S. T. SAVAGE.

FURNACE GRATE BAR.

No. 22,134. Patented Nov. 23, 1858.

Fig. 4

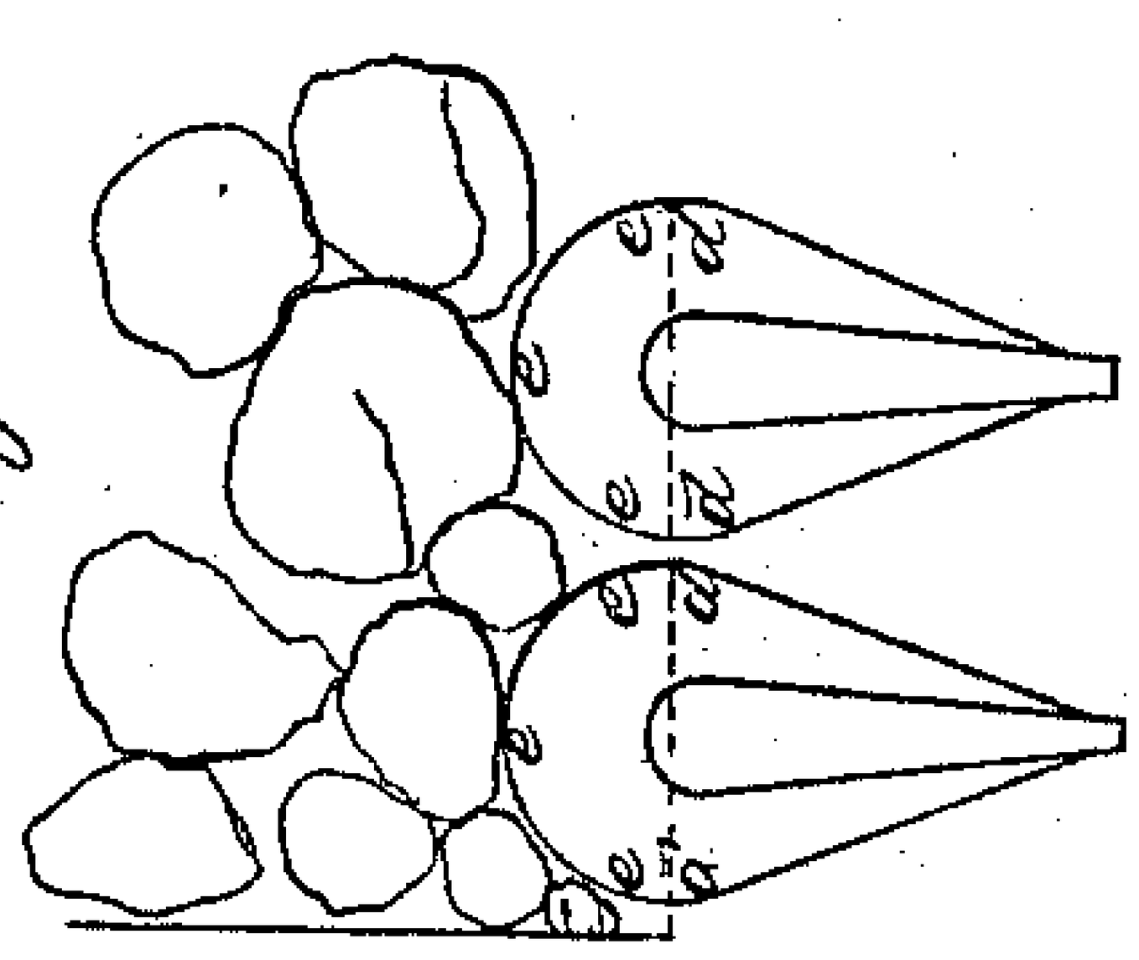


Fig. 1

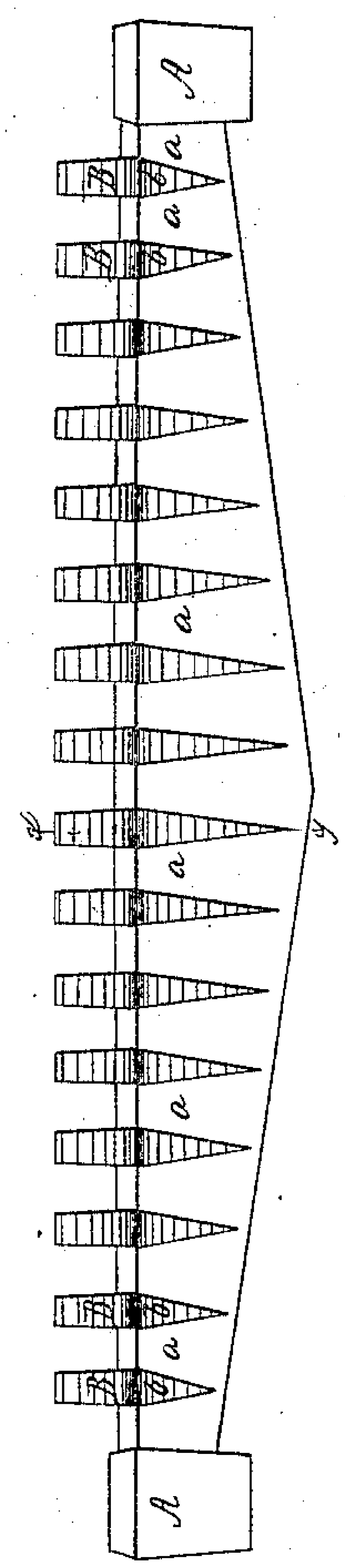


Fig. 2

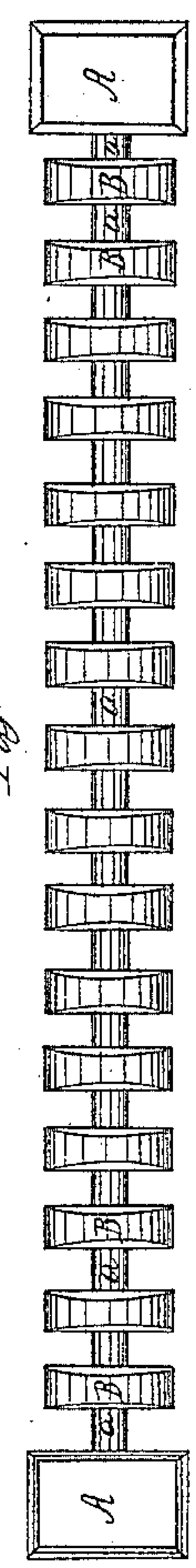
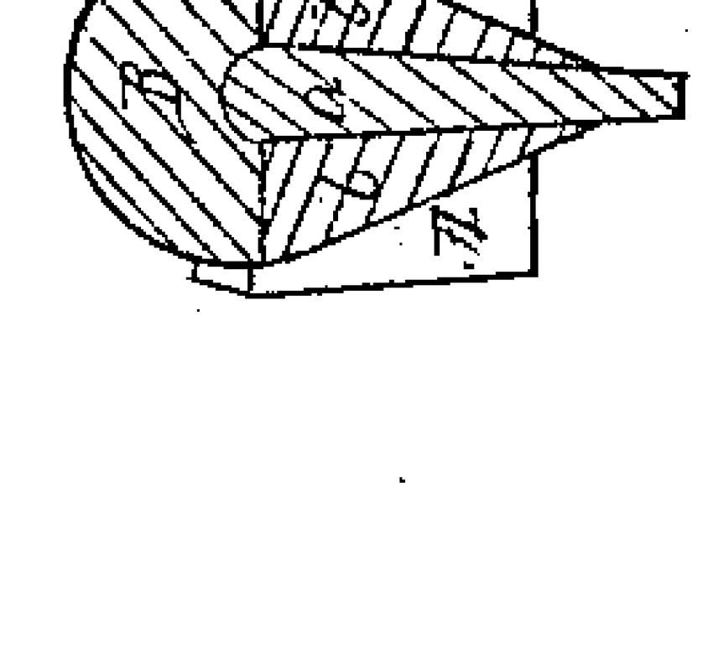


Fig. 3



Witnesses:

E. J. Miller

Platt Havens DeWitt

Inventor:

S. T. Savage

UNITED STATES PATENT OFFICE.

SILAS T. SAVAGE, OF ALBANY, NEW YORK.

GRATE-BAR.

Specification of Letters Patent No. 22,134, dated November 23, 1858.

To all whom it may concern:

Be it known that I, SILAS T. SAVAGE, of the city of Albany, State of New York, have invented a new Grate-Bar for Stoves and other Coal-Consuming Furnaces; and I declare the following specification, with the drawings hereto attached as part thereof, to be a full and complete description of the same.

Figure 1 represents the bar in profile. Fig. 2 represents the bar as seen from above. Fig. 3 is a section of the bar taken near its greatest breadth at *x*, *y* Fig. 1. Fig. 4 is a diagram showing the arrangement of the bars as they lie together and their operation.

Similar letters denote the same parts of the bar.

The grate bar consists of an ordinary fish belly bar *a*, *a*, *a* with its square ends A A, the bar having at short intervals, cross semi-disks B, B, B rising above the bar, their centers being near the top of the bar, and their radius to near the range of the sides of their square ends A A, so that when two bars lie side by side with A, A, touching, there shall be a small space between the peripheries of the opposite disks. From the extremities of their horizontal diameter the disks are continued down in a triangular rib of metal *b*, *b*, to near the lower edge of the bar; these ribs being to stiffen the bar, and make them more durable, the distance between these disks, to be regulated by the kind of coal used and the circumstances under which it is burned.

The advantage of this form of construction of bar for grates will be seen from diagram Fig. 4, where the coal is exhibited lying on the grate, showing that the air space underneath the coal is made of a series of semi-circular arches *e*, *e*, *e*, whereas if the grates were of the usual form, with the coal lying, as it then would, directly across the bars, the air spaces would only be the chords of the arches viz. *d*, *d*, *d*, that is to say only two thirds of the curves *e*, *e*, *e*, so that in a given breadth of furnace the access of air to the fuel is increased fifty per cent., by the use of the disk instead of the straight bar. Besides this these thin disks conducting the heat of the lower stratum of coals, readily downward, and radiating it freely, serve to heat the supply air on its way to the fuel, creating a hot blast very advantageous to the combustion of coal.

It is manifest that any form of bar as well as the fish-belly bar would answer. Also that other shapes than the semidisk would to some degree answer, such as semi-octagon, hexagon or triangular; but as these would be plain evasions of my invention I have not deemed it necessary to describe them.

I claim—

The employment of the bar *a*, when provided with a series of flanges which form an arc above the bar, and which taper from the extremities of the chord of said arc to, or near the bottom of the bar, thus supporting the coal in arches above the bar, and at the same time strengthening and sustaining the bar by the tapering sides of the flanges, substantially in the manner herein specified.

S. T. SAVAGE.

Witnesses:

E. J. MILLER,

RICHD. VARUK DE WITT.