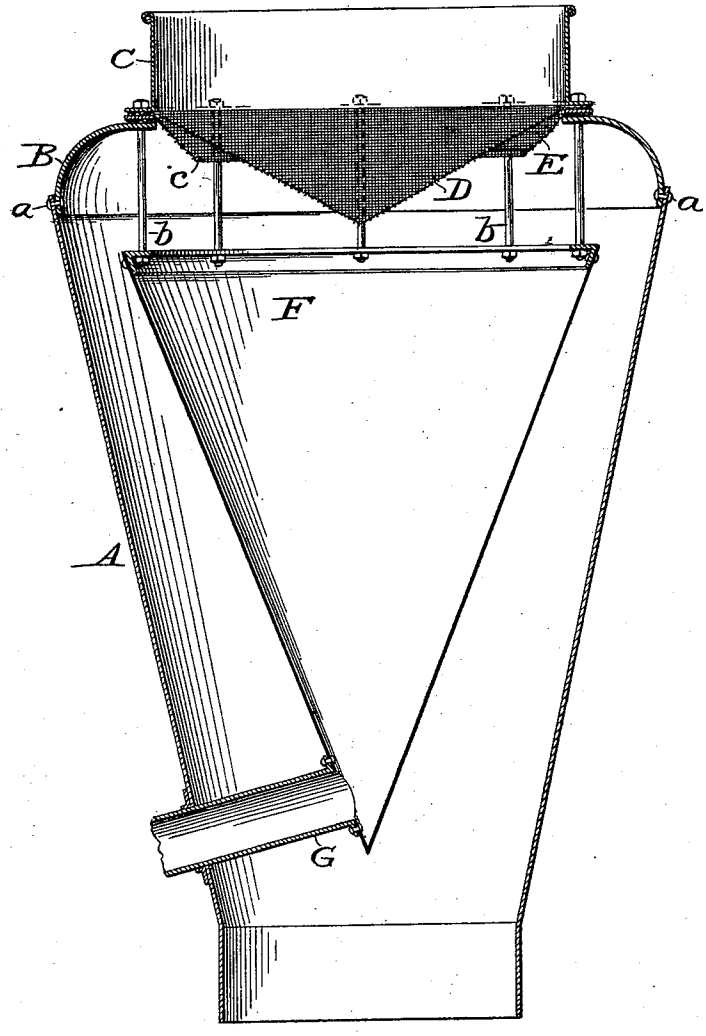
(No Model.)

H. C. SMITH.

SPARK ARRESTER.

No. 478,207. Patented July 5, 1892.



Witness:

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Horace A. Dodge.

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UNITED STATES PATENT OFFICE.

HENRY C. SMITH, OF ROANOKE, VIRGINIA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 478,207, dated July 5, 1892.

Application filed March 10, 1892. Serial No. 424,408. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SMITH, a citizen of the United States, residing at Roanoke, in the county of Roanoke and State of Virginia, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification.

My invention relates to spark-arresters; and it consists in the various details hereinafter set forth and claimed.

The object of my invention is to obtain an efficient spark-arrester which shall be simple in construction and at the same time will not materially retard the draft of the engine or boiler to which it is applied.

The annexed drawing represents a vertical sectional view of my improved device.

A indicates the main body or conical part of a smoke-stack, to which is secured by means of bolts or rivets *a a* an inwardly-curved cast-iron rim or hood B, and upon this hood is mounted a flanged ring or band C.

Between the hood B and band C I secure my spark deflectors or screens D and E, the former of which is in the form of an inverted cone and the latter a frustum of a cone, both being formed of wire-netting or similar material and having their outer edges clamped between the hood B and band C.

The lower edge of the screen or deflector E is stiffened or strengthened by means of a wire or band *c*, as shown, as this is the screen which is subjected to the greatest force and wear.

Suspended within the stack by means of the bolts or rods *b b* is an inverted-sheet-metal cone or receptacle F, its base being in nearly the same horizontal plane as the apex of the deflector D and equal in diameter to the said deflector. Extending through the side of the stack and communicating with the small end of the cone F is a pipe G, which is adapted to carry off the cinders from cone F.

The operation of my arrester is as follows: The smoke and gas enter the bottom of the stack and pass up through the same between the walls of shell A and cone F, when the smoke and cinders come in contact with the initial deflector or screen E, which serves to arrest the cinders, but does not materially affect the draft, which has a direct outlet through screen D and ring C. Such cinders as are not caught by the screen E will be stopped by the screen D, screen E serving to arrest those cinders which are thrown upward with the most force. The cinders which are arrested by the screens D and E fall into the receiving-cone F, from which they are carried off through the pipe G and discharged, while the smoke and gases pass through the screens and finally escape through the top of the stack.

I desire to emphasize the fact that while the short screen or deflector E causes a deflection of the ascending cinders, sparks, &c., and relieves the screen D from considerable work it does not to any material degree interfere with the draft and cause back-pressure.

While I prefer to make the shells A F and the screen D of conical form, this is not essential; nor is the precise manner of securing the screens in place of particular moment.

I am aware that spark-arresters have been provided with imperforate deflectors designed to receive the initial impact of the draft, and to such construction I make no claim. My invention comprises a screening-deflector which, while saving the main screen from the initial impact, allows the smoke and gases to escape directly from the stack without appreciably affecting the draft, as invariably occurs where imperforate deflectors are used.

Having thus described my invention, what I claim is—

1. In a spark-arrester, the combination, with the stack A, of a receptacle F, open at its upper end and located within the stack, a screen D, extending across the top of the stack immediately above the mouth of the receptacle, so as to direct the sparks thereinto, and a deflecting-screen E, surrounding that portion of the screen D above the annular space between the parts A and F, all substantially as shown and described.

2. In a spark-arrester, the combination, with a stack A, of a receptacle mounted therein, but set away from the sides thereof, so as to form an annular draft-space, a conical screen D, extending across the outlet of the stack and projecting down toward the mouth of the

receptacle F, and a second screen E, made in the form of a ring or band and adapted to receive the initial impact of the draft, &c.

3. In combination with stack A, having curved upper wall or casting B, receptacle F, mounted therein and having its upper end of the same size as the opening in the top of the stack, the conical screen D, filling the opening in the stack-opening and extending down toward the mouth of the receptacle, and a second screen E, made in the form of a band and surrounding the screen D near its junction with the stack.

In witness whereof I hereunto set my hand in the presence of two witnesses.

HENRY C. SMITH.

Witnesses:
J. W. SHIELD, Jr.,
JOHN THOS. TRAUT.