

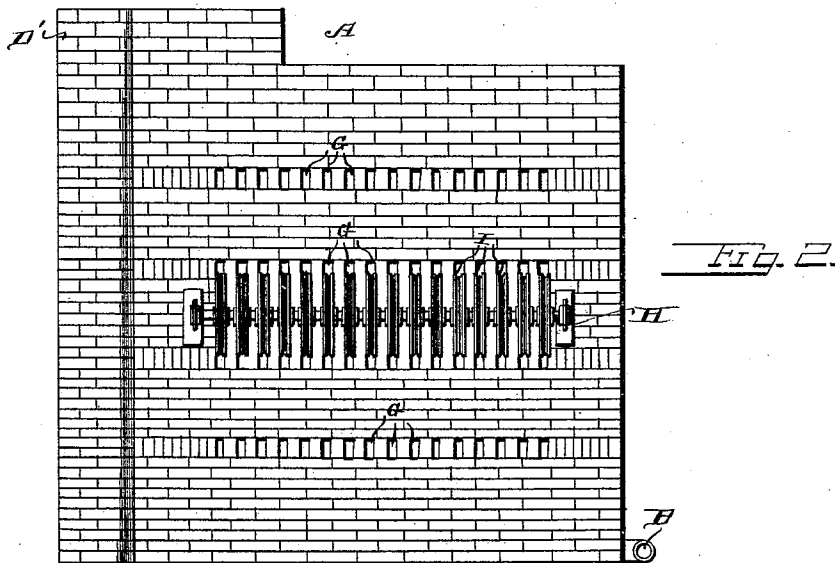
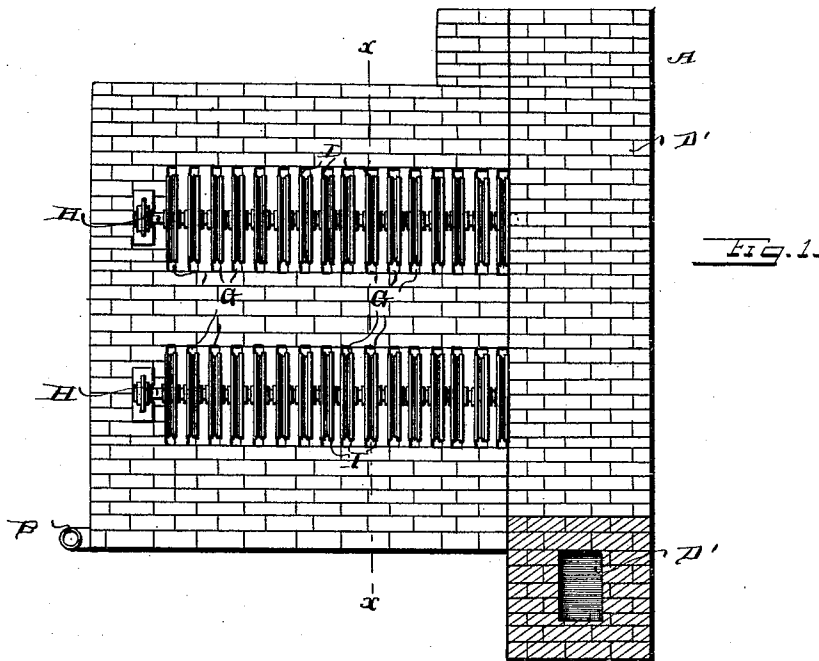
(No Model.)

3 Sheets—Sheet 1.

J. McCONNELL.  
FURNACE FOR ANNEALING WIRE.

No. 500,410.

Patented June 27, 1893.



Witnesses:  
Jesse Heller.  
Philip Massi.

Inventor.  
James M. Connell,  
by E. W. Anderson  
his  
Attorney.

(No Model.)

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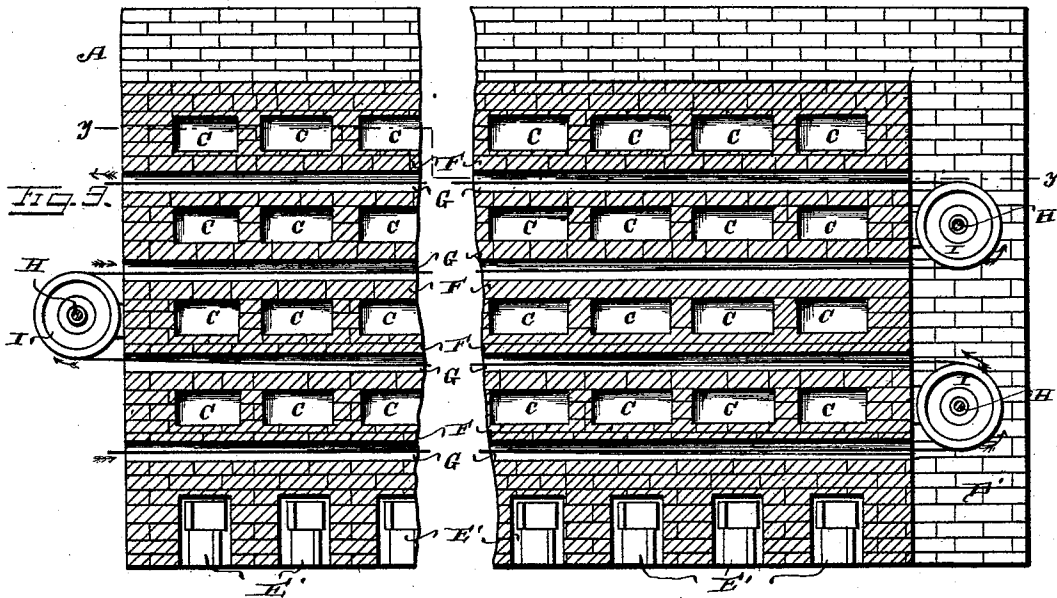
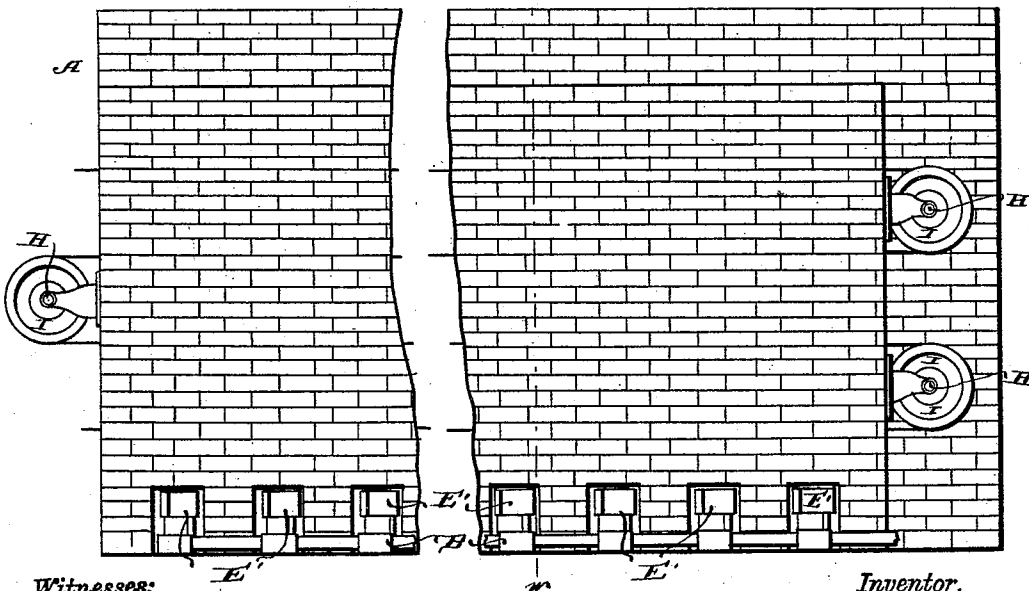


FIG. 4.



Witnesses:

Jesse Heller.

Philip Masi.

Inventor.

James Mc Connell,

by C. W. Anderson

his

Attorney.

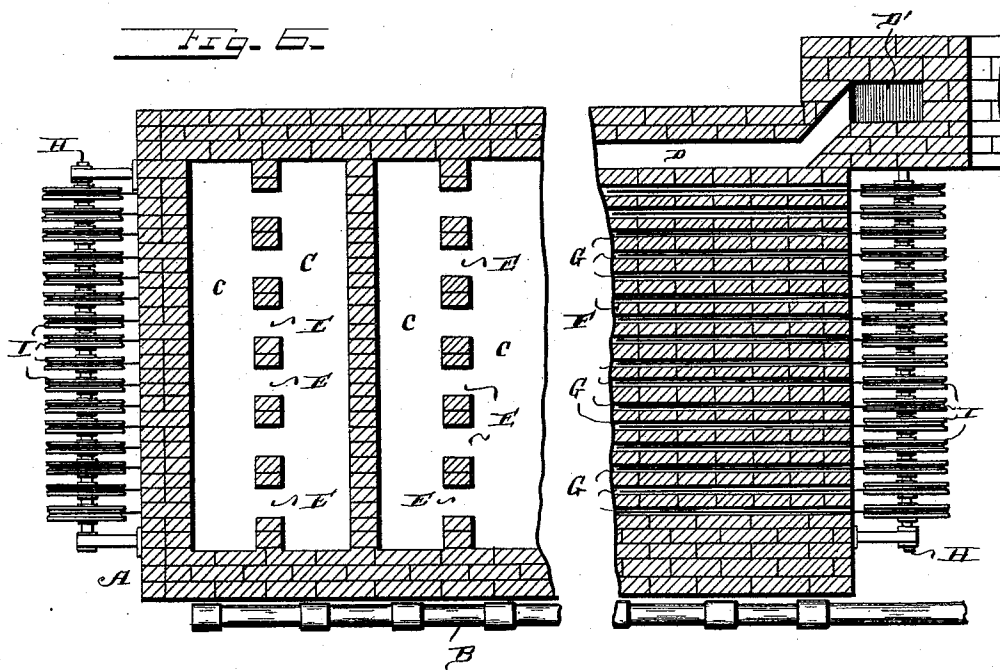
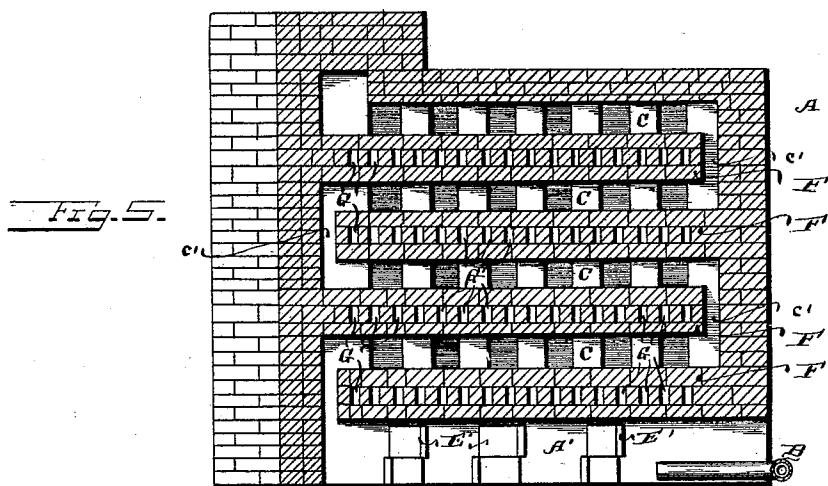
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3 Sheets—Sheet 3.

J. McCONNELL.  
FURNACE FOR ANNEALING WIRE.

No. 500,410.

Patented June 27, 1893.



Witnesses:

Jesse Heller.  
Philip LeMasi.

Inventor.

James M<sup>c</sup>Connell,

by E. W. Anderson,  
his Attorney.

# UNITED STATES PATENT OFFICE.

JAMES McCONNELL, OF ANDERSON, INDIANA.

## FURNACE FOR ANNEALING WIRE.

SPECIFICATION forming part of Letters Patent No. 500,410, dated June 27, 1893.

Application filed November 26, 1892. Serial No. 453,236. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES McCONNELL, a citizen of the United States, and a resident of Anderson, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Repeating-Furnaces for Annealing Wire, &c.; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a front view of the furnace. Fig. 2 is a rear view of same. Fig. 3 is a vertical longitudinal section on line *x x* Fig. 1. Fig. 4 is a side elevation. Fig. 5 is a vertical section on line *w w* Fig. 4. Fig. 6 is a horizontal section on line *y y* Fig. 3.

This invention has relation to certain new and useful improvements in furnaces for annealing wire, and it consists in the novel construction and combination of parts, all as hereinafter specified.

Referring to the accompanying drawings, the letter A designates my improved furnace, having the combustion chambers A' in its base, and which are supplied with gas or hydro-carbon fuel by a pipe B. In the body of said furnace are formed a series of transverse horizontal flues C, the lower set of said flues communicating at one end with the combustion chambers A', and the upper set end with a longitudinal lateral flue D, which leads along the upper side portion of the furnace to the chimney D'. Each flue of the lower set of the series of flues C is shown as communicating with an individual combustion chamber. Said flues C wind each back and forth from one side of the furnace to the other in parallel lines, one turn above the other, each horizontal passage *c* thereof being connected at one end by a short vertical passage *c'* with the next passage below it, and at the other end with the passage immediately above it.

In the construction illustrated in the drawings, the gases of combustion is required to travel four times across the furnace before

reaching the flue D, but it will be understood that the number of turns in the flues will depend upon the size and character of the furnace.

Through the partition wall separating the adjacent flues of each pair of flues is formed a series of openings or passages E, which serve to further increase the circulation, and break up the gases, so that the entire furnace may be brought to an intense heat.

E', E', are fire bricks, which are placed in the combustion chambers.

Extending through each longitudinal horizontal partition wall F, which separates each horizontal turn of the series of flues from the one immediately above it, is a series of parallel, longitudinal wire passages G, which extend the entire length of the furnace, and open out at each end thereof, four such series being shown in the drawings.

Supported across each end of the furnace are transverse shafts H, two of said shafts at one end, one between the mouths of each pair of the series of wire passages G, and one at the opposite end situated between the second and third series. Each of said shafts carries thereon a series of sheaves or wheels I, each of said sheaves being located in such position that the wire from the passage in line therewith in the lower series, is guided around and back into the corresponding passage in the upper series of the pair. It will be observed that the location of these wire passages is such that while the wire does not at any point come in contact with the flame, they are nevertheless raised to an intense heat by the flame in the surrounding flues, so that the wire in passing therethrough is sufficiently heated for the annealing. The wire is first carried into one of the passages in the lower series, passing out at the opposite end thereof, and around one of the sheaves I, thence into the corresponding passage in the next series, passing out and around the sheave I thereat, thence through the passage in the third series from the bottom, and around the third sheave, and thence through the passage in the upper series and out, where it may be galvanized by the usual process.

The construction of the furnace is such that

a perfect combustion of the fuel is provided for, and the heat is caused to be retained and fully utilized. By this furnace I do away with the hot lead bath commonly employed  
5 in annealing wire, thereby effecting a great saving of lead, together with the cost and labor of handling the same. I am also enabled to anneal fully fifty per cent. more wire in a given time, than can be done with the old  
10 processes.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. A furnace for annealing wire, having a  
15 series of transverse horizontal flues C, winding back and forth from one side of the furnace to the other in parallel lines, one turn above another, each horizontal passage thereof being connected with the one above or be-  
20 low it by short vertical passages, the lower set of said flues having each a communication with an individual combustion chamber and the upper set of said flues communicating with the chimney or stack, and a series of  
25 longitudinal wire passages between the said flues, substantially as specified.

2. In a furnace for annealing wire, the com-

bination of the combustion chambers, the continuous transverse flues, leading from the several combustion chambers said chambers  
30 communicating with the ends of the lower set of said flues the passages uniting adjacent flues of each pair of flues, and the wire passages extending longitudinally through the furnace between said flues, substantially as  
35 specified.

3. In a furnace for annealing wire, the combination with the combustion chambers, the series of transverse, continuous winding flues, leading from the several combustion cham-  
40 bers, said chambers communicating with the ends of the lower set of said flues the passages uniting adjacent flues of each pair of said flues, the longitudinal wire passages extending through the furnace between said flues,  
45 and surrounded thereby, and the sheaves for carrying the wire, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES McCONNELL.

Witnesses:

BERTIE TAYLOR,  
WILLIAM J. DOVE.