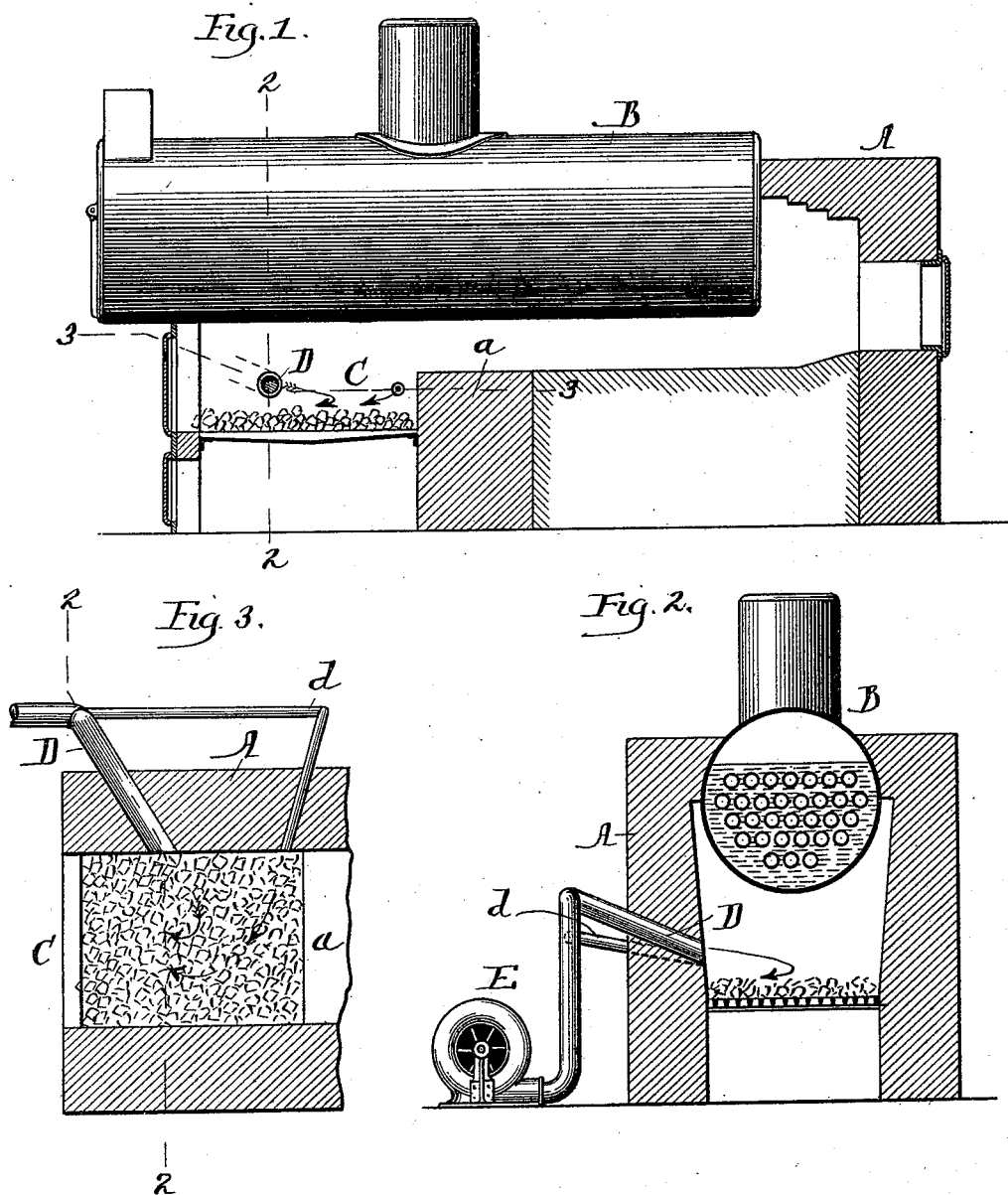


(No Model.)

C. STREUFERT.  
FURNACE.

No. 492,066.

Patented Feb. 21, 1893.



Witnesses:  
Fred Gerlach  
O. W. Bond.

Inventor:  
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# UNITED STATES PATENT OFFICE.

CHARLES STREUFERT, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO  
CARL HOLSTEIN, OF SAME PLACE.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 492,066, dated February 21, 1893.

Application filed July 29, 1892. Serial No. 441,576. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES STREUFERT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Furnaces, of which I declare the following to be a clear, full, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Figure 1 is a view in vertical longitudinal section through a boiler furnace, having my invention applied thereto. Fig. 2 is a view in vertical cross section on line 2—2 of Fig. 1. Fig. 3 is a view in horizontal section on line 3—3 of Fig. 2.

My present invention has for its object to secure a more perfect and thorough combustion within furnaces, so that not only shall the smoke annoyance be thereby abated, but also by reason of such thorough combustion a material saving in fuel shall be effected. This object of invention I have accomplished by forcing a supply of air into the furnace above the bed of fuel, the current of air being directed in such manner as to produce a "whirling" circulation or current of the products of combustion, and at the same time a downward pressure of the air blast, thereby securing a thorough intermixture of the air supply with the gases and effecting a complete burning of such gases and the material carried thereby in suspension before their final escape from the furnace stack.

My invention is shown in the accompanying drawings as applied to a boiler furnace A, within the body of which is set a tubular boiler B, of well known construction. Into the fire box C of a furnace leads an air delivery pipe D by which air is delivered into the fire box at a slight distance above the bed of fuel by means of a blower E or other air forcing mechanism located at any convenient distance from the furnace. The air delivery pipe D is located intermediate of the front and the bridge walls of the furnace and has a rearward and downward inclination, as shown. Preferably the discharge end of the air delivery pipe D will terminate slightly below the line of the top of the bridge wall a,

and by preference the front of this bridge wall is vertical so as to insure a more thorough circulation of the products of combustion before their passage from the fire box C of the furnace. By arranging the air delivery pipe D in the manner shown the volume of air forced into the fire box will impart a whirling movement or circulation to and a downward pressure upon the products of combustion thereby insuring an intermixture of the air supply with the gases and materials held in suspension before their passage from the fire box. As a consequence an intense heat is created within the fire box and beneath the boiler and a thorough burning of the gases and of the materials carried in suspension thereby is effected before their escape into the furnace stack. By giving a downward inclination to the air delivery pipe D, the blast of air is delivered into the mass of fuel thereby tending to better secure the whirling circulation of the products of combustion before their passage over the bridge wall.

While I have shown what I regard as the preferred location and the arrangement of the air delivery pipe D, it is manifest that this may be varied and other arrangements adopted for effecting a whirling circulation of the products of combustion within the furnace. If desired supplemental air delivery pipes may lead into the corners of the furnace to insure the circulation at such points, or if desired a circular shape may be given to the fire box of the furnace.

In the drawings I have shown a supplemental air delivery pipe *d* leading into the corner of the fire box at the rear of the main air delivery pipe D, and this supplemental pipe *d* is preferably arranged as shown, so as to aid the main air delivery pipe D in imparting a whirling movement to the products of combustion within the fire box of the furnace.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination with the fire box of a furnace, of an air delivery pipe, and suitable means for forcing air through it, said air delivery pipe being located intermediate the front and bridge walls of the furnace and hav-

ing its discharge end arranged with a rear-  
ward and downward inclination in such man-  
ner that a whirling movement is imparted to  
the products of combustion across the normal  
5 line of draft in one and the same general di-  
rection around the furnace, and at the same  
time the pressure of the forced air supply

serves to depress the circulating products of  
combustion thereby aiding to delay their es-  
cape, substantially as described.

CHARLES STREUFERT.

Witnesses:

GEORGE P. FISHER, Jr.,  
CARL HOLSTEIN.