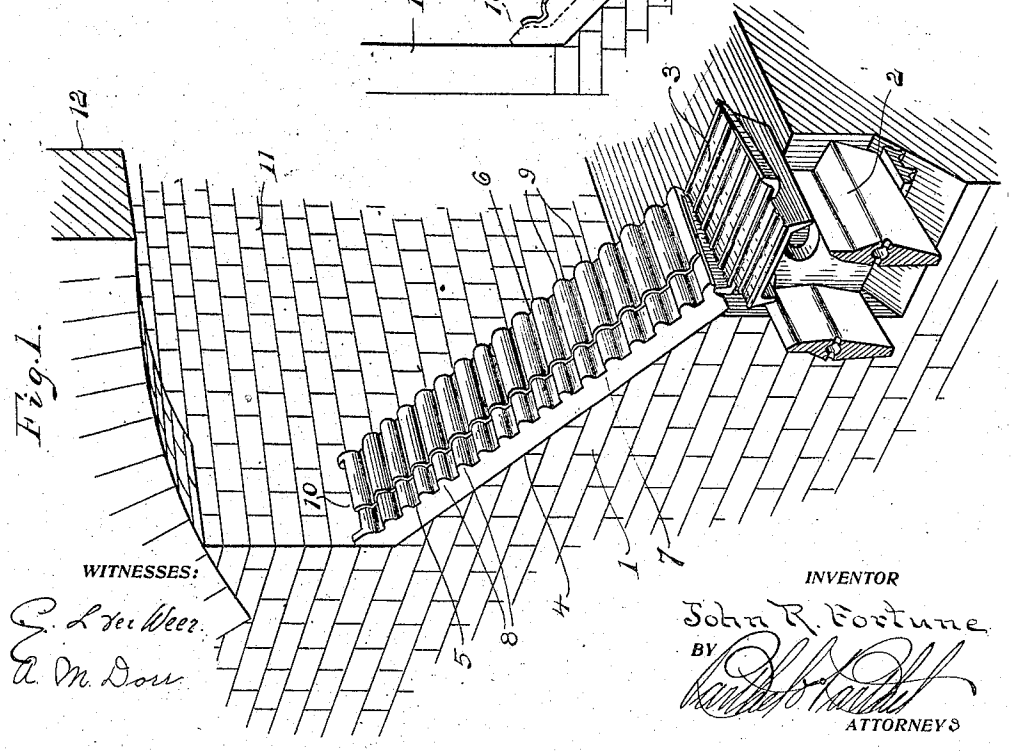

Fig. 1.

WITNESSES:

E. L. ver Weer.

A. M. Dow

INVENTOR

John R. Fortune

BY

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN R. FORTUNE, OF DETROIT, MICHIGAN, ASSIGNOR TO MURPHY IRON WORKS, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

PROTECTING-CAP FOR FURNACE BRIDGE-WALLS.

941,569. Specification of Letters Patent. Patented Nov. 30, 1909.

Application filed March 18, 1909. Serial No. 484,311.

To all whom it may concern.

Be it known that I, JOHN R. FORTUNE, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Protecting-Caps for Furnace Bridge-Walls, of which the following is a specification, reference being had therein to the accompanying drawings.

In furnaces where there is a bridge wall at the rear of the grate bars with its top in the plane of said grates and especially in smoke consuming furnaces having inclined grates and a correspondingly inclined wall adjacent to the rear end of said grates, it is found that the extreme heat generated within the furnace causes the clinkers or other residue from the fuel to melt and adhere to the top of the wall, soon choking the furnace and when removed, tearing away parts of the wall, thus necessitating frequent repair.

The object of this invention is to provide simple and efficient means for protecting such walls and so constructing said means as to adapt the same to different sizes and constructions of furnaces.

To this end the invention consists in the construction as hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings in which:—

Figure 1 is a perspective detail showing a portion of the interior of a furnace with the protecting cap embodying this invention in place upon its inclined bridge wall. Fig. 2 is a side elevation of two caps showing the same in place; and Fig. 3 is an enlarged transverse section of the same on line *x*—*x* Fig. 2.

As shown in the drawings 1 is an inclined bridge wall formed of fire brick, the top of which extends substantially in the plane of the upper edges of inclined grate bars of the ordinary arrangement and construction, which bars are not shown in the drawings, but are adapted to be supported at their lower ends upon the grate bearer 2 which is supported at one end in the center of the bridge wall, said wall being formed with the inclined upper edges extending downward from each side of the furnace toward said bearer. Resting upon the end of the bearer and the adjacent wall, is a shield 3, the construction and arrangement of the wall, bearer and shield all being old and well known.

4 represents the cap embodying the invention, and it consists of two plates 5 and 6 having a downwardly extending flanged edge 7, and the plate 5 having such a flange at both edges. The top of the plate 5 is corrugated or formed with transverse ribs 8 and the plate 6 is formed with corresponding hollow ribs 9 having an internal diameter which is such that they fit over the ribs 8 and thus the plate 6 is adapted to overlap at one edge and lie upon the plate 5 so that the over all width of the structure may be varied to fit different thicknesses of wall to which the device may be applied by sliding the plate 6 upon the plate 5. At their upper ends the plates 5 and 6 are cut away to form an opening 10 for the escape of air from the channels formed at the lower side of the plates by their downwardly extending flanges, the air entering freely into said channels at the lower end of the plates when the device is in place upon its bridge wall. The lower ends of the plates are preferably formed to engage and rest upon the shield 3 and the upper ends of the plate flanges are formed to engage the side wall 11 of the furnace from which side wall the furnace arch 12 springs across to the opposite side wall at a short distance above the upper ends of the bridge wall.

The cap is placed upon the bridge wall with one end engaging the furnace side wall and its flanges resting upon the top of the wall. It is held in this position by the grate bars (not shown) which engage it along one side. When so placed upon the wall the flanges form air passages at the lower side of the plate for air which may freely enter at the lower end of the cap between the wall and the shield 3, and, passing through the passages, cools the plate and passes out through the opening 10 at the upper end of the cap. The cap is thus cooled and air is also conducted to the side wall of the furnace where it mixes with the gases to aid combustion.

By forming the cap with the ribs or corrugation, the ashes and other residue from the coal collect upon the cap and is held by the ribs, forming a protecting covering for

the plates so that they will not be burned out by the flames coming in direct contact therewith, but this residue from the fuel will not adhere to the plate because said plate is kept comparatively cool by the air passing beneath the same.

What I claim as my invention is:—

1. A protecting cap for furnace bridge walls consisting of a plate formed with a longitudinal air channel at its lower side and a second plate with a longitudinal air channel at its lower side and overlapping the first plate at one edge and adjustable thereon to vary the width of the cap.

2. A protecting cap for furnace bridge walls consisting of a plate having downwardly extending flanges at each edge to form a longitudinal channel at the lower side of the said plate, a second plate having a downwardly extending flange at one edge and overlapping the first plate at its opposite edge and adjustable thereon.

3. A protecting cap for furnace bridge walls consisting of a plate formed with transverse ribs, a second plate formed with concavo-convex ribs to fit over the ribs of the first plate and adjustable thereon to vary the width of the cap.

4. In a smoke consuming furnace, the combination with an inclined bridge wall, a side wall at the end of the bridge wall, a grate bearer supported at one end upon the bridge wall, and a grate-bearer shield over the bearer at the lower end of the bridge wall; of a protecting cap for the bridge wall comprising a top plate and downwardly extending flanges to form a longitudinal air passage between the top of the bridge wall and the plate, the upper ends of the flanges being adapted to engage the side wall of the furnace and the plate between said flanges being cut away to form an opening for the escape of the air from said passage, adjacent to said side wall, and the lower end of the top plate being adapted to engage one edge of the shield.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN R. FORTUNE.

Witnesses:
L. O. Gordon,
Rose M. Conrad.