

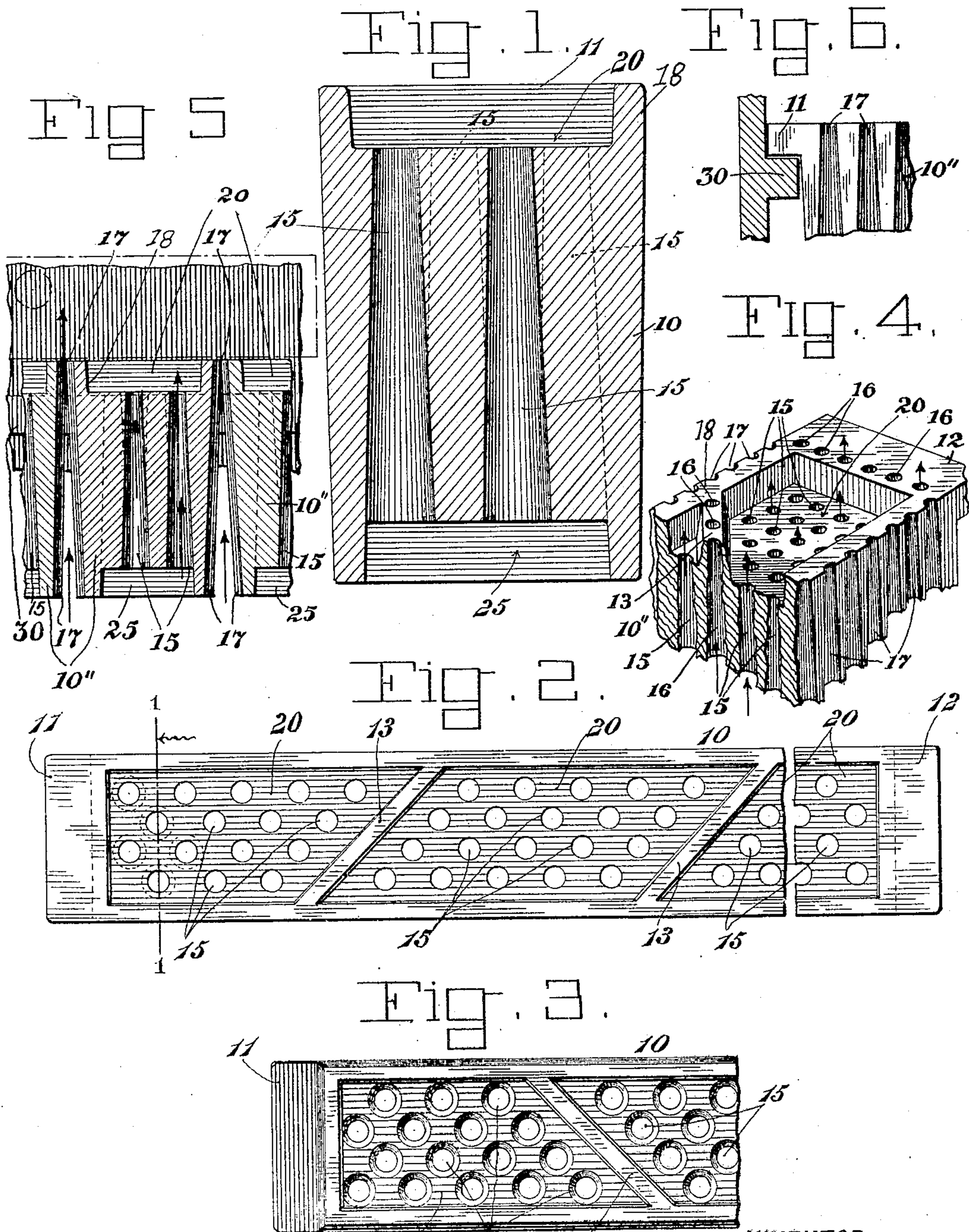
A. WILDERSPIN.

GRATE BAR.

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962,805.

Patented June 28, 1910.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## GRATE-BAR.

962,805.

Specification of Letters Patent. Patented June 28, 1910.

Application filed March 17, 1910. Serial No. 549,942.

*To all whom it may concern:*

Be it known that I, ANDERSON WILDER-  
SPIN, a citizen of the United States of  
America, and a resident of Grand Saline,  
5 in the county of Van Zandt, in the State of  
Texas, have invented certain new and useful  
Improvements in Grate-Bars, whereof the  
following is a specification.

This invention relates to a furnace grate  
10 bar especially adapted for a grate for burn-  
ing fine fuel such as slack lignite in steam  
boiler or other furnaces, either with a nat-  
ural, a forced or an induced draft. These  
grate bars may also be used to advantage in  
15 burning lump lignite and other fuel.

The principal objects of the invention are  
to secure a thorough distribution of air to  
the fuel on the grate and the retention there-  
on after a rake off of sufficient incandescent  
20 fuel to ignite a fresh supply of fuel.

Figure 1 of the accompanying drawings  
represents an enlarged transverse section on  
line 1—1 of Fig. 2 of a grate bar embody-  
ing the principal features of this invention.  
25 Fig. 2 represents a top plan view thereof,  
a part being broken out. Fig. 3 represents  
a bottom plan view of a fragment thereof.  
Fig. 4 represents a perspective view of a  
fragment thereof provided with ventilating  
30 holes extending through the partitions and  
with ventilating channels in its sides. Fig.  
5 represents a transverse section of a por-  
tion of a grate comprising a series of  
grate bars embodying the principal fea-  
35 tures of this invention. Fig. 6 represents  
a longitudinal section of a fragment of  
one end of one of the grate bars and its  
furnace support.

The same reference numbers indicate cor-  
40 responding parts in all the figures.

This bar in its general outline is like the  
ordinary grate bar commonly used in boiler  
furnaces being approximately rectangular  
in cross section, wider at top than bottom,  
45 and provided at its opposite ends with  
flanges 11 and 12 or other suitable projec-  
tions for engaging supporting means.

A grate bar embodying the preferred form  
of this invention is provided on its top face  
50 with marginal ribs 18 and transverse ribs  
or partitions 13 forming a plurality of in-  
dividual fuel pockets 20 adapted to retain  
fine fuel, and on its bottom face with re-  
cesses forming air pockets 25 preferably  
55 corresponding to the fuel pockets 20. The

transverse partitions 13 on the top face of  
the bar and the transverse partitions 14 on  
the bottom face thereof are preferably di-  
agonal. These fuel pockets are preferably  
about one-half to five-eighths of an inch 60  
deep, more or less. The fuel pockets 20 are  
connected with the air pockets 25 by venti-  
lating holes 15 preferably tapering and  
largest at their lower ends, being preferably  
about three eighths of an inch in diameter 65  
at the top and fifty per cent. larger at the  
bottom. These holes may be arranged in  
sets of two disposed apart from each other,  
the holes of one set being opposite the spaces  
between the holes of the adjacent set or sets. 70  
The grate bar may also be provided with  
tapering ventilating holes 16 which open  
flush with the top and bottom faces of the  
bar and pass through the marginal rims or  
ribs 18 thereof or through the diagonal par- 75  
titions or ribs.

The grate bar may be provided on one or  
both sides with channels 17 adapted to form  
with corresponding channels on an adjacent  
bar or bars additional ventilating holes. 80

In the use of these grate bars they are dis-  
posed together in touch one with another on  
ledges 30 or other suitable supports within  
the fire box as shown in Figs. 5 and 6.

The tapering form of the ventilating 85  
holes tends to cause a discharge of the air in  
jets into the fuel. When the fire is raked,  
the marginal rim and cross partitions or  
ribs cause the scraper or rake to pass over  
the incandescent fuel in the pockets and said 90  
fuel serves to ignite the fresh lignite or other  
fuel with which the fire is replenished. The  
diagonal direction of these ribs permits the  
rake to pass without obstruction.

In ordinary grates especially where a 95  
forced or induced draft is used, there is a  
tendency of the air to rush through the  
weakest places in the fire. In a grate com-  
posed of this improved grate bar the indi-  
vidual air pockets underneath tend to pre- 100  
vent the air rushing past some of the venti-  
lating holes and overcharging others. These  
air pockets form separate sources of supply  
to the separate groups of ventilating holes  
and cause an even distribution of the air to 105  
the fuel pockets in the top of the bar  
throughout the grate surface.

I claim as my invention—

1. A grate bar provided on its top face  
with marginal ribs and transverse partitions 110



forming a plurality of individual fuel pockets adapted to retain fine fuel, said bar having ventilating holes extending through the body thereof and opening into said pockets.

5 2. A grate bar provided on its top face with marginal ribs and diagonal transverse partitions forming a plurality of individual fuel pockets adapted to retain fine fuel, said bar having ventilating holes extending  
10 through the body thereof and opening into said pockets.

3. A grate bar provided with individual fuel pockets in its top face, separated by transverse partitions, individual air pockets  
15 on its bottom face and ventilating holes connecting said pockets.

4. A grate bar provided with individual fuel pockets in its top face, separated by transverse partitions, individual air pockets  
20 in its bottom face and upwardly tapering ventilating holes connecting said pockets.

5. A grate bar provided with individual fuel pockets in its top face, separated by transverse partitions, corresponding individual air pockets on its bottom face and  
25 ventilating holes connecting said pockets.

6. A grate bar provided with individual fuel pockets in its top face, separated by transverse partitions, with ventilating holes  
30 extending through the body of said bar and opening into said pockets and with ventilating holes extending through the body of said bar and opening flush with the top face thereof.

35 7. A grate bar provided with individual fuel pockets in its top face, separated by transverse partitions, with ventilating holes extending through the body of said bar and opening into said pockets and with ventilating  
40 holes extending through the body of said bar and through the separating partitions between said pockets and opening flush with the top face thereof.

45 8. A grate bar provided with individual fuel pockets in its top face separated by transverse partitions, and with ventilating holes extending through the body of said bar and opening into said pockets, said bar

being provided with air channels in its side adapted to form ventilating holes with corresponding air channels on an adjacent grate bar. 50

9. A grate bar provided with individual fuel pockets in its top face separated by transverse partitions, with individual air  
55 pockets in its bottom face, with ventilating holes connecting said pockets, and with ventilating holes extending through the body of said bar and opening flush with the top face thereof. 60

10. A grate bar provided with individual fuel pockets in its top face separated by transverse partitions, with individual air  
65 pockets in its bottom face, with ventilating holes connecting said pockets, and with ventilating holes extending through the body of said bar and through the separating partitions between said fuel pockets.

11. A grate bar provided with individual fuel pockets in its top face separated by  
70 transverse partitions, with individual air pockets in its bottom face, with ventilating holes connecting said pockets, and with ventilating holes extending through the body of said bar and opening flush with the top face  
75 thereof, said bar being provided with air channels in its side adapted to form ventilating holes with corresponding air channels on an adjacent grate bar.

12. A grate bar provided with individual  
80 fuel pockets in its top face separated by transverse partitions, with individual air pockets in its bottom face separated by transverse partitions, with ventilating holes connecting said pockets, and with ventilating  
85 holes extending through the body of said bar and through the separating partitions between said pockets and opening flush with the top face thereof, said bar being provided with air channels in its side adapted  
90 ed to form ventilating holes with corresponding air channels on an adjacent grate bar.

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Witnesses:

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