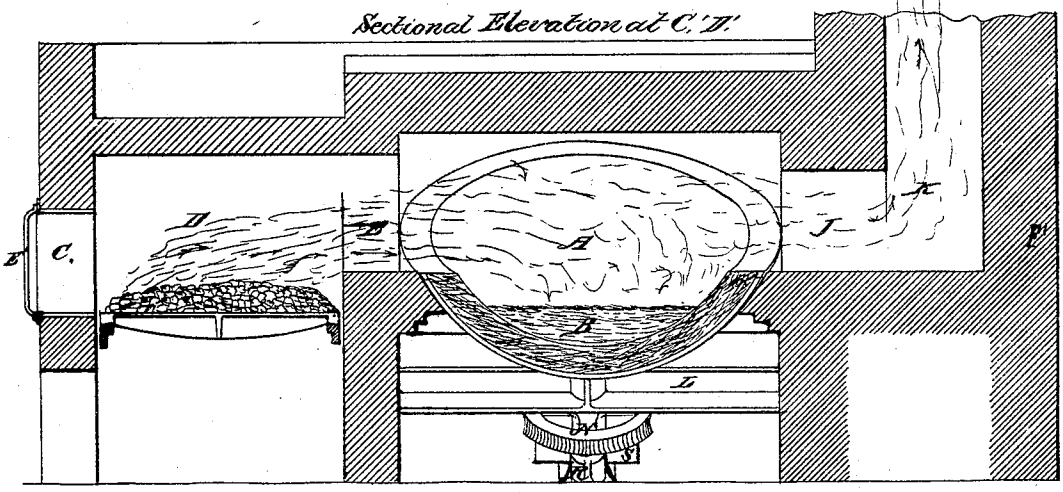
H. A. V. POST.

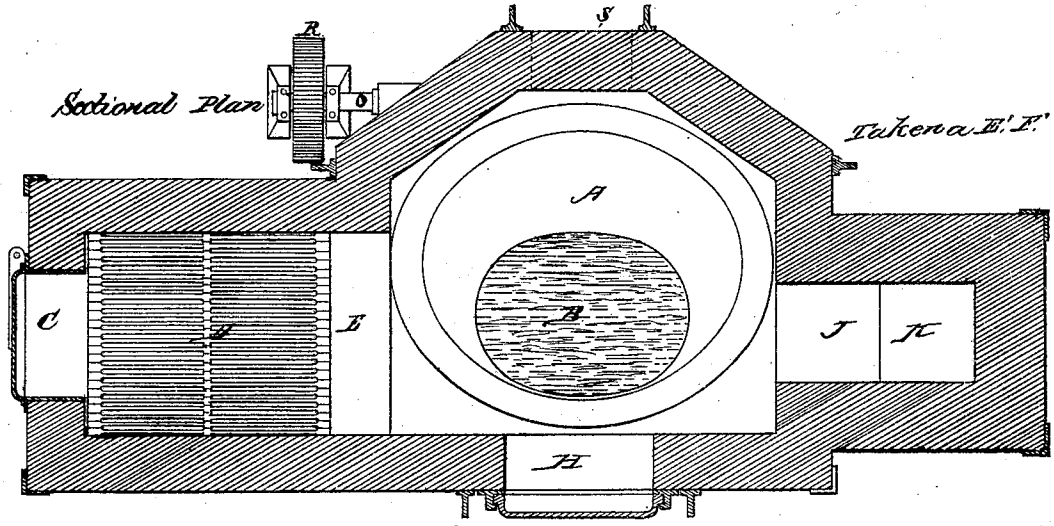
Improvement in Apparatus for Puddling and Melting Iron.

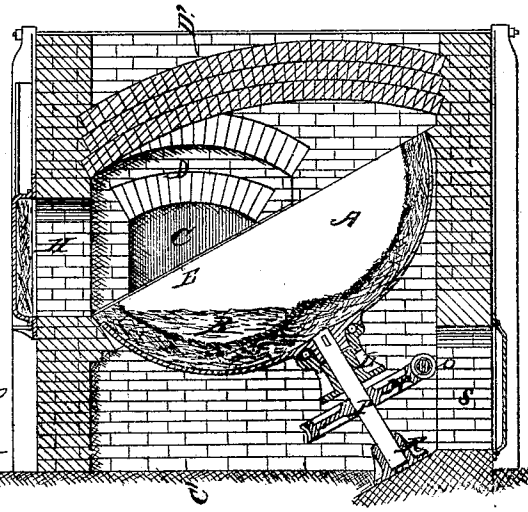
No. 130,241. Patented Aug. 6, 1872.

Sectional Elevation at C. F.



Sectional Plan Taken at E. F.





Witnesses.

James Gibson

Chas. E. Foote

Inventor.

H. A. V. Post.

UNITED STATES PATENT OFFICE.

HENRY A. V. POST, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR PUDDLING AND MELTING IRON.

Specification forming part of Letters Patent No. **130,241**, dated August 6, 1872.

Be it known that I, HENRY A. V. POST, of the city, county, and State of New York, have invented a new and useful Improvement in Apparatus for Puddling and Melting Iron; and I declare the following to be a full and accurate description thereof, reference being had to the accompanying drawing making part of this my description and specification.

The object of my invention is to so improve the rotary puddling-machine that all the difficulties now attending its use may be practically overcome and new uses added to it.

There are at present two forms of rotary puddling-machines known, in one of which a cylindrical hollow closed vessel is rotated on a horizontal axis, and in the other an open basin revolves on a vertical axis. In the cylindrical or spherical machine the heat is admitted through one of the axes of rotation, and passes out either through the opposite axis or returns through the same by which it was admitted, and which is divided for the purpose into two passages; but, as an incident to the fact that the machine revolves horizontally, it is necessary to open the cylinder or sphere to take out the puddle-ball through the trunnion, and in doing this the heat must be shut off and complicated mechanism be used to effect the purpose. In the machine in which the basin revolves on a vertical axis the melting metal will be merely carried round in the basin without being stirred or worked by the act of rotation; and it is necessary to use tools for puddling the iron, which may be fixed so as to arrest the movement of the mass, and so act upon it or be operated by workmen in the usual way; but in such a machine the puddle-ball can be removed, without disarranging the apparatus, simply by opening the furnace-door, as in the case of the ordinary furnace.

In my improved machine I obtain the advantages of both systems without encountering the disadvantage of either, and the principle upon which that result is effected is in revolving the basin upon an axis so much inclined from a perpendicular that melted metal will run down to the lower side of the basin as it revolves, and yet so far inclined from a horizontal that the uncovered or open basin will not spill out the charge. Under these circumstances the mass may be examined and the puddle-ball removed through a door similar to that used for these purposes in the ordinary puddling-furnace, without shutting off the heat or disarranging the apparatus by which the machine is operated.

In the accompanying drawing my machine is exhibited under three views, which explain themselves. C is the fire-door; D is the furnace; E is the bridge-wall; J and K are the uptake, all of which are similar to the corresponding parts in the ordinary puddling-furnace. Between the bridge-wall and the uptake is a chamber sufficiently large to contain the rotating puddling-machine, which should be of the size desired to contain a puddle-ball of the required dimensions in the lower part of it, as shown in the drawing. Five feet in diameter would be a good-sized machine. In the chamber the revolving puddling-machine A is set, and the bridge-wall may be built so as to overlap the edge of the basin, which is of cast-iron, and so protect it from the action of the flames from the furnace. The basin is set on the axis P, which is guided in a suitable manner to secure stability. The beam L, of iron, with a proper bearing on it, is a good arrangement; but there are many ways of supporting this shaft or basin, which will suggest themselves to any mechanic, equally good. N is a worm-wheel, driven by the tangent-screw O, which may be driven by the cog-wheel R, connected to any motor desired in the usual way. The basin is to be lined with any refractory substance which is used for puddling-furnaces. The door H opens directly upon the basin, and the melting iron, which is represented by B, is accessible just as it is in the ordinary puddling-furnace. The basin should revolve close to the brick-work all round it, so as to shut off the influx of air.

The mode of operation is very obvious from the examination of the drawing. The basin, charged with metal, is set in rotation when fusion commences, and, as in the other form of rotating puddling-machines on horizontal axes, the mass will flow down to the lower side of the basin and act as it does in them. The basin may be set with its axis at an angle about thirty degrees from the perpendicular; but the inclination may be increased, making the basin more concave to retain the puddle-ball, and the inclination of the axis may be made adjustable during action; and the basin

may be set so as to receive the flames at a different angle from the furnace, which, in that case, would be brought round more in the front of the basin.

I do not confine myself to any arrangement of the fire-chamber and flue, which may be made to suit the constructor, as this machine is suitable for steel-making with regenerating-furnaces; nor do I limit myself to any particular angle of inclination of the axis of the basin so long as it is inclined far enough from the perpendicular to cause fluid metal to flow to the lower side as the basin revolves, and far enough from the horizontal to permit the basin to be uncovered without spilling out the charge, and the ball to be examined without stopping the machine or shutting off the heat if desired to do so.

What I claim as my invention, and desire to secure by Letters Patent, is—

A puddling, melting, or decarbonizing machine in which the puddling, melting, or decarbonizing is done in an open basin revolving in a plane inclined to the horizon, substantially in the manner and for the purposes described.

H. A. V. POST.

Witnesses:
JAMES SIMSON,
CHAS. P. CHOATE.