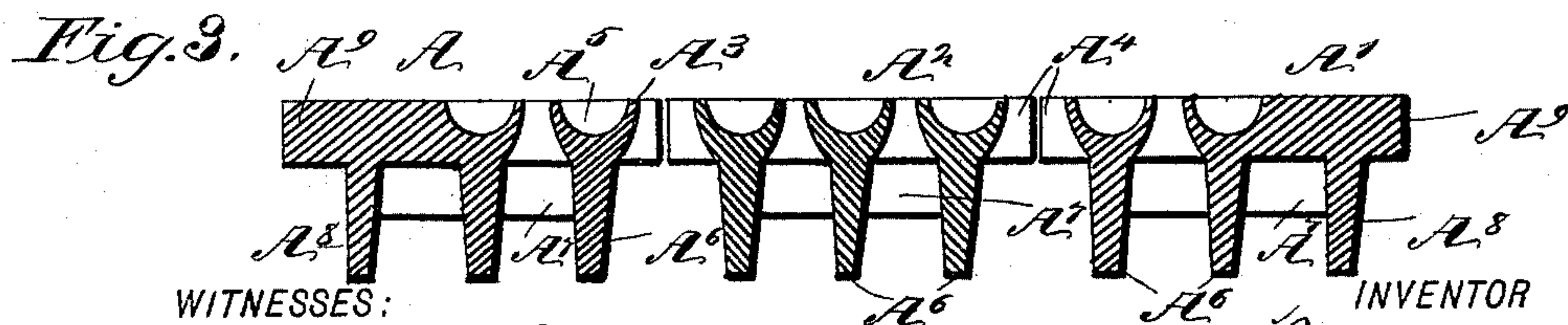
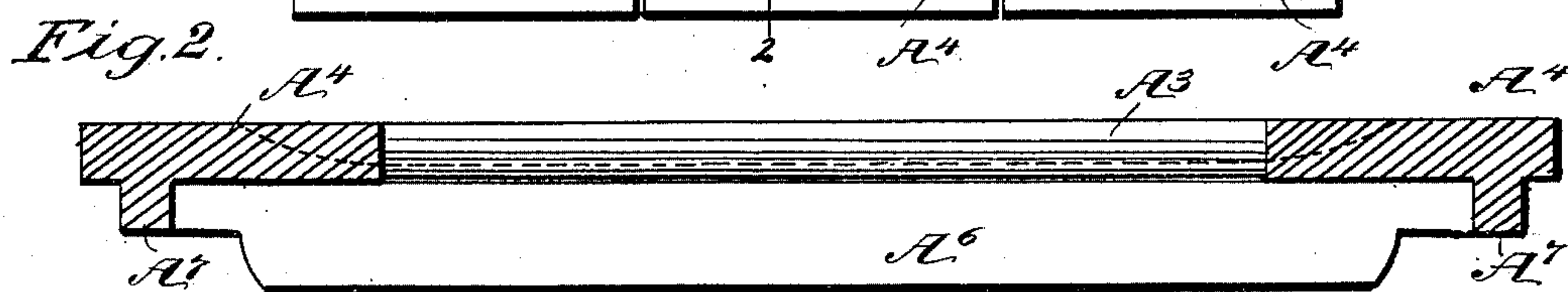
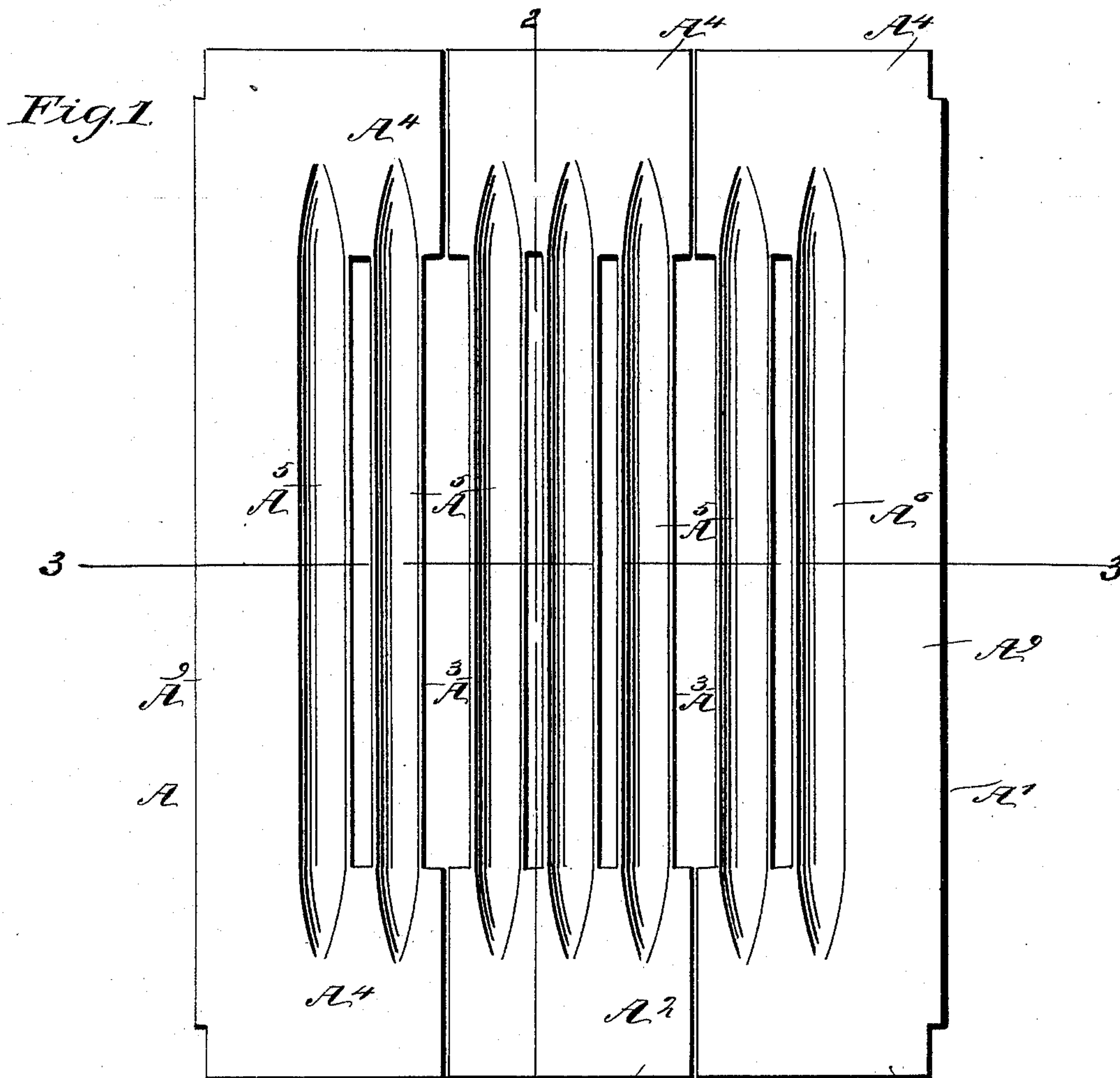


(No Model.)

J. W. SMITH.
GRATE.

No. 518,470.

Patented Apr. 17, 1894.



WITNESSES:

P. McArdle.
C. Sedgwick.

INVENTOR

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BY

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES WILL SMITH, OF MOSCOW, KENTUCKY.

GRATE.

SPECIFICATION forming part of Letters Patent No. 518,470, dated April 17, 1894.

Application filed July 22, 1893. Serial No. 481,189. (No model.)

To all whom it may concern:

Be it known that I, JAMES WILL SMITH, of Moscow, in the county of Hickman and State of Kentucky, have invented a new and Improved Grate, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved furnace grate, which is simple and durable in construction, very effective in operation, and arranged to force the air directly into the fire, so as to highly heat the air before the same enters the boiler flues, thus also insuring proper draft in the boiler flues.

The invention consists of a grate head in sections, each section having solid ends, and longitudinally extending bars, integral with the ends, each bar being formed on the top with a deep longitudinally extending groove for the passage of air.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described and then pointed out in the claim.

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

Figure 1 is a plan view of the improvement. Fig. 2 is a longitudinal section of the same on the line 2—2 of Fig. 1; and Fig. 3 is a transverse section of the same on the line 3—3 of Fig. 1.

The improved grate is provided with the two side sections A and A', and one or more middle sections A², arranged between the side sections A and A'. Each of the grate sections is provided with a series of longitudinally extending bars A³ formed integral with the solid ends A⁴ of the respective sections, each bar being provided on top with a deep groove or channel A⁵ terminating in the heads A⁴ of the

corresponding sections. The under side of each bar A³ is reinforced by a longitudinally-extending rib A⁶, the several ribs of one section being connected at their ends with transverse bars A⁷ formed integral on the respective end A⁴ of the corresponding section. The solid sides of the side sections A and A' are reinforced on their under side by longitudinally-extending ribs A⁸, likewise integral with the said solid sides A⁹. It is understood that the several parts of each section are cast in one solid piece, so that all the parts are integral one with the other.

A grate constructed in this manner will permit a ready entrance of the air between the several bars, the air also passing into the grooves A⁵ so as to penetrate the fuel in all its parts and thus aid combustion and also heat a large quantity of the entering air to a high degree before the air passes to the boiler. As the highly heated air travels at a considerable velocity through the boiler flues, proper draft is established in the said boiler.

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

The herein described grate, consisting of the side sections A A', having solid ends and sides A⁴ A⁹ and the middle section A², having solid ends A⁴, the sections being provided with the bars A³ integral with the ends and having longitudinal grooves A⁵ in their upper surfaces, the depending ribs A⁶ A⁸ on the lower surfaces of the bars A³ and sides A⁹ respectively, and the transverse bars A⁷ on the under side of the ends A⁴ and integral with the ribs A⁶ A⁸, as set forth.

JAMES WILL SMITH.

Witnesses:

EDWARD NALL,
M. L. SHAW.