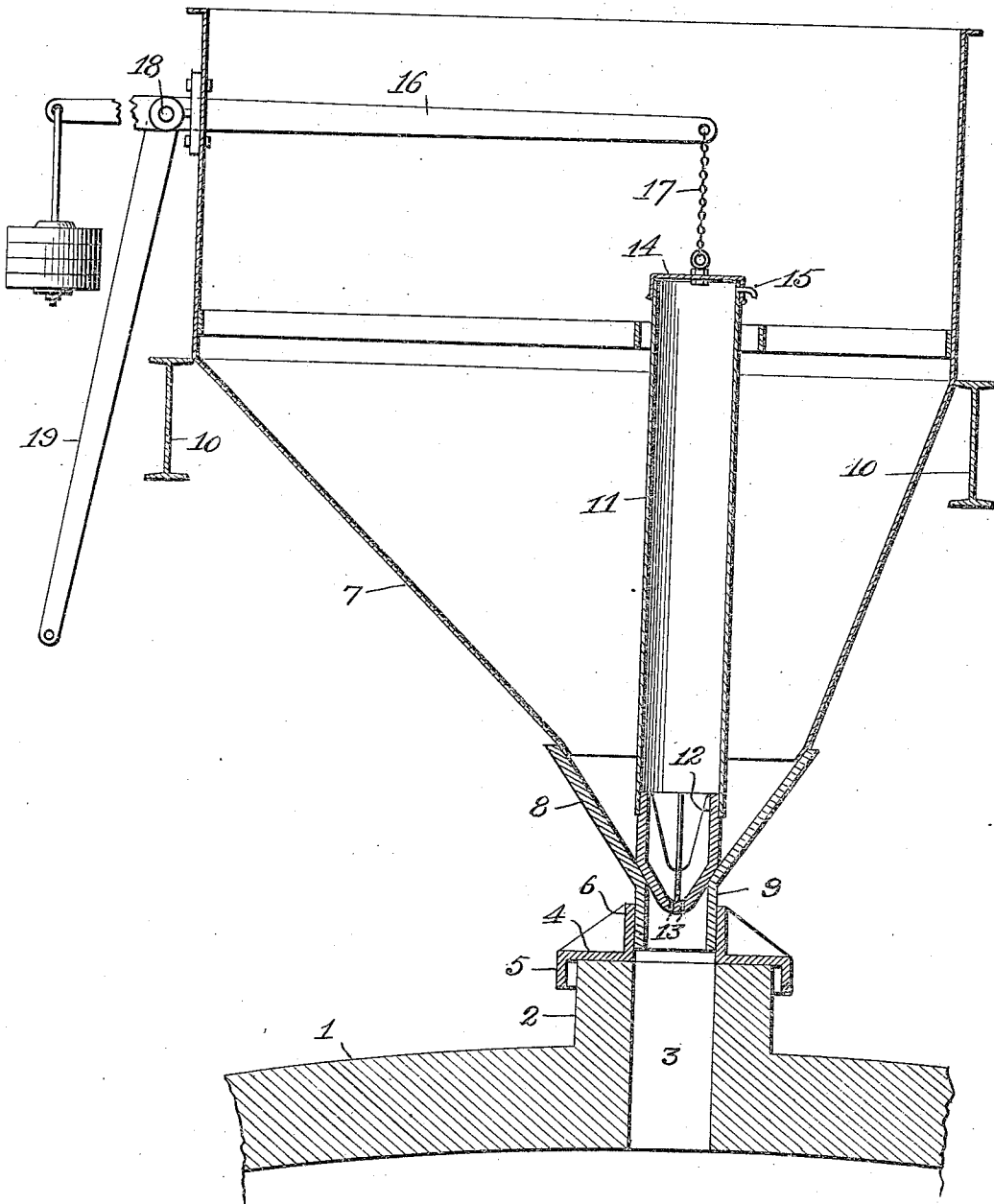


S. R. GARR.
 FEEDING DEVICE FOR REVERBERATORY FURNACES.
 APPLICATION FILED MAR. 26, 1910.

961,768.

Patented June 21, 1910.



Witnesses

Edwin L. Jewell
 S. R. Garr

Samuel Richard Garr

Inventor

By *Geo. W. H. H. H. H.*
 Attorney

UNITED STATES PATENT OFFICE.

SAMUEL RICHARD GARR, OF GARFIELD, UTAH.

FEEDING DEVICE FOR REVERBERATORY FURNACES.

961,768.

Specification of Letters Patent. Patented June 21, 1910.

Application filed March 26, 1910. Serial No. 551,689.

To all whom it may concern:

Be it known that I, SAMUEL RICHARD GARR, a citizen of the United States, residing at Garfield, in the county of Salt Lake and State of Utah, have invented new and useful Improvements in Feeding Devices for Reverberatory Furnaces, of which the following is a specification.

This invention relates to devices for feeding ore into a reverberatory furnace, and its object is to prevent loss of the ore when in a finely divided condition, and also to avoid impairing the draft by the introduction of undue quantities of air into the furnace.

A further object is to prevent the breaking of the connections between the feeding hopper and the roof of the furnace.

Incidentally, my invention prolongs the life of the furnace, because the fluxing constituents fed in with the ore tend to destroy the arch or roof of the furnace if permitted to leak out of the hopper.

To these ends, my invention consists in an improved hopper and valve, all as hereinafter set forth and particularly pointed out in the claims.

The accompanying drawing is a vertical section of a hopper equipped with my improved valve and connections.

The arch or roof 1 of the reverberatory furnace is provided with a short chimney 2 surrounding the feeding orifice 3. The chimney has a flat top on which rests an annular cast-iron plate 4 preferably having a downwardly turned peripheral rim 5 somewhat greater in diameter than the chimney, so that the plate is not rigidly confined, but ample provision is afforded for expansion or lateral movement of the furnace in any direction. The plate 4 is a flange on an upwardly extending tubular neck or sleeve 6 concentric with the central opening in said plate or flange and normally in alinement with the feeding orifice 3. The feed hopper 7 has a conical lower portion 8 of cast-iron which is provided with a spout 9 having a sliding fit in the sleeve 6, to provide for vertical expansion or movement of the furnace; the hopper being supported independently of the furnace by a suitable floor or framework indicated by the girders 10.

While this construction permits the utmost freedom of movement both laterally

and vertically within all probable limits, between the hopper and the furnace, and thus avoids any possibility of breaking of the connections, it also maintains a good tight joint at all times, so that leakage of the calcines or other fine ores is prevented, and moreover, air cannot gain entrance to the furnace and impair the draft, and thereby diminish the out-put of the furnace.

My improved gate or valve consists of a tubular plunger, preferably composed of a length of iron pipe 11 shod with a cast-iron conical point 12, which fits the conical lower portion 8 of the hopper to close the same. In the tip of the point 12 are a few small holes 13 to allow a small amount of air to enter the furnace and keep the point cool. The upper end of the plunger is closed by a cap 14, but just below the cap is an air inlet opening, preferably provided with a short downwardly turned pipe 15. The plunger can be lifted by any suitable mechanism, such, for instance, as the counter-weighted lever 16 connected to the plunger by a chain 17, and mounted on a rock shaft 18 which the attendant can rock by a handle 19, when he wishes to lift the valve, after a charge of ore has been dumped into the hopper.

It will be seen that my invention effectually prevents all leakage of the valuable calcines and the destructive fluxing materials from the hopper to the roof of the furnace, and that it also keeps the furnace tight when the valve is closed, the only air admitted being the minute quantity sucked in through the small holes in the tip of the plunger.

What I claim as my invention, is:—

1. The combination with a reverberatory furnace, of a feed hopper supported independently thereof, a short chimney on said furnace and a sleeve movable vertically on said hopper and having a flange resting on said chimney and permitting relative lateral movement of said hopper and furnace.
2. The combination with a reverberatory furnace, having a short chimney in its roof, of an upright sleeve having a flange resting on said chimney and provided with a downwardly turned rim of larger diameter than said chimney, and a hopper having a spout entering said sleeve with a sliding fit.

3. A feed hopper for a reverberatory furnace, and a tubular valve therefor having a closed lower end provided with air holes.

4. A feed hopper for a reverberatory furnace, and a valve comprising a tubular plunger having a conical point provided with air holes in its tip.

5. A feed hopper for a reverberatory furnace, and a valve comprising a length of pipe, a cap at its upper end, an air inlet be-

low said cap, and a conical point secured to the lower end of said pipe and provided with air holes in its tip.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL RICHARD GARR.

Witnesses:

JAMES HEGGIE,
GRANVILLE GRANT.