

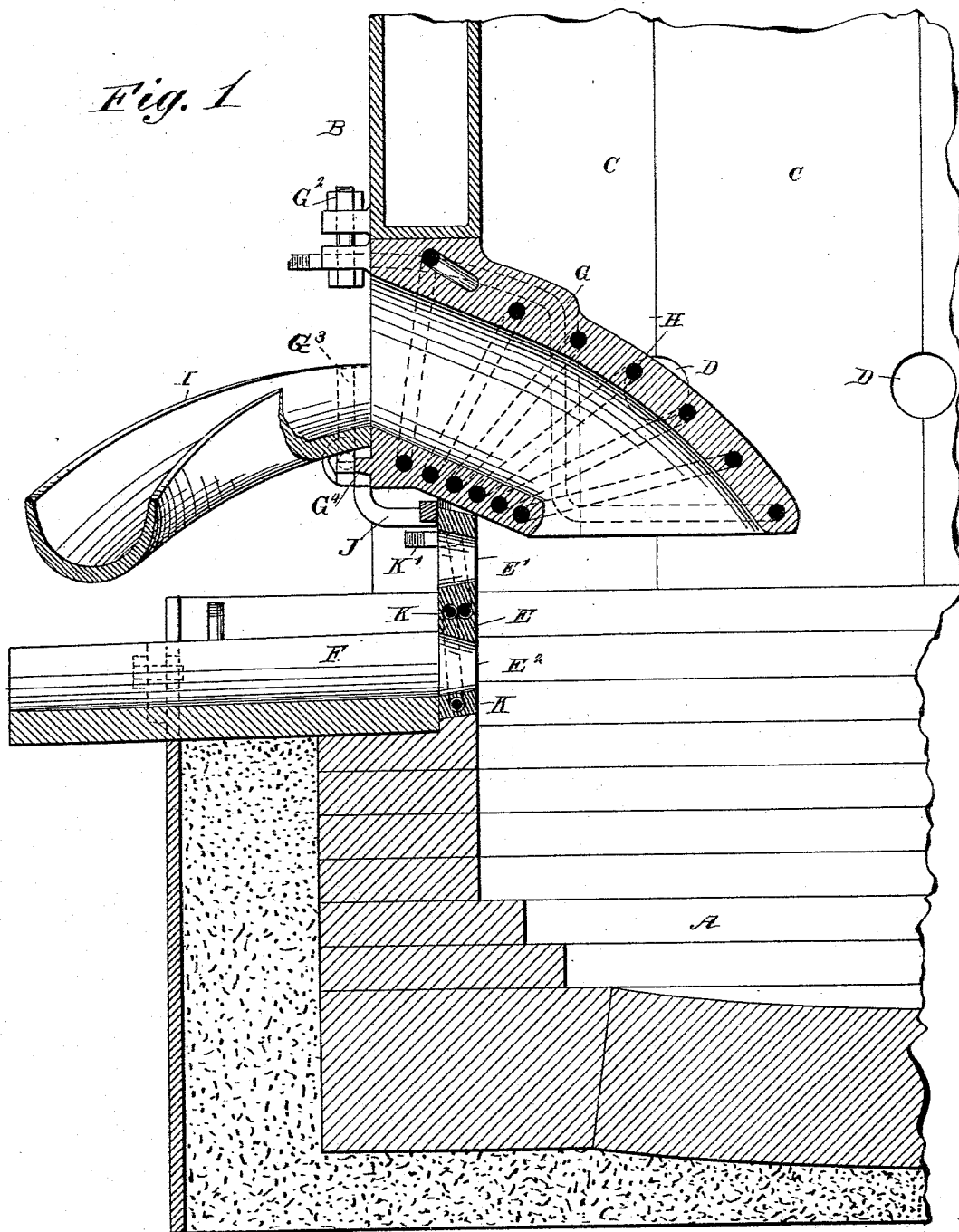
(No Model.)

3 Sheets—Sheet 1.

E. P. MATHEWSON.
FURNACE TAP.

No. 511,090.

Patented Dec. 19, 1893.



WITNESSES:

C. Neveu
C. Pedgwick

INVENTOR

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(No Model.)

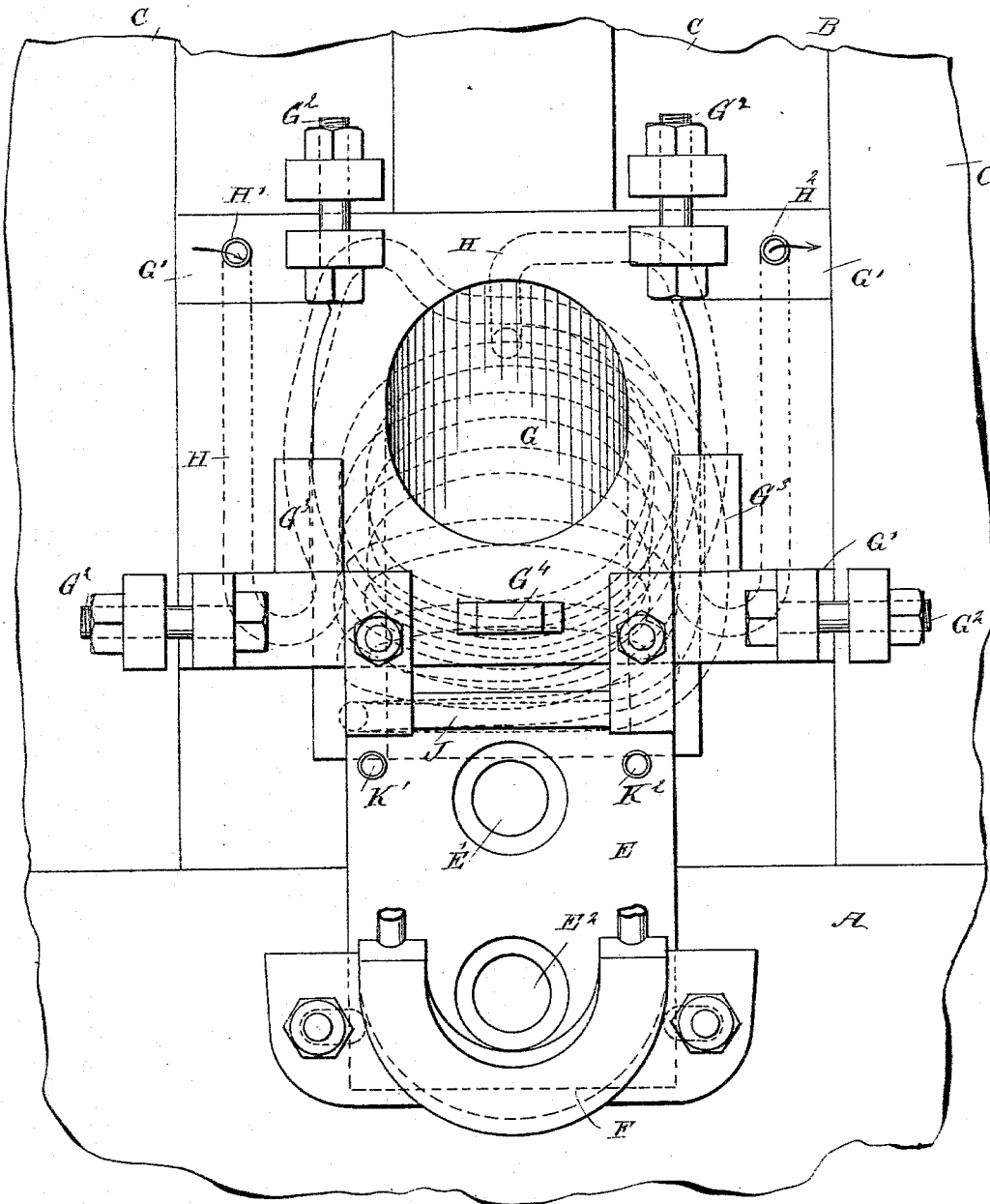
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Fig. 2.



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Fig. 3

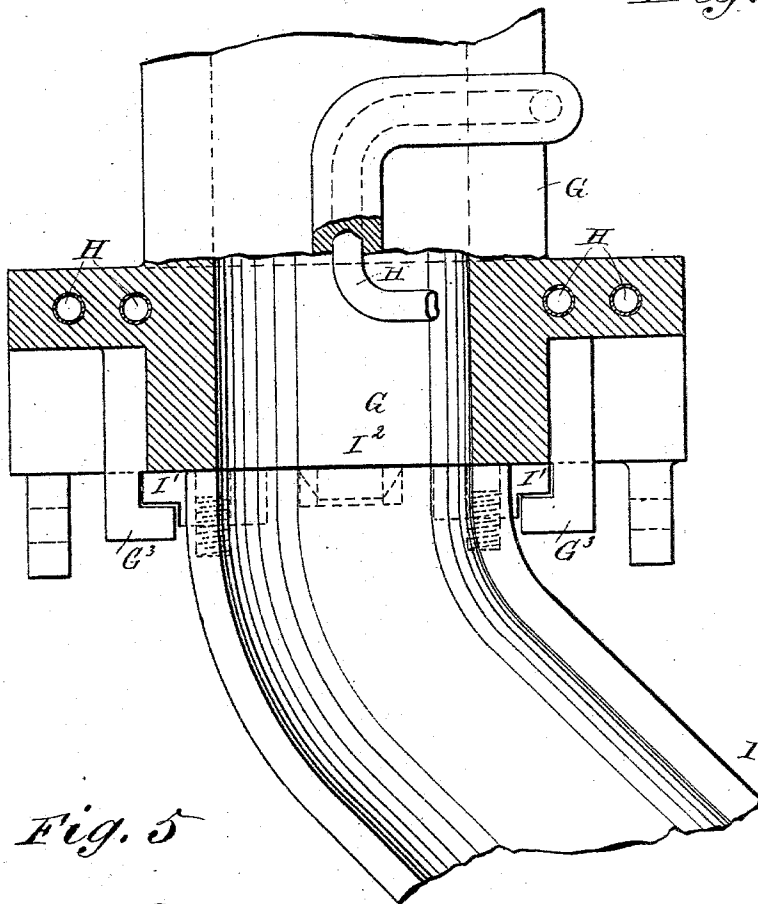


Fig. 5

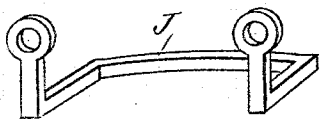
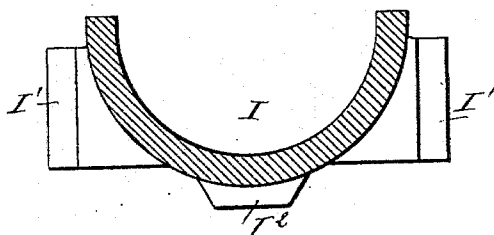


Fig. 4



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UNITED STATES PATENT OFFICE.

EDWARD PAYSON MATHEWSON, OF PUEBLO, COLORADO.

FURNACE-TAP.

SPECIFICATION forming part of Letters Patent No. 511,090, dated December 19, 1893.

Application filed April 5, 1893. Serial No. 469,194. (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 a new and Improved Furnace-Tap, of which the following is a full, clear, and exact description.

The invention relates to furnace taps, such as shown and described in the Letters Patent of the United States No. 483,936, granted to me October 4, 1892.

The object of the invention is to provide a new and improved furnace tap, which is simple and durable in construction, and arranged to conveniently separate and quickly run off the slag at all times.

The invention consists of a water-cooled tube adapted to extend into the furnace to pass into the molten slag nearly to the matte level, the outer end of the said tube being adapted to discharge into a slag spout arranged on the outside of the furnace.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter 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 sectional side elevation of the improvement. Fig. 2 is an enlarged front elevation of the same with the slag spout removed. Fig. 3 is a sectional plan view of the improvement. Fig. 4 is a sectional front elevation of the slag spout; and Fig. 5 is a perspective view of a brace for the slag spout.

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 the bosh B formed of a series of water-cooled sections C and with the tuyere openings D, as is plainly illustrated in the drawings.

On the front of the furnace is arranged a matte tap jacket E, water-cooled, and formed with two holes E' and E², of which the hole E' is located above the hole E² and forms an emergency tap hole, while the lower one E² is the regular matte tap hole. Both holes E' and E² are adapted to discharge the matte into a spout F extending on the outside of the furnace. Above the matte tap jacket E

is arranged a tube G extending into the interior of the furnace to within a short distance of the matte level, as indicated in Fig. 1, the said tube being inclined outward and upward, as shown, and the outer end being about flush with the outer surface of the bosh B, in one section of which the said tube is set. The tube G is formed or provided in its wall with a water-cooling pipe H, extending, at its ends H' and H² to the outside, into the flanges G' formed on the outer end of the tube G, and connected by bolts G² with the adjacent bosh sections C, to securely hold the tube in place. Water is introduced through the end H', to circulate in the tube H, so as to cool the tube, the hot water being discharged at the end H². The outer end of the tube G, is provided with vertically disposed guideways G³ engaged by side flanges I' formed on the slag spout I extending forwardly and downwardly and curved to one side to discharge the slag to one side of the matte discharged by the straight spout F. The spout I is formed at the under side near the inner end with a lug I², adapted to rest on a lug G⁴, formed on the front edge of the tube G. See Figs. 1 and 2. When the spout I is in this position the inner upper surface registers with the outer opening of the tube G, as illustrated in Fig. 1. When it is desired to raise the inner upper end of the spout I, according to the height of the slag in the furnace caused by the variation in the blast pressure, then the operator can raise the spout I in its guides G³ and place auxiliary blocks or wedges between the now separated lugs I² and G⁴ to hold the spout at the proper height. It will be seen that by this water-cooled slag tube G, the slag can, at all times, run out of the furnace into the spout I, to be discharged to one side of the furnace.

The pressure of the blast and the weight of the charge in the furnace, force the molten slag readily up through the tube G to the spout I.

A brace J is shown in detail in Fig. 5, is bolted to the front of the tube G and rests with its rear end on the front upper end of the matte tap jacket E to hold the latter in place.

The matte tap jacket is water-cooled and is for this purpose provided with a water-cool-

ing pipe K having its outer ends K' and K² connected with a suitable water-supply and water-discharge respectively.

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

1. A furnace tap provided with a water-cooled tube extending into the furnace to pass into the molten slag nearly to the matte level, the outer end of the said tube discharging on the outside of the furnace, substantially as shown and described.

2. A furnace tap provided with a water-cooled slag discharging tube arranged in one side of the bosh and extending inward and downward, the inner end being arranged to pass into the molten slag to within a short distance of the matte level, substantially as shown and described.

3. A furnace tap provided with a water-cooled slag discharging tube arranged in one side of the bosh and extending inward and downward, the inner end being arranged to pass into the molten slag to within a short distance of the matte level, and a spout arranged on the outside of the said tube and

into which the outer end of the tube discharges, substantially as shown and described.

4. A furnace tap comprising a water-cooled matte tap jacket formed with an emergency tap hole, a matte tap hole, and a water-cooled slag discharging tube arranged over the said jacket and extending inward and downward to pass into the molten slag nearly to the matte level, substantially as shown and described.

5. A furnace tap comprising a water-cooled matte tap jacket formed with an emergency tap hole a matte tap hole, a water-cooled slag discharging tube arranged over the said jacket and extending inward and downward to pass into the molten slag nearly to the matte level, and a slag discharge spout held adjustably on the outer end of the said slag discharge tube, substantially as shown and described.

EDWARD PAYSON MATHEWSON.

Witnesses:

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WILLIAM J. HAMILTON.