W. C. YEOMANS.

SPARK ARRESTER.

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1,079,586. Patented Nov. 25, 1913.

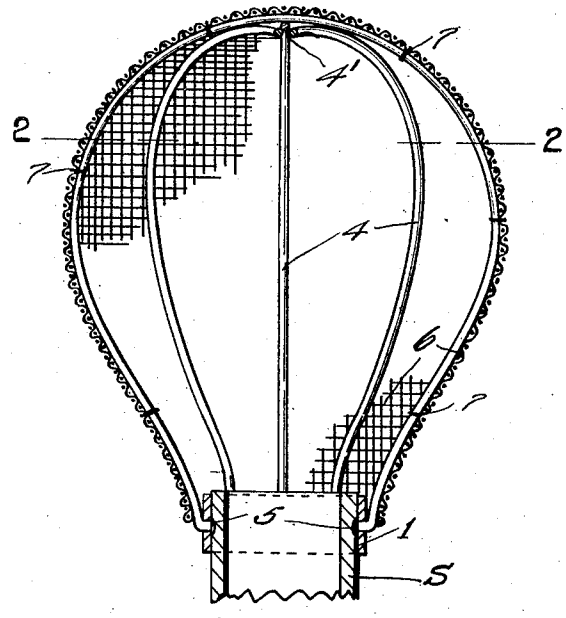


FIG. 1

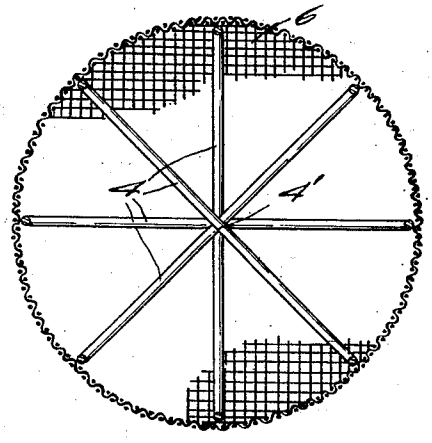
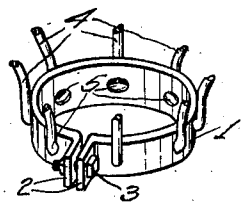


FIG. 2

FIG. 3



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SPARK-ARRESTER.

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To all whom it may concern:

Be it known that I, WALLACE C. YEOMANS, a citizen of the United States, residing at Pe Ell, in the county of Lewis and State of Washington, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification.

This invention relates to improvements in spark arresters for locomotive or stationary boiler furnaces.

The object of my improvements is the provision of a device of the class described of simple and inexpensive construction that will prevent the escape of all cinders and sparks, however minute, and which will not clog or obstruct the passage of smoke or diminish the draft of the furnace to an appreciable extent.

The invention consists in the provision of a flexible frame of novel construction, adapted to be secured about the flue opening of a boiler-furnace and a covering secured to said frame of a fine-meshed screen, said frame and screen adapted to be agitated by the steam-exhaust or normal vibrations of the boiler-construction to clear the screen of trapped cinders which may fall back into the furnace and be consumed, as will be fully explained in the following specification, illustrated in the accompanying drawings, and finally set forth in the appended claims.

In said drawings, Figure 1 is a view in vertical section of an embodiment of my invention shown secured to a smoke-stack. Fig. 2 is a horizontal section of the same taken through 2—2 of Fig. 1. Fig. 3 is a fragmentary perspective view of a detail of the invention.

Referring to said drawings, the reference numeral 1 designates a collar or band adapted to be secured or clamped to the upper extremity of a boiler smoke-stack S or other support through integral out-turned lugs 2 apertured to receive the bolt 3. A skeleton frame is secured to said collar consisting of a plurality of light spring metal rods or wires 4 rigidly secured, as at 5, at their opposite ends upon diametrically opposite sides of said collar. Said rods are positioned at equally spaced intervals about said collar. Said rods are crossed radially intermediate their ends at their uppermost point, as at 4^1, in the vertical axis of the frame and between said uppermost portion and their respective ends are bowed outwardly inclosing a balloon-shaped, or ovoid, space. A fine-meshed screen 6 is fitted to said frame completely covering the same and preventing all egress of matter emitted from the stack excepting what passes through the mesh. The screen is secured to the frame, as at 7, in such manner that the flexibility of the frame-rods is not materially affected.

In operation, when the device is securely positioned, as described, upon the stack of a locomotive or other boiler furnace, all the sparks and cinders except the smallest and most inconsequential size, are retained by the fine-meshed screen 6 inclosing the frame. The jet of exhaust steam emitted through the stack in a succession of spurts, as is ordinarily the case, causes a rapid variation in pressures within the arrester and causes the latter to vibrate or be agitated at a more or less uniform rate. Such agitation usually consists in the expansion and contraction of the normal horizontal diameter of the arrester in relatively rapid succession following the emission of steam from the exhaust nozzle. However, such vibrations of the arrester are not regular and are modified and accompanied by complex lateral swaying and swinging movements due to its unstable construction and the movements and vibration of the boiler itself during operation; the total effect being that the cinders stayed by the fine mesh of the screen do not remain drawn against the screen for any length of time to accumulate and retard the draft of the furnace but are jarred and shaken from their contact with the screen whence they fall again within the stack to be consumed.

In the present construction and with a sufficiently fine screen all the sparks are caught while upon their upward velocity being checked, they are shaken away from contact with the screen so that the passage of combustion products therethrough remains free and there is no consequent retarding of the draft.

Having described my invention, what I claim, is—

1. In a spark arrester, the combination with a smoke stack, of a collar adapted to be secured adjacent the upper end thereof, ovoidal-shaped flexible wire members connected at their lower ends to said collar, and a fine mesh screen covering said members.

2. In a spark arrester, the combination with a smoke stack, of a collar adapted to be

secured adjacent the upper end thereof, flexible wires bent to provide substantially inverted U-shaped members connected at their lower ends to said collar, the sides of said U-shaped members being of greater diameter substantially mid-way the height thereof and directed inwardly to provide a top greater in diameter than the support, and a fine mesh screen covering said members.

Signed at Pe Ell, Wash., this 30th day of January, 1913.

WALLACE C. YEOMANS.

Witnesses:
G. E. ALDONE,
E. PETERSON.

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