

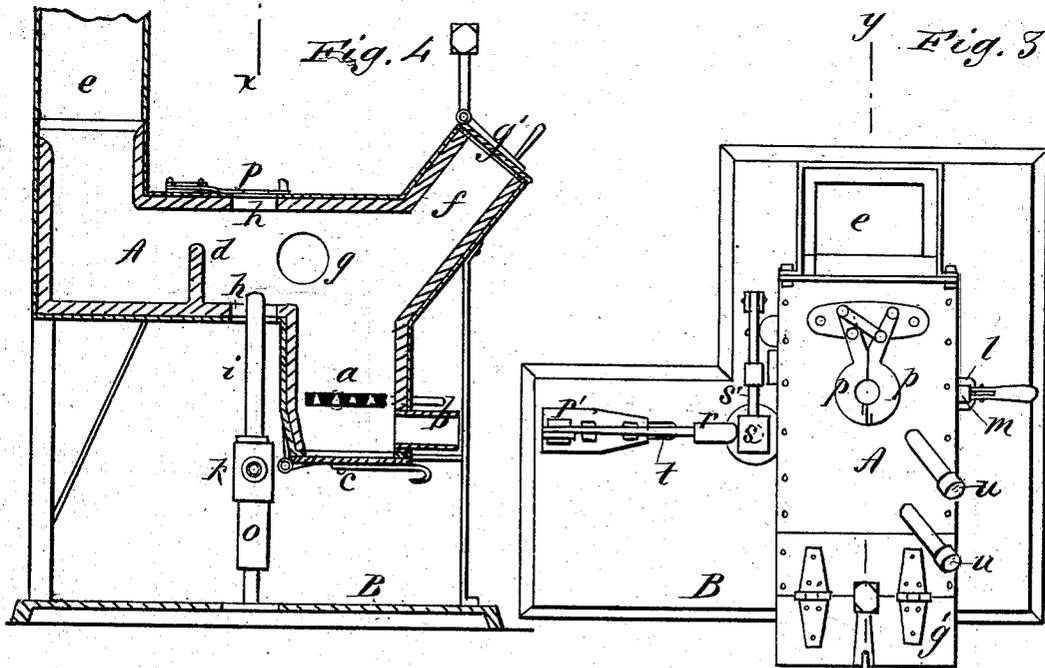
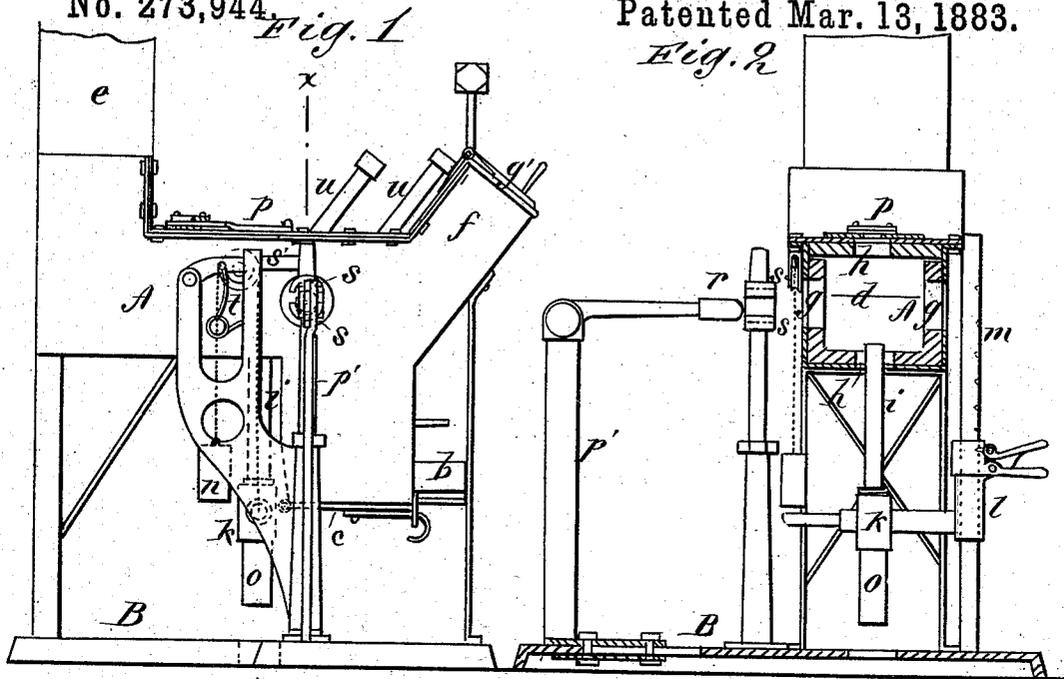
(Model.)

R. H. BROWN.

FURNACE FOR HEATING TUBES.

No. 273,944.

Patented Mar. 13, 1883.



WITNESSES:

*C. Neveu*  
*E. Sedgwick*

INVENTOR:

*R. H. Brown*  
 BY *Munn & Co*  
 ATTORNEYS.

# UNITED STATES PATENT OFFICE.

RICHARD H. BROWN, OF OMAHA, NEBRASKA, ASSIGNOR OF ONE-HALF TO  
JOHN REED, OF SAME PLACE.

## FURNACE FOR HEATING TUBES.

SPECIFICATION forming part of Letters Patent No. 273,944, dated March 13, 1883.

Application filed September 1, 1882. (Model.)

To all whom it may concern:

Be it known that I, RICHARD H. BROWN, of Omaha, in the county of Douglas and State of Nebraska, have invented a new and Improved Furnace for Brazing and Welding Flue-Tubes, of which the following is a full, clear, and exact description.

The object of my invention is to construct a furnace completely arranged for brazing and welding tubes, by the use of which such work may be done at a great saving of time and fuel.

To that end my invention consists in a furnace constructed and arranged as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improved furnace. Fig. 2 is a vertical transverse section of the same on the line *x x*, Fig. 1. Fig. 3 is a plan view of the furnace. Fig. 4 is a vertical section on line *y y*, Fig. 3.

*A* is the body of the furnace, which may be made of cast or sheet iron and lined with fire-brick. The body is elevated on posts from a base, *B*, of suitable character.

*a* is a grate arranged for shaking and dumping the fire.

*b* is the blast-pipe, entering the furnace beneath the grate; and *c* is a blast-door, fitted for closing the bottom opening beneath the grate, so as to retain the blast and insure a better consumption of the fuel.

*d* is a bridge-wall fitted within the furnace for confining the heat around the work.

*e* is the escape-flue, and *f* is the coal-magazine, constructed as an inclined chute at the front of the furnace and above the grate, so that the fuel may slide readily down to the fire. *g'* is a door fitted to the coal-magazine for closing the same tightly.

The top of the furnace is attached by bolts so as to allow of its removal when the furnace requires rebricking. The top is also provided with peep-tubes *u u*, for observing the work while in the furnace. The top and bottom of the furnace are formed with apertures *h h*, for the brazing-post *i*, which is attached by screwing to a support, *k*. The support *k* is suspended by an arm from a slide, *l*, which is fitted for

movement on a vertical standard, *m*, at the side of the furnace, the slide being provided with a suitable catch engaging the standard, so as to sustain the post in any position in which it may be placed. A balance-weight, *n*, is also provided for counterbalancing the slide, post, and flue, so that the post can be moved up and down more readily. The support *k* is fitted at its under side with a hollow extension, *o*, for use with flues longer than can be received by the post *i*, the post in that case being removed from the support, and the flue passed down into the extension *o*. The hole *h* in the top of the furnace is provided with slides *p*, closed tightly around the flue while the brazing is progressing.

At opposite sides of the furnace are apertures *g g*, for receiving a flue that is to be welded. At one side is a mandrel, *r*, supported by a horizontal arm from a standard, *p'*, which is fitted adjustably to the base *B*, so that the mandrel may be set to and from the swages. *s s* are the swages, the lower one of which is supported by a fixed standard, and the upper one is carried by an arm, *s'*, which is pivoted to a bracket on the standard. To the arm *s'* is connected a spring, *t*, that serves to throw the moving swage upward after each blow, such movement being limited by a suitable stop. This upward movement of the swage is to allow the flue to be turned while being operated upon. The mandrels and swages are made removable from their supports, so that they can be replaced by others of different sizes, according as the work may require.

In the operation of brazing, the flue is supported by the post *i*, which may be lowered to bring the end of the flue within the furnace for heating. When properly heated the post is to be raised, and the end of the flue thus projected from the opening *h* in the top of the furnace in position for convenient manipulation. In welding, the flue is passed through the openings *g* so as to bring the joint within the furnace. In this position it may be observed through the peep-tubes *u u*, and when the required heat is obtained it is to be drawn out upon the mandrel and between the swages. Then by striking the movable swage with a hammer the work is readily completed. These operations may be performed at a great saving

of time and fuel. The tubes while in the furnace are free from contact with the fuel, so that the joints are left clean and a more perfect connection insured than when the brazing or welding is done in the fire. The workmen are free from the heat of the furnace, the sparks, and the dust, while at the same time being able to watch the heating operation closely. Any ordinary fuel may be used in this furnace, and the furnace is adapted for use in heating blanks for various kinds of work.

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

15 1. The furnace for brazing and welding consisting of the body *A*, having side apertures, *g*, and top and bottom apertures, *h h*, the fuel-reservoir *f*, blast-pipe *b*, and blast-door *c*, con-

structed and arranged substantially as shown and described. 20

2. The standard *m*, standing beside the furnace, the sleeve *l* sliding thereon, the support *k* on an arm projecting from said sleeve, and the post *i*, removably secured in support *k*, in combination with a furnace provided with a hole in its bottom to receive said post, and a hole in the top to receive the work, as and for the purpose specified. 25

3. The hollow extension *o*, in combination with the adjustable support *k*, substantially as shown and described. 30

RICHARD H. BROWN.

Witnesses:

GEORGE A. WILSON,  
ELIJAH DUNN.