

(No Model.)

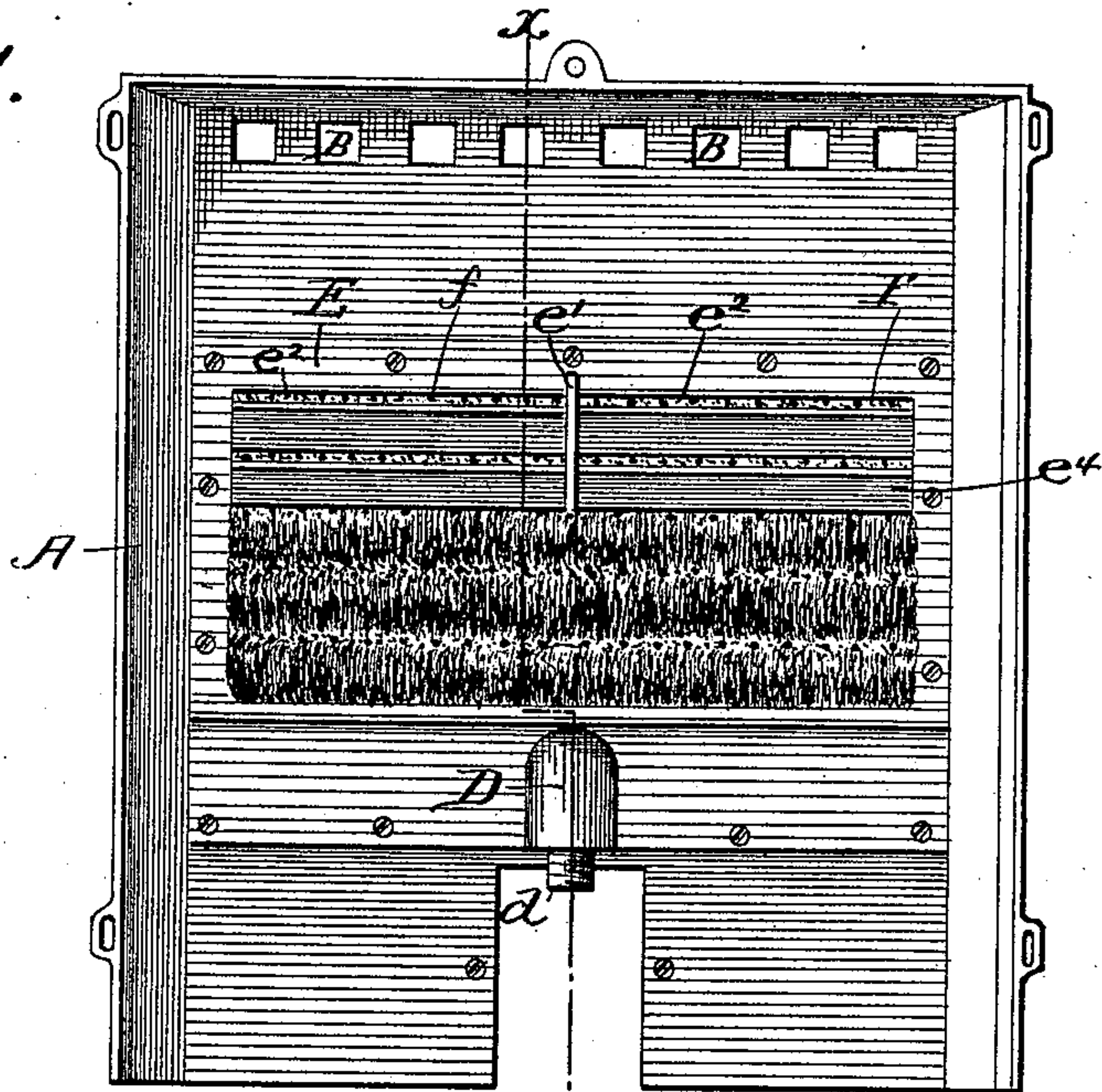
2 Sheets—Sheet 1.

G. E. SHARPE.  
GAS BURNER.

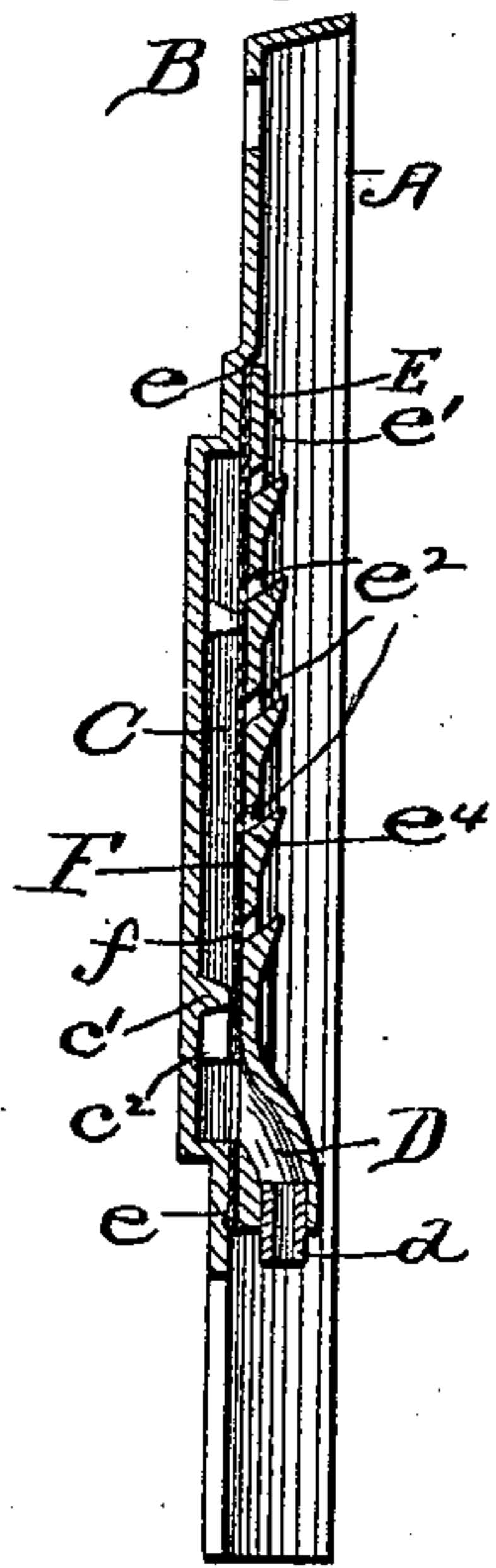
No. 587,334.

Patented Aug. 3, 1897.

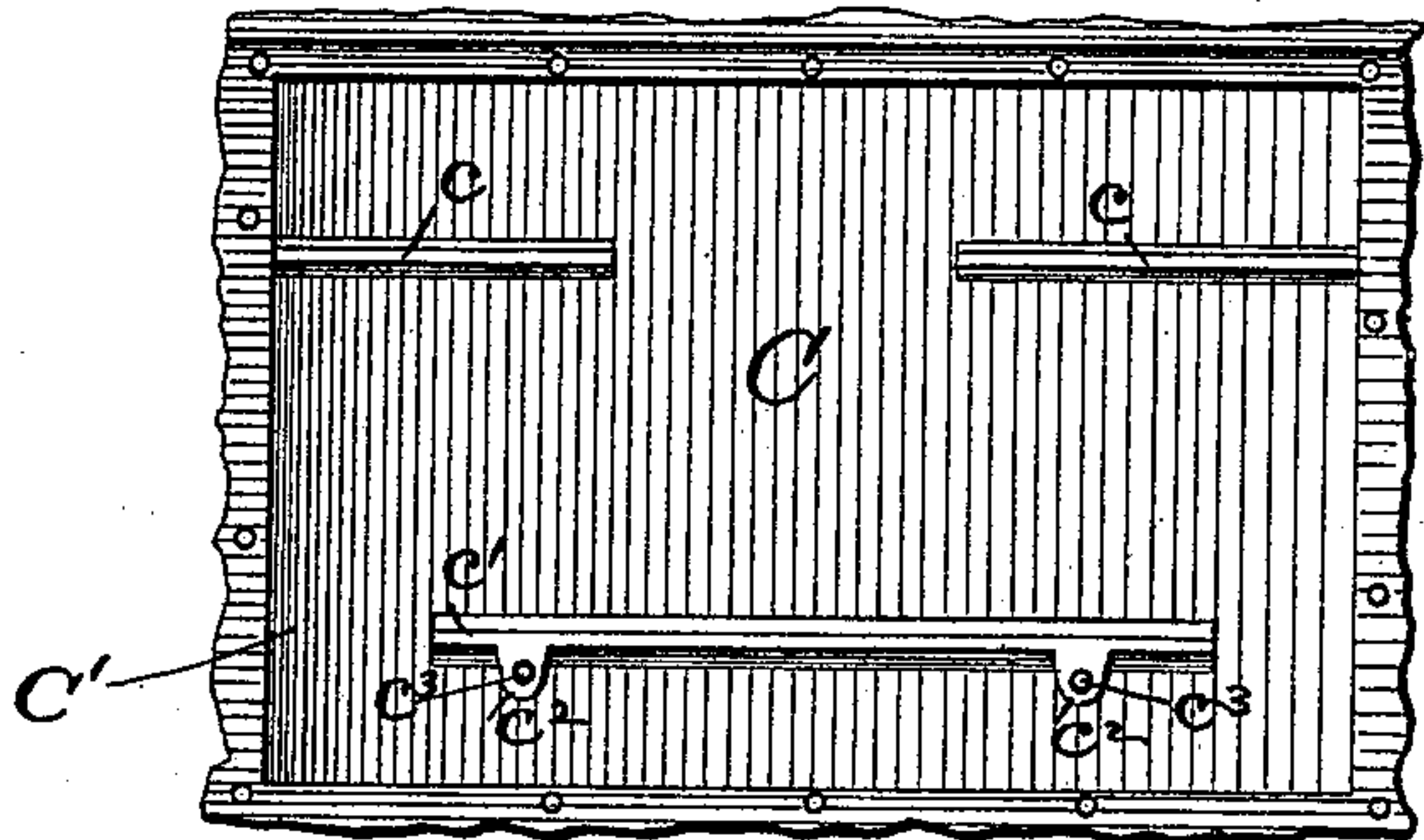
*Fig. 1.*



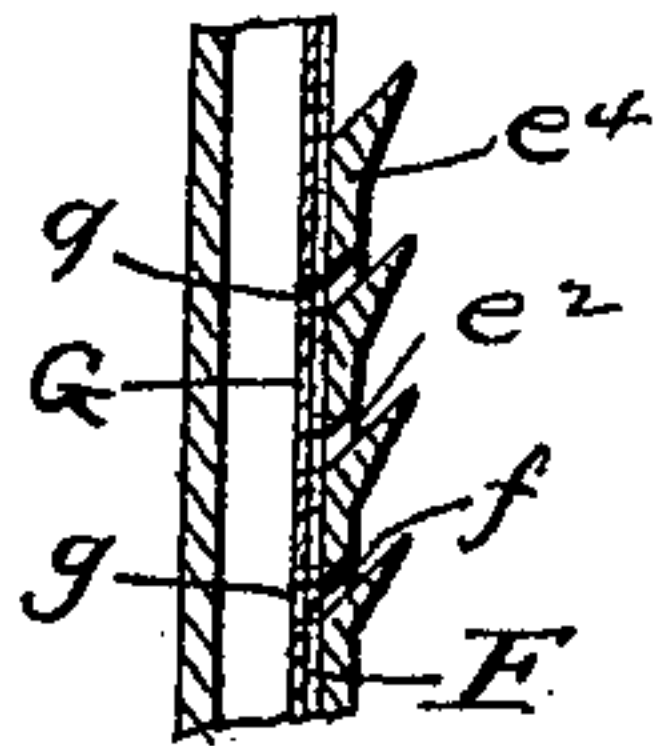
*Fig. 2.*



*Fig. 3.*



*Fig. 2a.*



WITNESSES

*A. B. Digger*  
*Edw. M. Cleary*

INVENTOR

*George E. Sharpe*  
*by C. A. Walton*  
Attorney

(No Model.)

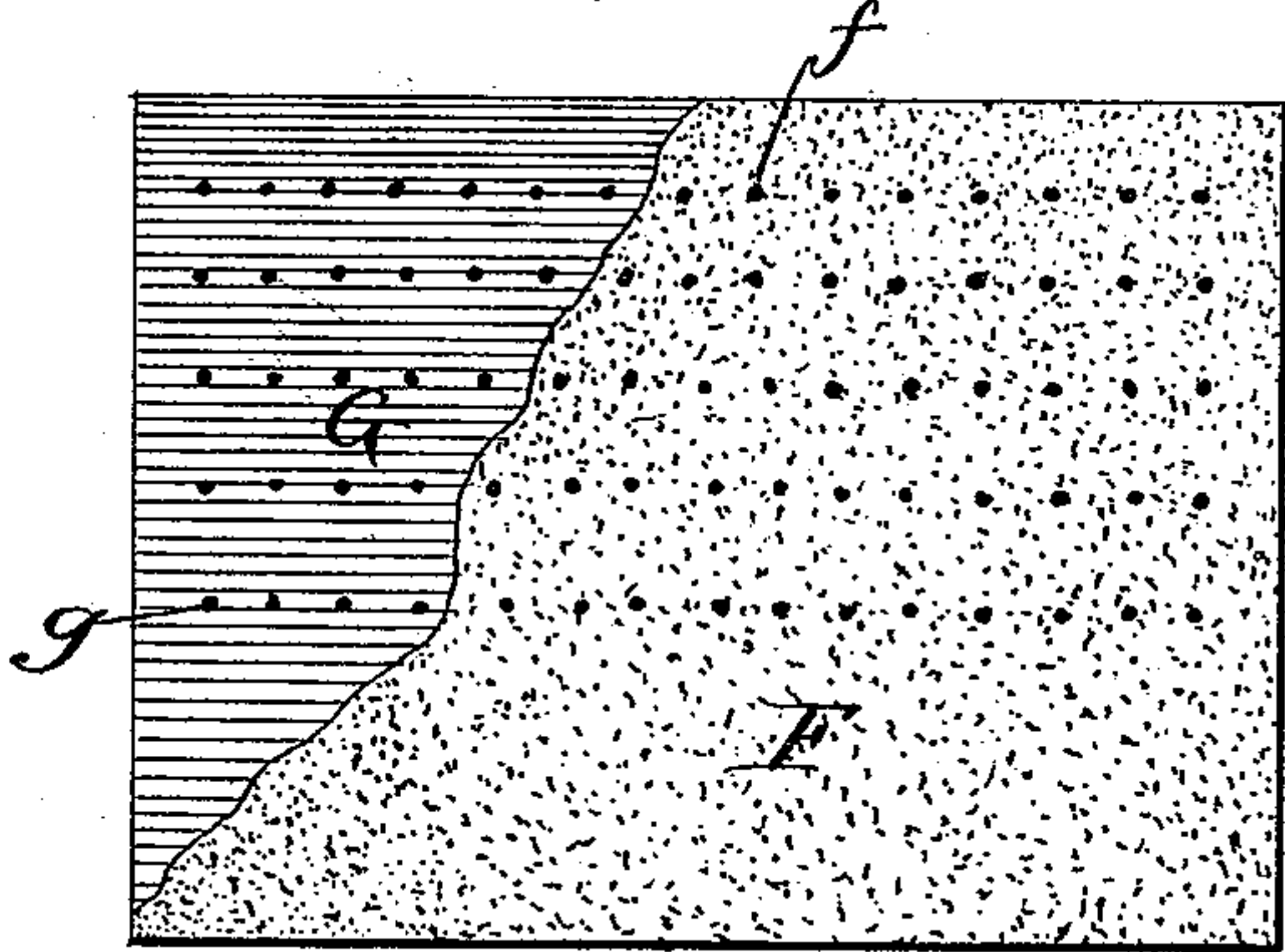
2 Sheets—Sheet 2.

G. E. SHARPE.  
GAS BURNER.

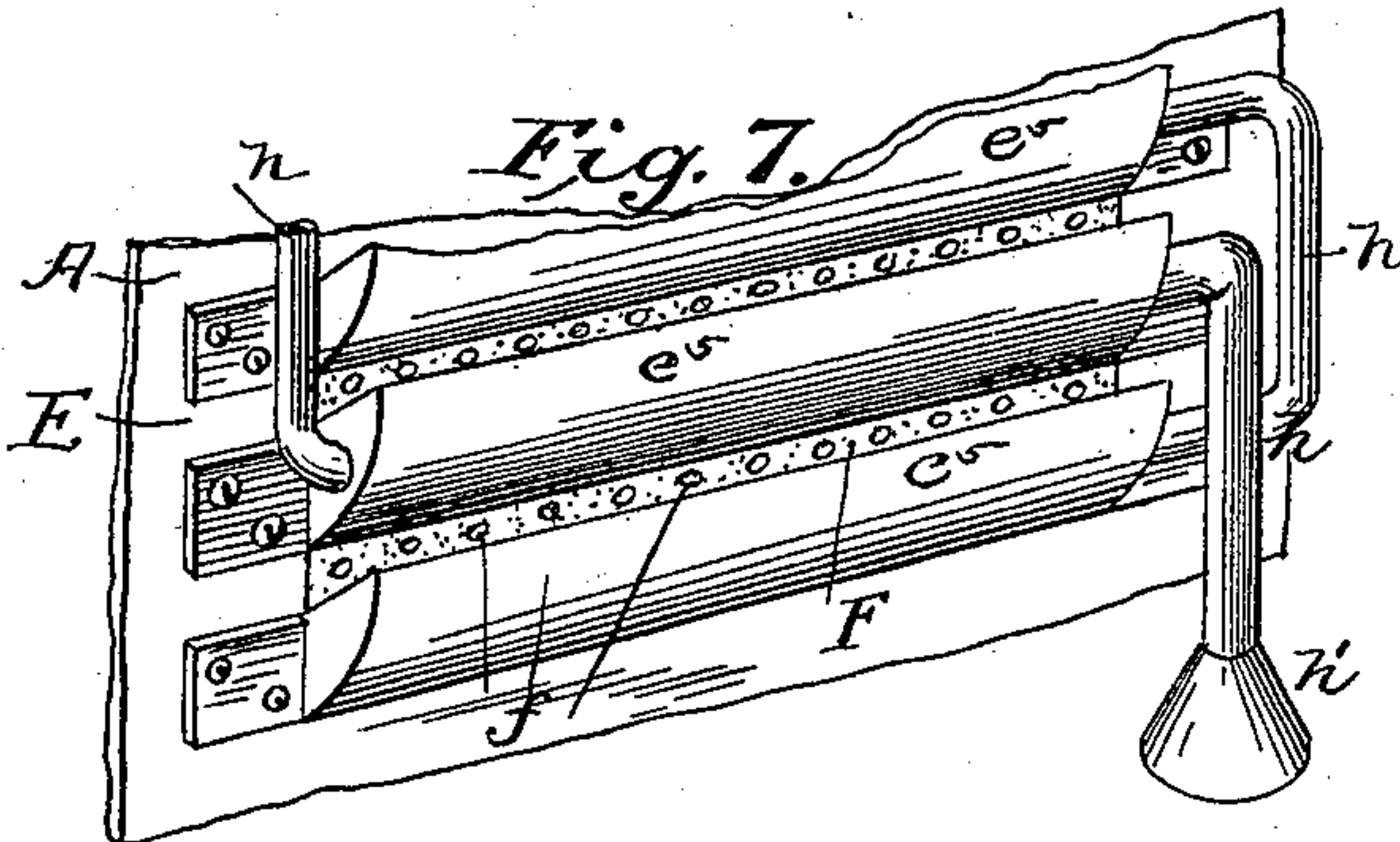
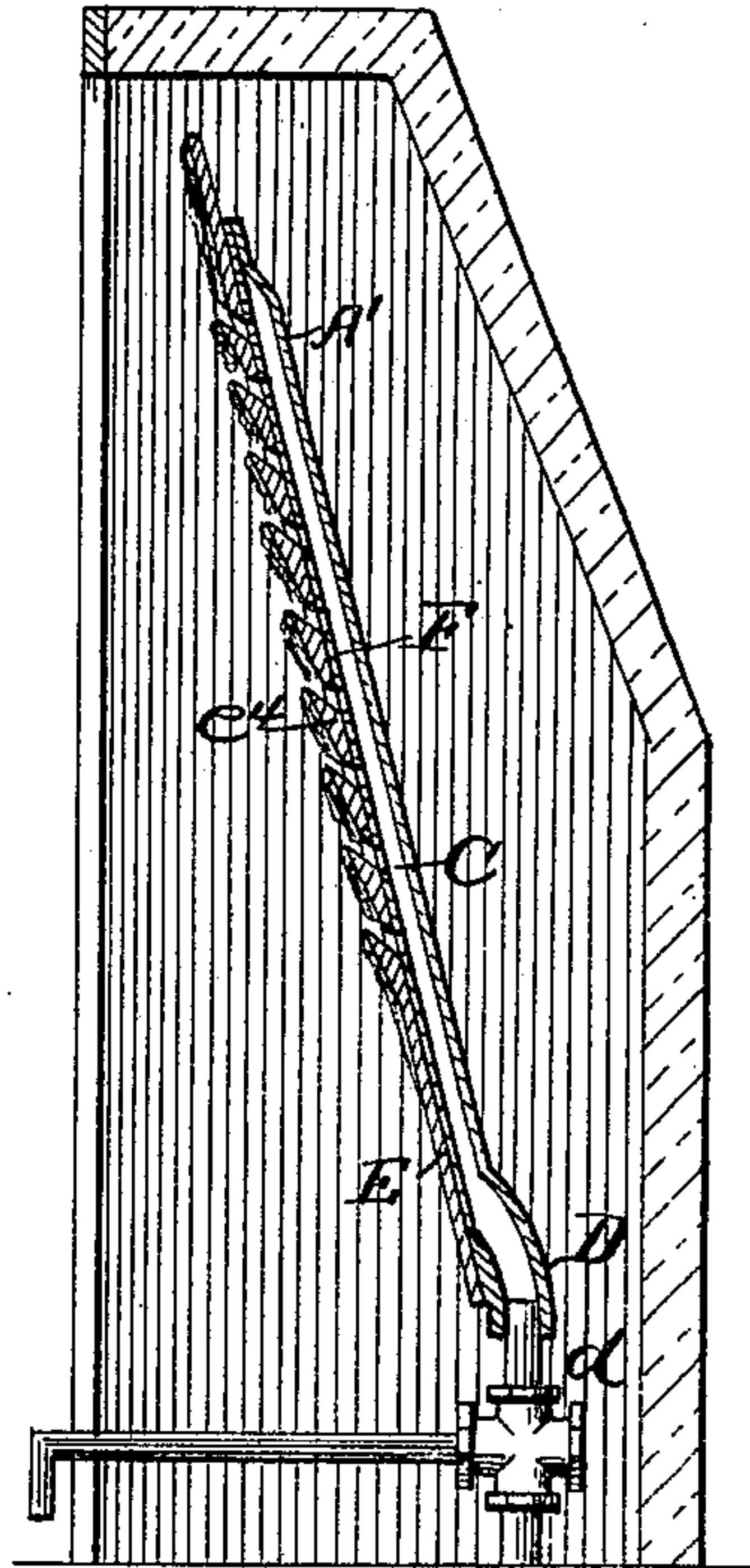
No. 587,334.

Patented Aug. 3, 1897.

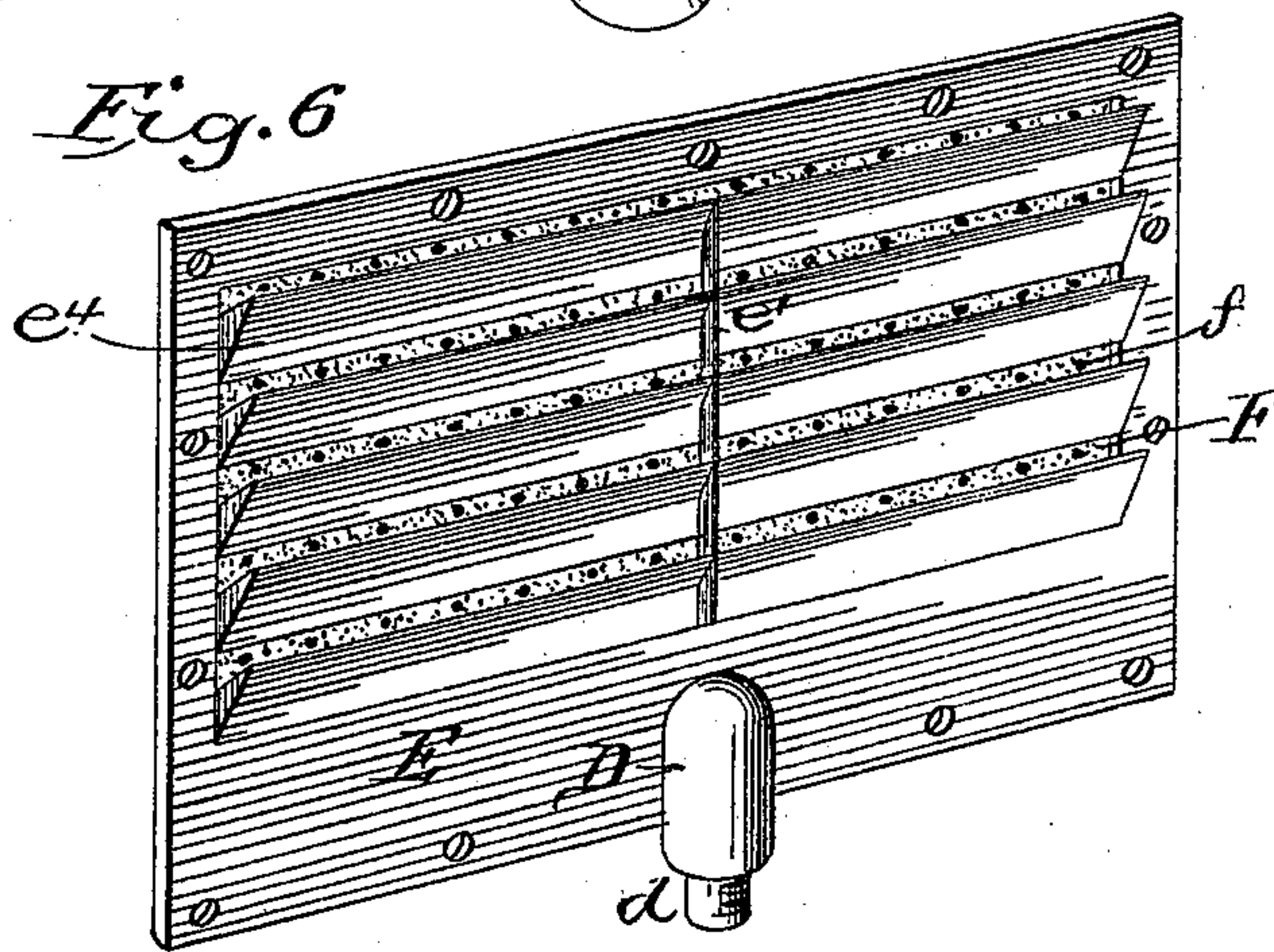
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



WITNESSES

*A. B. Driggs*  
*Edw. M. Cleary*

INVENTOR

*George E. Sharpe*  
by *C. A. Walton*  
Attorney



# UNITED STATES PATENT OFFICE.

GEORGE E. SHARPE, OF STEUBENVILLE, OHIO.

## GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 587,334, dated August 3, 1897.

Application filed January 21, 1897. Serial No. 620,050. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE E. SHARPE, a citizen of the United States, residing at Steubenville, in the county of Jefferson and State of Ohio, have invented certain new and useful Improvements in Gas-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same.

This invention relates to improvements in gas-burners for fireplaces.

Objects of the invention are to provide for a more perfect combustion, to obtain a more uniform distribution of heat over the fireback-surface, and for a greater amount of heat with the consumption of a minimum amount of gas than is now obtained in many heaters of this class.

A further object is simplicity in construction and to provide a device of this character which may form an integral part of the fireplace itself, as well as one which may be readily set up in any fireplace.

The invention embraces other and detailed improvements, which will hereinafter be clearly pointed out in the specification and claims, to which reference is made for a full and complete understanding of the invention.

Corresponding letters indicate like parts in the following views.

Figure 1 is a front view of the gas-burner, the asbestos being partly removed from the front thereof and means shown for the attachment of the sides and top of a fireplace thereto. Fig. 2 is a cross-sectional view taken on lines *x x*, Fig. 1. Fig. 2<sup>a</sup> is a detail of the same. Fig. 3 is a front view of Fig. 1, the top and bottom being broken away and the front removed to illustrate the construction of the gas-chamber in rear thereof. Fig. 4 is a front view of a sheet-metal sheet with rows of apertures therein, covered with asbestos paper having corresponding apertures therein, the asbestos sheet being broken away at one corner for better illustration. Fig. 5 is a central cross-sectional view similar to Fig. 2 of a portable modification of the device in use in an ordinary fireplace. Fig. 6 is a front view of a fireback-wall of a portable modification, showing a punctured or apertured asbestos sheet in rear thereof, the asbestos wool on its front

face being removed for clearer illustration. Fig. 7 is a detail of a section of a fireback-wall, showing a modification of the same, the flanges being shown detachable and made hollow for the circulation of air through them and tubes for connecting the same with an air-supply and with each other.

In the drawings, A refers to a gas-burning fireback having a suitable damper-opening B at the top, constructed of either cast or sheet metal or the two combined, which may be secured to the sides and top of a fireplace in any well-known manner.

C refers to a shallow rectangular-shaped gas-chamber and gas-and-air mixer projecting slightly to the rear of the central portion of the fireback and having an open front C' and an enlarged opening D at the bottom central portion of the same for the insertion of a suitable gas-pipe *d*, to be secured to a suitable gas connection below. Near the top of this chamber and extending from each side part way toward the center are horizontal barriers *c*, cast on or suitably secured to the rear wall of the chamber, and slightly above the enlarged opening D is a single barrier *c'*, extending across and to points near the sides of the chamber and having portions *c*<sup>2</sup> near its ends inclined downwardly and being punctured to form holes *c*<sup>3</sup> for bolts or screws, hereinafter referred to, for securing the fireback wall or plate tightly over this chamber. These barriers *c c'* are of the same depth as the chamber and prevent the gas from escaping upwardly any faster than it is required to burn, while causing the gas in its obstructed passage around the barriers to mix with the air in the chamber C to form a proper proportion of the two elements for the most efficient combustion and heat on the face of the fireback-wall, hereinafter described.

The gas-chamber and gas-and-air mixer are centrally situated, as before described, as it is found that the heat from the fireback brings the chamber to a temperature which more readily facilitates the mixing of gas and air. The barriers *c c'* also prevent the gas when ignited from flashing back through the chamber to the gas connection below, a serious objection met with in other gas-burners in use.



E refers to the front wall of the gas-chamber and gas-and-air mixer and the fireback of the device, which is made of metal, preferably cast-iron. This fireback wall or plate is of rectangular shape and a little larger than the chamber C, to fit tightly over the same, its edges resting in suitable depressions  $e$  around the front edge of the chamber, as shown in Fig. 2. Extending on each side of a central perpendicular rib  $e'$  of this plate or wall at regular intervals are horizontal slots  $e^2$ , which terminate a short distance from each side of the wall, as shown. Underneath these slots and extending across the rib  $e'$  are forwardly-projecting flanges  $e^4$ , preferably slightly inclined upwardly (see Fig. 2) to deflect the gas and flames upwardly when ignited.

F is a sheet of asbestos of the same dimensions as the fireback wall or plate and has horizontal rows of small apertures  $f$  in the same at regular intervals. G represents a plate or sheet of metal of a size similar to sheet F, having apertures  $g$  therein of the same dimensions and corresponding to apertures  $f$ . These apertures register when the sheets are secured together. These corresponding apertures are so arranged that when the asbestos sheet is placed in rear of the fireback wall or plate and the sheet-metal plate is placed in rear of the latter the rows of apertures will register and fall in the rows of the slots in the fireback wall or plate. These sheets F and G are secured tightly in place in the depressions  $e$  by the same screws or bolts which secure the fireback-wall in place. By this arrangement of plates or sheets it is found that smaller and more numerous gas-burning apertures are provided than is the case where the fireback-plate is cast with gas-ports, and it is evident that by using different sets of sheets of asbestos and thin metal having variable-sized apertures therein the gas burning can be easily regulated, will be more uniform, the fire will be made more effective, and the gas economized by a more perfect combustion.

In using cast plates or plates with holes cast, drilled, or punctured in the same a greater expense is entailed, and there is no provision made for regulating and adjusting the gas-escaping apertures, as in the present invention.

Asbestos in the form of wool is attached in any well-known manner to the front of the fireback-wall E above and between the slots  $e^2$ , as shown.

The chamber C is of such size to at all times supply sufficient gas through all the gas apertures or ports for consumption, and the gas-ports are in such proximity to one another that by applying a light to some of them the remainder will ignite.

In the modification (see Figs. 5 and 6) the construction is substantially the same, except that the gas-burner A' is separate and inde-

pendent of the fireplace-back, so that it can be readily used in any fireplace.

In Fig. 7 is shown a hollow forwardly-projecting flange  $e^5$ , which may be cast integral as part of the fireback-wall or be made independent thereof and bolted or screwed onto the face of the fireback-wall. When these hollow flanges are used, one end of each is preferably attached to a suitable tube or pipe  $h$ , having an enlarged lower end  $h'$  which supplies air from the bottom of the fireplace to the hollow flanges, so that it passes out from the open end of the hollow flange into the room for heating purposes. These hollow flanges may be connected alternately from opposite ends with suitable tubes or in any manner which will prove most effective.

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

1. The combination with a fireplace of a gas-heater, a gas-chamber and gas-and-air mixer, a removable fireback-wall having horizontal slots in the face thereof, a sheet of asbestos in rear of said wall, and a metallic sheet or plate in rear of the asbestos sheet, both sheets having registering apertures falling in said slots and forming ports to said gas-chamber, means for securing said fireback-wall, asbestos and metal sheets together over the front of said chamber, substantially as described and set forth.

2. The combination with a fireplace of a gas-heater, a gas-chamber and gas-and-air mixer, a removable fireback-wall having open spaces therein, forwardly-projecting flanges on said fireback-wall, inclined upwardly and underneath said open spaces, sheets of asbestos and metal in rear of and in contact with the fireback-wall, both sheets having registering apertures falling in said open spaces and forming ports to said gas-chamber, means for removably securing said fireback-wall and said sheets together over the front of said chamber, as and for the purposes set forth.

3. The combination with a gas-heater, of a gas-chamber and gas-and-air mixer, a fireback-wall provided with horizontal rows of gas-jets, a series of hollow flanges, above said rows of gas-jets, and means to connect said flanges with an air-supply, and with each other, substantially as described and set forth.

4. The combination with a fireback-wall having rows of gas-jets, a series of hollow flanges secured to said wall, between said gas-jets, and means to connect said flanges with an air-supply, substantially as described and set forth.

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

GEORGE E. SHARPE.

Witnesses:

GEORGE C. MEIGS,  
OLIVER F. MERILLAT.