

No. 688,186.

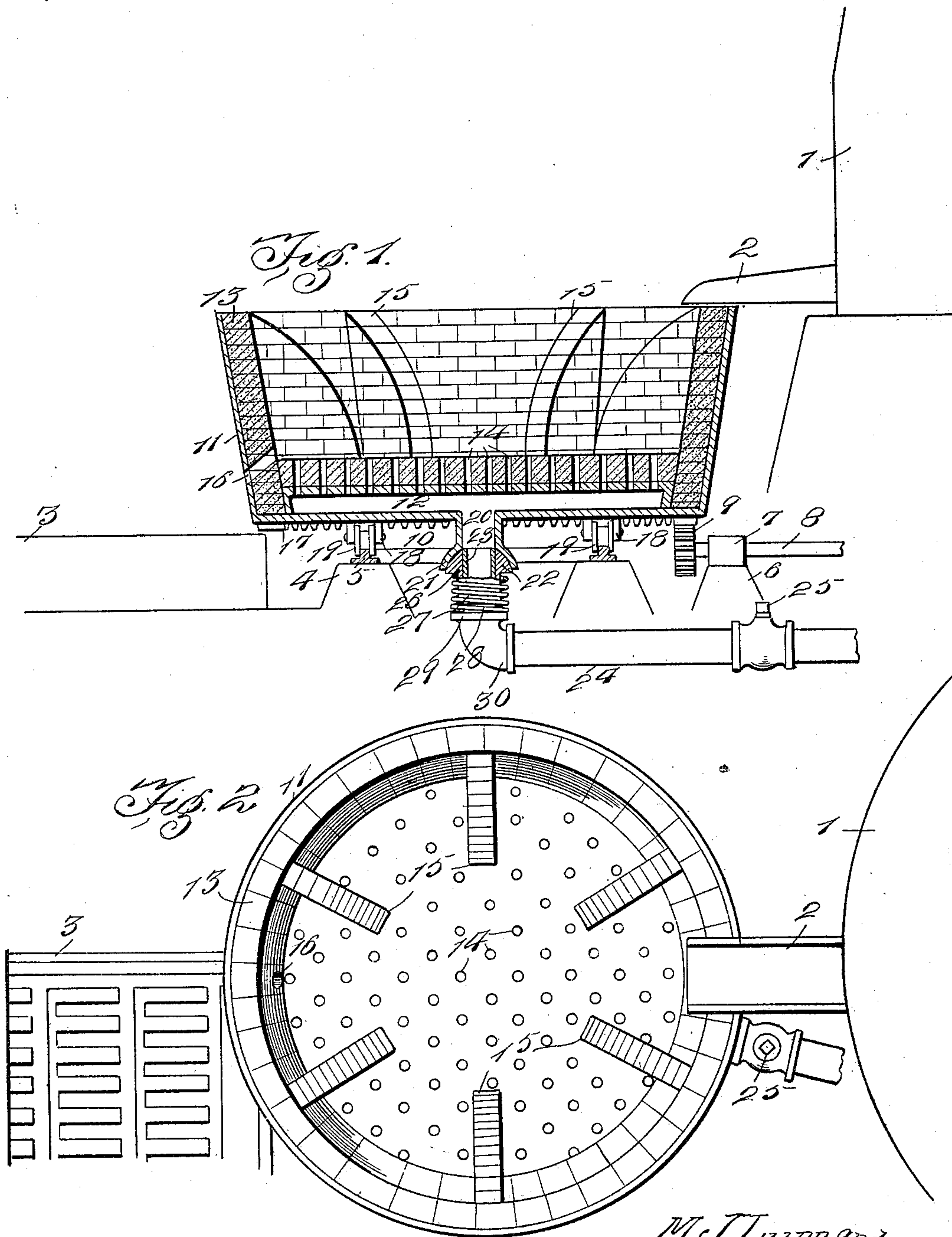
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M. J. LYNN & J. T. FOLEY.

METAL PURIFYING ATTACHMENT FOR BLAST FURNACES.

(Application filed Feb. 27, 1901.)

(No Model.)



Witnesses

Olive M. Simpson  
Chas. S. Hoyer.

M. J. Lynn and  
J. T. Foley Inventors

By C. A. Snow & Co.  
Attorneys



# UNITED STATES PATENT OFFICE.

MICHAEL J. LYNN AND JOHN T. FOLEY, OF CEDARTOWN, GEORGIA.

METAL-PURIFYING ATTACHMENT FOR BLAST-FURNACES.

SPECIFICATION forming part of Letters Patent No. 688,186, dated December 3, 1901.

Application filed February 27, 1901. Serial No. 49,124. (No model.)

*To all whom it may concern:*

Be it known that we, MICHAEL J. LYNN and JOHN T. FOLEY, citizens of the United States, residing at Cedartown, in the county of Polk and State of Georgia, have invented a new and useful Metal-Purifying Attachment for Blast-Furnaces, of which the following is a specification.

This invention relates to a metal-purifying attachment for blast-furnaces; and the object of the same is to provide a simple and effective device for increasing and improving the output of an iron blast-furnace by permitting the latter to be run more regularly and the molded iron produced each day be, as a consequence, the full capacity of the furnace, to cause the entire output of the furnace to be produced in good marketable iron, and adapting the furnace for use with ore containing a large percentage of phosphorus as well as ore of a desirable quality and arrive at the increased result without intermediate treatment or additional attachments, the improved device being easily applied at a comparatively small expense.

The invention consists in the construction and arrangement of the several parts which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a view in sectional elevation showing the improved attachment in operative position. Fig. 2 is a top plan view of the parts shown by Fig. 1.

Similar numerals are employed to indicate corresponding parts in the views.

The numeral 1 designates a blast-furnace provided with a spout 2, and 3 molds of any suitable form and nature. Between the furnace and the molds is an annular support 4, having a circular track 5 thereon, and nearer to the furnace is a suitable upright or other analogous support 6, provided with a bearing 7 for a shaft 8, driven by any preferred power and controlled by any suitable devices, and on the end of said shaft near the upright or support 6 is a pinion 9. Located between the furnace and the molds is a rotatable receptacle 10, comprising a metallic outside shell or casing 11, with a bottom blast-receiving-chamber 12, the said shell or casing being lined with fire-brick 13 at the side and bot-

tom. The fire-brick bottom and the top of the blast-chamber are formed with a plurality of closely-arranged vertical openings 14 to establish communication between the blast-chamber and the containing portion of the receptacle. Extending radially into the receptacle are a series of fire-brick agitators 15, and at a suitable point an outlet-opening 16 is formed through the brick lining and the shell or casing to permit the contents of the receptacle to flow out to the molds after treatment, the said opening 16 being closable by any preferred means. The receptacle is flared toward its upper ends or top, and secured to the bottom thereof near the periphery of the same is an annular gear-rim 17, which meshes with the pinion 9, and through the said rim and pinion the receptacle is adapted to be rotated at any speed desired and found necessary. Inwardly a suitable distance from the rim 17 hangers 18 are secured at regular intervals and rotatably support grooved track-wheels 19, which engage the track 5 to provide a stable support for the receptacle and facilitate the revolution thereof.

Communication is had with the lower blast-chamber 12 by means of a central depending tubular neck 20, having a lower terminal socket 21 to removably receive a substantially hemispherical head 22 and movably mounted on the upwardly-projecting extremity 23 of a blast-pipe 24, running to any suitable point distant from the furnace and supplied with a controlling-valve 25. The lower portion of the head 22 is formed with a flange 26 and a depending member 27 over the extremity 23, the latter extending through the head, as shown, and surrounding the member 27 is a spring 28, which has its opposite extremities in contact with the flange 26 and the upper flange 29 of the union 30 of the blast-pipe to thereby maintain an air-tight joint between the head 22 and socket 21, but at the same time allow the receptacle to have an unretarded revolution.

In the operation of the device the blast is turned onto the receptacle 10 and the furnace is tapped and the molten metal therefrom runs into the receptacle 10, the latter being preferably large enough to hold one tapping or run-off of iron from the furnace. After or



while receiving its charge the receptacle is revolved, and during the revolution of said receptacle the molten metal therein is thoroughly agitated, and to increase the agitation  
 5 the movement of the receptacle is alternately reversed. This agitation of the metal results in a reliable purification by means of the blast distributed therethrough from the blast-chamber below, and it is possible to produce  
 10 a fully-purified mass, or the molten metal may be treated long enough to have the silica, phosphorus, and other impurities low. This is accomplished by regulating the speed of revolution of the receptacle and the blast, and  
 15 by thus preliminarily purifying the metal and producing it in such state in molds one step less from ore to finished iron or steel results, which is a great saving to the manufacturer, and if the metal is directly used for castings  
 20 it means stronger material in the castings. As before set forth, and an advantage that cannot be too strongly emphasized, all kinds of iron ore can be used.

It will be understood that the metal after  
 25 purification is run from the receptacle into the molds through the opening in said receptacle for the purpose, and, if desired, more than one of these openings may be provided.

The device is simple and may be easily and  
 30 readily applied in operative position.

Having thus described the invention, what is claimed as new is—

1. The combination with a furnace and blast-conveyer, of a horizontally-revoluble  
 35 receptacle having a bottom and a blast-receiving chamber below said bottom connected to said conveyer, the said bottom having a plurality of openings therethrough communicating with said chamber, the receptacle

also having a series of inwardly-projecting 40 radial wings above said bottom.

2. The combination with a furnace and blast-conveyer, of a horizontally-revoluble receptacle having an inner side and bottom  
 45 lining of fire-brick or the like, the lower portion of the receptacle being provided with a blast-receiving chamber having central communication with the blast-conveyer and the upper portion and bottom fire-brick lining  
 50 formed with a plurality of openings to establish blast communication with the body of the receptacle, the receptacle above the bottom lining having inwardly-projecting radially-arranged fire-brick agitators.

3. The combination with a furnace and  
 55 blast-conveyer, of a revoluble receptacle having an inner side and bottom lining of fire-brick, and an outlet-opening, the lower portion of the receptacle being provided with a blast-receiving chamber having central com-  
 60 munication with the blast-conveyer through the medium of a tubular socket-and-head connection, the upper portion of the chamber and the bottom lining having a plurality of open-  
 65 ings formed therein and the side of the receptacle-body provided with inwardly-projecting agitating wings of fire-brick, an annular gear-rim on the bottom of the receptacle, and a pinion engaging the said rim.

In testimony that we claim the foregoing as  
 70 our own we have hereto affixed our signatures in the presence of two witnesses.

MICHAEL J. LYNN.  
 JOHN T. FOLEY.

Witnesses:

R. B. BAKER,  
 W. M. GAY.