W. F. COSGROVE.

Smoke-Stack.

No. 218,937. Patented Aug. 26, 1879.

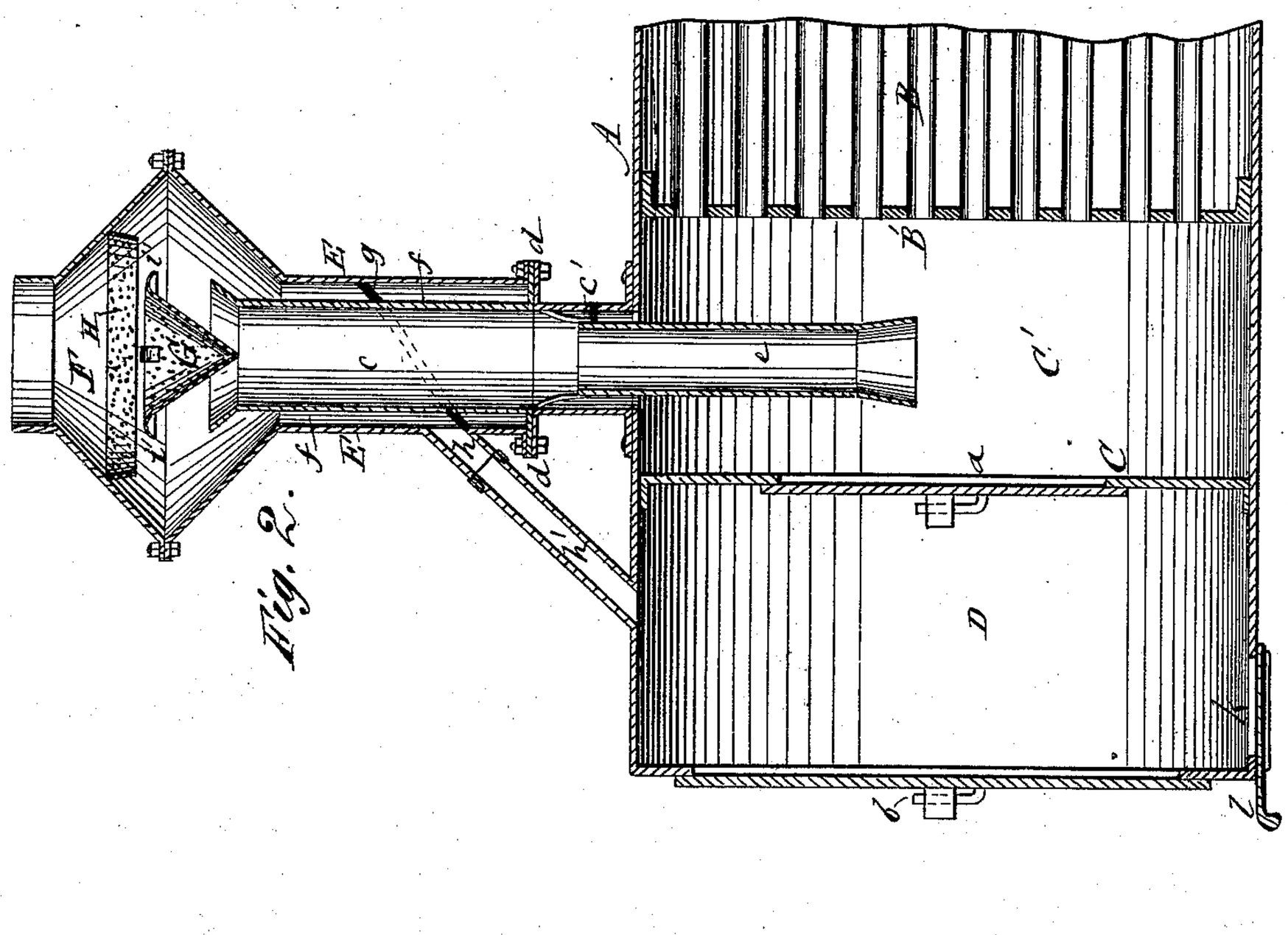

Fig. 2.

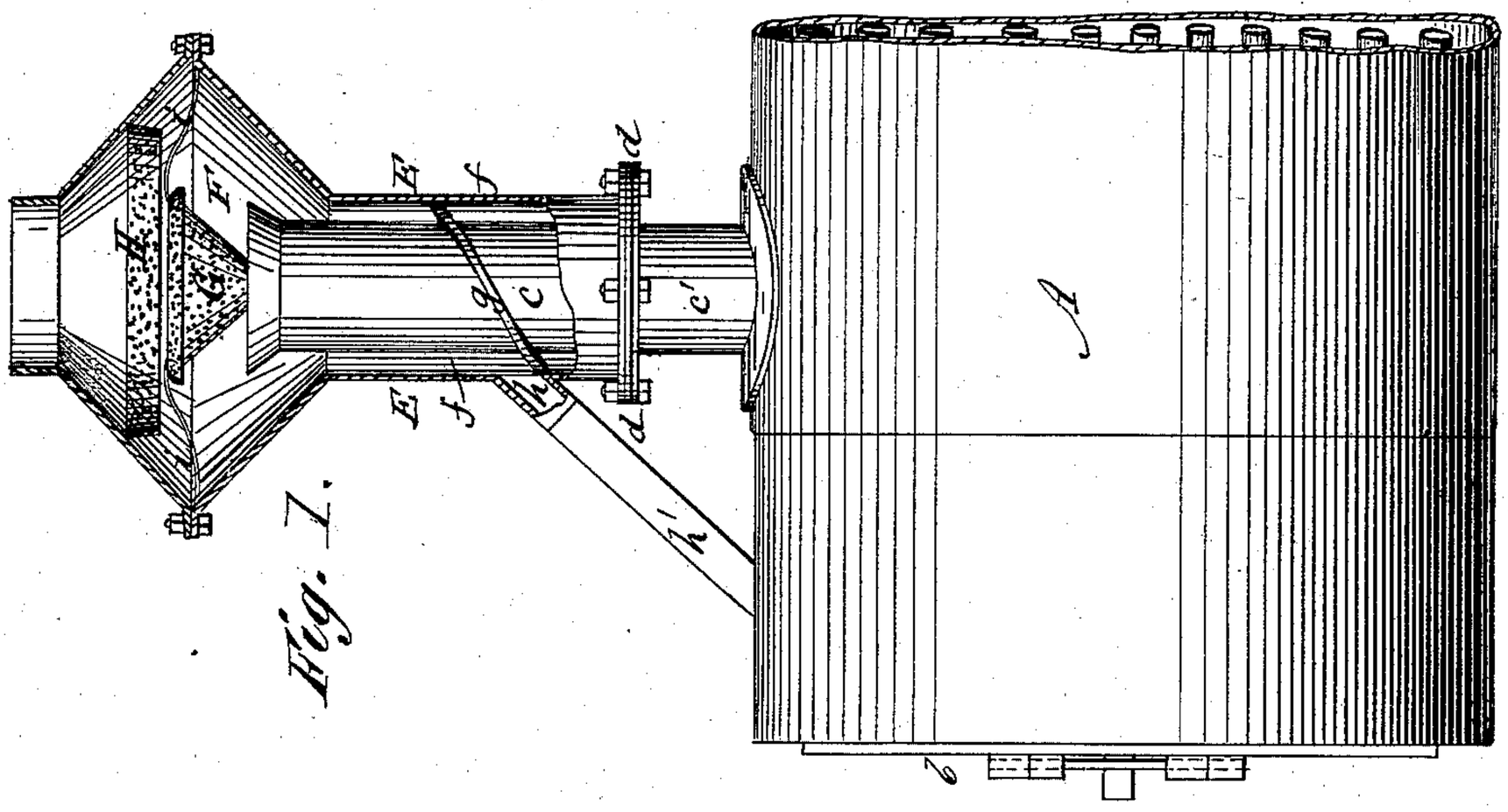

Fig. 1.

WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM F. COSGROVE, OF JERSEY CITY HEIGHTS, ASSIGNOR TO HIMSELF AND ERNEST F. JENNINGS, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN SMOKE-STACKS.

Specification forming part of Letters Patent No. **218,937**, dated August 26, 1879; application filed January 4, 1879.

To all whom it may concern:

Be it known that I, WILLIAM F. COSGROVE, of Jersey City Heights, in the county of Hudson and State of New Jersey, have invented a new and Improved Smoke-Stack, of which the following is a specification.

This invention relates specifically to smoke-stacks attached to steam-generators, such as locomotives and boilers, where it is desirable to arrest the sparks, dust, and cinders carried out by the draft; and the object of the invention is to provide efficient means for preventing the escape of the said sparks, dust, and cinders from the stack without interfering with the draft, and also to furnish means of carrying the said products of the fire from the stack, and a chamber to receive them in.

It consists in providing the stack with an inclosing-jacket, in the double conical head whereof is supported, above the stack, an inverted perforated cone and a screen for deflecting the products downward, where they fall upon an inclined collar surrounding the stack, which leads them to a spout, whence they are conveyed by a pipe to a chamber formed in an extension of the boiler-shell.

In the accompanying drawings, Figure 1 is a side elevation of a boiler, with the stack in vertical section; and Fig. 2 is a vertical longitudinal section of a boiler and smoke-stack provided with my improvements.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the boiler-shell. B are the flues; B′, the flue-plate. C is the boiler-head, inclosing a chamber, C′, in which is a man-hole, *a*. Beyond the boiler-head is a chamber, D, formed by an extension of the boiler-shell, and this chamber is closed by a door, *b*.

From the upper side of the boiler, over chamber C′, rises the smoke-stack, formed of two parts, *c c′*, connected together by a broad flange, *d*.

From the part *c′* depends the petticoat-pipe *e* into the chamber C′, for the exhaust from the engine.

Surrounding the upper part, *c*, of the smoke-stack is a jacket, E, the bottom whereof is flanged outward, and bolted to the flange *d* by the same bolts that fasten the two parts of the stack together.

Between the stack and the jacket is a space, *f*, and in the space is placed a collar, *g*, in an inclined position, so as to lead to the spout *h*, projecting from the front of the stack, and from this spout a pipe, *h′*, leads through the boiler-shell over the chamber D. The top of the jacket E is provided with a double conical head, F.

G represents a perforated cone with a curved flanged base, which is held in an inverted position by arms *i*, extending from the head F over the stack, so that its apex is just in line with the axis of the stack.

From the walls of the upper cone of the head depends a perforated screen, H, so as to leave an annular space, *i′*, between its edge and the base of the cone. The perforated cone and screen form the spark-arresters proper.

The operation of the invention is as follows: The draft carries the dust, cinders, and sparks up the stack, and striking against the sides of the inverted cone, they are deflected to the walls of the double conical head, whence the greater part falls down between the jacket and the stack to the collar *g*. Those having great momentum or being very light, if carried farther up, come in contact with the dependent screen H, and are stopped, whence they fall, too, to the collar. This being inclined so as to lead to the spout *h*, the cinders, dust, &c., accumulating, fall down through spout *h* into pipe *h′*, and are thence delivered into the chamber D, from whence they can be removed through the opening *k* in the bottom of chamber D, covered by sliding door *l*.

The annular space *i′*, between the screen H and the base of the inverted cone, should be of the same capacity for the passage of air and smoke as the stack, so that no obstruction will be offered to the draft.

As a further precaution, the screen and cone are perforated, as before described.

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

The combination of the sections *c c'*, the petticoat-pipe *e*, the jacket E, the inverted perforated cone G, the perforated screen H, the inclined collar *g*, the spout *h*, and the pipe *h'*, with the chambers C' D of the boiler A, substantially as and for the purpose set forth.

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Witnesses:

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