No. 852,727. PATENTED MAY 7, 1907.

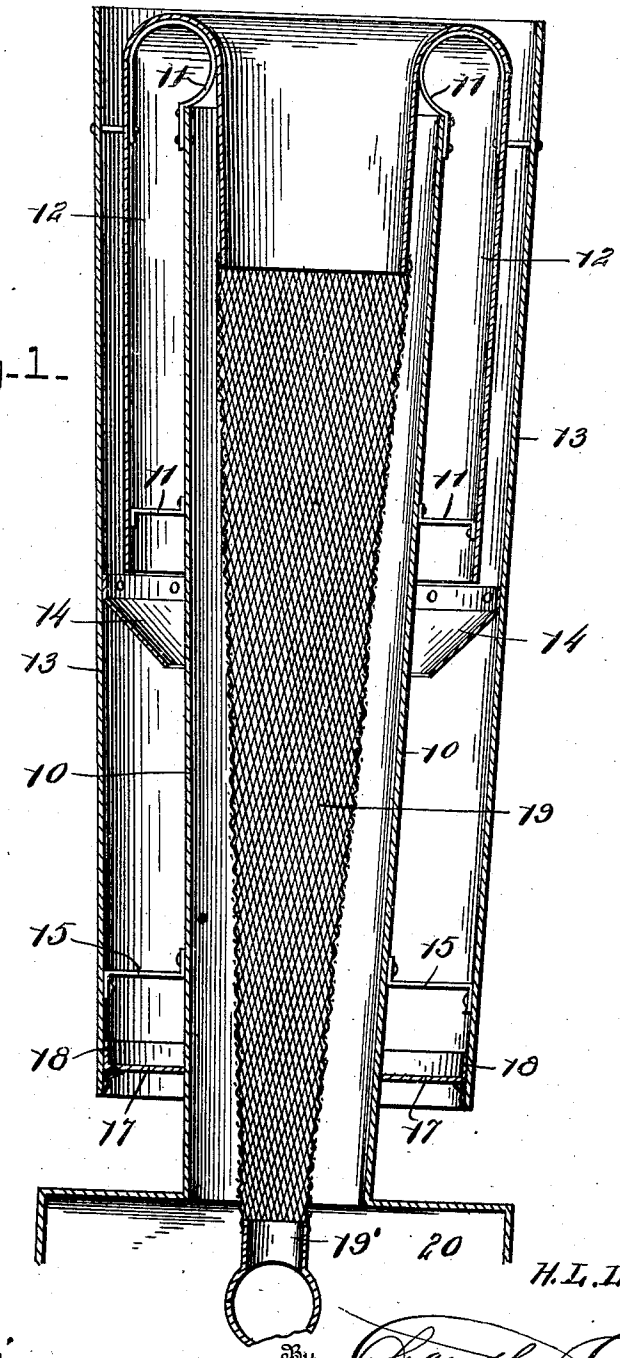
H. L. LAPHAM.

SPARK ARRESTER.

APPLICATION FILED JUNE 20, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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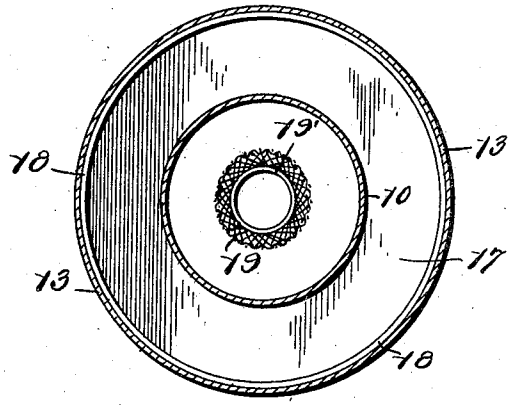

Fig. 2.

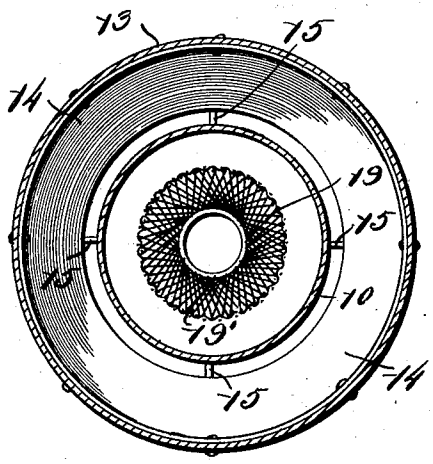

Fig. 3.

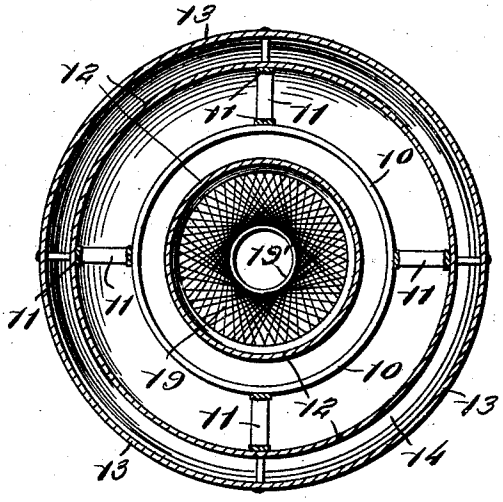

Fig. 4.

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UNITED STATES PATENT OFFICE.

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SPARK-ARRESTER.

No. 852,727. Specification of Letters Patent. Patented May 7, 1907.

Application filed June 20, 1906. Serial No. 322,582.

To all whom it may concern:

Be it known that I, HERBERT L. LAPHAM, a citizen of the United States, residing at the town of Wilmington, in the county of Houston, State of Minnesota, have invented certain new and useful Improvements in Spark-Arresters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference, generally, to spark arresters, and in particular to a device of that nature, designed for employment in connection with traction engines such, for example, as are used for hauling grain separators.

It is the object of the invention to simplify and perfect the construction and arrangement of the steam exhaust, and of the parts which control the course of the cinders, so as to prevent the tendency of the latter, after having started outside of the screen cone, from entering the same, and by the free escape of steam to be thereby drawn upward until they pass the inside rim of the deflecting hood where they will find an easy escape over the rim of the smoke stack, being caught in the removable bottom of the outside shell.

Other objects include the construction, combination and arrangement of the various parts of the invention, as will appear in the following detailed description.

The invention will first be described in detail, in connection with the annexed drawings, forming a part of this specification, and then be pointed out with particularity in the subjoined claims.

Of the said drawings, Figure 1 is a vertical central view of the invention, the top of a part of the boiler and some other adjuncts. Fig. 2 is a horizontal section taken on a line just above the removable bottom that catches the cinders. Fig. 3 is a horizontal section on the line of the spark fender. Fig. 4 is a horizontal section taken on a line just above the smoke stack.

Similar figures of reference designate similar parts or features, as the case may be, wherever they occur.

Though the size of the various parts are not matters of limitation in the invention, the relationship of one part to another, in some instances, calls for its measurements, that the invention may be clearly understood.

As before stated, the spark arrester herein illustrated is especially designed for use on a traction engine, but it is applicable as readily to an engine of any other kind.

In the drawings, 10 designates the smoke stack that may be considered, in this instance, to be four feet tall and nine inches in diameter at the base and twelve inches at the top. Braces 11 of iron are bolted to the top and sides, and over the top is arranged the deflecting hood 12 consisting of an imperforate sheet of iron or steel which the braces 11 assist in maintaining in position. The said deflecting hood in its outer portion extends down inside of the smoke stack 10 about eight inches below the rim, leaving a space of one and one-half inches between the inside of the deflecting hood and the smoke stack. The deflecting hood then extends up six inches above the smoke stack, making a circle six inches in diameter at the top and extends down outside of the smoke stack twenty-four inches, leaving a space of three inches between the outside of the deflecting hood and the smoke stack.

13 designates the outside shell inclosing the entire apparatus, and about twenty-six inches from its top the cinder feeder 14 is riveted at its upper edge to the said shell and inclines downward and inward to near the outside of the smoke stack. Stay-bolts are employed to maintain the outside casing in place at the top and iron or steel braces 15 at the bottom, leaving a space of one inch all around between the deflecting hood and outside shell at the top, and three inches between the outside shell and smoke stack at the bottom.

To the bottom of the outside shell, about a foot above the boiler, a removable bottom 17 is fitted with a rim 18 extending vertically up from its outside edge for two or three inches and extending to the outside shell 13. The said removable bottom is designed to receive all of the cinders and is commodious enough to hold the accumulations of three or four days. It is so supported that it may be released and dropped down to the boiler and cleaned and readily replaced again.

19 designates the inverted screen cone which extends from the exhaust nozzle 19′ to the rim of the deflecting hood. At its lower

end the screen cone is fitted upon the outside of the exhaust nozzle 19′ so that the explosive exhaust of steam from the latter occurs inside of the cone, thus preventing all tendency of the sparks to enter the cone, and at the same time the free course of the steam, in its escape, operates to draw the sparks upward until they pass the outside rim of the deflecting hood 12 from which line their easiest course of escape is over the rim of the top of the smoke stack and down to the bottom the outside shell into the removable bottom or pan 17, where they are instantly disintegrated.

20 designates the smoke box and 19′ the exhaust nozzle, which, as stated, is so disposed as to make the exhaust within the screen cone.

The construction and arrangement of parts are such as to make the course for the exhaust steam easiest to the open air by passing directly up through the screen cone and out of its top, while the course of the sparks, by reason of the drafts exerted thereon, is easiest upward outside of the screen cone until they pass into the deflecting hood 12, whence they are drawn over, and as they pass down become pulverized or disintegrated, with certainty, the residuum, after extinguishment, falling into the removable bottom 17, while the gases rise gently, passing out at the top of the outside shell. The position of the screen cone surface being, as it is, so nearly parallel with the draft, prevents any tendency of the sparks to pass to the open air through the screen. The free passage of the exhaust steam increases the draft, and hence directs the sparks well without the rim of the bottom of the deflecting hood, and once the sparks have reached the latter line their passage up and over the top of the smoke stack, down to the spark fender, and finally up outside of the deflecting hood and between it and the outside shell, is assured.

The space between the top of the smoke stack and the screen being large, there is no tendency to even crowd the sparks at this point, and they pass freely over the top of the stack, as before stated.

What is claimed as the invention is:—

1. The combination with the exhaust nozzle, the smoke stack, and outside shell having an open top, of the inverted screen cone secured at its lower end to the outside exhaust of the nozzle, the deflecting hood provided with an opening through its center connected with the upper end of the screen cone and curved over the top of the smoke stack and extending down between the latter and the outside shell to substantially the longitudinal center of the smoke stack and permitting of the escape of steam and gases out from the top of the said outside shell.

2. The combination, with the exhaust nozzle, the smoke stack, and the outside shell having an open top, of the inverted screen cone secured at its lower end to the outside of the exhaust nozzle, the cinder fender connected with the outer shell and arranged at substantially the longitudinal center of the smoke stack, the deflecting hood provided with an opening through its center connected with the upper end of the screen cone and curved over the top of the smoke stack and extending down between the latter and the outside shell to the cinder fender and permitting of the escape of steam and gases out from the top of the said outside shell.

3. The combination, with the exhaust nozzle, the smoke stack, and outside shell having an open top, of the inverted screen cone secured at its lower end to the outside of the exhaust nozzle, the deflecting hood provided with an opening through its center connected with the upper end of the screen cone and curved over the top of the smoke stack and extending down between the latter and the outside shell to substantially the longitudinal center of the smoke stack, and a removable cinder-catching device arranged substantially at the bottom of the outside shell to receive and remove the extinguished cinders and permitting of the escape of steam and gases out from the top of the said outside shell.

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

HERBERT L. LAPHAM.

Witnesses:
A. J. FLYNN,
H. C. SEUFFERT.