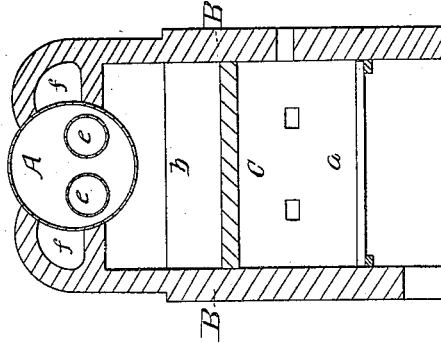


*H. J. Davison,*  
*Steam-Boiler Furnace,*

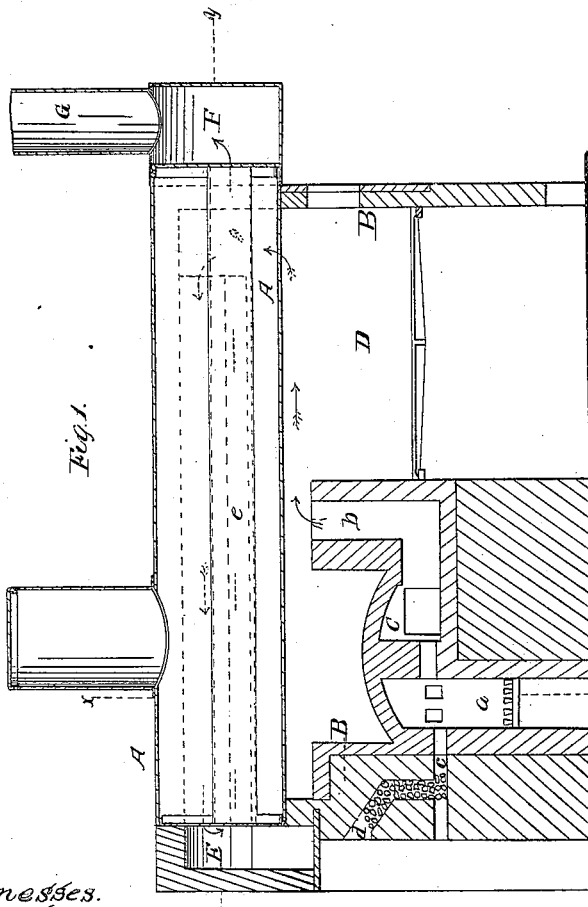
*No. 50,562.*

*Patented Oct. 24, 1865*

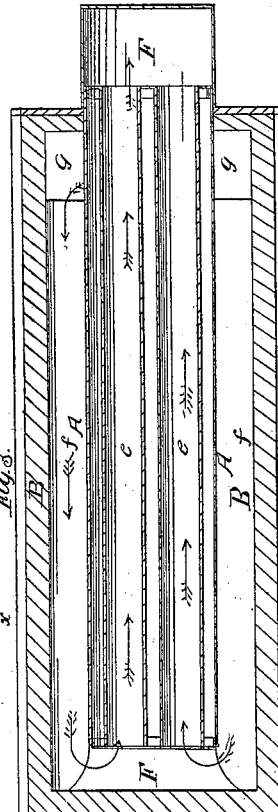
*Fig. 2.*



*Fig. 1.*



*Fig. 3.*



*Witnesses.*  
*J. W. Coombs.*  
*A. Sellers.*

*Inventor.*  
*Henry J. Davison.*

# UNITED STATES PATENT OFFICE.

H. J. DAVISON, OF NEW YORK, N. Y.

## IMPROVEMENT IN ARRANGEMENT OF A WELDING-FURNACE AND STEAM-BOILER.

Specification forming part of Letters Patent No. 50,562, dated October 24, 1865.

*To all whom it may concern:*

Be it known that I, H. J. DAVISON, of 229 Broadway, in the city, county, and State of New York, have invented a new and Improved Arrangement of a Welding-Furnace in Relation to a Steam-Boiler for Generating Steam by the Waste Heat of such a Furnace; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of a steam-boiler and welding-furnace illustrating my invention. Fig. 2 is a transverse vertical section in the plane indicated by the line *x x* in Fig. 1. Fig. 3 is a horizontal section in the plane indicated by the line *y y* in Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

The gaseous products of the combustion of the fuel used in the furnaces employed for the welding of wrought-iron tubes and other articles escape from such furnaces at a very high temperature; and as steam power is commonly used for driving the machinery used in connection with such furnaces, the said gaseous products may be used very advantageously for heating the boilers in which the steam is generated, the heat of such gaseous products (if not all, sufficient, with a proper construction and arrangement of the furnace and boiler, to generate the steam required) being sufficient to reduce very greatly the quantity of fuel required to be used in a separate furnace. It is desirable in carrying out such an arrangement that provision shall be made for heating the boiler before the welding-furnace is in operation, as the blower of the welding-furnace must be started before the said furnace can be got into operation, and the steam from the boiler will be used for driving the blower; but this provision has not been conveniently made in previous arrangements of the boiler and welding-furnace.

The object of this invention is to use the heat of such gaseous products in the most economical manner; and to provide conveniently for the heating of the boiler before the welding-furnace is in operation; and the invention consists in a novel arrangement of the welding-furnace in relation to a boiler and within the set-

ting thereof whereby those results may be effected.

To enable others to apply my invention to use, I will proceed to describe it with reference to the drawings.

A is the boiler; and B is its setting within which, under and near one end of the boiler, is arranged the welding-furnace C, which is of the usual reverberatory construction. The fire-place *a* of this furnace is at the end nearest the end of the boiler, and the upright flue *b*, through which the gaseous products of combustion escape and which takes the place of the chimney of an ordinary welding or other reverberatory furnace, being at the opposite end and nearly under the middle of the boiler. The tubes or other articles to be welded are placed on the reverberating chamber of the said furnace through an opening in one side of the said furnace and the boiler. The fuel is supplied to the fire-place *a* through an opening, *c*, from a reservoir, *d*, in the nearest end wall of the said furnace and boiler-setting, the fuel being heated in the said reservoir and being pushed into the furnace as required by means of suitable implements inserted into the opening *c*, which extends through the exterior of the said wall.

Under the other end of the boiler is a furnace, D, Fig. 1, substantially like the furnace commonly employed under a steam-boiler. This furnace is for the purpose of starting the steam in the boiler when it is desirable to do so before the welding-furnace is set in operation, or for generating steam when at any time the welding-furnace is not in use, or for assisting to generate steam in case of the escaping heated gaseous products of combustion from the welding-furnace being insufficient for that purpose.

The boiler represented is of the cylindrical return-flue kind, having two flues, *e e*. Extending right through it in the upper part of the setting B there are two flues, *f f*, one on each side, extending from end to end of the setting, the entrances to said flues being at *g g*, close to the end of the boiler farthest from the welding-furnace C and over the furnace D, and the exits being through a breeching, E, at the opposite end of the boiler and in communication with the return-flues *e e*. At the end of the

boiler farthest from the welding-furnace C and over the furnace D the return-flues *ee* communicate with a smoke-box F, on the top of which is the chimney or stack G.

The operation of the invention is as follows: The heated gaseous products of combustion from the welding-furnace escaping from the flue *b* pass, as indicated by arrows in Fig. 1, under the boiler to the openings *gg*, Figs. 1 and 2; thence through the outer flues *ff*, to the breeching E at the opposite end of the boiler, whence they pass through the return-flues *ee* to the smoke-box F, and escape by the chimney G, having yielded up all their available heat to the boiler. When there is a fire

in the furnace D, the heated gaseous products of combustion therefrom pass through the openings *gg* and follow the same course through the flues, breeching, and smoke-box, to the chimney.

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

The arrangement of the two furnaces C and D, flue *b*, openings *gg*, and side flues, *f*, substantially as and for the purpose herein specified.

HENRI J. DAVISON.

Witnesses:

J. W. COOMBS,  
A. LE CLERC.