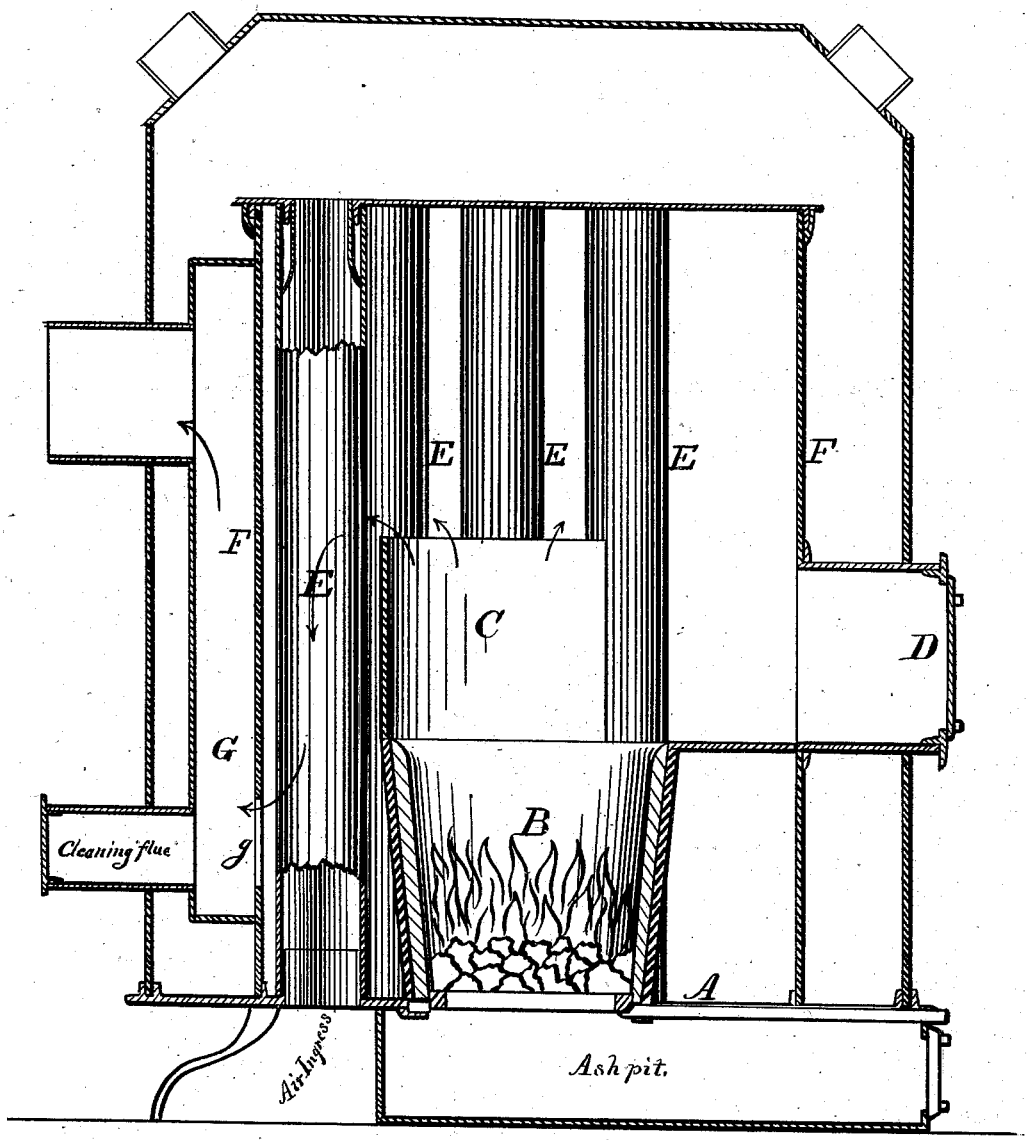
C. MARCHAND.

HOT-AIR FURNACE.

No. 192,835. Patented July 10, 1877.



Witnesses

B. S. DeForest

Samuel Osterhold

Charles Marchand Inventor

By

Geo. W. Gibbs

Attorney

UNITED STATES PATENT OFFICE.

CHARLES MARCHAND, OF CLEVELAND, OHIO.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **192,835**, dated July 10, 1877; application filed May 12, 1877.

To all whom it may concern:

Be it known that I, CHARLES MARCHAND, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Hot-Air Furnace, which improvement is fully set forth in the following specification and accompanying drawing, in which the figure is a vertical section.

This invention relates to furnaces for generating hot air for heating buildings and the like, and has for its object to furnish a simple and economical apparatus by which the air is heated to a uniform degree without burning or overheating; and consists of a series of upright pipes surrounding a fire-pot inclosed in a wall or case, whereby the heat, but not the flame, from the fire-pot passes between said pipes for heating them. Said pipes pass directly up through from the bottom, receiving the fresh air from below, and as it passes up is heated and accumulated in a receiving and distributing chamber at the top of the apparatus. The joints of the apparatus are so constructed that no gases from the fire can pass into the air-spaces.

In the drawing, A is the base-plate, in the center of which stands a fire-pot, B, provided with a dumping-grate, ashes being discharged into the ash-pit below. A wall, C, extends upward from the top edge of the fire-pot a sufficient height to prevent the flames from leaping over. Said wall extends about three-fourths the way round, leaving an opening on the side next to the door D. Arising from the aforesaid base-plate A is a series of flues or pipes, E E, which flues partly surround the fire-pot B and its extension C. The said series of pipes E E and the fire-pot are inclosed in a sheet-metal wall or case, F, having a closed top, the said pipes communicating from below the base-plate A to a chamber above the aforesaid case F. At the rear side of the case F is made a smoke-flue, G, the opening into which is located at *g*, near the bottom. By this arrangement the heat, smoke, and gases from the fire-pot are made to pass downward, around, and between the pipes E before reaching their outlet to the chimney. The arrows indicate the direction of the smoke and gases. The joints of the pipes at the top are constructed with sockets, into which a flange on the under side of the top plate sets. The said socket being filled with a cement insures a tight joint, and prevents the escape of gases into the air-chamber.

Having described my invention, I claim—

The herein-described hot-air furnace, consisting of the base-plate A, fire-pot B located therein, the extension-wall C arranged above the fire-pot, and the flues E, in combination with the gas-tight inclosing-wall F, and the smoke-flue G, having an outlet, *g*, at its base, whereby the heat without the flame is caused to circulate about the pipes, the construction, arrangement, and operation being substantially as shown and specified.

C. MARCHAND.

Witnesses:

GEO. W. TIBBITTS,

SAMUEL OSTERHOLD.