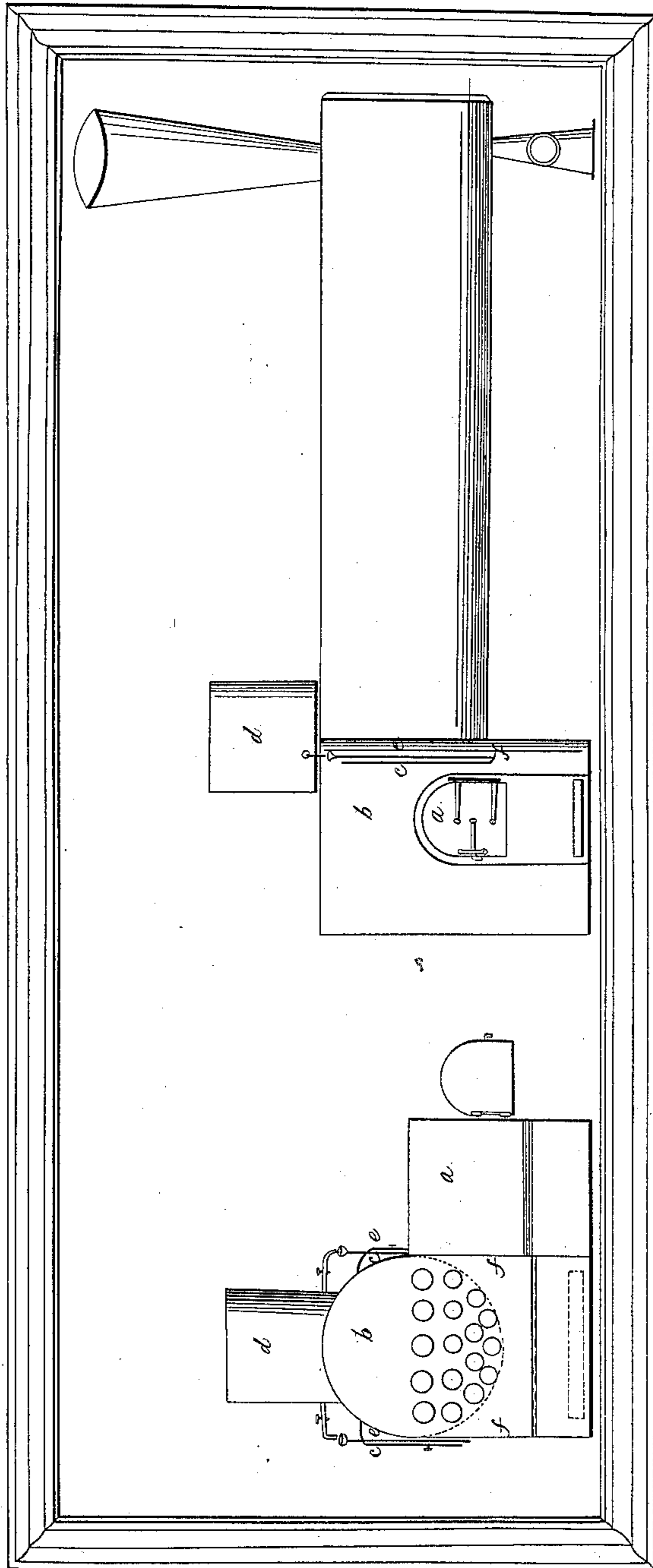


Connelly & Phillips,

Burning Hydrocarbon.

N<sup>o</sup> 34,198

Patented Jan. 21, 1862.



Witnesses:

John D. Wilson  
James Forbes

Inventor:

Connelly & Phillips  
by S. Allen  
attorney

# UNITED STATES PATENT OFFICE.

JOSEPH H. CONNELLY AND JAMES W. PHILLIPS, OF WHEELING, VIRGINIA.

## IMPROVED STEAM-BOILER FURNACE.

Specification forming part of Letters Patent No. 34,198, dated January 21, 1862.

*To all whom it may concern:*

Be it known that we, JOSEPH H. CONNELLY and JAMES W. PHILLIPS, of the city of Wheeling, and county of Ohio and State of Virginia, have invented a new and useful improvement for the economy of fuel and burning of the gases in generating heat for any purpose that may be required; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The nature of our invention or improvement consists, first, of outside coking-furnaces, which may or may not be used, according to the kind of furnace or fire-box to which they are applied; but if not used it is required that the fresh coal or wood be always fed at the front part of the regular furnace or fire-box, and as it becomes properly coked it is then pushed back, in order to keep up a clear white heat at that point over which the smoke must pass and where the oil and steam enter; and, second, by the use of petroleum, carbon, or well oil, which is forced into the inside furnace or fire-box with a jet of steam, where wood, coal, or any other fuel is used, thereby effecting the burning of the gases and economizing the fuel.

*a* represents the outside or coking furnace, which may be at or near the after end of the boiler, where a cylinder-boiler is used, or at the side of the regular furnace or fire-box, and in which the coking process is effected, and then the coke is pushed over into the regular furnace or fire-box.

*b* represents the regular furnace or fire-box, which receives the coke.

*c* represents the steam-pipes, which enter both sides of the regular furnace or fire-box by one or more points of entrance, directly opposite and under the flues or tubes of the boiler, and having their points of entrance lined with platina.

*d* represents the oil-can.

*e* represents the oil-pipes, which conduct the oil from the can *d* and accompany the steam-pipes and enter them on their upper side close to their points of entering the furnace at *f*. The hot coke, therefore, being forced into the rear or back part of the regular furnace or fire-box, necessarily making intense heat, over which the smoke must pass, and owing to the high degree of heat at that point where the steam enters, and as it forces in the oil in the form of a spray, where it readily consumes, and as the steam is at once decomposed and unites its oxygen with the carbon of the oil and smoke, the combustion is complete.

What we claim, and desire to secure by Letters Patent, is—

1. The introduction of petroleum or well oil into the furnace of steam-boilers, by means of the steam-jet or pipes, for the purpose of facilitating the combustion of the gases of the fuel, whether wood or coal.

2. The side furnace, *a*, in connection with the boiler *b*, reservoir *d*, steam-pipes *c*, and oil-pipes *e*, constructed and arranged substantially as and for the purposes specified.

JOSEPH H. CONNELLY.  
JAMES W. PHILLIPS.

Witnesses:

JAMES A. DINSMORE,  
DANIEL DUNBAR.