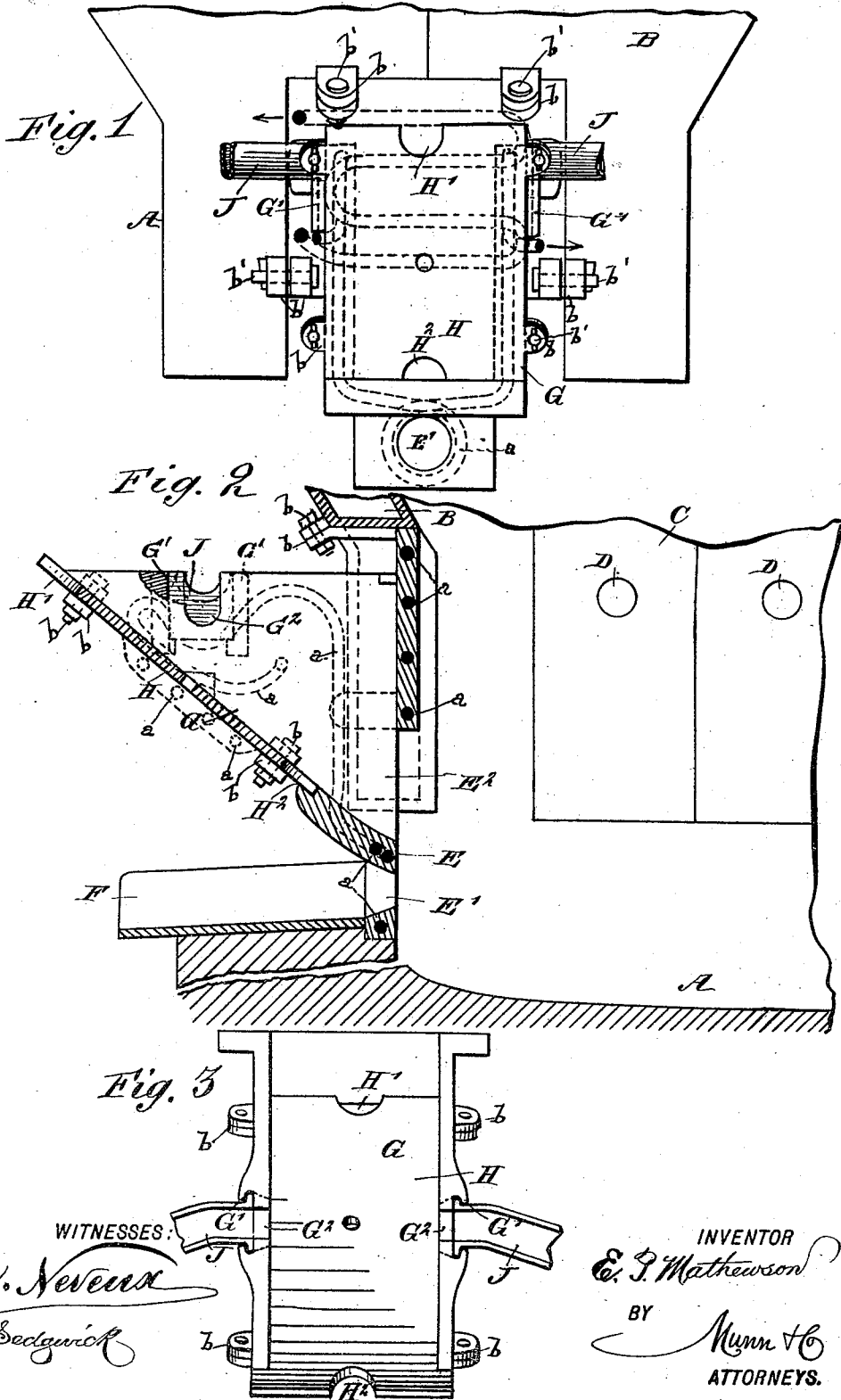


(No Model.)

E. P. MATHEWSON.
FURNACE TAP.

No. 515,244.

Patented Feb. 20, 1894.



UNITED STATES PATENT OFFICE.

EDWARD PAYSON MATHEWSON, OF PUEBLO, COLORADO.

FURNACE-TAP.

SPECIFICATION forming part of Letters Patent No. 515,244, dated February 20, 1894.

Application filed June 21, 1893. Serial No. 478,334. (No model.)

To all whom it may concern:

Be it known that I, EDWARD PAYSON MATHEWSON, of Pueblo, in the county of Pueblo and State of Colorado, have invented certain new and useful Improvements in Furnace-Taps, of which the following is a full, clear, and exact description.

The invention relates to furnace taps, such as shown and described in the application for Letters Patent of the United States, Serial No. 451,512, filed by me November 10, 1892, and allowed January 25, 1893.

The object of the invention is to provide certain new and useful improvements in furnace taps, whereby the operator in charge is permitted to drive an agitating bar into the molten metal contained in the hearth or crucible of the furnace, without stopping the blast or otherwise interfering with the regular process of smelting.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement as applied. Fig. 2 is a cross section of the same; and Fig. 3 is a plan view of the slag discharge casing.

The furnace on which the improvement is applied is of the usual construction and is provided with the hearth or crucible A on which is mounted a bosh B formed of a series of water-cooled sections C and with the tuyere openings D, as plainly shown in Fig. 2.

On the front of the furnace is arranged a casing E formed with a matte hole E' adapted to discharge the matte into the trough F extending on the outside of the furnace, as illustrated in the said Fig. 2, so as to carry or guide the matte to a suitable receptacle or channel. Above the matte hole E' is a slag hole E² through which passes the slag into the casing G formed integral with and arranged on the front of the casing E above the trough F, the said casing G being formed with an inclined bottom or front plate H bolted to the sides of the casing G as plainly shown

in Figs. 1 and 2. Such inclination of the bottom H, not only reduces the cubical capacity of the casing as much as practicable, but also allows due freedom of access to the matte hole, E', and trough, F. On the front plate H and at the upper and lower ends are arranged openings H' and H² usually closed or filled with cold slag or clay, adapted to be easily broken by a bar or other suitable tool, which may be driven through such openings, or notches, and the slag hole, E², into the molten metal on the furnace hearth. The bar is however most advantageously used at the top of the casing, which is open for that purpose. On the sides of the casing G are arranged vertically-disposed guideways G' adapted to support the slag discharge spouts J registering at their upper inner ends with the notches or recesses formed in the sides of the casing G. The slag discharge spouts J discharge the slag to the sides of the furnace and are vertically-adjustable in the guideways G'. The adjustment is effected by hand, and the spouts are held or supported at any desired height by means of props resting on abutments or ledges of the casing. It will be seen that by this arrangement the operator can, at any time, conveniently drive the bar into the molten metal contained in the crucible of the furnace, without stopping the blast or interfering in any manner with the regular process of smelting.

It is understood that the slag passing through the hole E² rises in the casing G to be finally discharged through the openings G² into the spouts J to be carried to one or both sides of the furnace.

The front plate H may have a water cooled pipe cast as indicated by full and dotted lines in Figs. 1 and 2, a pipe, a, is cast in the casing to provide for circulation of water for cooling the casing. The latter is attached to the furnace front, and its sides and bottom are also connected by means of perforated lugs, b, and bolts, b', which pass through the latter, as shown.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a furnace having a slag-discharge hole above the matte hole, of

a slag-discharge casing which is attached to the furnace exteriorly and whose bottom joins the furnace front at a point between the matte and slag holes, as shown and described.

5 2. The combination, with a furnace of the character described, the same having a slag hole above the matte hole, of a casing attached to the furnace front and covering the slag but not the matte hole, and having its
10 top open to allow introduction of a bar through the slag hole, as shown and described.

3. The combination with the furnace of the character described, of the detachable slag-discharge casing composed of side walls and
15 an upwardly-inclined front plate which is detachably connected with said side walls, as shown and described.

4. The combination with the furnace having a slag hole above the matte-discharge

hole, of a casing which is attached to the furnace, its front or bottom joining the furnace front at a point between the matte and slag holes, and being thence inclined upward, as shown and described, for the purpose specified.

25 5. A furnace tap comprising a casing fastened to the front of the furnace and provided with a matte hole and a slag discharge hole, a slag casing arranged over the said matte hole in front of the first named casing, and slag spouts
30 arranged on the sides of the said slag casing, and adapted for vertical adjustment in guides substantially as shown and described.

EDWARD PAYSON MATHEWSON.

Witnesses:

WM. H. SPEAIGHT,
W. H. HOWARD.