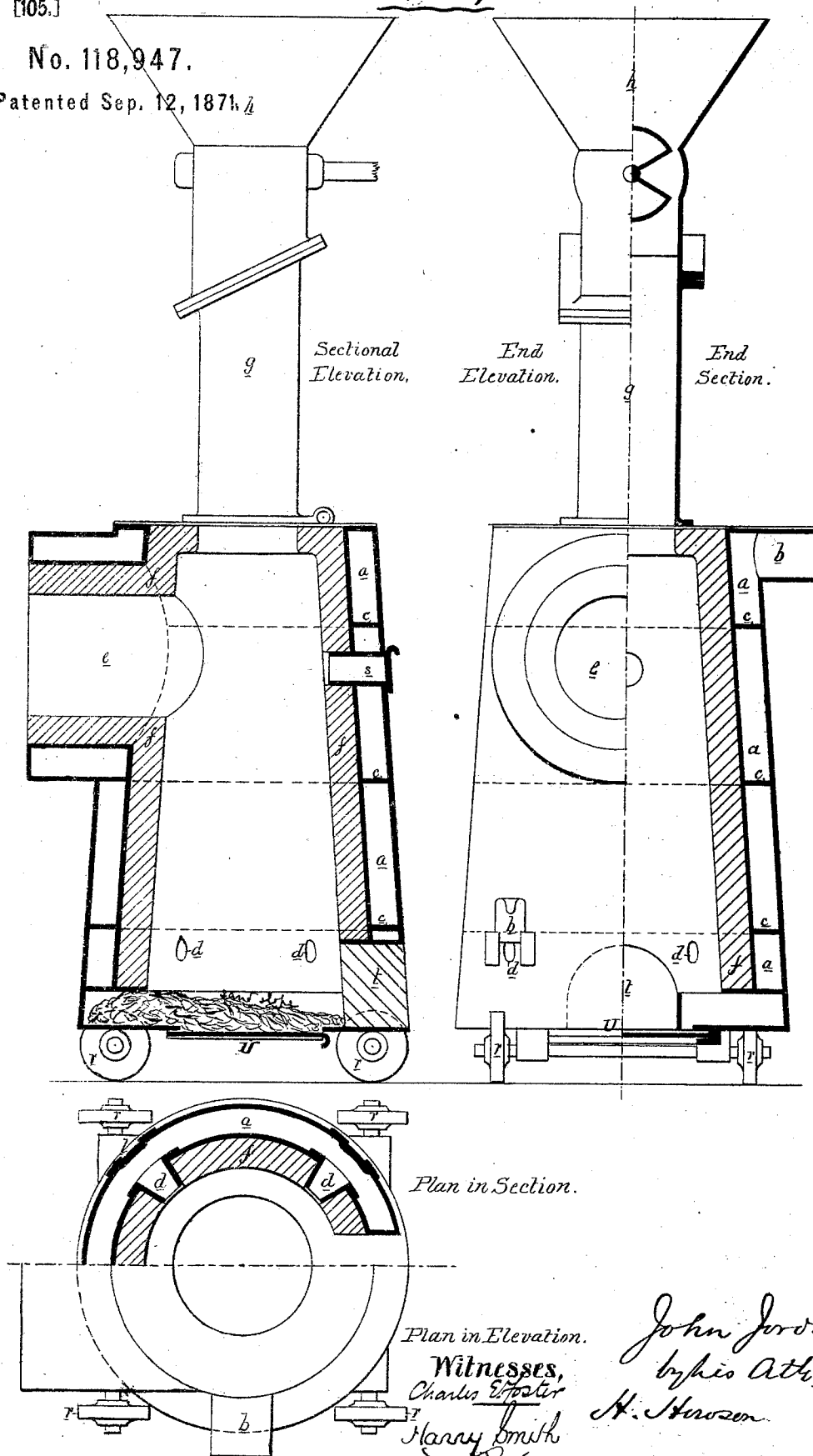


No. 118,947.

Patented Sep. 12, 1871.



Plan in Section.

Plan in Elevation.

Witnesses,
Charles E. Foster
Harry Smith

John Jordan
by his Att.
H. Horner

UNITED STATES PATENT OFFICE.

JOHN JORDAN, OF LIVERPOOL, ENGLAND.

IMPROVEMENT IN GAS-FURNACES.

Specification forming part of Letters Patent No. 118,947, dated September 12, 1871.

To all whom it may concern:

Be it known that I, JOHN JORDAN, of Liverpool, in the county of Lancaster, England, engineer, have invented certain Improvements in the Construction of Furnaces for Burning Coals or other combustibles, of which the following is a specification, and which will be more readily understood on reference to the accompanying drawing and to the letters marked thereon—that is to say:

My invention consists in making an iron air-chamber, *a*, lined on the inside next the center with fire-bricks, fire-tiles, or other fire-resisting materials *f*. I prefer to make the chamber of a conical shape, as shown in the accompanying drawing, (but other shapes may be used,) with the top or upper surface horizontal, or nearly so, and with the bottom beveled or sloped with sand, so that all slag and other residual matters may fall toward the door *t*, so as to be removed easily at intervals or when required. A hole is left in the bottom of the furnace, which is covered by a shutter, *u*, so that the whole contents of the furnace, when necessary, may be very quickly discharged. This hole and shutter *u* are covered by the sand forming the slope of the bottom. The gaseous products of combustion pass out through an exit-pipe or aperture, *e*, of convenient dimensions, in the side near the top of the furnace into any ordinary fire-place where the heat is to be utilized.

In applying this invention to ordinary fire-places no alterations are required to be made in the fire-places, excepting to line them with fire-resisting material to guide the flame in the direction required and through the flues to the chimney. The size of a furnace constructed according to this invention to burn, say, one hundred weight of coals per hour, with a mild blast, would be, say, eighteen inches diameter at its large end and twelve inches diameter at its small end, and about thirty-six inches long. The thickness of iron need not be more than one-quarter of an inch and the air-chamber *a* not wider than two inches. The coals or other combustibles are to be broken small enough, or small coals (usually called slack) are dropped down into the combustion-chamber through a pipe, *g*, placed more or less vertical, which has at its upper extremity a hopper, *h*, fitted with any approved or suitable apparatus for regulating the supply of combustibles, as required. I prefer,

however, for small coals, revolving cylinders, having recesses to contain the charges dropped down, as shown. The pipe is made with joints, so as to be easily removable to gain access to the interior, and the furnace, with its feeding-pipe, may be mounted on rollers or wheels *r*, so as to be readily moved about. Opposite the exit-aperture *e* a sight-hole, *s*, is put to "sight" the furnace and to remove anything obstructing the exit-aperture.

To cause combustion, a jet or jets of air, forced or otherwise, are directed upon the combustibles in the combustion-chamber from the air-chamber *a* in proportionate quantity to the coals to be burned, so that perfect combustion ensues. Opposite the tuyeres or blast-pipes *d*, which lead the air from the air-chamber *a* into the furnace, holes *l* are cut in the outer casing of the air-chamber, so that access may be had to the tuyeres or blast-pipes to remove them or clear away any obstructions, and to give air to the furnace when the blast is stopped. The blast is introduced at the upper part of the air-chamber through the inlet *b* and is circulated round the chamber, by means of guiding-plates *c*, to the tuyeres or blast-pipes which are placed, say, six inches from the bottom of the furnace.

By this means the air used keeps the furnace cool on the outside and carries off all the conducted and radiant heat back into the furnace.

Having now described the nature and object of my said invention for improvements in the construction of furnaces for burning coals or other combustibles, together with the manner in which the same is to be or may be performed or carried into practical effect, I would remark, in conclusion, that I claim as my invention—

1. A furnace having an inner lining of fire-brick, an outer casing, intermediate air-chamber, and tuyeres or blast-openings communicating with said air-chamber, as specified.

2. The combination of the above, the tube *g*, hopper *h*, and the feeding apparatus, as and for the purpose described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses this 31st day of January, 1871.

Witnesses:

JOHN JORDAN.

JOSEPH LANPHIER,
Clerk U. S. Consulate.

JNO. CALVIN,
Clerk U. S. Consulate, Liverpool. (105.)