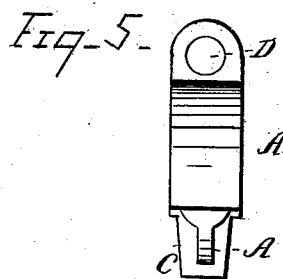
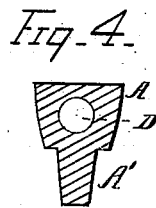
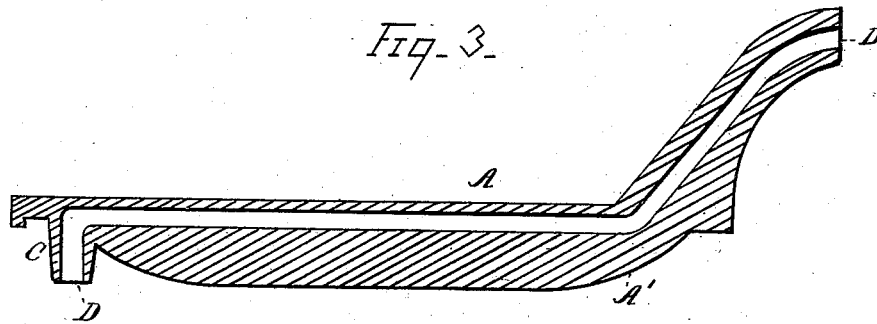
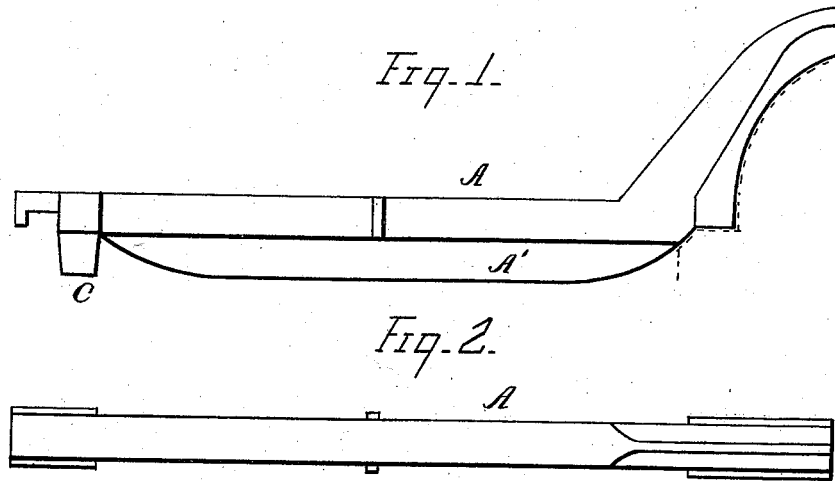


G. W. TODD.  
Grate-Bar.

No. 168,684.

Patented Oct. 11, 1875.



WITNESSES  
*E. J. Nottingham*  
*Wm. H. Brereton Jr.*

INVENTOR  
*George W. Todd.*  
By *Leggett & Leggett* Attorneys.

# UNITED STATES PATENT OFFICE.

GEORGE W. TODD, OF ALLEGHENY, ASSIGNOR OF ONE-HALF HIS RIGHT  
TO W. W. SPEER, OF PITTSBURG, PENNSYLVANIA.

## IMPROVEMENT IN GRATE-BARS.

Specification forming part of Letters Patent No. **168,684**, dated October 11, 1875; application filed  
September 16, 1875.

*To all whom it may concern:*

Be it known that I, GEORGE W. TODD, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Grate-Bars; and do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to furnace grate-bars; and consists in constructing the bar with a rear-curved elevated projecting end, which extends back over the bridge-wall of the furnace, the bar also being made hollow or with an air-passage through its entire length, whereby air is taken from the front of the fire, conducted through the bar back over the fire-wall, and discharged, where it mingles with the unconsumed carbon as it passes over the bridge-wall, thereby producing a more perfect combustion.

In the drawings, Figure 1 is a side elevation of the bar, showing about the position of the bridge-wall of the furnace in dotted lines; Fig. 2 a top view, Fig. 3 a vertical longitudinal elevation, Fig. 4 a rear view, and Fig. 5 a transverse section, of the bar.

A is a bar, of usual or any appropriate size, shape, or material, with the strengthening-rib A' at its under part. The rear end of the bar is formed into an enlarged vertically and rearwardly curved projecting portion, B, of a sufficient length to extend back over the bridge-wall of the furnace. C is a downwardly-pro-

jecting tube or portion at the extreme front of the bar. Passing up through this tube C, along the entire length of the bar A, and up through the enlarged curved end B, is an opening or air-passage, D.

The object of this invention is to provide a durable grate-bar, and at the same time to conduct the air that passes through it from the front of the fire back over the top of the fire-wall, where it mingles with the unconsumed carbon as it passes from the fire over the bridge-wall, thereby producing more perfect combustion, thus making a simple, durable, and effective bar, and perfect combustion in the fire, thereby accomplishing a great saving in fuel, cost of bars, &c.

In case the bars project from the front of the furnace, the opening will enter directly at the end, and the spout C be dispensed with.

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

The grate-bar A, constructed with enlarged, curved, rearward-projecting portion B, and air passage or tube D, extending entirely through the body of the bar from front to rear, up through the enlarged part B, and discharging over the fire-wall of the furnace, substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of September, 1875.

GEORGE W. TODD.

Witnesses:

FRANCIS TORRANCE,  
CORNELIOUS CALLIO.