F. Sulter.

Furnace for Steam Boiler.

No. 93,764. Patented Aug. 17, 1869.

Fig. 4.

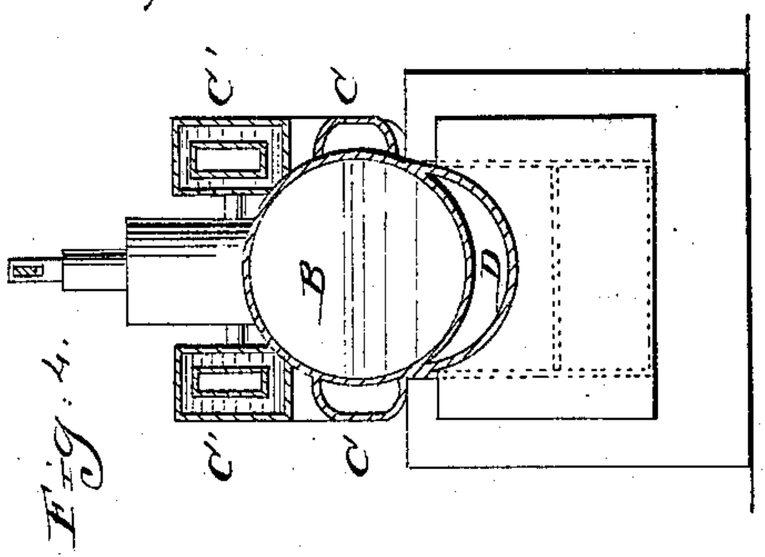


Fig. 3.

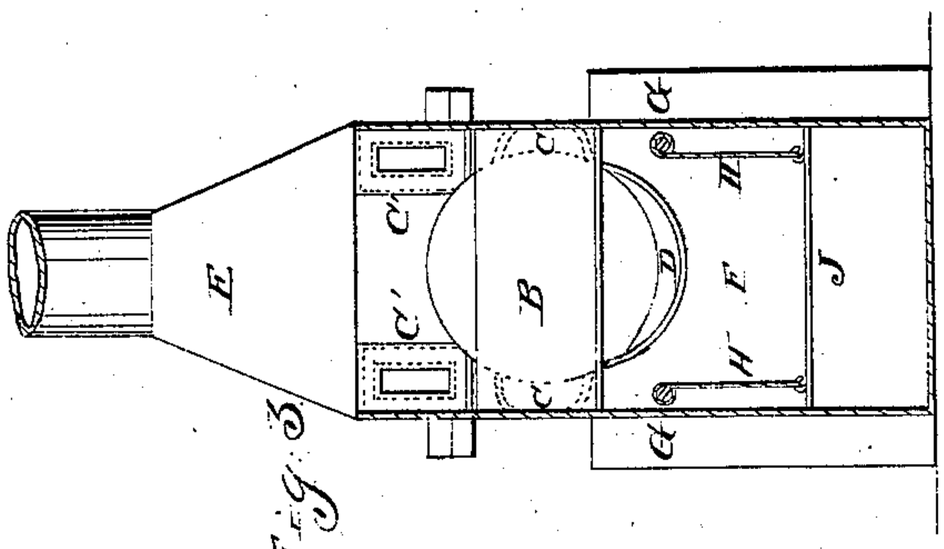


Fig. 5.

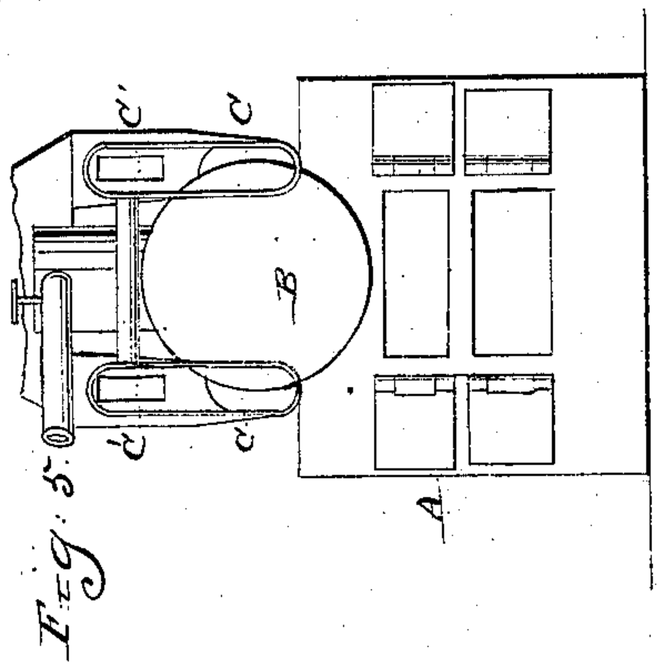


Fig. 1.

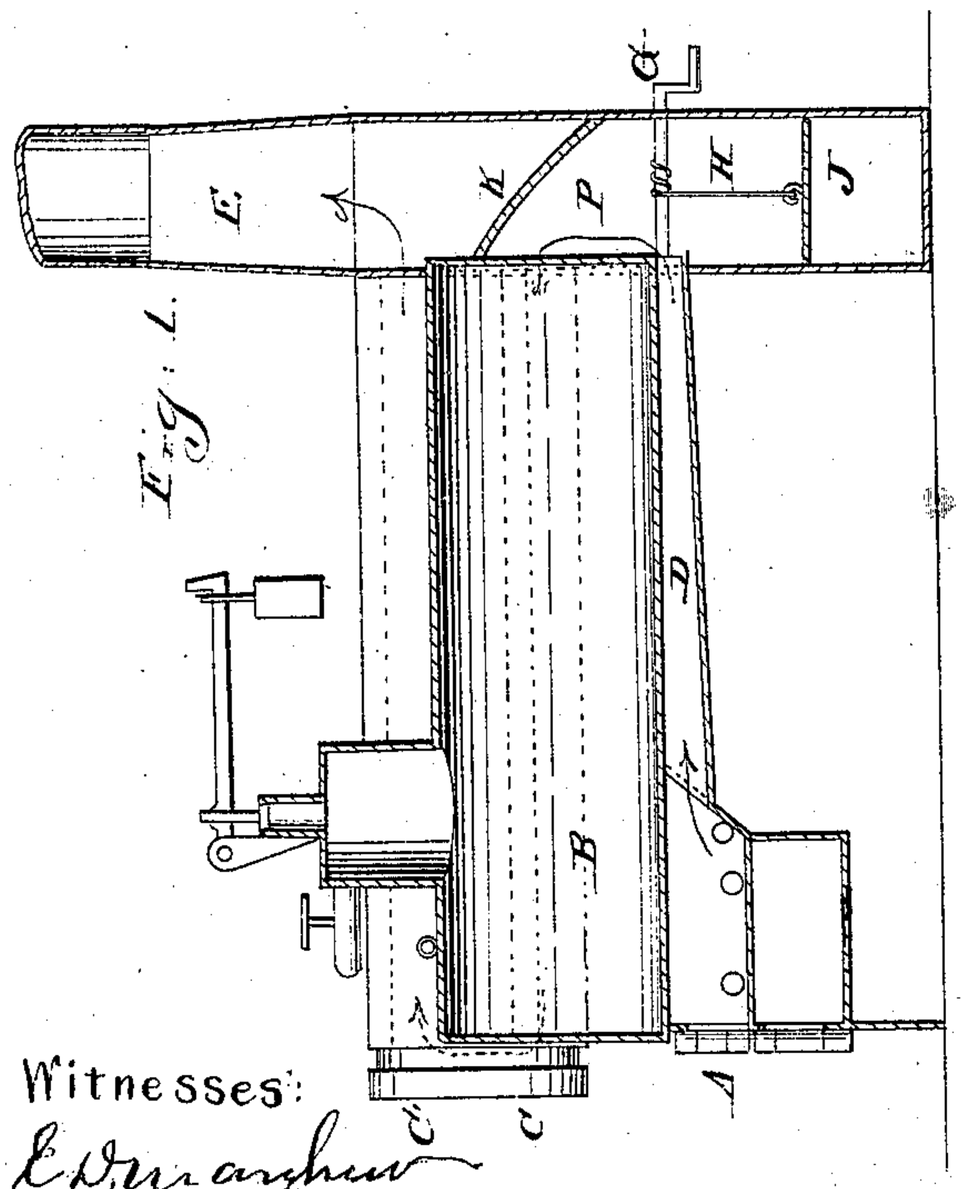
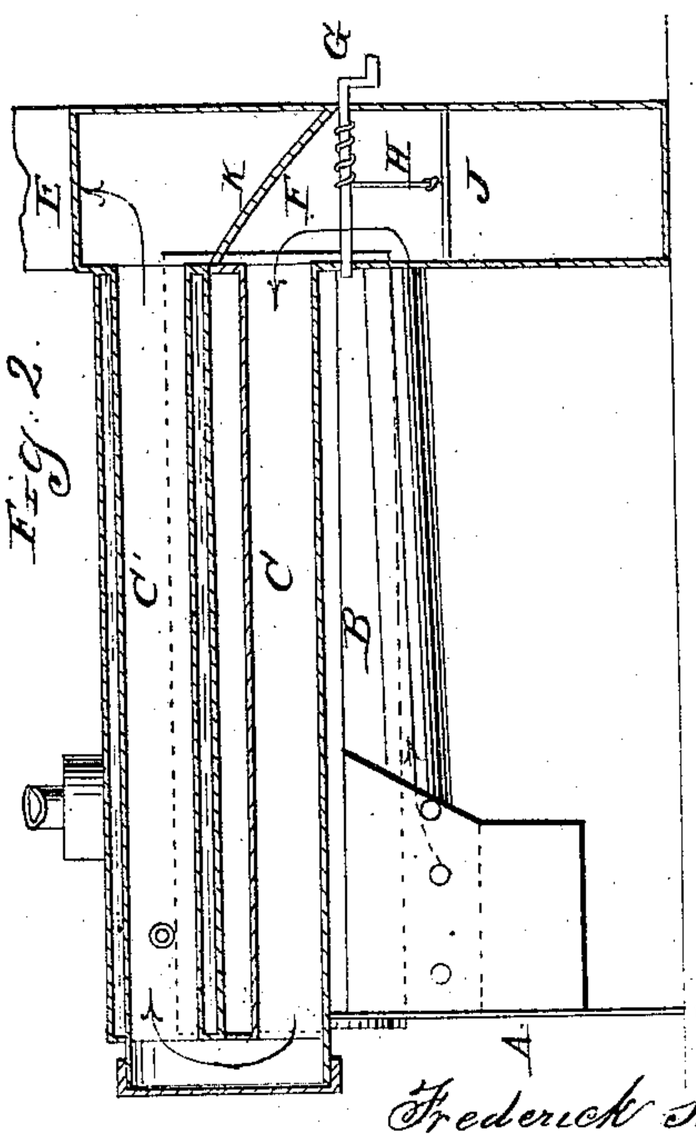


Fig. 2.



Witnesses:

E. Dwyer

Thomas Cummings

Inventor

Frederick Sulter

By his Atty - F. G. Pergam

United States Patent Office.

FRIEDRICK SULTER, OF ST. PAUL, MINNESOTA.

Letters Patent No. 93,764, *dated August* 17, 1869.

IMPROVEMENT IN FURNACES FOR STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, FRIEDRICK SULTER, of St. Paul, Ramsey county, and State of Minnesota, have invented Improvements in Furnaces for Steam-Generators, &c.; and I hereby declare the following to be an exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 represents a sectional elevation of the furnace, showing the adjustable regulator as operating in the smoke-chamber in the rear of the furnace.

Figure 2 also represents a sectional side elevation, with the regulator raised, showing how it is adjusted up and down, to regulate the draught according to the kind of fuel used.

Figure 3 represents a rear-end view of the furnace.

Figure 4 shows a cross-section of the furnace, with its cylinder and flues common to ordinary furnaces.

Figure 5 represents a front-end view of the furnace.

The nature of my invention consists in the construction and arrangement of the adjustable regulator in the smoke-chamber at the rear of the furnace.

The object of this regulator is to regulate the draught when different kinds of fuel are used.

When hard coal is used, the regulator is raised, say about three-fourths; when soft coal or wood is used, the regulator is lowered, to allow the smoke or cinders to pass into the smoke-chamber, and be consumed.

Hard coal making no smoke, and requiring a stronger draught, the regulator is raised to increase the draught, (especially when the furnace is used with an old chimney in which the draught is defective,) and the heat is forced forward through the lower return-flues, alongside of the boiler, and then into the upper flue, (containing the heater,) from which it passes out into the chimney.

A represents the fire-box, from which the heat and cinders are carried through the lower flue D, underneath the boiler B, the cinders being deposited in the smoke-chamber F, the heat thence passing along through a side-flue, C, again to the front, thence upward to another flue, C′, along the top side of the boiler, to the rear of the furnace, and thence out the smoke-stack E, as indicated by the courses of the arrows.

The smoke-chamber F is located at the rear of the boiler, and has an inclined arch, K, extending from above the boiler to the opposite side of the chamber, to prevent the smoke and heat from passing directly up through the smoke-stack, and to collect the cinders.

I have two crank-shafts, G G, passing through the upper part of the smoke-chamber F, each shaft G having a chain, H, operating on it as a windlass.

To the lower ends of these chains H H, my regulator, J, is suspended.

The regulator J is made of sheet-iron, and fits closely into the smoke-chamber F, and is raised and lowered by means of the cranks G and chains H, for the purpose of increasing or diminishing the size of the chamber F, to increase or diminish the draught required, and is thus adjusted to suit the character of the fuel used.

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

The crank-shafts G G, chains H H, and regulator J, when constructed, arranged, and operating in the smoke-chamber F, as herein described, and for the purpose set forth.

FRIEDRICK SULTER.

Witnesses:

E. D. MAYHEW,

EDM. F. BROWN.