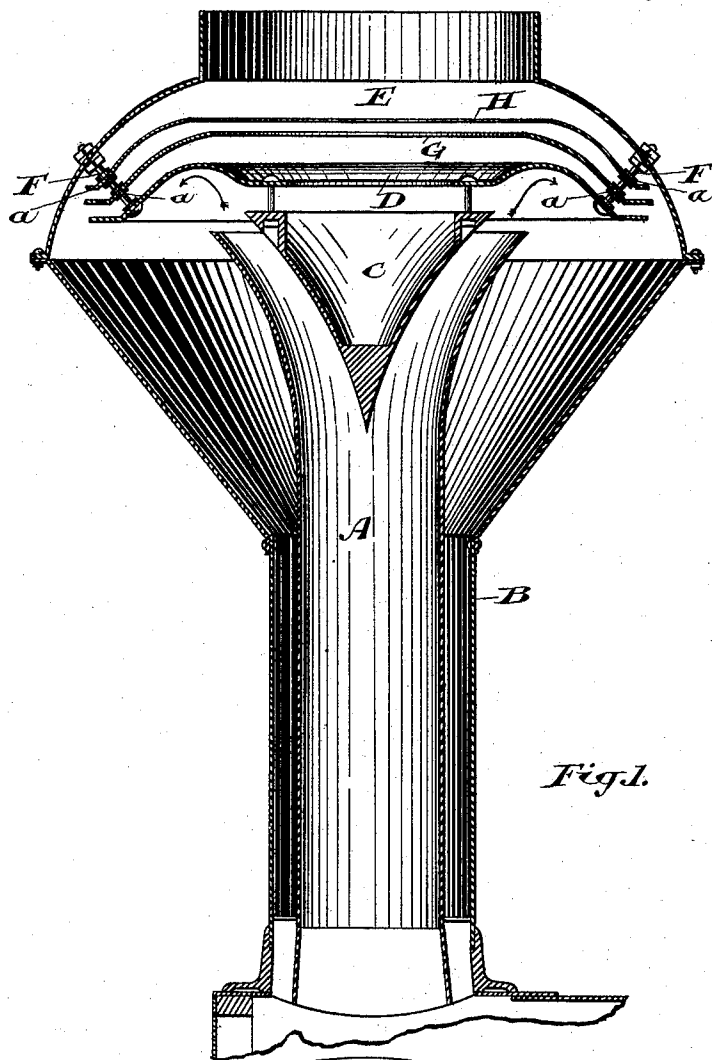
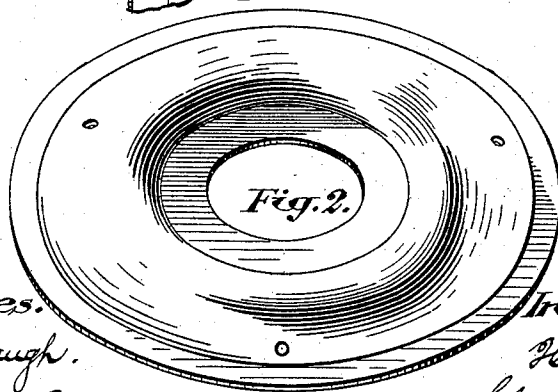


(No Model.)

H. BRUCE.
SPARK ARRESTER.

No. 382,948.

Patented May 15, 1888.



Witnesses.
T. B. Fehusonbaugh.
J. H. H. H. H.

Inventor:
H. Bruce
by Donald C. Ridout & Co
Atty

UNITED STATES PATENT OFFICE.

HUNTER BRUCE, OF ST. THOMAS, ONTARIO, ASSIGNOR OF ONE-HALF TO
ISAAC HENRY RADFORD, OF TORONTO, CANADA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 382,948, dated May 15, 1888.

Application filed August 21, 1886. Renewed April 5, 1888. Serial No. 269,683. (No model.)

To all whom it may concern:

Be it known that I, HUNTER BRUCE, of the city of St. Thomas, in the county of Elgin, in the Province of Ontario, Canada, mechanic, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification.

The object of the invention is to provide a spark-arrester for the smoke-stacks of steam-engine boilers which will completely prevent the escape of sparks without the use of wire-netting, and without in any way impeding or interfering with the draft of the boiler or free escape of the exhaust steam; and it consists, essentially, in placing within the bonnet of the smoke-stack a series of deflecting-plates suspended above the inner smoke-pipe, so that the sparks escaping from it will come in contact with the first deflecting-plate and be thrown down into the space between the inner smoke-pipe and the outer case of the stack, the remaining deflecting-plates being arranged to catch any sparks which might escape the first plate, the whole being arranged substantially as and for the purpose specified.

Figure 1 is a sectional elevation of a smoke-stack provided with my improved spark-arrester. Fig. 2 is a perspective detail of the first deflecting-plate.

A represents the inner smoke-pipe, which communicates with the smoke-box, and in the center of which the exhaust-nozzle points.

B is the outer case of the smoke-stack, a space being left between the smoke-pipe A and the case B. The top of the smoke-pipe A is bell-mouthed, and within this mouth an inverted cone, C, is suspended from the first deflecting-plate, D. This plate is shaped substantially in the form shown, and is suspended from the top of the bonnet E by the bolts F.

G and H are two other deflecting-plates supported by the bolts F, adjusting-nuts *a* being fitted onto the bolts F, so that the distances between the plates D, G, and H may be altered as required.

A central annular hole is made through the plate D, slightly smaller in diameter than the base of the cone C, while those in the plates G and H are larger.

The operation of my spark-arrester is as follows: The smoke, sparks, and exhaust-steam pass up through the pipe A, where they strike the point of the cone C, flaring off through the bell-mouth of the pipe A. The sparks must necessarily come against the curved surface of the plate D, as indicated by single-headed arrows, and are thrown down into the space between the pipe A and outer case, B. The smoke and steam will escape through the central hole in the plates D, G, and H, and through the spaces left between the said plates D, G, and H.

Owing to the arrangement of the plates D, G, and H, sufficient space is left for the free escape of the smoke; but, owing to the circuitous passage-ways, no sparks can find their way out of the stack.

What I claim as my invention is—

1. A smoke stack having a bell-mouthed pipe, A, inserted in it, so as to leave a space between the case B and the said bell-mouthed pipe A, the combination of the cone C, suspended from the deflecting-plate D, which is supported from the top of the bonnet E by the bolts F, substantially as and for the purpose specified.

2. The deflecting-plates D, G, and H, supported from the top of the bonnet E by the bolts F, having adjusting-nuts *a* on them, in combination with the inverted cone C, suspended from the plate D within the bell-mouth of the pipe A, substantially as and for the purpose specified.

Toronto, August 9, 1886.

HUNTER BRUCE.

In presence of—

F. J. DUNBAR,

Of Toronto, Barrister-at-Law.

CHARLES C. BALDWIN.