(No Model.)

J. W. & J. D. SMITH.

SMOKE CONSUMING DEVICE.

Patented Apr. 15, 1884.

No. 296,791.

Fig. 1.

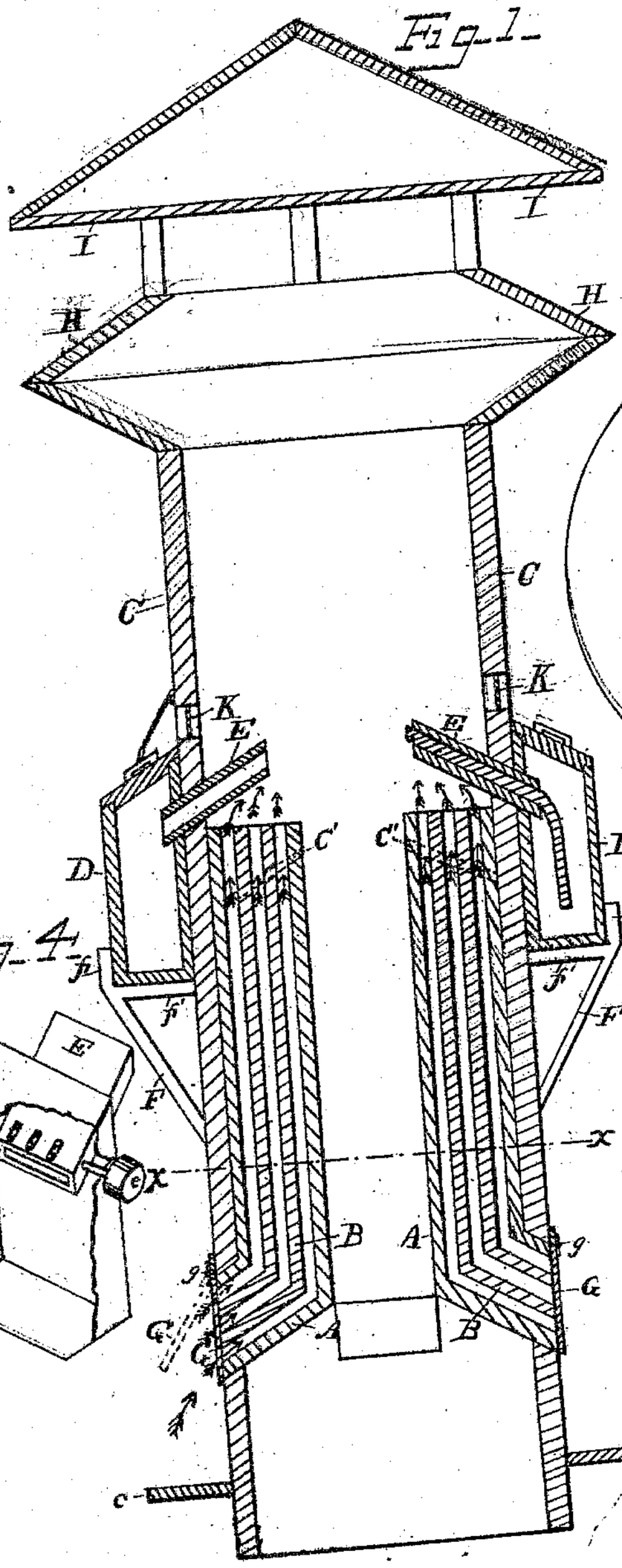


Fig. 4.

Fig. 3.

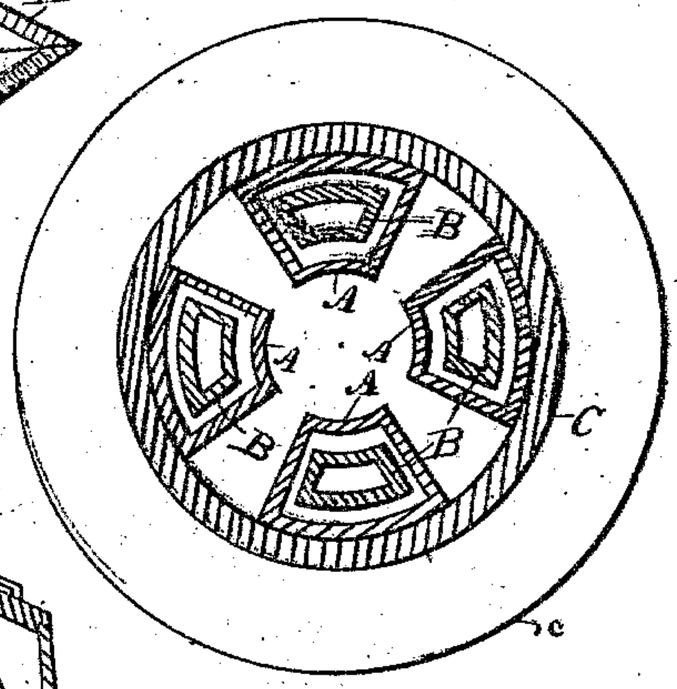
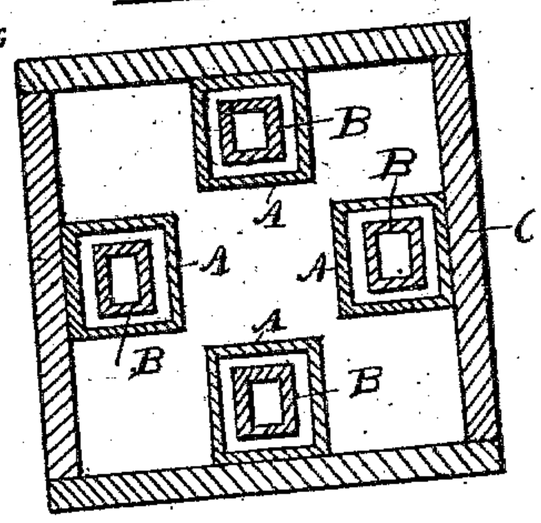


Fig. 2.



Witnesses.
C. H. Brown.
W. C. McGill, Jr.

Inventor.
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UNITED STATES PATENT OFFICE

JOHN W. SMITH AND JAMES D. SMITH, OF WASHINGTON, D. C., ASSIGNORS OF FOURTEEN TWENTY-FOURTHS TO SIMPSON P. MOSES, WILLIAM B. MOORE, AND I. HEYLIN McDONALD, ALL OF SAME PLACE.

SMOKE-CONSUMING DEVICE.

SPECIFICATION forming part of Letters Patent No. 296,791, dated April 15, 1884.

Application filed September 22, 1883. (No model.)

To all whom it may concern:

Be it known that we, JOHN W. SMITH and JAMES D. SMITH, citizens of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Smoke-Consuming Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of our invention is to provide means for consuming smoke as it comes from a chimney or smoke-stack; and to this end the invention consists in an auxiliary smoke-stack provided with suitable air-inlet pipes or tubes, by means of which the products of combustion are commingled with oxygen, and means within the stack for consuming the products of combustion after they have been thus commingled with the oxygen.

It further consists in certain details of construction, arrangement, and operation of the several parts, as will be hereinafter more fully set forth in the specification, and pointed out in the accompanying drawings, in which—

Figure 1 is a vertical section of our device; Fig. 2, a transverse section on line *x x*, Fig. 1; Fig. 3, a transverse section of a circular stack; Fig. 4, a detail view of one of the lamps.

Heretofore there have been various devices for consuming the products of combustion arising from the consumption of fuel in furnace-boilers, &c. Some of them have introduced air into an auxiliary flue and brought the products thus charged back to the grate-bars or ash-pit. Others have used steam and air under pressure for furnishing oxygen and again brought back the products to the fire. Devices for catching the products beneath the petticoat-pipe and returning them to the fire have been used. In all devices of this kind there have been means for consuming the products by bringing them back to the initial point of burning. It is well known that such means are imperfect, uncertain, and expensive. We consume the products of combustion as they are emitted from the top of the chimney or smoke-stack.

In order to fully explain our method, we will now refer more particular to the drawings.

Our auxiliary stack C is made of sheet or cast metal, of suitable dimensions, and is adapted to be placed upon a chimney or smoke-stack. It has a bottom flange, *c*, by means of which and suitable wires it is secured to the chimney or stack. About six inches (more or less) above the flange *c* air-pipes A B are placed on the inside of the tube. These pipes open, as shown in Fig. 1, to the outside air, and extend upwardly to a point near a flame or series of flames supplied by lamps D. These lamps are placed on the outside of the stack C, and rest on supports F, provided with flange and base pieces *f f'*. The lamps have wick-tubes E, which project into the stack by means of suitable openings therein, so that said tubes, which contain broad flat wicks, are brought toward the center of the stack. The lamps are filled with any suitable burning-fluid; but we prefer the ordinary coal-oil, as being cheap and readily obtained. The space between the pipes or tubes A B is closed by means of the caps C', which cause the smoke to enter the space between the pipes, and as it approaches the flame of the lamps it comes in contact with the air from the tubes A B, and thence passes to the flame charged with oxygen, so that the products of combustion are readily consumed. We may have the pipes A B subdivided into a series of pipes or tubes for creating a greater draft. This, however, is not always necessary. The draft can be regulated by a door, G, so as to obtain a greater or less amount of air. Doors or openings K are placed in the sides of the stack above the lamps D, so that the flame can be observed and regulated. The lamps D may be of any suitable size. The stack will generally be made of galvanized sheet-iron, and can be plain or ornamental, as desired. We will usually have four lamps for the rectangular stacks and three for the circular or elliptical stack. The number may, however, be increased, as may be deemed essential. It is apparent that this introduction of air and the flame at the top of a chimney or smoke-stack will create a draft which will increase the combustion of the fuel, and at the same time effectually prevent a chimney from "smoking." These auxiliary stacks will dis-

pense with the expensive, high, and unsightly smoke-stacks now in use, for by using our auxiliary stack there is sufficient draft obtained, and, as the products of combustion are burned, there is no necessity for carrying the smoke-stack above the roofs of houses. The height of chimneys can also be reduced, and the stack placed on the chimney near the roof, and can be made ornamental when desired.

The smoke-consumers in general use cannot be used upon or with the ordinary house-chimney. It is also well known that the smoke in cities where soft coal is burned is not due to manufactories, but to dwelling-houses. Therefore by using a device of this kind a great portion of such smoke is obviated. Where coal-gas is convenient, we will preferably carry up pipes and burners into the auxiliary stack. We can then light the burners by electric lighting apparatus, and turn the gas on and off from a convenient point at or near the ground.

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

1. The method of consuming smoke, which consists in placing an auxiliary smoke-stack upon a chimney or smoke-stack and commingling the products of combustion with atmospheric air as they are emitted from the top of the chimney or stack, and then bringing said oxygenized products into contact with a flame in said auxiliary stack, as set forth.

2. A smoke-consuming device consisting of an auxiliary smoke-stack provided with air-inlet tubes and lamps or flames entering said stack, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN W. SMITH.
JAMES D. SMITH.

Witnesses:
I. H. MACDONALD,
EMMA M. GILLETT.