

No. 692,165.

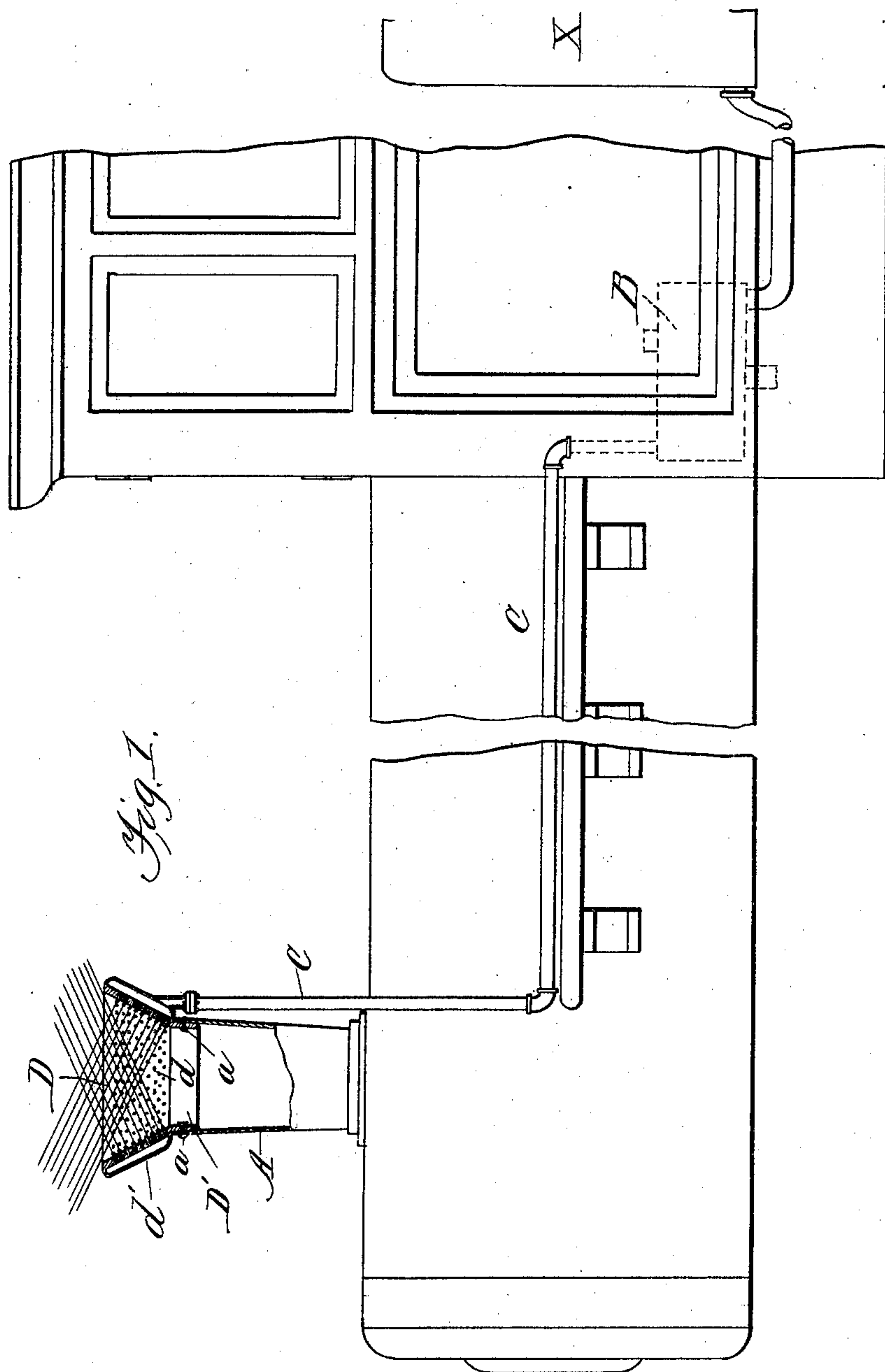
Patented Jan. 28, 1902.

G. F. MOORE, JR.
SPARK ARRESTER.

(Application filed Sept. 20, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:
Wm. H. Bradford.
Edw. W. Byrne.

INVENTOR
George F. Moore, Jr.
BY *Munn & Co.*
ATTORNEYS

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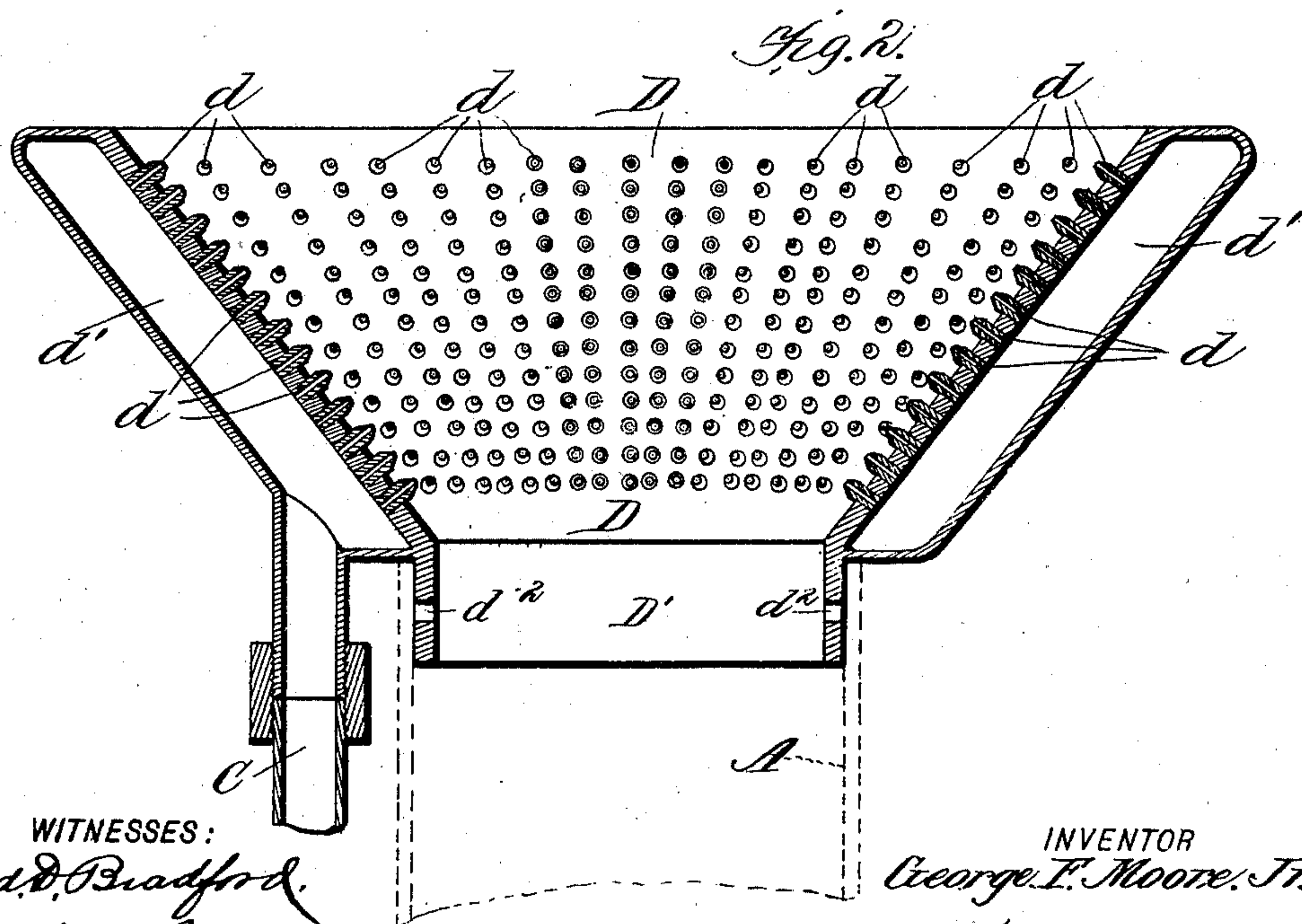
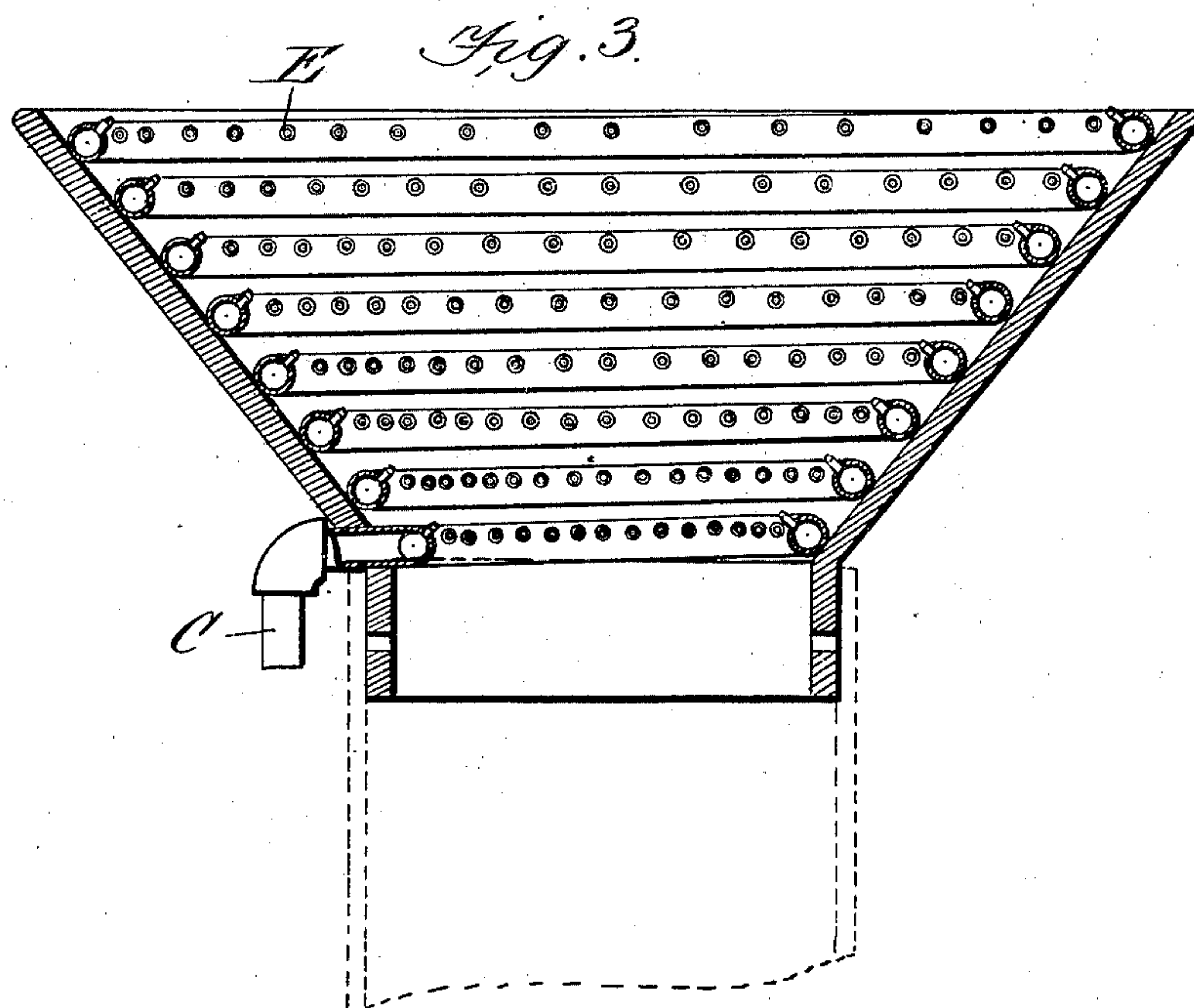
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UNITED STATES PATENT OFFICE.

GEORGE FLEMING MOORE, JR., OF JACKSONVILLE, FLORIDA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 692,165, dated January 28, 1902.

Application filed September 20, 1901. Serial No. 75,674. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FLEMING MOORE, Jr., of Jacksonville, in the county of Duval and State of Florida, have invented a
5 new and useful Improvement in Spark-Arresters, of which the following is a specification.

The object of my invention is to provide a means for extinguishing and arresting sparks
10 from the smoke-stack of a steam-boiler furnace.

When steam-engines are used in harvest-fields, the danger of setting fire to the straw or grain from escaping sparks is very great,
15 and the same danger of setting fire to grain, hay, or dry forest timber exists where locomotives run through such areas. My invention comprehends a simple and practical device for preventing such fires, which device
20 is comparatively inexpensive and may be applied to the stack of any steam-boiler furnace.

It relates to that form of spark-arrester which employs a water-spray; and it consists in the special construction and arrangement
25 of devices for producing the same, as will be hereinafter fully described with reference to the drawings, in which—

Figure 1 is a side elevation of a locomotive having my invention applied to its smoke-stack, which latter is shown in section. Fig.
30 2 is an enlarged sectional view of my spark-arrester shown detached. Fig. 3 is a similar view of a modification.

In the drawings, X represents the water-tank of a locomotive, B a force-pump, preferably of the rotary type, and C a discharge-pipe from the force-pump, arranged to carry the water under pressure to the top of the
35 smoke-stack A. On the top of this smoke-stack is detachably secured by bolts *a* my improved spark-arrester. This consists of a flaring funnel D, having a dependent cylindrical flange D', which fits inside the smoke-stack A and has holes *d*², through which the
40 bolts *a* pass to secure it to the top of the smoke-stack. The wide mouth of the funnel D opens upwardly into the air without obstruction, and on the outer sides of this funnel there is formed an annular water-jacket by means of
50 an external casing *d'*, into which casing the water-supply pipe C is tapped. The thicker

inner wall of the funnel is provided with a multitude of small nipples or tubes *d*, which are firmly seated in or cast on the wall of the funnel and project inwardly, and are inclined
55 upwardly at an angle of about forty-five degrees, so that the lowest nipple will discharge a jet of water a little above the top of the opposite side of the funnel. The pressure of the water in the pipe C and water-jacket casing *d'* causes a number of minute jets of water to pass over the open space of the funnel, through which the smoke and sparks emerge, the jets crossing each other, so that the sparks
60 have to pass through this converging fountain of spray and are thereby fully extinguished before being discharged into the air.

In constructing the spray-orifices on the inner wall of the funnel I employ projecting nipples, forming small nozzles, to prevent the
70 water from trickling down the sides of the funnel into the smoke-stack, as it would be liable to do if the funnel merely had perforations in its inner wall, without any raised tubes or nipples at the discharge side.

In making use of my invention I may in some cases use exhaust-steam in the pipe C instead of water, or live steam may be so used.

The pipe C is preferably located on the running-board beside the boiler and the force-
80 pump beneath the engineer's seat in the cab; but they may be located in any other desirable place.

As a modification of my invention I may, instead of using a water-jacket *d'*, employ a
85 coil of pipes E, as shown in Fig. 3, into which coil of pipes the nipples are inserted. When such coils of pipes are employed, the lower coils should be of somewhat larger cross-section to permit a sufficient volume of water to
90 reach the upper coils, or the inlet-pipe C may be branched and tapped into the coils at several points.

In defining my invention with greater clearness I would state that I am aware that spray-
95 ing devices have been located in the relatively narrow cylindrical part of a locomotive smoke-stack; but this is highly objectionable, because the spray seriously retards or impedes the draft, both by choking the narrow
100 passage-way and also by the downward movement of the spray when water is used.

In my invention it will be seen that the spray is located in the larger cross-section of the open flaring funnel, where it does not choke the draft, and where by virtue of the inclined walls of this open funnel the trajectory of the spray is upward and outward, and it really assists the draft of the stack, while catching and extinguishing the sparks.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A spark-extinguisher consisting of a funnel-shaped top for the smoke-stack having jet-orifices on its inner wall arranged to form a conical fountain of spray above the smoke-stack flue and means for supplying said orifices substantially as described.

2. A spark-extinguisher consisting of a funnel-shaped top for the smoke-stack having on its inner wall upwardly-inclined nipples, and an externally-arranged water-chamber and means for supplying said chamber substantially as and for the purpose described.

3. A spark-extinguisher consisting of a funnel-shaped top for the smoke-stack having an annular water-jacket with spray-orifices opening inwardly and upwardly across the smoke-

flue, and means for forcing water into said jacket substantially as described.

4. A spark-extinguisher consisting of a detachable funnel-shaped top for the smoke-stack having jet-orifices opening upwardly through its inner surface, an annular water-jacket surrounding the same, and a depending flange adapted to be bolted to the top of the smoke-stack and means for supplying said water-jacket substantially as shown and described.

5. The combination with a steam-boiler furnace, its water-tank, and its smoke-stack; of a force-pump having its suction side connected to the tank and its discharge side provided with a pipe leading to the top of the smoke-stack, a funnel-shaped top for the stack having an annular water-jacket connected with the discharge-pipe from the pump, said funnel-shaped top having spray-orifices on its inner surface adapted to form a conical fountain of spray above the flue of the smoke-stack substantially as described.

GEORGE FLEMING MOORE, JR.

Witnesses:

R. C. COOLEY,

THOS. N. WILSON.