

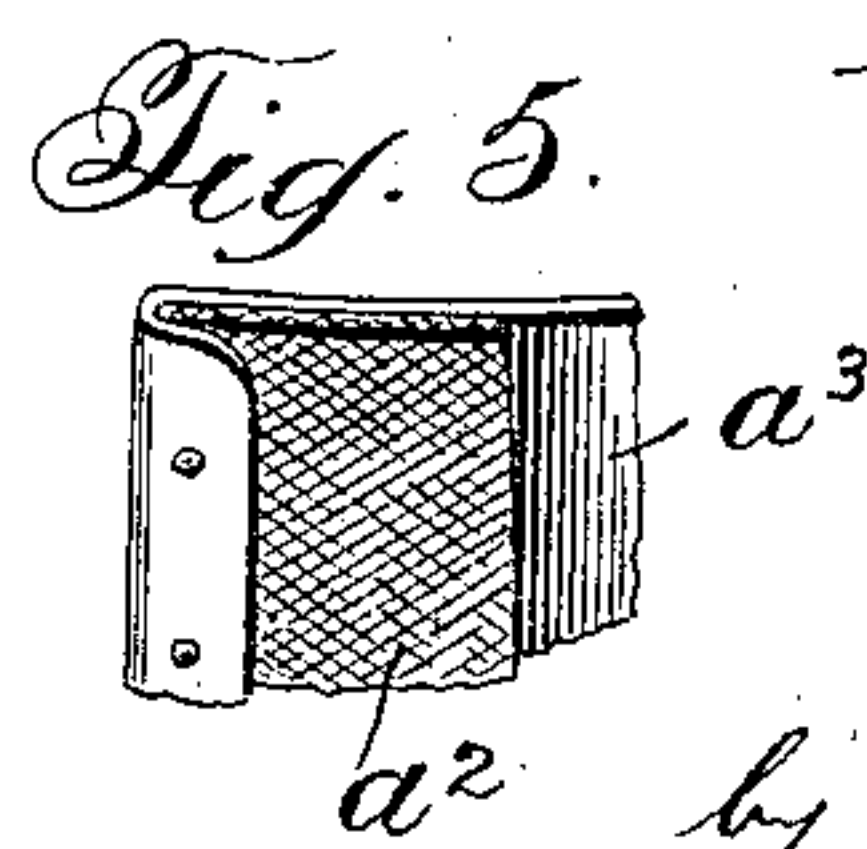
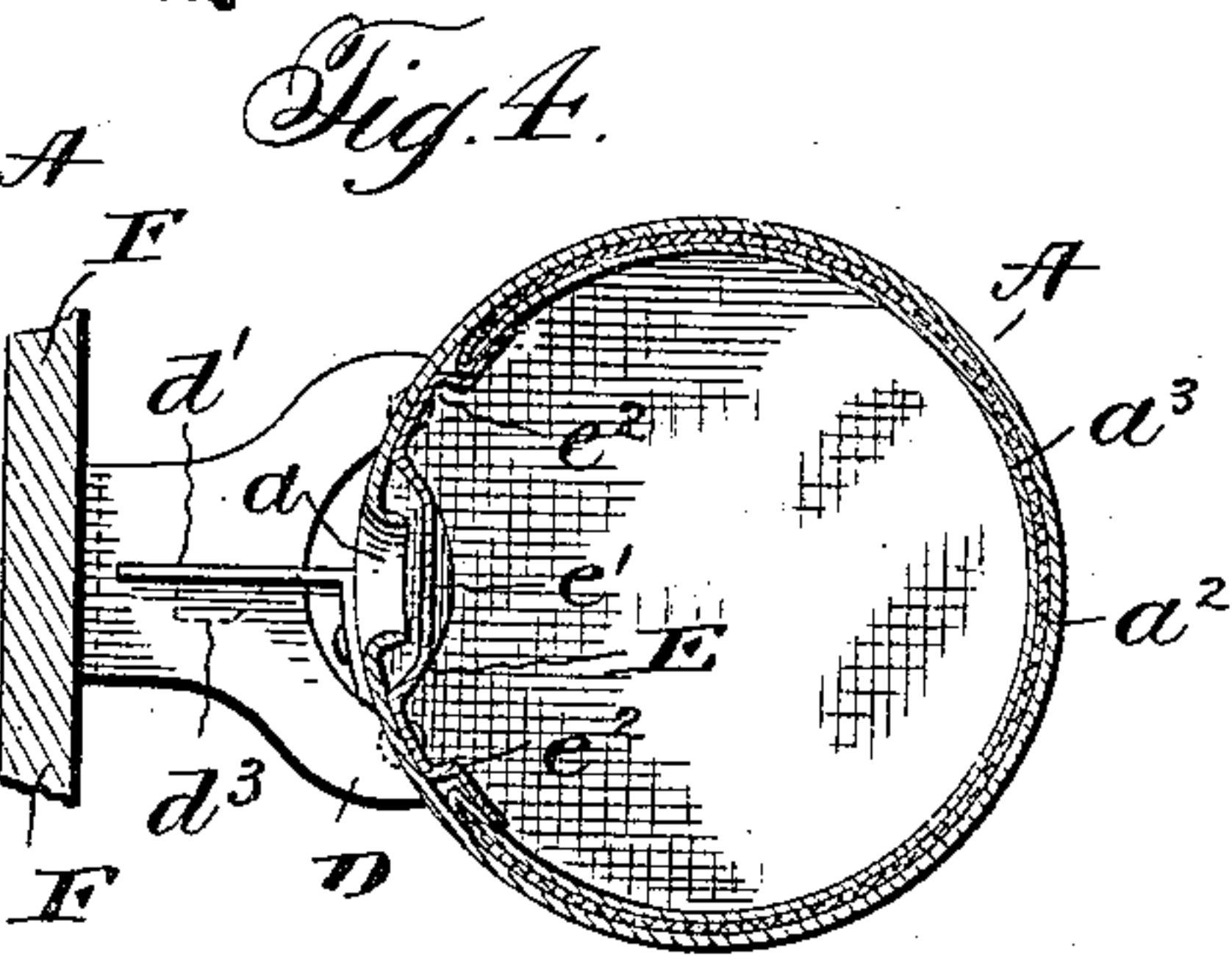
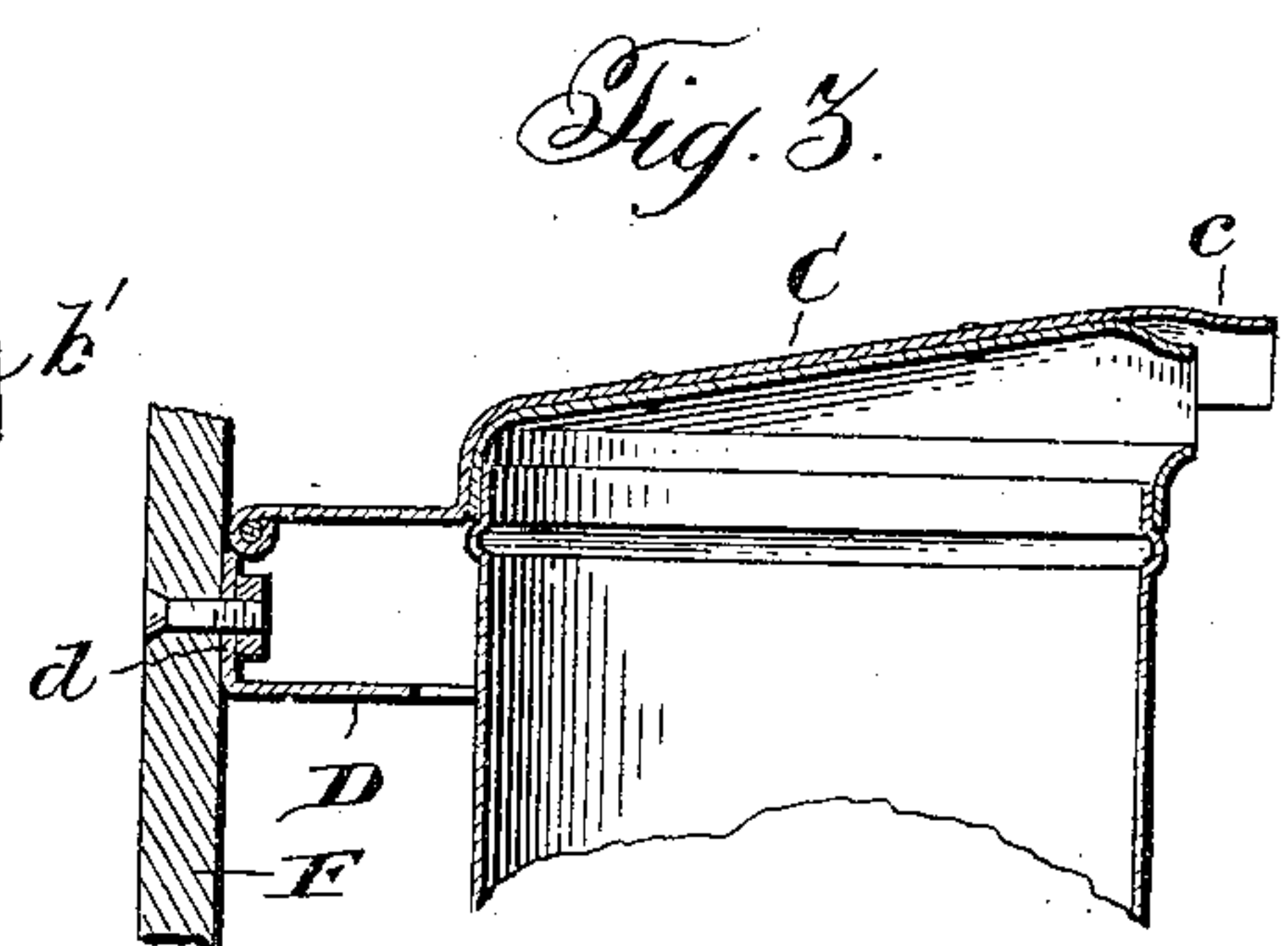
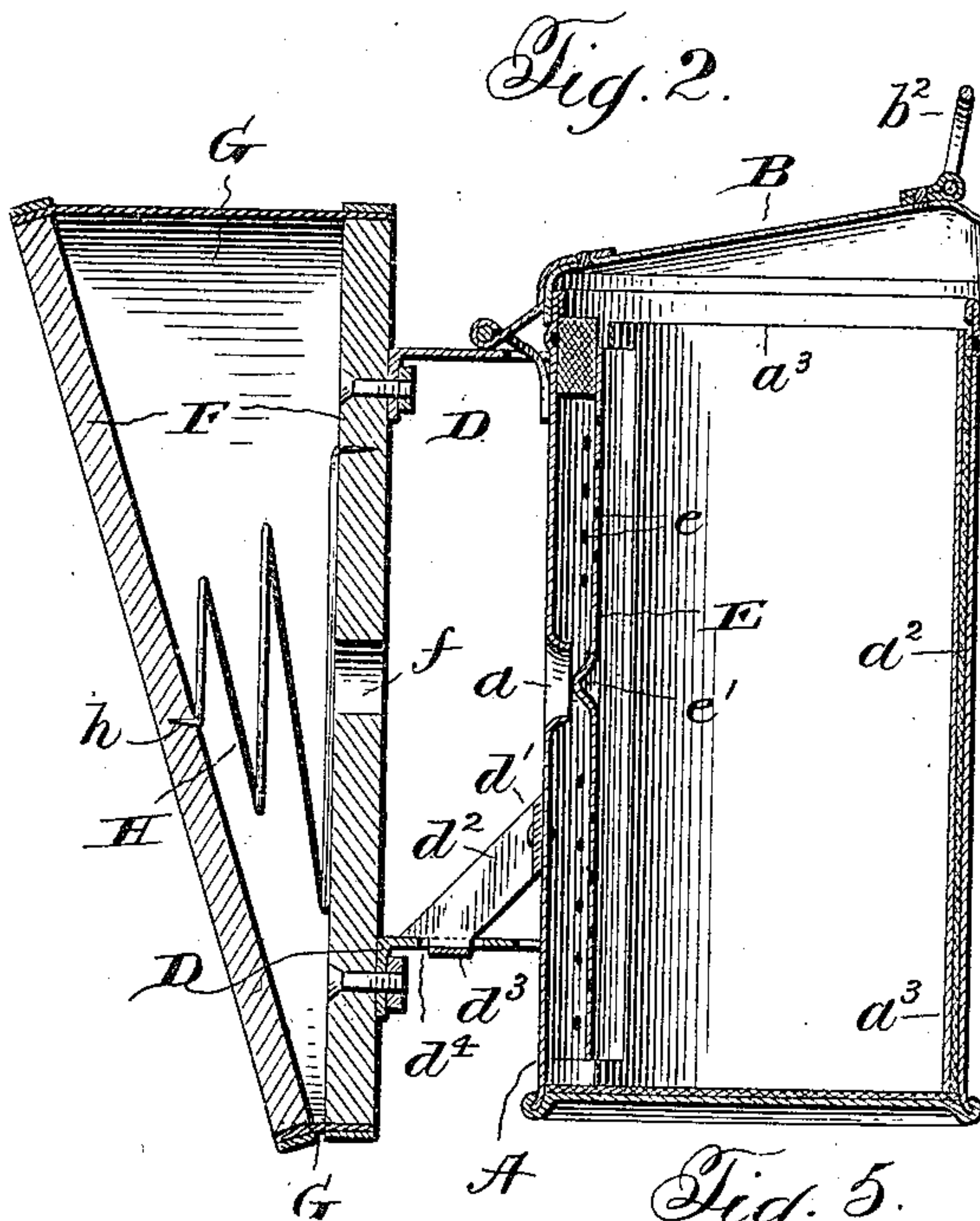
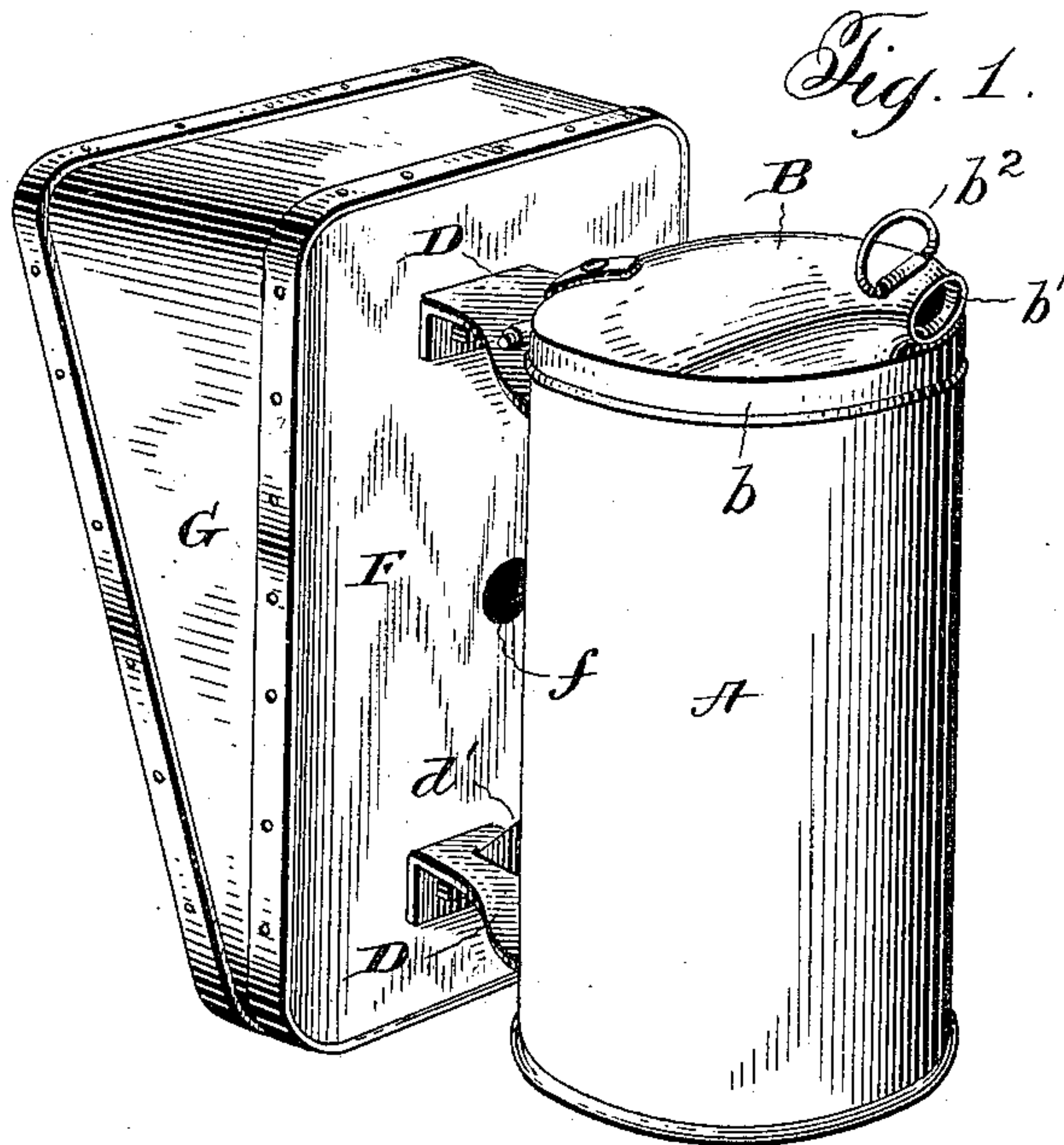
F. DANZENBAKER.

BEE SMOKER.

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993,439.

Patented May 30, 1911.



Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANCIS DANZENBAKER, OF MIAMI, FLORIDA.

BEE-SMOKER.

993,439.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed December 10, 1904. Serial No. 236,319.

*To all whom it may concern:*

Be it known that I, FRANCIS DANZENBAKER, of Miami, Dade county, Florida, have invented a certain new and useful Improvement in Bee-Smokers, and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a bee-smoker constructed according to my invention; Fig. 2 is a vertical section of the same; Fig. 3 is a like view, showing a different construction; and, Fig. 4 is a horizontal section through the fire cup; Fig. 5 a detail view in perspective of a fragment of the fire cup illustrating one mode of attaching the non-conductor lining thereto.

The object of my invention is to improve the construction of bee-smokers, whereby they will be simplified, their cost of manufacture cheapened, their efficiency increased, and improved in other respects, and to these ends, my invention consists in the smoker constructed substantially as hereinafter specified and claimed.

My smoker is of the type which comprises a cylindrical stove or fire cup and a bellows attached to the fire cup, at the side thereof, by which air is supplied, under pressure, both to maintain combustion in the fire cup and to cause the expulsion of smoke therefrom.

The stove or fire cup A, consists of a simple or plain cylinder whose bottom is permanently closed and whose top has a movable lid or cover B, the fuel being accordingly placed in the fire cup through the top thereof. The lid or cover may be a simple cap adapted to be slipped on and off the top of the fire cup, but I preferably hinge or pivot it, employing for this purpose, as shown in Fig. 3, a strip of sheet metal C that is riveted to the lid or cover and at one end is pivoted to the vertical extension  $d$  of the upper one of the brackets D that unite the fire cup and bellows. If desired, however, the hinge and bracket may be separate parts. The cap, as I prefer to make it, has the construction illustrated, it comprising a circular flange  $b$  to fit around the top of the stove or fire-cup, and a top part that inclines upward and forward from the side next the bellows, and converging to a hole or outlet

$b'$  in the forward side thereof, just above the circular rim or flange  $b$ , the whole cap being formed of one piece, which can readily and cheaply be done by means of dies. It is provided with a ring  $b^2$  that forms a handle by which it may be opened. By forming the cap with the smoke-outlet or orifice  $b'$ , rather than providing such outlet in the side of the stove or fire-box, the fuel capacity of the latter is thereby increased. I employ no snout or nozzle, for one is objectionable, because it so easily chokes up with soot, and requires to be frequently cleaned out. A brace  $d'$  preferably connects the lower bracket D with the fire-cup. I find this materially strengthens the smoker, and that blows on the bellows do not injure the brackets, as might be the case if the brace were omitted. As I have illustrated the bracket, it consists of a strip of sheet-metal  $d^2$  having a tongue  $d^3$ , which is bent at an angle to the strip  $d^2$ . The tongue  $d^3$  is passed through a vertical slot  $d^4$  in the bracket D and is secured in place by swinging the strip  $d^2$  to a position at right angles to the bracket, in which position the tongue rests against the back of the bracket and the lower edge of the strip rests against the face of the bracket. The brace is secured in the position just described as by a rivet passing through the upper end of the brace (which is bent to conform to the body of the fire-cup) and the fire-cup.

Air enters the fire-cup through a hole  $a$  at or near its vertical center, and it passes up and down therein through a vertical channel formed by a plate or partition E that extends from a point close to the bottom of the fire-cup to a point nearly to the top thereof, the channel being closed at the top but open at the bottom, so that air may emerge therefrom at the bottom of the fire-cup to support combustion of material down to the very bottom of the fire-cup, and thus assure the burning of all the material in the cup. If desired, the channel may be open at the top also. At points both above and below, but not in line with the opening  $a$ , the plate or partition E has a number of small perforations  $e$  through which the air at various points, both above and below the opening  $a$  may enter the fire-cup from the channel. Because of the absence of openings through the plate or partition E opposite the opening  $a$ , it will be evident that air



passing with force through such opening  $a$  and striking the imperforate portion of the plate or partition, will be deflected up and down the channel. To insure the passage of  
 5 the air both down and up the channel, I provide, opposite the opening A, a rib  $e'$  that extends horizontally of the partition plate E, and acts to direct a portion of the air blast up and a portion down the flue or  
 10 channel. The opening  $a$  may be provided with a slight inwardly-projecting lip, if desired. I have no grate at the bottom of the fire-cup, but the burning fuel rests directly upon the bottom of the cup, which consists  
 15 of a piece of sheet-metal and a sheet of asbestos paper, or the like, covering it to protect it from the heat. The bottom, it is to be observed, is supported a short distance above the bottom edge of the cup, so that  
 20 when the latter stands upon a surface its bottom will not burn the same. The plate or partition E has, at opposite edges, flanges  $e^2$  that lie near the inner surface of the fire cup, and such flanges are attached to the fire-cup,  
 25 the same rivets being utilized to fasten them to the fire cup that unite the brackets D to the latter. The plate or partition is made of heavy sheet-metal that it may withstand the heat.

30 To keep the fire cup cool, and thus increase its durability, as well as the comfort of handling the smoker, I preferably provide it with a lining  $a^2$  of asbestos or other non-conductor of heat, which extends from  
 35 the bottom to, or nearly to, the top of the cup. A very convenient way of applying this lining is to apply it in the form of a sheet to a circular or partly cylindrical shell  $a^3$  of sheet-metal, whose edges are crimped  
 40 or bent over the edges of the sheet of asbestos, the whole thing snugly fitting the fire-cup and extending around in the same from one flange  $e'$  of the plate or partition E to the other flange thereof, as clearly shown  
 45 in Fig. 4 of the drawings. Each of said flanges at its free edge is bent away from the wall of the fire-cup to receive the edge of the lining. This lining device is not attached to the fire cup but is readily removable therefrom, so that it may be removed  
 50 and renewed very readily when necessary.

If desired, a smoke deflector may be employed above the smoke outlet or opening  $b'$ , which may, as shown in Fig. 3, consist of a  
 55 simple, comparatively short, extension  $c$  of the hinge strip C of the cover, which extension overhangs the opening and is bent down at its opposite sides. Such extension, besides serving as a smoke deflector, is also useful in opening the lid or cover, as it may  
 60 readily be knocked or bumped against any suitable object for this purpose. Preferably the edges of the exit or opening  $b'$  are turned outward a short distance, but neither this  
 65 formation nor the employment of the de-

flector above the opening constitutes a nozzle, for there is nothing of this nature employed, and there can be no collection or accumulation of soot in the structure I employ.

My bellows, as usual, consists of two boards F, connected together by a strip of leather G, one of the boards being movable toward and from the other to expel from  
 70 and draw into the bellows, alternately, the air, a coil-spring H being interposed between the two boards to move the movable one away from the other, but, of course, any other type of spring may be employed if preferred. Where I employ the coil spring, I  
 75 secure its ends to the respective boards, which may be done by forming a point  $h$  on each end to enter the wood. The spring will thus be securely held in place against lateral movement, so that its power will always be  
 80 exerted to the best advantage and the likelihood of its slipping sidewise and catching into the leather obviated, and it can be kept free from slack and under such tension as to utilize its energy to the best possible ad-  
 85 vantage. The air hole  $f$  in the stationary board of the bellows is directly opposite the air inlet  $a$  in the fire-cup, and I employ no valve for such hole. Said hole is used for both the inlet of air into the bellows and its  
 90 exit therefrom, so that the bellows is provided with but a single hole.

It is to be remarked that back draft from the fire-cup into the bellows is prevented by having the portion of the plate or partition  
 100 E opposite the fire-cup air-opening  $a$  imperforate. Preferably, I employ no thimble or sleeve between the bellows air hole and the inlet hole of the fire-cup as, without the employment of such sleeve or thimble, an  
 105 ample volume of air enters the fire-cup, and there is an advantage in having some not enter it, but to strike and move along the sides of the fire-cup, in that the latter is thereby cooled on the side that is next the  
 110 hands in grasping the bellows; but, if preferred, such a sleeve or thimble may be employed. I round or curve the corners of the bellows boards, as shown in the drawings, to avoid any sharp or angular bends of the  
 115 leather that would cut or otherwise damage it, and, at the same time, I secure a more pleasing appearance of the bellows.

It will be seen that my smoker is a direct side and top burner, the air to support combustion passing into the channel formed by  
 120 the side of the fire-cup and the plate or partition E at its vertical center, and thence passing upward and downward and coming in contact with the burning fuel all along  
 125 the side thereof, as well as entering it at the bottom of the fire-cup, and thence passing upward through it to the top.

It will be seen that my smoker is extremely simple in construction; the fire-cup  
 130



has great fuel capacity; the smoker operates most efficiently, and it is convenient and comfortable to handle.

While I prefer the various details of construction which I have illustrated and described, it is to be understood that the scope of the invention is not limited thereto, as changes can be made which will involve no departure from the scope of my invention. Among other changes that may be made, I mention the employment of a differently constructed non-conducting lining for the fire-cup, it being possible to use in place of that I have shown ribbed or corrugated paper of non-conducting material.

Having thus described my invention, what I claim is:—

1. In a bee-smoker, the combination of a fire-cup, a bellows, a bracket connecting the cup and bellows, and a hinged cover for the cup pivoted to an extension of said bracket.

2. A bee-smoker, comprising a fire-cup having walls providing a channel, one of said walls having an air-opening, a deflector for entering air in opposite directions

through such channel, and means for forcing air into the channel.

3. A bee-smoker, comprising a fire-cup having walls providing a vertical channel one of said walls having an air opening, a rib in the channel wall opposite the opening, and means for forcing air into the channel.

4. A bee-smoker, comprising a fire-cup, a bellows, sheet-metal brackets connecting said cup and bellows, and a sheet-metal brace connecting one of said brackets with said fire-cup, said bracket having a slot, said brace consisting of a strip of sheet-metal having a tongue bent at an angle thereto, said tongue being passed through the slot in the bracket, the lower end of said brace resting against the face of the bracket, said brace having its upper end bent to conform to the fire-cup and being secured thereto.

In testimony that I claim the foregoing I have hereunto set my hand.

FRANCIS DANZENBAKER.

Witnesses:

S. L. PATTERSON,  
M. E. ROBINSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."