

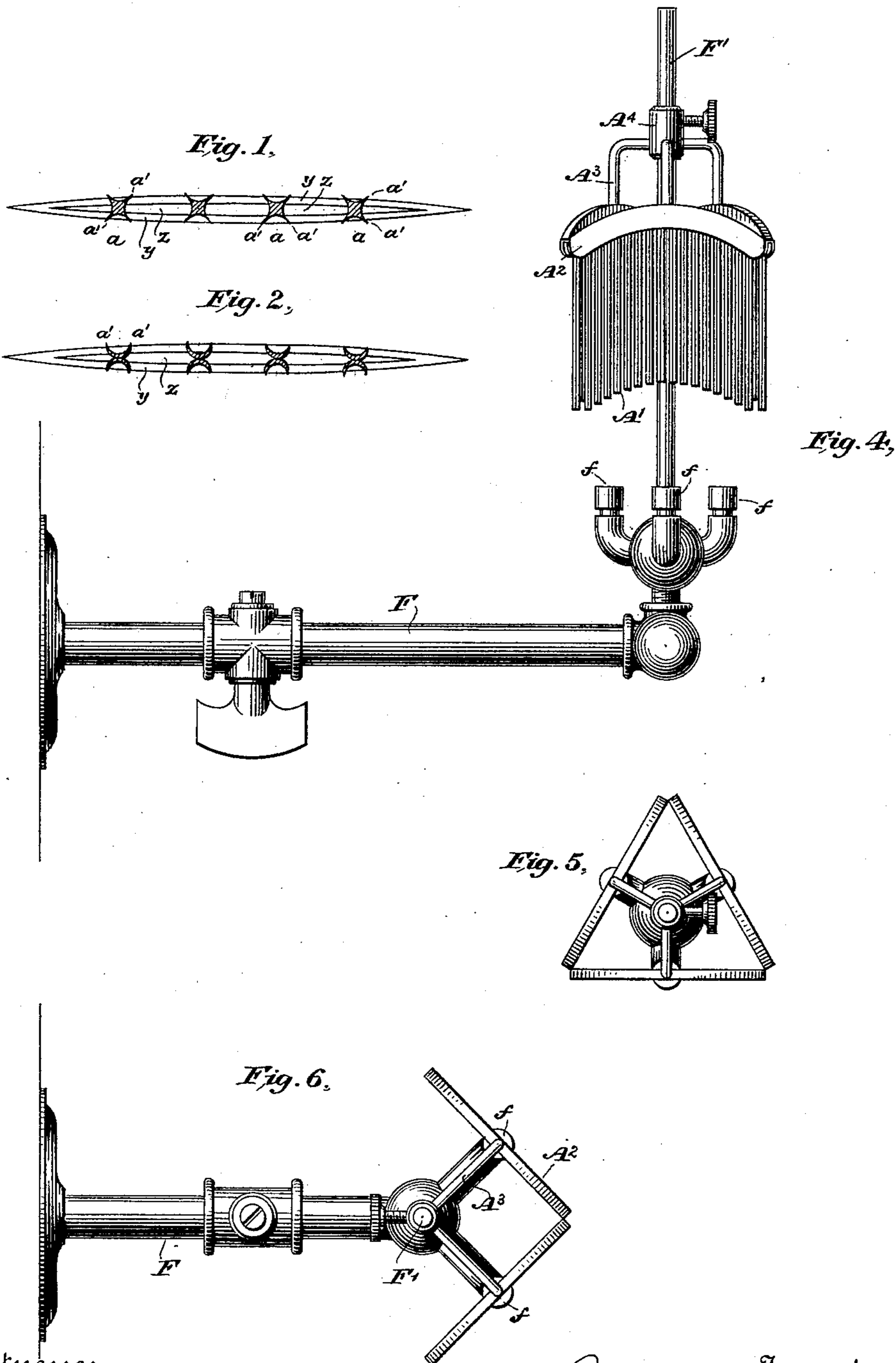
(No Model.)

3 Sheets—Sheet 1.

C. B. HARRIS.
INCANDESCENT BURNER.

No. 437,114.

Patented Sept. 23, 1890.



Witnesses
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 3,

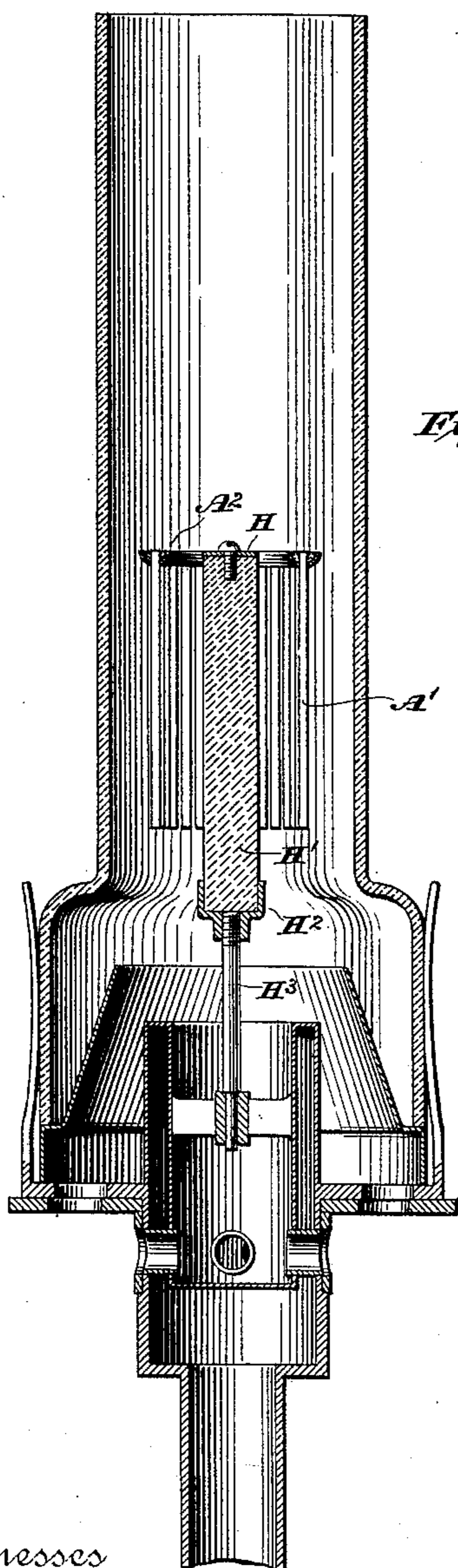


Fig. 9,

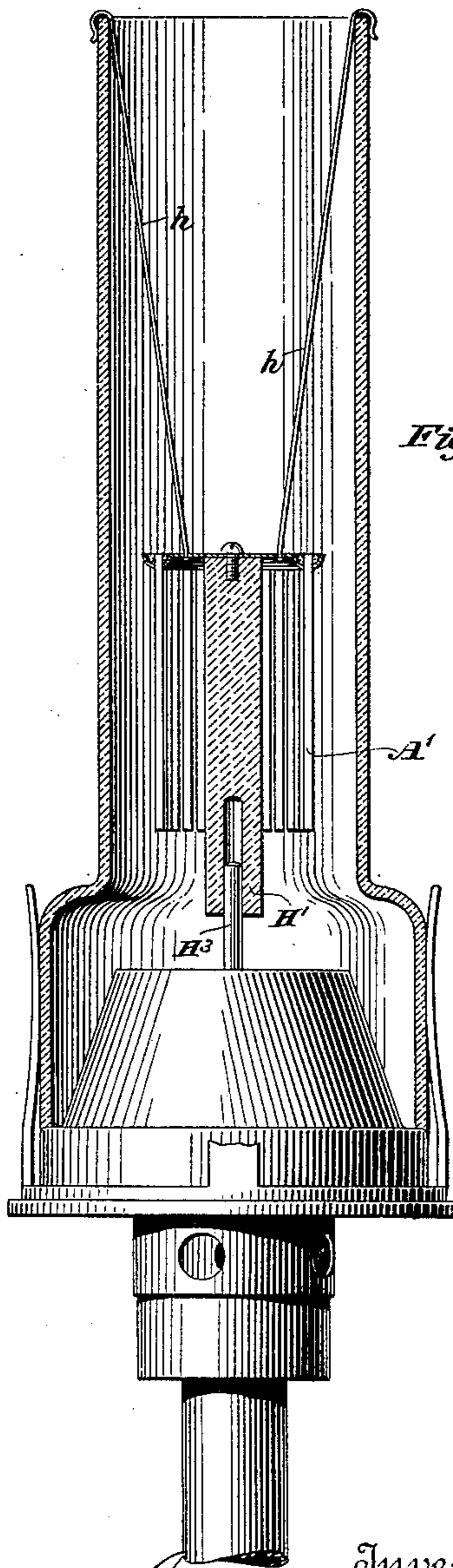


Fig. 10,

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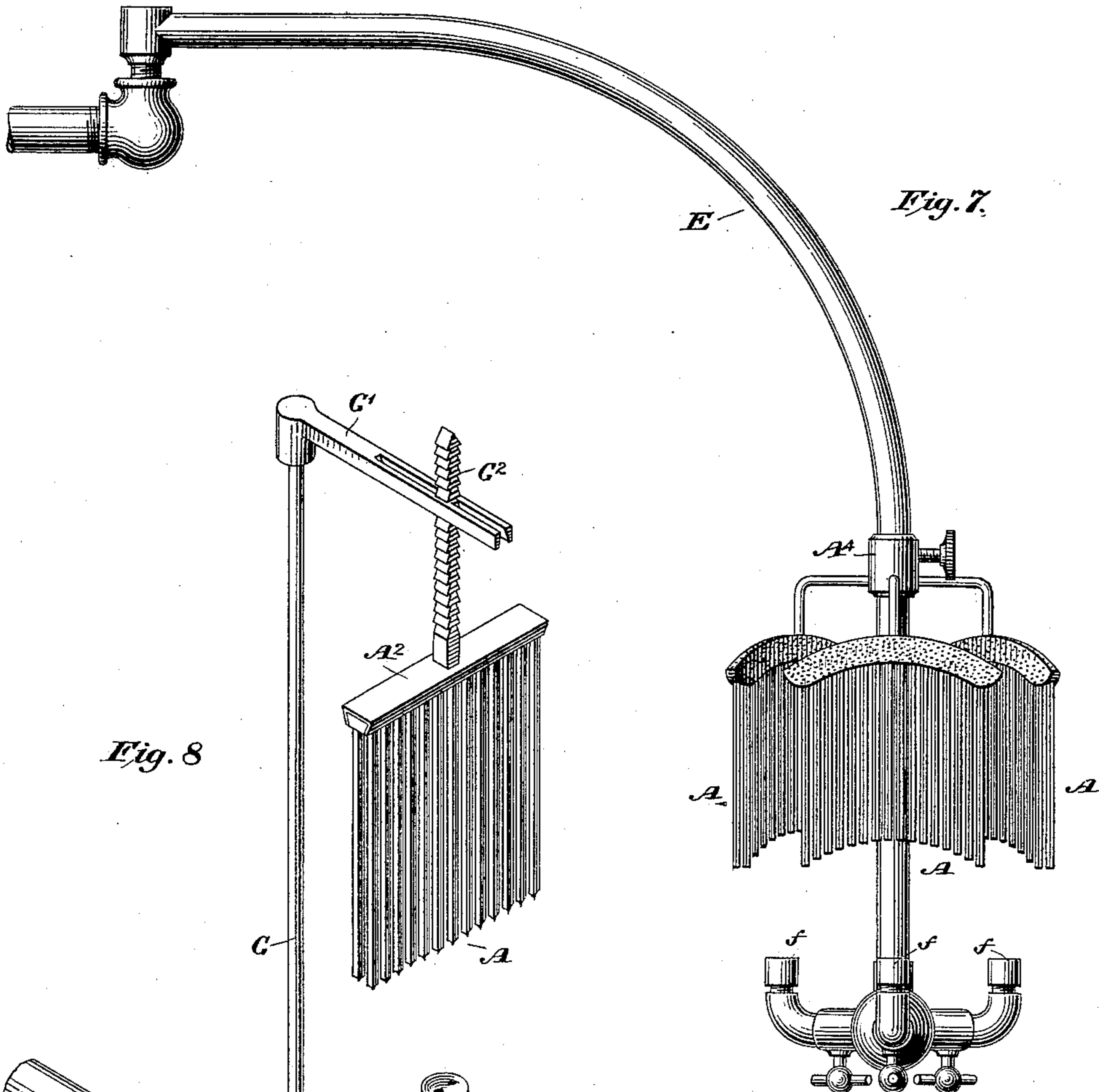


Fig. 7.

Fig. 8.

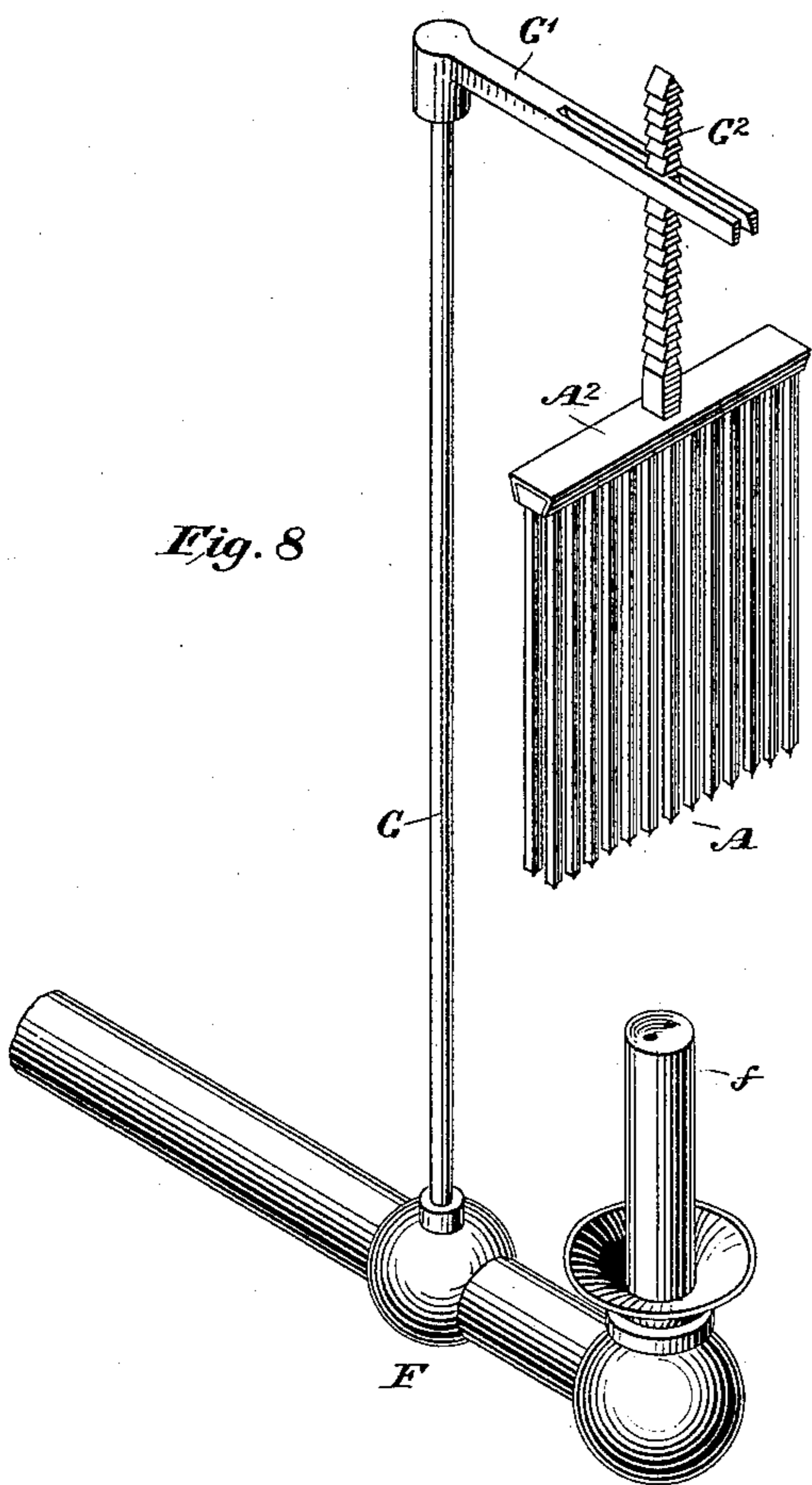


Fig. 12.

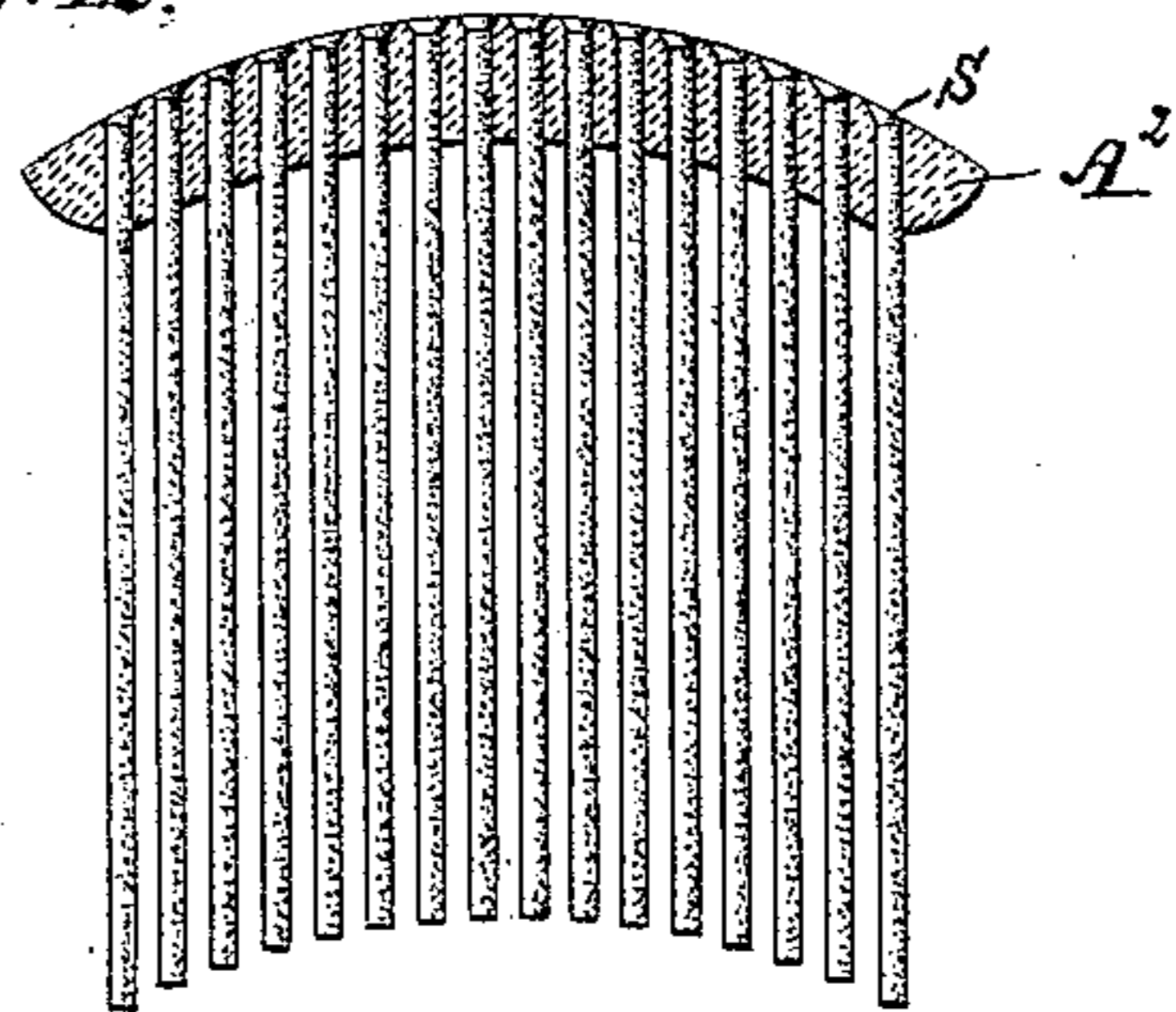
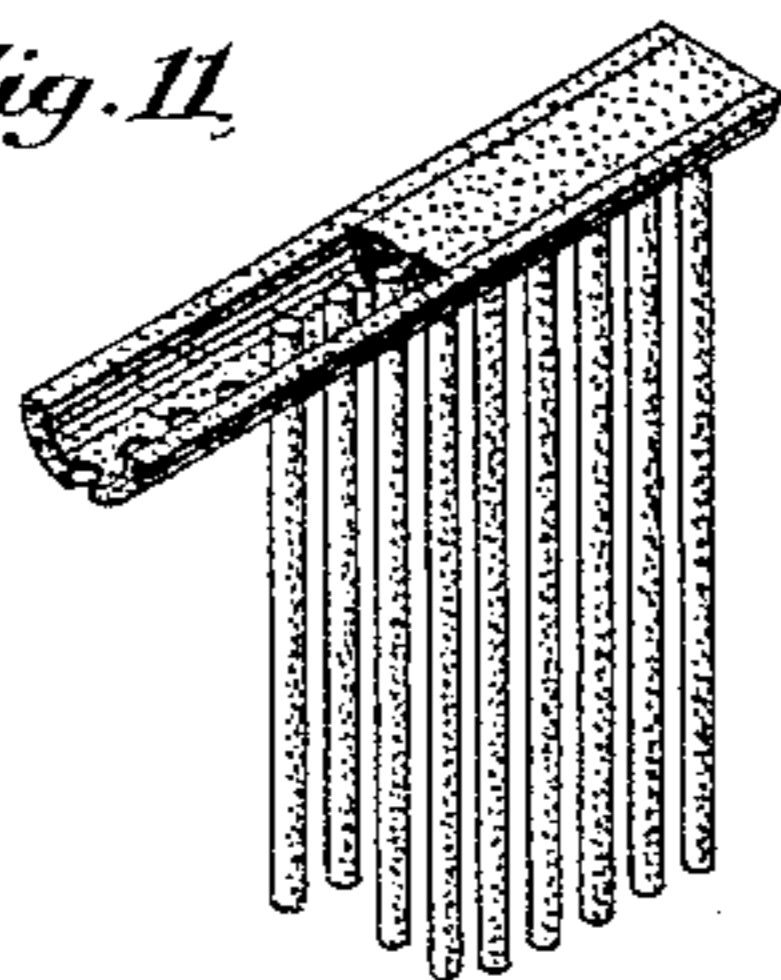


Fig. 11.



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UNITED STATES PATENT OFFICE.

CHARLES B. HARRIS, OF NEW YORK, N. Y.

INCANDESCENT BURNER.

SPECIFICATION forming part of Letters Patent No. 437,114, dated September 23, 1890.

Application filed October 16, 1889. Serial No. 327,173. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. HARRIS, of New York city, in the county and State of New York, have invented certain new and useful Improvements in Incandescent Burners, of which the following is a specification.

My invention relates to that class of burners in which sticks or pencils of refractory material capable of becoming incandescent in the flame of a gas-burner are employed.

The purposes of the invention are to provide a new form for the incandescing sticks or pencils and to provide means for arranging or hanging them in suitable relation to the flame. It has been demonstrated that the greatest heat of a gas form is developed in an area on each side of the central portion of the flame which is of relatively much lower temperature. In my improved form of stick or pencil I recognize this fact and form the stick with longitudinal projections made comparatively thin, the shape being such that the thin projecting portions occupy the space in the flame having the highest temperature, while the central part or main body of the stick which occupies the cooler part of the flame is made a size to give sufficient strength to the stick or pencil. The projecting portions are made as thin as possible or desirable, so that the mass of incandescent material exposed to the hottest part of the flame will be relatively small and will quickly become incandescent. Incandescing elements of the character referred to may be made of the ordinary materials well known in the art and according to methods well understood. The incandescent sticks or pencils are usually white, being in many instances made of magnesia with other ingredients, and when so the central part of the stick occupying the cooler portion of the flame reflects the light outwardly. I preferably make the head which supports the incandescing sticks of the same material as the sticks. The head may be molded and formed with apertures for the reception of the sticks, which are secured therein by cement in the ordinary way. I also prefer to support the group of incandescing sticks by a non-heat-conducting support or post, so that there is but little loss of heat by conduction from the group and head to the metallic part of the fixture.

In the accompanying drawings, Figure 1

indicates a horizontal section through a gas-flame with several of my improved incandescing sticks placed therein, the sticks being shown in section; Fig. 2, a similar view showing sticks of another cross-section; Fig. 3, a view showing a variety of cross-sections of incandescing sticks. Fig. 4 shows one form of bracket-lamp in which my improved sticks are employed; Fig. 5, a plan of the burner portions of the same; Fig. 6, a plan of a bracket-burner, showing a somewhat different arrangement. Figs. 7 and 8 show illustrations of other forms of fixtures; Fig. 9, a vertical central section through a circular burner, showing the circle of incandescing elements suspended upon a central post; Fig. 10, a similar view showing a circle of incandescing elements suspended from the upper edge of the lamp-chimney; Fig. 11, a detail perspective, partly broken away, showing the head supporting the incandescing sticks made of the same material as the sticks; and Fig. 12, a longitudinal section showing the same feature with the parts somewhat differently arranged.

Referring to Fig. 1, x represents the hot space on one side of the gas-flame; y , the hot space on the opposite side, and z the relatively cool space in the middle. In this figure the incandescing sticks A are shown as having a central portion a , from which project longitudinal thin incandescing portions a' . Two of such portions project into the hot space on each side of the flame, the general shape being such that straight lines drawn from point to point of the incandescing portions would form a rectangle or square.

In Fig. 2 the incandescing elements or sticks are crescent-shaped in cross-section, the relatively thick back a of the crescent occupying the cold part of the flame and the projecting horns a' the hot part. The figure also shows the sticks arranged in pairs back to back.

Various other forms may be adopted in practicing my invention. For instance, in Fig. 3, where the two forms already described are shown, two others are illustrated. One is of general triangular shape, there being three projections a' extending radially from the central portion a , while the other form shown in this figure has five projecting portions a' . In every instance the light radiated from the incandescing portions or thin portions a' is in

part reflected outwardly by the central white portion *a*, which, occupying the cooler part of the flame, may not become incandescent. This improved incandescing element may be used either with non-carbureted or water gas or with ordinary illuminating-gas when the same is mixed with air, as in an ordinary Bunsen burner.

In Figs. 4 and 5 I have illustrated three groups of my improved incandescent elements mounted in the ordinary way in heads A^2 . The fixture *F* is provided with three radially-projecting burners *f*, and a group of incandescing sticks is suspended above the burner, the arrangement of these groups in plan or cross-section being a triangular one, as indicated in Fig. 5, so that the light is radiated in every direction. These groups may be suspended by rods A^3 from a single collar A^4 , loosely embracing a central vertical post F' , carried upon the fixture, and the groups may be vertically adjusted by means of a set-screw, as shown. In Fig. 6 I have shown a similar arrangement, except that two groups only are employed, the burner being V-shaped in plan. Such an arrangement serves to throw the light in every direction into the room, the group which would occupy a position next to the wall from which the bracket projects being omitted.

In Fig. 7 an arrangement similar to that of Fig. 4 is shown, except that the fixture is a pendent one, and a collar A^4 is adjustable thereon, the burners being located at and projecting radially from the lower end of the pendent portion of the fixture *F*.

In Fig. 8 an ordinary bracket-fixture *F*, having a single burner *f*, is shown. A vertical post *G* is mounted upon the bracket at one side of the burner and at the top carries a horizontally-projecting slotted arm G' , extended over the burner. In this instance the head A^2 carries two parallel rows of incandescing sticks *A* and has projecting upwardly from it a post G^2 , having notched or serrated edges, by means of which the group may be supported in the slotted arm G' at any desired elevation above the burner.

In Fig. 9 I have shown a circular burner of the character illustrated in my patent, No. 410,549, granted September 3, 1889. The group *A* of incandescing elements is circular, being suspended in a circular head A^2 . This head is suspended by means of a cross-piece *H* upon the upper end of the post H' , of the same material of which the incandescing sticks are composed, or other suitable non-heat-conducting material. The lower end of this post is seated in a socket H^2 , carried by a vertical rod H^3 , projecting upwardly centrally from the circular burner. The post H' in this instance not only serves to support the group of incandescing sticks, but also reflects light outwardly, and, in addition to these two functions, serves for another important purpose—namely, being relatively a non-conductor of heat, it prevents, in a meas-

ure, the loss of heat, which would occur by conduction from the head A^2 downward to the metallic parts of the burner. In Fig. 10 a similar arrangement is shown, all the corresponding parts being correspondingly lettered; but in this instance the head A^2 is supported by wires having hooked ends engaging the upper ends of the glass chimney. The post H' is bored centrally from its base upwardly, and the upper end of a post H^3 fits therein, thus preserving the concentric relation of the group of incandescing sticks to the burner.

In Fig. 12 the head A^2 is shown as made of the same or like refractory material as the sticks, molded and compressed into shape and provided with perforations in which the sticks fit. The perforations are preferably enlarged at the top at *s*, and are filled with cement to retain the sticks in place.

In Fig. 11 the head A^2 is trough-shaped and perforated, and is to be filled with the usual cement to retain the sticks in place.

In each instance the perforations may be molded in the head or bored therein.

Fig. 7 also indicates that the heads are made of the same material as in Figs. 11 and 12. In these instances, also, the material of which the head A^2 is composed is a poor conductor of heat, and will prevent, in a great measure, loss of heat by conduction, as above mentioned.

I have illustrated and described a number of fixtures or ways in which my improved incandescing sticks or elements may be used. They are desirable and practical; but I do not of course limit the invention to the special organizations shown, as my improvements may be used in a variety of burners differing more or less from those shown.

I claim as my invention—

1. An incandescing stick or element having a relatively thick central portion and a thinner longitudinally-projecting portion, for the purpose set forth.

2. An incandescing stick or element having a relatively thick central portion and two or more thinner longitudinally-projecting portions, for the purpose set forth.

3. The combination of a group of incandescing sticks or pencils, each of which has a relatively thick central portion and thin longitudinally-projecting incandescing portions, and a gas-burner, above which said group is suspended, the group being so related to the burner that the thick portions of the incandescing sticks occupy the central or cooler part of the flame and the projecting incandescing thinner parts occupy the outer hotter portions of the flame.

In testimony whereof I have hereunto subscribed my name.

CHARLES B. HARRIS.

Witnesses:

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MAMIE J. KELLEY.