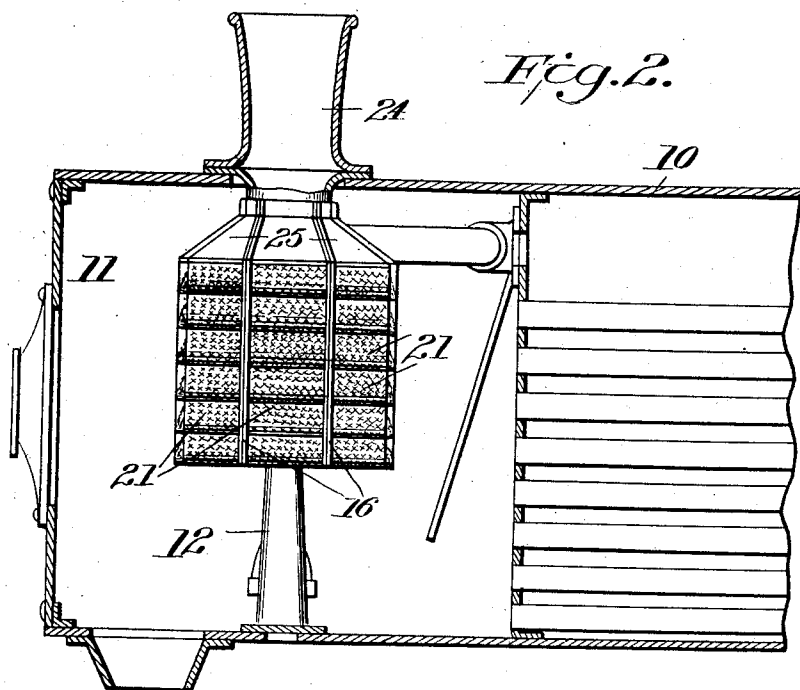
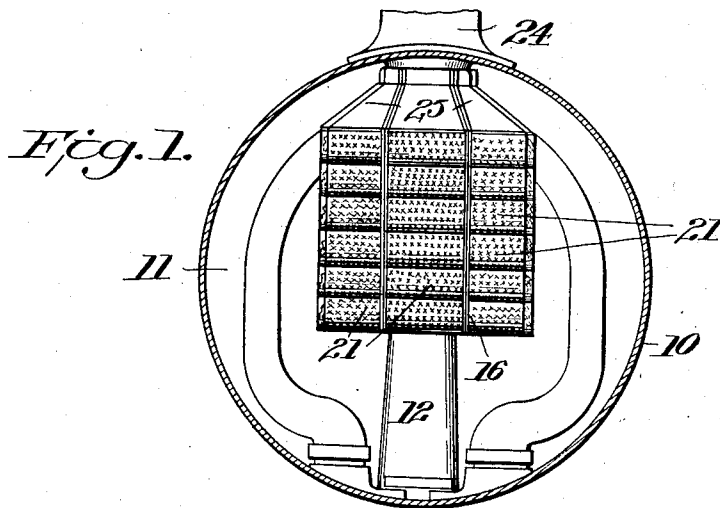


A. W. GRAHAM.
SPARK ARRESTER.
APPLICATION FILED APR. 11, 1911.

1,037,898.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.



WITNESSES

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R. C. Fischer.

INVENTOR

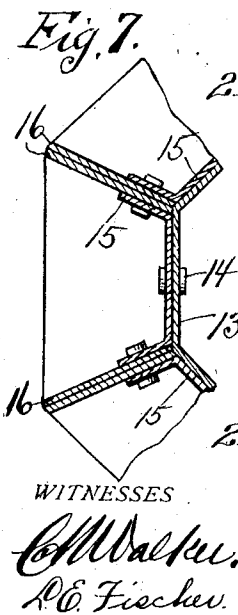
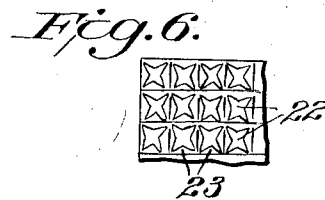
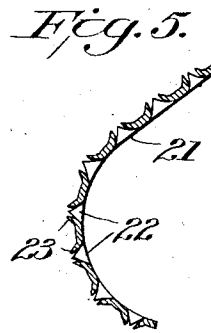
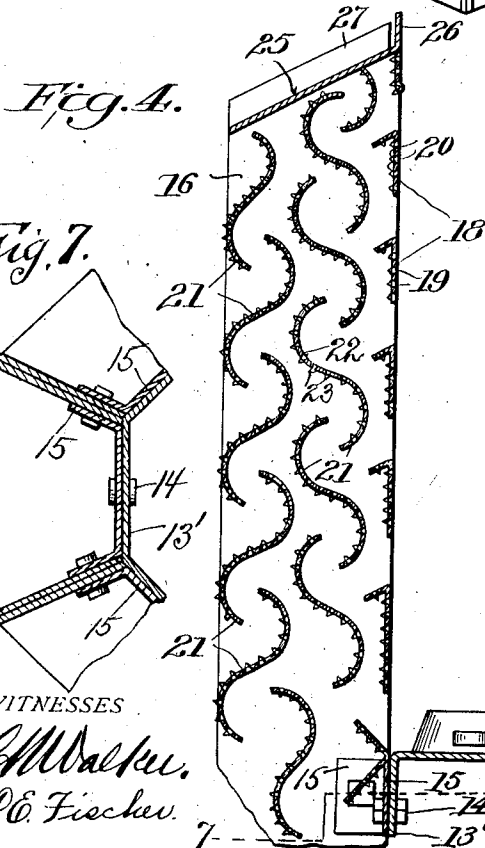
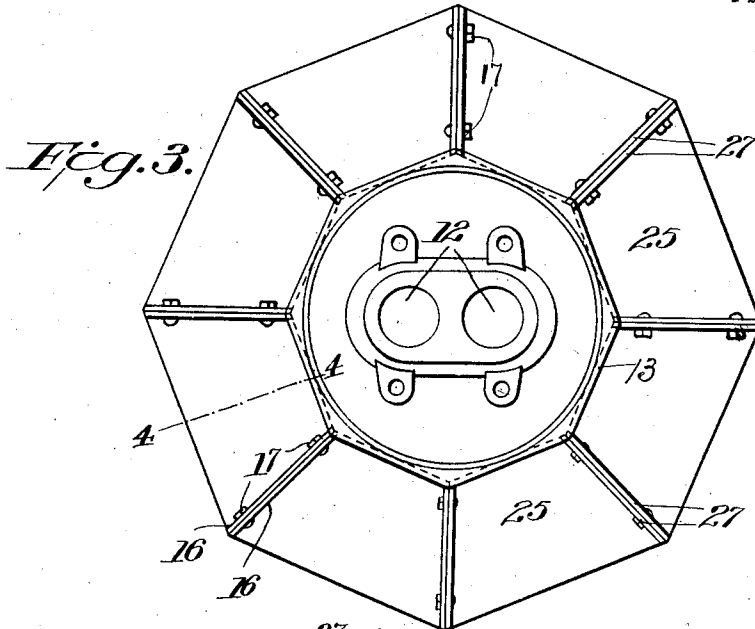
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2 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

ANDREW WALTER GRAHAM, OF BRADFORD, PENNSYLVANIA, ASSIGNOR OF TWENTY-FOUR AND THREE-FOURTHS ONE-HUNDREDTHS TO RANSOM G. LANDON AND TWENTY-FOUR AND THREE-FOURTHS ONE-HUNDREDTHS TO JOHN C. McCREA, BOTH OF BRADFORD, PENNSYLVANIA.

SPARK-ARRESTER.

1,037,898.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed April 11, 1911. Serial No. 620,447.

To all whom it may concern:

Be it known that I, ANDREW WALTER GRAHAM, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification.

This invention relates to locomotives and has particular reference to a spark arrester such as is employed in the smoke box of engines of this character.

The principal object of the invention is to improve the general construction of devices of this description.

A second object of the invention is to provide a device of that character which will effectively break or pulverize the large cinders into such minute fragments that they will be readily consumed and extinguished before leaving the stack and thus be rendered incapable of doing harm by setting fire to combustibles adjacent the track.

A third object of the invention is to provide a device which will not be liable to clog.

With the above and other objects in view the invention consists in general of certain novel features of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the claims.

In the accompanying drawings like characters of reference refer to like parts in the several views, and Figure 1 is a transverse section through the smoke box of a locomotive showing the device in position therein. Fig. 2 is a similar longitudinal section through such a smoke box. Fig. 3 is top plan view of the device. Fig. 4 is a section on the line 4—4 of Fig. 3 through one of the sections of the spark arrester. Fig. 5 is a cross section through a portion of one of the baffle plates employed in this invention. Fig. 6 is a face view of such a plate. Fig. 7 is a horizontal section on the line 7—7 of Fig. 4.

In the drawings there is illustrated a boiler 10 of the type commonly employed in

locomotives. This boiler has in front of the water compartment a smoke box 11 and nozzles 12 project upwardly in this smoke box and are connected with the exhaust from the cylinders of the engine which are not deemed necessary here to be shown. Resting on these nozzles or connected therewith is a housing 13 of polygonal form by preference and secured to this housing preferably consisting of a flat plate having a depending peripheral flange 13' by any suitable means, as by the bolts 14 are members 15 radiating from the conjoining angles of which are plates 16 which are so arranged that the plates from one side of the polygonal housing contact with the plates of adjacent sides of the housing, the adjacent plates being secured by fastening means such as indicated by the bolts 17. Each of these plates 15 with its pair of plates 16 thus forms a section which can be built separately and attached to the housing. The spaces between the inner edges of the plates 16 are bridged by vertically spaced members 18 which are preferably made of sheet metal and punched to provide openings 19 surrounded by outwardly projecting teeth 20. The spaces between the members 16 are bridged by a plurality of series of spaced but interlocking S-shaped members 21 each provided with apertures 22 formed by striking the metal of the members outwardly to provide teeth 23. From an inspection of Fig. 4 it will be observed that this arrangement provides a plurality of circuitous passages for the gases of combustion and the cinders carried thereby so that the cinders upon striking on the teeth 20 and 23 will be comminuted and reduced to such small dimensions that they will be extinguished before leaving the stack 24. It will thus be observed that perfect freedom is provided for the gases of combustion while at the same time provision is made for comminution of the cinders without the possibility of clogging the device. It will also be observed that each of the sections is provided with an upwardly inclined top 25 and that this top has inner flanges 26 and radial flanges 27, the latter

being formed from extensions of the members 16.

From the foregoing it will be observed that the members 16 form panels that are arranged in radiating relation so that a plurality of vertical spark arresting compartments are provided that are open at their front and rear, and that the products of combustion which enter the compartments through the front thereof cannot have direct passages through the compartments, but owing to the staggered arrangement of the spaced overlapping and interlocking of the baffles 21 are caused to contact with and be acted upon by said baffles. And, further, the baffles 18 at the rear of the compartments are so disposed that they act upon the products of combustion after leaving the baffles 21.

Having thus described the invention, what is claimed as new is:—

1. A spark arrester comprising a nozzle, a plurality of spaced panels surrounding the nozzle, and baffle plates connecting adjacent panels and provided with a plurality of openings that are surrounded by spark disintegrating teeth.

2. A spark arrester comprising an exhaust nozzle, a plurality of panels surrounding the said nozzle and arranged radially, and baffle plates connecting adjacent panels and provided with openings that are surrounded by spark disintegrating means.

3. A spark arrester comprising an exhaust nozzle, a support mounted on the nozzle, a plurality of radiating panels carried by the support, a plurality of baffle plates connecting adjacent panels, and additional baffle plates connecting the inner edges of adjacent panel plates.

4. A spark arrester comprising an exhaust nozzle, panels arranged in radial spaced relation and surrounding the nozzle, and baffle plates connecting adjacent panels and provided with cinder disintegrating means.

5. A spark arrester comprising an exhaust nozzle, a series of spaced vertically disposed radial panels surrounding the nozzle, a plurality of baffle plates connecting adjacent panels and provided with spark disintegrating means.

6. A spark arrester comprising an exhaust nozzle, an inclosing structure therefor including a plurality of vertically arranged spaced radial panels, overlapping baffles connecting adjacent panels, and additional baffles connecting the inner edges of adjacent panels.

7. In a spark arrester, an exhaust nozzle, a cinder retarding device surrounding said nozzle and including panels arranged in spaced relation, and a series of baffles between adjacent panels, said baffles being

each provided with cinder disintegrating means comprising a multiplicity of openings surrounded by outwardly projecting teeth.

8. A spark arrester comprising an exhaust nozzle, and a cinder retarding and disintegrating device surrounding the same and including a series of vertically arranged radial panels, and a series of baffles connecting adjacent panels and provided with a multiplicity of openings surrounded by projecting teeth.

9. In a spark arrester, an exhaust nozzle, a cinder retarding device surrounding said nozzle and including panels arranged in radial relation, and a series of baffles between adjacent panels and each provided with spark disintegrating means.

10. In a spark arrester, an exhaust nozzle, a cinder retarding device surrounding said nozzle and including a nozzle engaging support, outwardly projecting panels spaced around and carried by said support, a series of interlocking S-shaped spark disintegrating baffles between adjacent panels, and additional spark disintegrating means between said panels.

11. In a spark arrester, an exhaust nozzle, a cinder retarding device surrounding said nozzle and including outwardly projecting panels spaced around said retarding device, a series of interlocking S-shaped baffles between adjacent panels, and provided with spark disintegrating means and additional baffles between the inner edges of adjacent panels and provided with spark disintegrating means, each of said spark disintegrating means comprising a multiplicity of openings surrounded by outwardly projecting teeth.

12. A spark arrester comprising a support, panels carried thereby and arranged to provide a plurality of radiating spark arresting compartments open at the front and rear, baffle plates in each compartment and arranged to intercept incoming products of combustion, said plates being provided with spark disintegrating means, and baffle plates in the rear of said compartments and provided with spark disintegrating means.

13. A spark arrester comprising a support, a plurality of radiating panels carried thereby and arranged to provide compartments that are open at the front and rear, a cover for the compartments for directing the products of combustion to the rear thereof, a plurality of overlapping baffles in each compartment arranged in staggered relation and provided with spark disintegrating means, and a vertical row of spaced baffles in the rear of the compartments and provided with spark disintegrating means.

14. A spark arrester comprising a plural-

ity of partition panels arranged to provide
spark arresting compartments a plurality
of baffles in each compartment arranged to
provide circuitous passages for the prod-
5 ucts of combustion, said baffles being pro-
vided with spark disintegrating means, and
baffles in the rear of the compartments and
provided with spark disintegrating means.

In testimony whereof I affix my signature
in presence of two witnesses.

ANDREW WALTER GRAHAM.

Witnesses:

L. N. ELLIS,

ALBERT POPKINS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
