

(No Model.)

W. T. McMILLEN.  
FIRE PLACE SMOKE CONSUMER.

No. 261,015.

Patented July 11, 1882

Fig. 1.

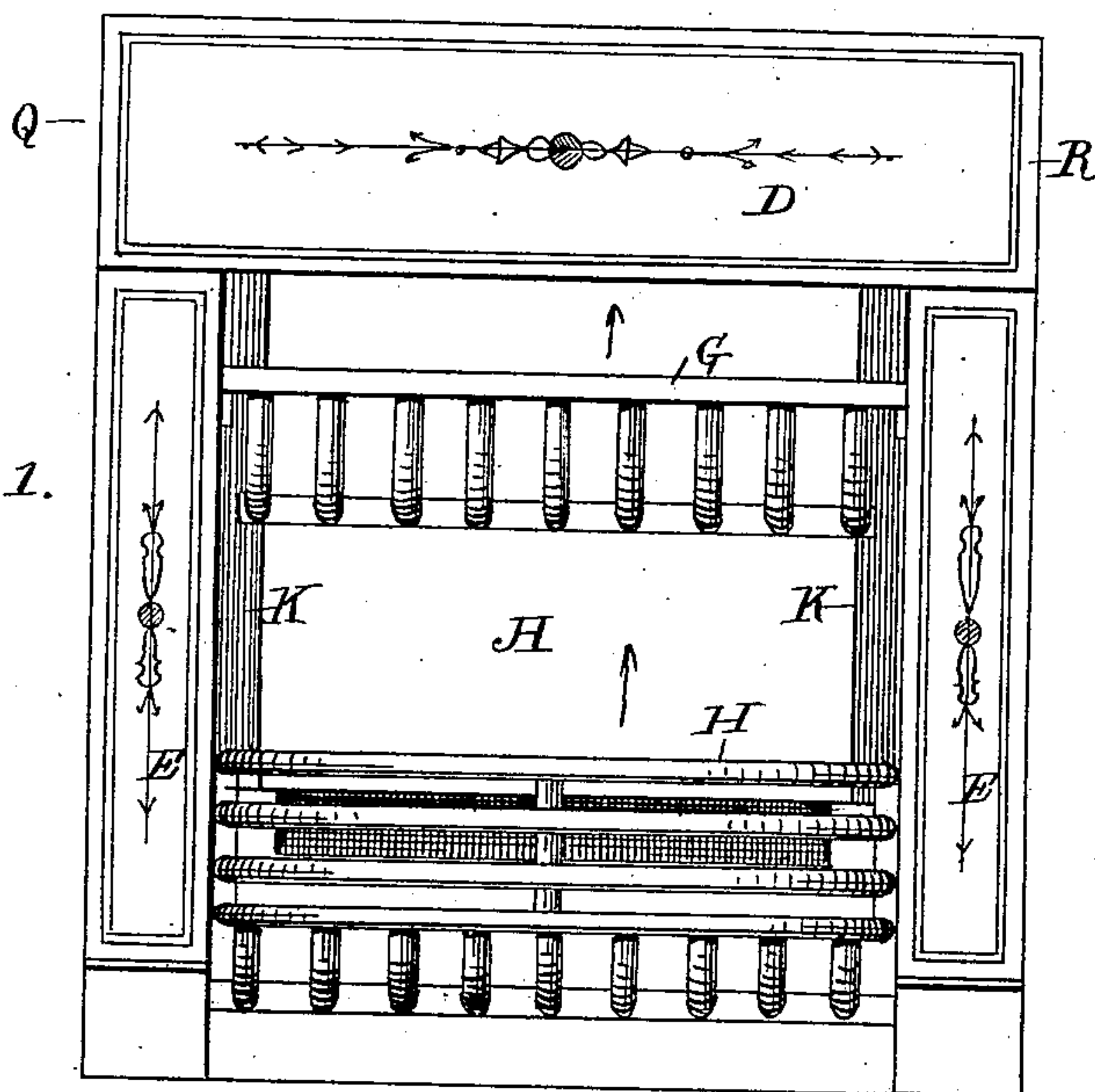


Fig. 2.

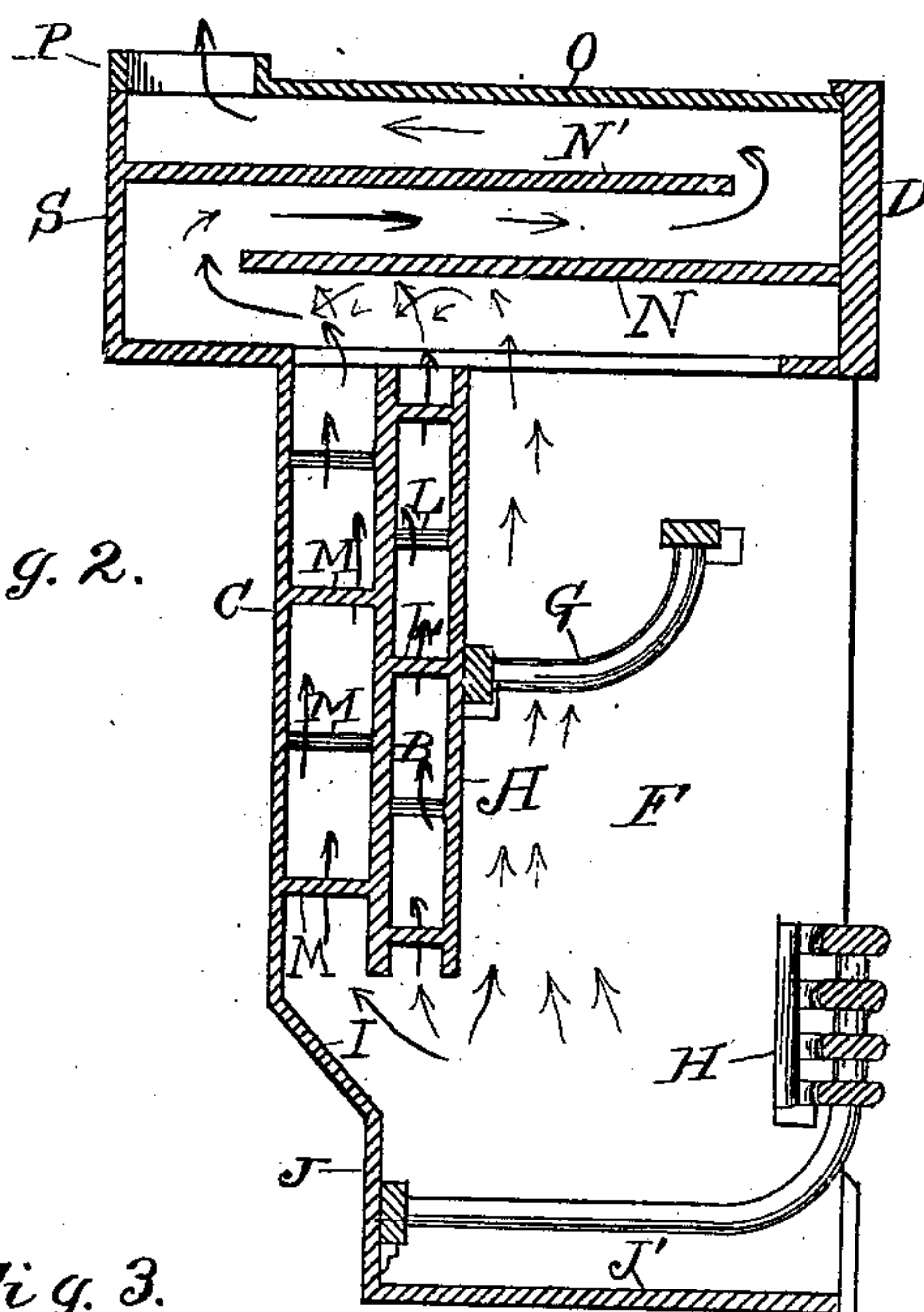
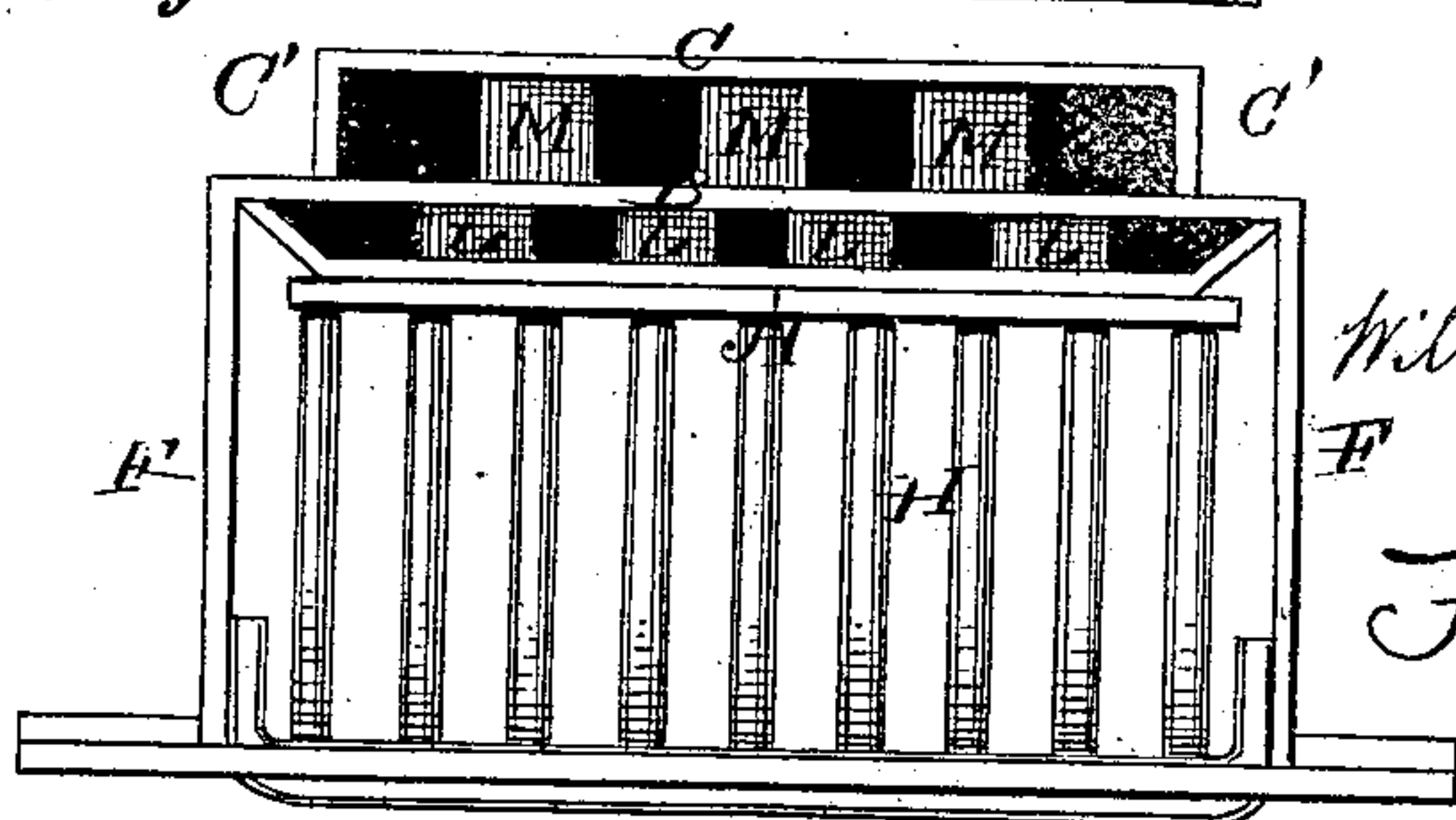


Fig. 3.



Attest:

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# UNITED STATES PATENT OFFICE.

WILLIAM T. McMILLEN, OF CINCINNATI, OHIO.

## FIRE-PLACE SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 261,015, dated July 11, 1882.

Application filed April 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM T. McMILLEN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Fire-Place Smoke-Consumers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an open fire-place so arranged in its several parts that the smoke emanating from the fire is consumed—that is, the carbon containing the inflammable gas which constitutes the primary elements of smoke is consumed between the fire-place and the crown-plate of my device.

It is a well-known fact that smoke is a disagreeable element in any community, and it is particularly so in large and crowded cities, where it rises only to let fall its soot to the discomfiture of citizens, and when the weather is cloudy the smoke hovers near the earth and becomes objectionable almost to an unbearable degree. Just how to get rid of this feature is a problem upon which a vast amount of study and experiment has been devoted. After long, careful, and patient research I have invented the device shown in the accompanying drawings, and when the same is constructed in accordance with the principle as therein disclosed and with the language of this specification the smoke from a fire-place can be thoroughly and radically consumed.

My invention consists in a series of horizontal crown-plates, and also in three vertical parallel plates, which are placed several inches apart. The plates are held together by suitable end strips, and between are a series of checks so arranged as to retard the progress of the smoke and gases on their upward course. By thus retarding these elements and momentarily confining them between the heated plates and uniting-checks the process of combustion of the smoke commences. The three plates constitute two flues, the central plate being a wall between them. This plate, being unexposed to the air, and being subjected on both its sides to the heat on its upward passage, is necessarily heated to a great degree, and the heat thus imparted to the central plate is retained by reason of its non-exposure, as indi-

cated. The flame and smoke also pass upward in front of the face-plate. By this means the face-plate is heated on both sides, like the central plate. It will thus be seen that the smoke is partially consumed in its passage through the heated flues and around the checks—that is, the carbon is partially consumed. It is manifest from the foregoing that the gases and smoke, on leaving the fire, are formed into three separate and distinct bodies—namely, one passing upward over the front plate, the next one passing between this one and the central plate, and the third passing between said central plate and the rear one. The body of smoke and gas, on leaving the fire, is of course in a highly-combustible state. Its volume, however, is considerably lessened by reason of its having been formed into separate bodies and by passing upward through the vertical flues and over the face-plate. In order to complete the combustion, the smoke passes upward after leaving the vertical flues and comes in contact with the first of a series of horizontal crown-plates. The draft causes the three columns to thoroughly intermingle and pass backward under the horizontal bottom plate. This process necessarily aids combustion. If, however, any particles of smoke should remain in the flame after having been subjected to the foregoing fiery ordeals, said particle or particles will encounter perfect combustion in the circuitous upper passage between the crown-plates. Said plates, particularly the first, are necessarily thoroughly heated by being directly exposed to the blast of flames coming from the vertical flues and over the face-plate. The horizontal or crown plates have alternate openings—that is, the opening in the lower one is in the rear, while the one immediately above that is opened in front. The smoke is forced to describe a zigzag motion, first passing under and over a plate before it can escape up the chimney. The checks heretofore adverted to also cause the smoke and flames to pass through the flues in an irregular or zigzag manner. By thus thoroughly heating the flue and crown-plates, and retarding the progress of the smoke and flame while passing over the face of said plates, and forcing the several bodies of flame to intermingle, I am enabled



to thoroughly and effectually produce a perfect combustion of the same.

In addition to the smoke-consuming feature of my device, it also imparts all necessary heat to the room in which it may be placed. The fire burns in a manner similar to other open fire-places, with the exception of the auxiliary grate placed above the main grate. The object of this grate is to utilize and consume coke or partially-burned coal, such as might remain in the grate in the morning after the fire had gone out. It also aids in consuming the smoke in its passage from the lower grate over the face-plate. The smoke and flame passing over the plate necessarily pass through any fire that may be burning in the upper grate. The smoke in passing through this grate is partially consumed. The smoke remaining after encountering this supplementary fire passes upward, and is wholly consumed in the manner hereinbefore specified, all of which will be more fully hereinafter described, and pointed out in the claims.

I attain the foregoing objects by the device illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a central vertical section. Fig. 3 is a plan view with the crown-plates and top grate removed, showing the vertical plates forming the double flues.

The letter A represents the face-plate. B is the central plate, and C the back plate, supported by strips C' C'. D is the breast. E E are pilasters. F F are the jambs. G is the top grate, and H is the lower one. I is an oblique strip at the rear flue. J is the back piece, and J' is the hearth. K K are diagonal vertical strips supporting the face plate A. L L are checks in the front flue, and M M the checks in the rear flue. These cheeks are a series of short narrow strips placed horizontally between the flue-plates, so arranged that the flame passes under and around them in its upward passage. N is the lower crown-plate, fixed at one end to the inside of the breast D. This plate is abridged at its rear end, so as to admit the escaping gases. N' is a plate similar to plate N; but it is se-

cured at its rear end, leaving an opening in front, so as to produce a zigzag current, as hereinbefore mentioned. O is the mantel-piece. B is the chimney-collar. Q and R are side pieces inclosing plates N and N', and to which said plates are fixed. S is a back strip at the rear of the chimney-collar, and which serves as a rear inclosure for the plates N and N'.

I have shown and described two crown-plates. I do not wish, however, to confine myself to that number, because it is quite apparent that two or more can be used, one above the other, without departing from the principle of my device.

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

1. The rear plate, C, united to central plate, B, by checks M M, and the face-plate A, united to said central plate by checks L L, the three plates forming double vertical flues, being open at their bottoms to receive two independent volumes of smoke from the lower grate, H, and having top openings immediately under a crown-plate, so that the volumes shall be intermingled to aid in the consumption of the smoke, substantially as described and shown.

2. The plates A B C, having intervening retarding-checks, for the purposes herein specified, in combination with the grates H and G, substantially as set forth.

3. The grate H and plates A B C, the plate A being provided with grate G, in combination with the jambs F, the crown-plates N, N', and O, and chimney P, all arranged in suitable casing, and connected together in the manner and for the purpose specified.

4. The horizontal plates N, N', and O, the plate O having the rear chimney-opening, all arranged in the manner and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM T. McMILLEN.

Witnesses:

J. C. TURNER,  
M. V. SMITH.