D. BURGESS & J. M. RUSSELL.

Spark-Arrester.

No. 217,579. Patented July 15, 1879.

Fig. 1.

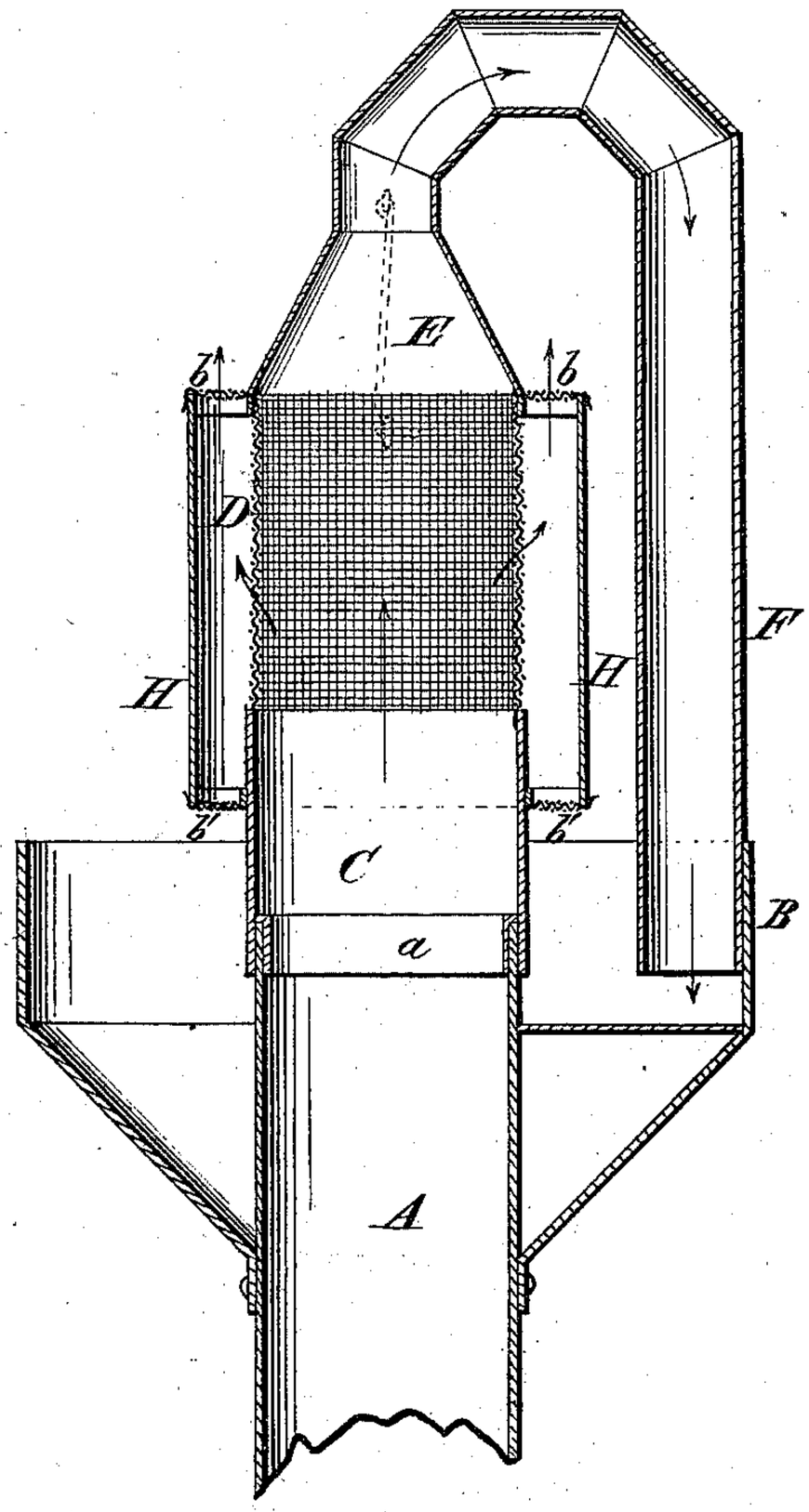

Fig. 2.

Attest:
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UNITED STATES PATENT OFFICE.

DANIEL BURGESS, OF NOBLESVILLE, AND JAMES M. RUSSELL, OF ARCADIA, INDIANA.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **217,579**, dated July 15, 1879; application filed June 7, 1879.

To all whom it may concern:

Be it known that we, DANIEL BURGESS, of Noblesville, and JAMES M. RUSSELL, of Arcadia, in the county of Hamilton and State of Indiana, have invented certain new and useful Improvements in Spark-Arresters; and we 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in that class of devices usually called "spark-arresters," which are applied to the chimneys of such steam-engines as produce a draft through the boiler-furnace by means of the exhaust-steam, which enters the stack or chimney near its base and escapes at its top, carrying with it a strong current of air and the products of combustion, which, when the fuel used is wood, straw, or other light material, carries along a large quantity of sparks and small coals, which, if not deadened, endanger all combustible material within their reach; and the invention consists in the especial construction of the cap which surmounts the chimney, which, while it allows the smoke to escape unimpeded, carries the sparks and cinders along, and drops them into a tank of water, all as will be hereinafter fully set forth, and then clearly defined in the claims.

In the drawings, Figure 1 is a vertical section of the cap applied to a chimney and provided with a water-tank, and Fig. 2 is a plan of the same without the tank.

The stack or chimney A may be provided near its top with the water-tank B, completely encircling the stack, and supplied with water from any suitable source. Upon the top of the stack A is detachably secured the sheet-iron cylinder G by means of the internal band or ring *a*, of less diameter than the cylinder, so that sufficient space is left between it and the ring for the top of the stack to enter, thus forming a socket, which, while it allows the cap to be turned around when desired, still retains it in place upon the top of the stack. To the top of the cylinder C is attached the cylindrical wire or perforated sheet-metal screen D, in turn surmounted by the funnel-shaped cap E, from the apex of which the curved tube F extends downward to the tank B. It will be apparent that this tank may be placed in other positions, if desired, and the tube E carried to it; but I prefer the arrangement shown in the drawings of a tank surrounding the stack, open at the top to allow the cap with its tube F to be turned around, so as to place the tube on the lee side of the cap, if desired. Surrounding the screen D at such a distance as to leave a free passage for the products of combustion is the outer case, H, the cylindrical part of which is of sheet metal and without perforations, so as to force the smoke and gases which pass through the screen D into an upward or downward direction, so that they shall find an outlet through the annular screens *b* and *b'* at the ends of the case H. These screens fill the space between the inner cylinder and the case, leaving no space for the passage of smoke except through the screens *b*, *b'*, and D, by which all the hot gases are so cooled as to be incapable of igniting any substance with which they may come in contact. In order to retain the case H in its proper position and yet allow of its easy removal for cleaning or other purposes, two or more rods, *d d'*, are attached to the pipe F, their lower ends being provided with hooks, which enter the staples *e* secured to the case, and thus retain the latter in position.

The sparks and cinders which are too large to pass through the screens are carried on, as indicated by the arrows, passing the bend in the pipe F and falling down into the water in the tank B. This apparatus will be found very beneficial in those classes of engines which are usually called "agricultural" and "traction or road" engines, which are principally employed in farming operations, where there is great danger from fire being communicated to barns and other outbuildings, as well as stacks of hay and grain.

Having thus described my invention, I claim as new and desire to secure by Letters Patent, the following:

1. The spark-arrester hereinbefore described,

consisting, essentially, of the cylindrical base C, screen D, case H, and annular screens *b* and *b'*, bent pipe F, and tank B, all constructed and arranged for operation substantially as shown and described.

2. A spark-arrester consisting of the outer and inner screens, arranged as described, and capable of revolution upon the stack, in combination with the funnel-shaped cap, bent pipe, water-tank, and stack, connected and constructed substantially as shown and described.

In testimony that we claim the foregoing we have hereunto set our hands this 3d day of June, 1879.

DANIEL BURGESS.
JAMES M. RUSSELL.

Witnesses:
J. BARTHOLOMEW,
L. BURGESS.