

UNITED STATES PATENT OFFICE.

WILLIAM H. SNOW, OF HOLYOKE, ASSIGNOR TO CHARLES S. WALDO, OF
BOSTON, MASSACHUSETTS.

GAS-RETORT FURNACE.

SPECIFICATION forming part of Letters Patent No. 462,021, dated October 27, 1891.

Application filed February 28, 1891. Serial No. 383,246. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SNOW, of Holyoke, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Gas-Retort Furnaces, of which the following is a specification.

The object of my invention is to produce in as simple a manner as possible a furnace in which there shall be substantially perfect combustion, owing to the supplies of heated air furnished both below the grate and in the combustion-chamber below the retorts.

In the drawings are shown sectional views of a furnace embodying my invention.

Figure 1 is a front elevation of such a furnace, various parts being shown in dotted lines. Fig. 2 is a horizontal section on line x of Fig. 1; Fig. 3, a horizontal section on line y of Fig. 1; Fig. 4, a horizontal section on line z of Fig. 1. Fig. 5 is a sectional view, in elevation, on line w of Fig. 3; and Fig. 6 is a sectional view on line v of Fig. 4.

The retorts are shown at A, and may be supported within the combustion-chamber in any of the well-known ways.

B is the fire-box, also of ordinary construction, except as below described.

I supply air to the grate by means of flues C. These flues open in front of the furnace, as shown in Fig. 1, just below the normal level of the fire, and pass down through the brick-work at the sides of the fire-box to a point below the level of the grate-bars. Here they are connected with the ash-pit D by means of small ports e , which serve to spread the air over practically the entire surface of the ash-pit, thus supplying the air for combustion in the fire-box over the entire lower surface of the fire-box and causing a substantially equal distribution of air for the purpose.

I supply air to the combustion-chamber just above the normal level of the fire by means of flues E, which open in the front of the furnace and pass back, as shown in Figs. 2 and 3, through the brick-work which forms the sides of the fire-box, and then up onto a level with what is normally the top of the fire. Here this flue lies horizontal on both sides of the fire, and is connected with the combustion-chamber at its lowest point by means of

ports e , these ports being located opposite each other, so that the air is distributed evenly over the surface of the fire. It is evident that during this passage through the walls of the furnace the air in both flues is heated, according to the temperature of the brick-work, and is supplied to the fire at a very high temperature.

It has been found by experience that a furnace constructed as above described requires less fuel to accomplish a given amount of work, because of the more perfect combustion which the supplies of air above described afford. Consequently it requires less labor to tend, and with a given amount of fuel it produces a larger quantity of product.

By supplying the flue-openings in front of the furnace with sliding doors the amount of air to be taken into the furnace can be easily controlled.

In feeding the furnace, fuel is supplied at the firing-door F, G being the clinkering-door and H being the ash-pan door, these parts being made in any customary way.

The main advantage of my furnace is due to its perfect simplicity. The air is heated sufficiently hot by passing through flues separated by a comparatively thin wall from the fire-box, and from these flues it passes either to the chamber below the grate or to the combustion-chamber. The flues being located as shown, the air is sufficiently heated without requiring the use of smoke-flues to convey the products of combustion about through the walls of the furnace, as has been done heretofore. In this latter case there is always a great chance for leakage, especially after the furnace has been in use for some time, and also a chance that the smoke flues will be stopped up more or less with soot and other impurities, so that from time to time they will have to be cleaned out, which, as those skilled in the art know, is a tedious and expensive process, requiring the furnace to be cooled off thoroughly and practically to be pulled to pieces and rebuilt. In my furnace there is no such danger, as will be readily understood, as there are no such smoke-flues. My retort-chamber is a direct passage for the products of combustion from the fire-box to the chim-

(No Model.)

2 Sheets—Sheet 1.

H. C. SPAULDING.
ELECTRIC RAILWAY SWITCH.

No. 462,022.

Patented Oct. 27, 1891.

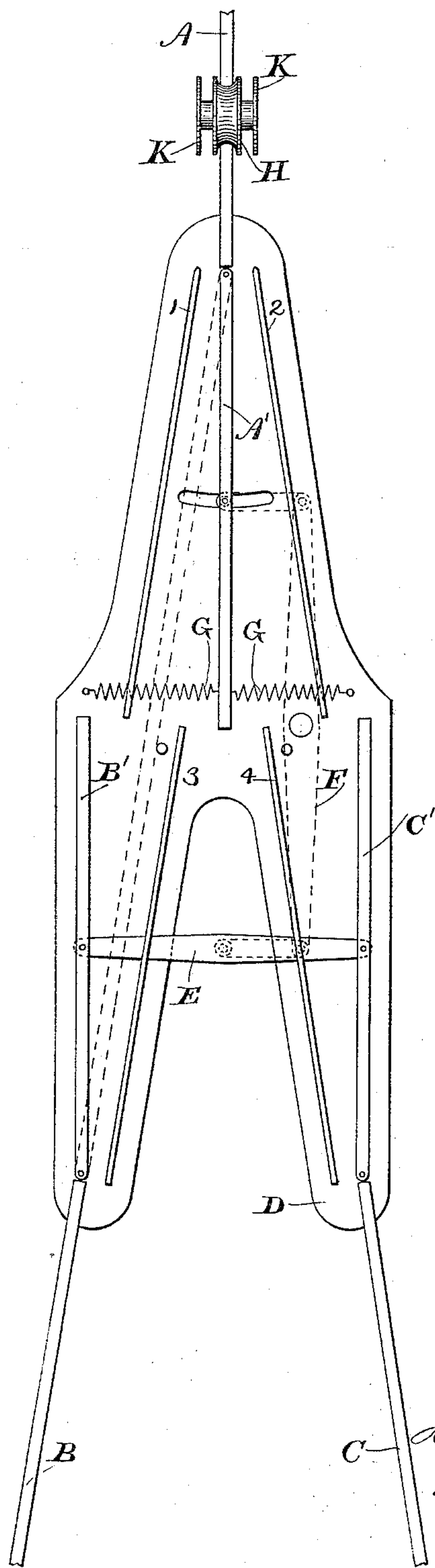


FIG. 1.

WITNESSES:

Alfred
W. M. Twombly

INVENTOR:

Hollon C. Spaulding
by Bradley & Knight

ATTYS.

(No Model.)

2 Sheets—Sheet 2.

H. C. SPAULDING.
ELECTRIC RAILWAY SWITCH.

No. 462,022.

Patented Oct. 27, 1891.

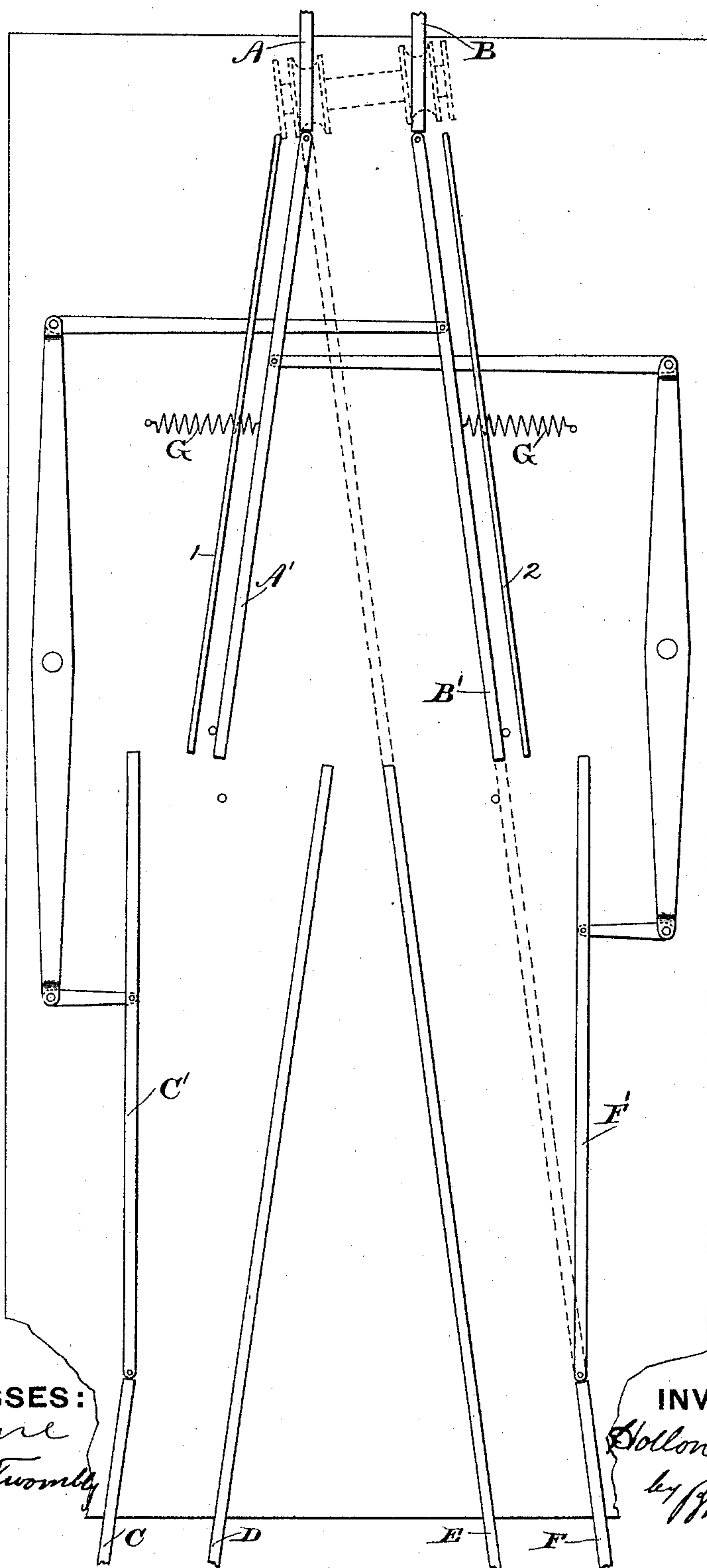


FIG. 2.

WITNESSES:

A. C. Crane
W. M. Twombly

INVENTOR:

Hollon C. Maulding
by Bradley Knight
ATTYS.

ATTYS.

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
1155 EAST 58TH STREET
CHICAGO, ILL. 60637

1964

TO THE HONORABLE
COMMISSIONER OF THE
DEPARTMENT OF AGRICULTURE
AND FORESTRY
WASHINGTON, D. C.
SIR:
I have the honor to acknowledge
the receipt of your letter of
the 11th instant, and in reply
to inform you that the
Department of Chemistry
has no objection to the
use of the above-named
institutions for the purpose
of the above-named project.
Very respectfully,
[Signature]

Very truly yours,
[Signature]
[Name]
[Title]
[Department]
[University]