J. SHARP.

Furnace.

No. 805. Patented June 23, 1838.

Fig. 2.

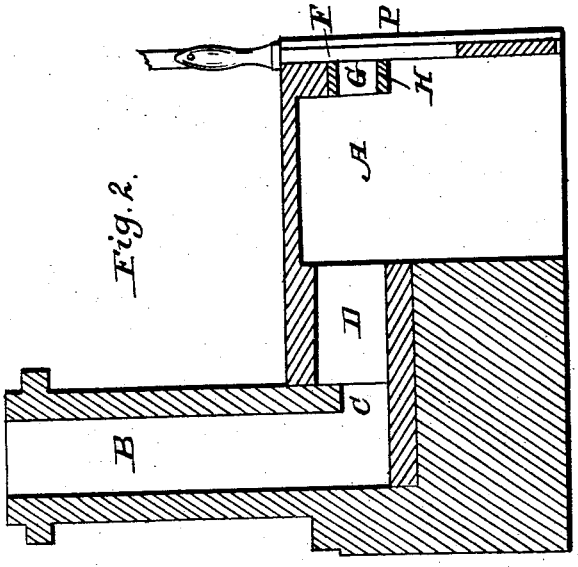
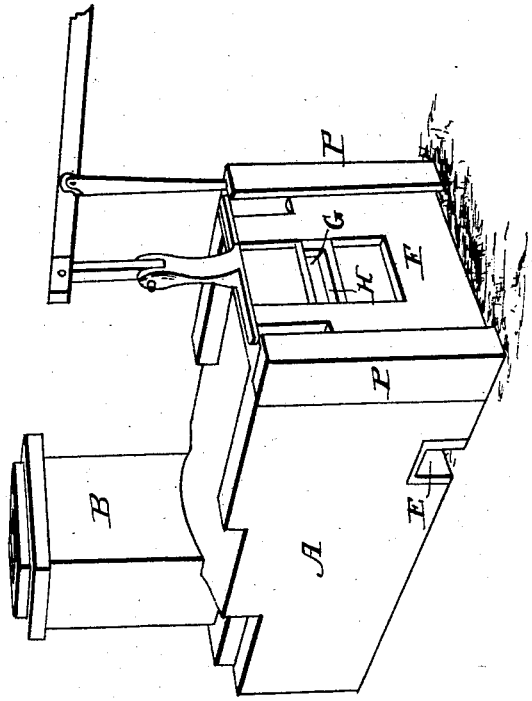


Fig. 1.



UNITED STATES PATENT OFFICE.

JAMES SHARP, OF LIVERPOOL, PENNSYLVANIA.

IMPROVEMENT IN FURNACES FOR REFINING IRON.

Specification forming part of Letters Patent No. **805**, dated June 23, 1838.

To all whom it may concern:

Be it known that I, JAMES SHARP, of Liverpool, York county, State of Pennsylvania, have invented a new and useful improvement, being a Furnace for Refining Iron, which is described as follows, reference being had to the annexed drawing of the same, making part of this specification.

A furnace, A, Figure 1, is constructed of brick or other suitable material, of sufficient size and strength for the purpose intended, at the rear end of which is constructed the chimney B; at the front the chamber of combustion, in which the charcoal is put and the iron to be melted for refining; at the bottom of the flue the throat C, and near the throat an arch, D, to contain the pigs of iron to be heated by the escape heat. The throat is contracted in size to arrest the heat and flame, in order to heat the pigs placed in the arch.

E is an opening to admit the blast.

At the two front corners of the furnace are secured to the walls by bolts two right-angular cast-iron plates, P P, containing channels to receive a sliding door, F, for regulating the heat, for securing the fire, and for protecting the forgeman's face; also to close the charging-door, said door being made open in the upper part, and raised or lowered by a lever.

The charging-door G is surrounded by a rectangular metallic frame laid upon a cross-bar of iron, H, let into the brick-work.

Operation: A refiner's fire is placed in the chamber of combustion. Then the furnace is charged in the usual manner with charcoal. A sufficient quantity of metal is then put in to make a bloom. The charcoal is ignited, and the blast is then applied. The melted iron is managed in the usual manner. The arch at the throat of the flue is charged with a sufficient quantity of pig metal to make a bloom; also, while the operation of melting the iron is going on, the pig metal in the arch is heated by the escape heat passing over it to the flue, which heat has heretofore been lost; and this metal is by this means partially heated, and when put into the melting-chamber it of course will not require so intense or continued degree of heat to melt it as in the case when not thus previously heated by the escape heat. The slide is raised or lowered by the forgeman to suit his views by means of the lever.

An arch and slide, similar to the above, have never before been used to a refiner's fire in melting iron.

The invention claimed, and desired to be secured by Letters Patent, consists in—

The construction of the arch near the throat of the chimney to receive the pig-iron for a bloom to be heated by the escape heat while a bloom is being melted in the chamber of combustion, as before described.

JAMES SHARP.

Witnesses:

W. THOMPSON,

W. BISHOP.