

J. LAWSON.
FURNACE COOLING JACKET.
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951,647.

Patented Mar. 8, 1910.

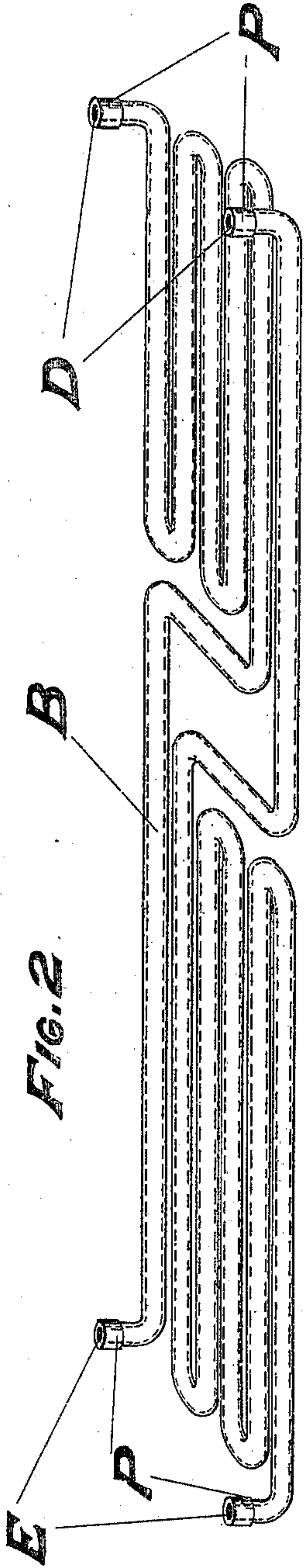


FIG. 2

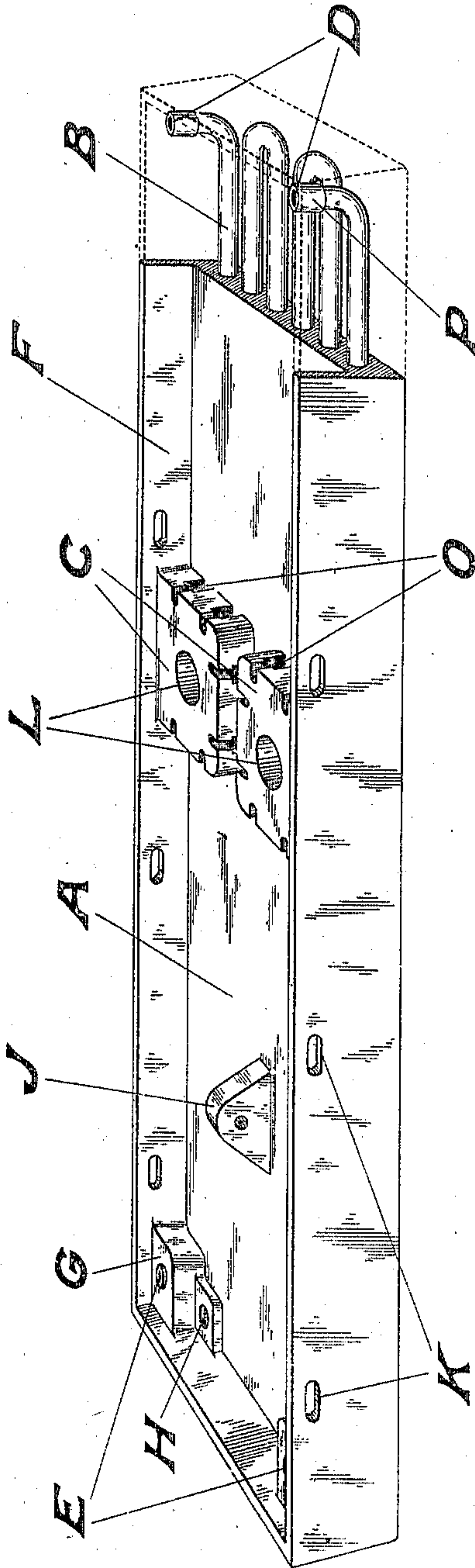


FIG. 1

WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN LAWSON, OF COPPER CLIFF, ONTARIO, CANADA, ASSIGNOR TO INTERNATIONAL NICKEL COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

FURNACE-COOLING JACKET.

951,647.

Specification of Letters Patent.

Patented Mar. 8, 1910.

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To all whom it may concern:

Be it known that I, JOHN LAWSON, of Copper Cliff, Ontario, Canada, have invented a new and useful Improvement in Furnace-Cooling Jackets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a perspective view of a jacket constructed in accordance with my invention; and Fig. 2 is a perspective view of the pipe system around which the casting is formed.

15 The object of my invention is to provide an improved jacket for blast furnaces, particularly for furnaces wherein a highly corrosive matte is produced; or furnaces wherein the jacket cooling water contains a percentage of acid or corrosive substance.

20 In furnaces producing a corrosive matte, the tendency of the matte is to scour or cut out the ordinary steel plate jackets, producing perforations and causing freezing or disastrous explosions from escaping water. In cases where the cooling water contains corrosive acids or chemicals, the inner surfaces of the ordinary steel jacket form a heavy scale, which lodges in the lower portion of the jacket and allows the plate to burn through in this portion on account of insufficient cooling thereof.

30 My invention is designed to overcome these difficulties, and reduce the liability to explosions, while largely preventing scale accumulation.

It is also designed to provide a jacket which can be cheaply and easily made.

40 In the drawings A indicates the cast iron body of the jacket, which is shown in Fig. 1 as lying on its face or inner side, partly broken away to show the piping. The particular jacket shown in this case is a twyer jacket; and in jackets without twyers the piping and general arrangement may be changed and simplified. In the case of the twyer jacket the cooling pipe, which is preferably ordinary welded water pipe, is preferably bent as shown in Fig. 2, D being the water inlets of the two pipes, and E being the water outlets. These inlets and outlets preferably terminate in pipe collars or fittings, which are embedded in bosses G cast integrally with the plate or jacket. For
55 connecting the twyers I preferably provide

the casting with faced bosses C having cored recesses O for the twyer connecting bolts. These recesses are enlarged in the portions next to the plate in order to receive the bolt heads or nuts.

H are shallower bosses having holes to receive jacket bolts, which maintain the jacket in proper alinement.

J is a cast lug on the jacket, used for hoisting it into position. The jacket is shown as provided with an integral cast flange F which stiffens it; and this flange is preferably provided with slots or holes K by which the adjacent jackets may be bolted together.

L, L are the twyer openings.

The number of inlets and outlets; or, in other words, the number of individual pipes, cast into the jacket may be varied according to the size of the jacket and its position in the furnace.

In making the jacket, the pipes are set in the mold, clamped in any suitable manner, and the jacket is cast around them, the coupling ends of the inlets and outlets being preferably embedded in the bosses at the corners of the plates as shown.

The advantages of my invention result from decrease in the liability of explosion and reducing the collection of scale. The scouring action of the small concentrated streams of water will tend to scour out scale accumulations, while small obstructions may be blown out with compressed air. Any accidental failure of the water supply will result in no more serious damage than the cutting away of the portion of the metal covering the cooling pipes, or the possible cracking of the jacket, if the water stoppage is prolonged. In case of complete obstruction in any of the pipes, or the development of a thick coating from any cause, the water may be shut off from this jacket, and it will perform its duty while the furnace is being banked for the insulation of a new jacket.

The jacket may be easily and cheaply made, and is found to be highly efficient.

Variations may be made in the form, size of the jacket, and its parts, without departing from my invention.

I claim:—

1. A blast furnace water jacket, comprising pipes embedded in a casting having a flange at its periphery, the ends of the pipes

being within projections or thickened portions of the casting; substantially as described.

2. A blast furnace water jacket having a plurality of pipes embedded in a casting, the pipes having their open ends terminating at the corners of the casting and embedded within thickened portions or projections thereof; substantially as described.

3. A blast furnace water jacket having a plurality of pipes embedded in a casting, the pipes having their open ends terminating at the corners of the casting and embedded within thickened portions or projections thereof, said casting having a circumferential rim provided with holes or slots; substantially as described.

4. A twyer cooling jacket comprising bent water pipes embedded in a casting, said

casting having thickened portions for the twyer holes, the thickened portions having bolt openings; substantially as described.

5. A blast furnace water jacket comprising a casting having a bent pipe cast therein, the casting having stiffening and connecting flanges at its edges, and also having projections within which are the ends of the pipes, and also provided with bosses for the twyer connections, said bosses having twyer openings therethrough; substantially as described.

In testimony whereof, I have hereunto set my hand.

JOHN LAWSON.

Witnesses:

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F. C. AINNERLY.