

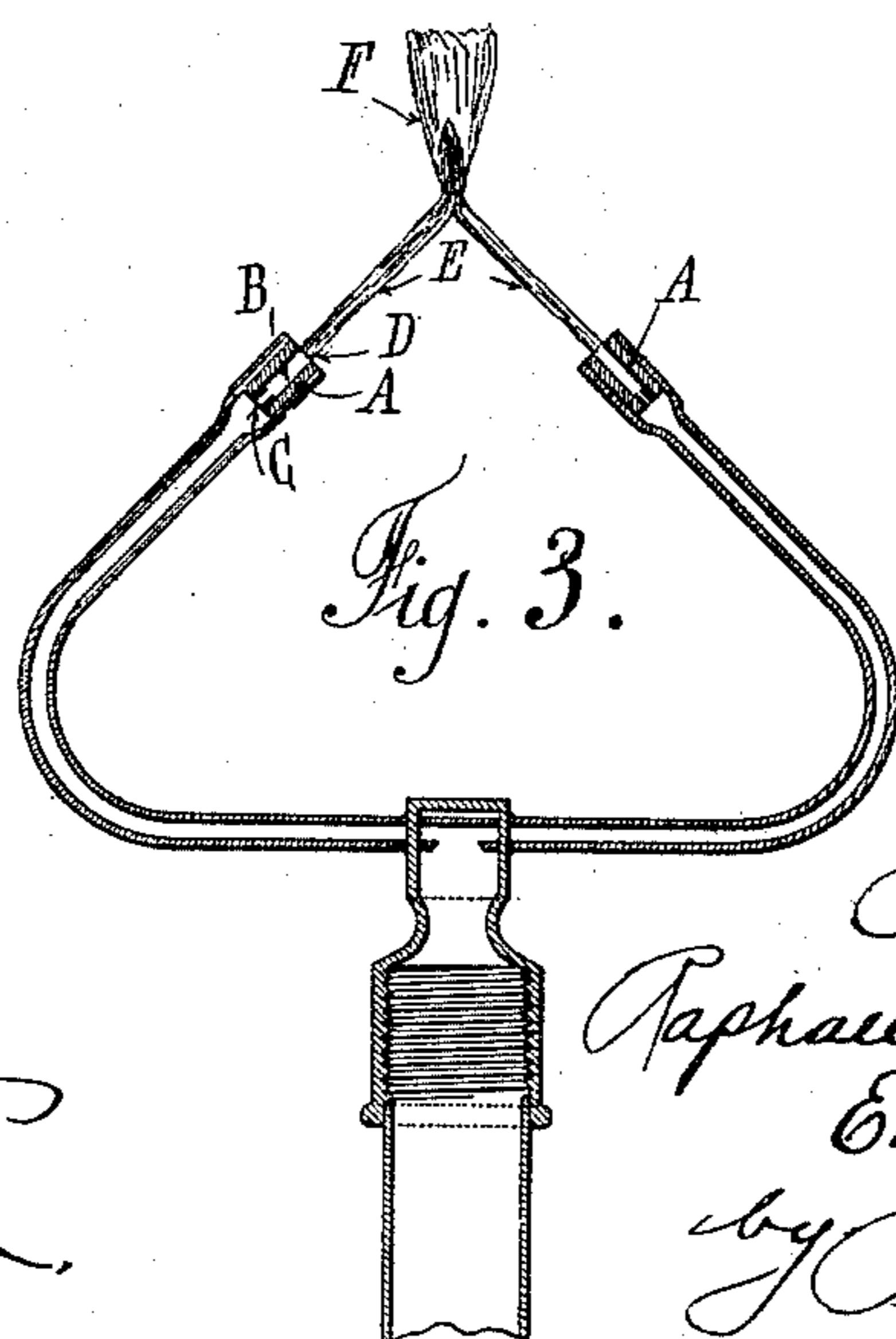
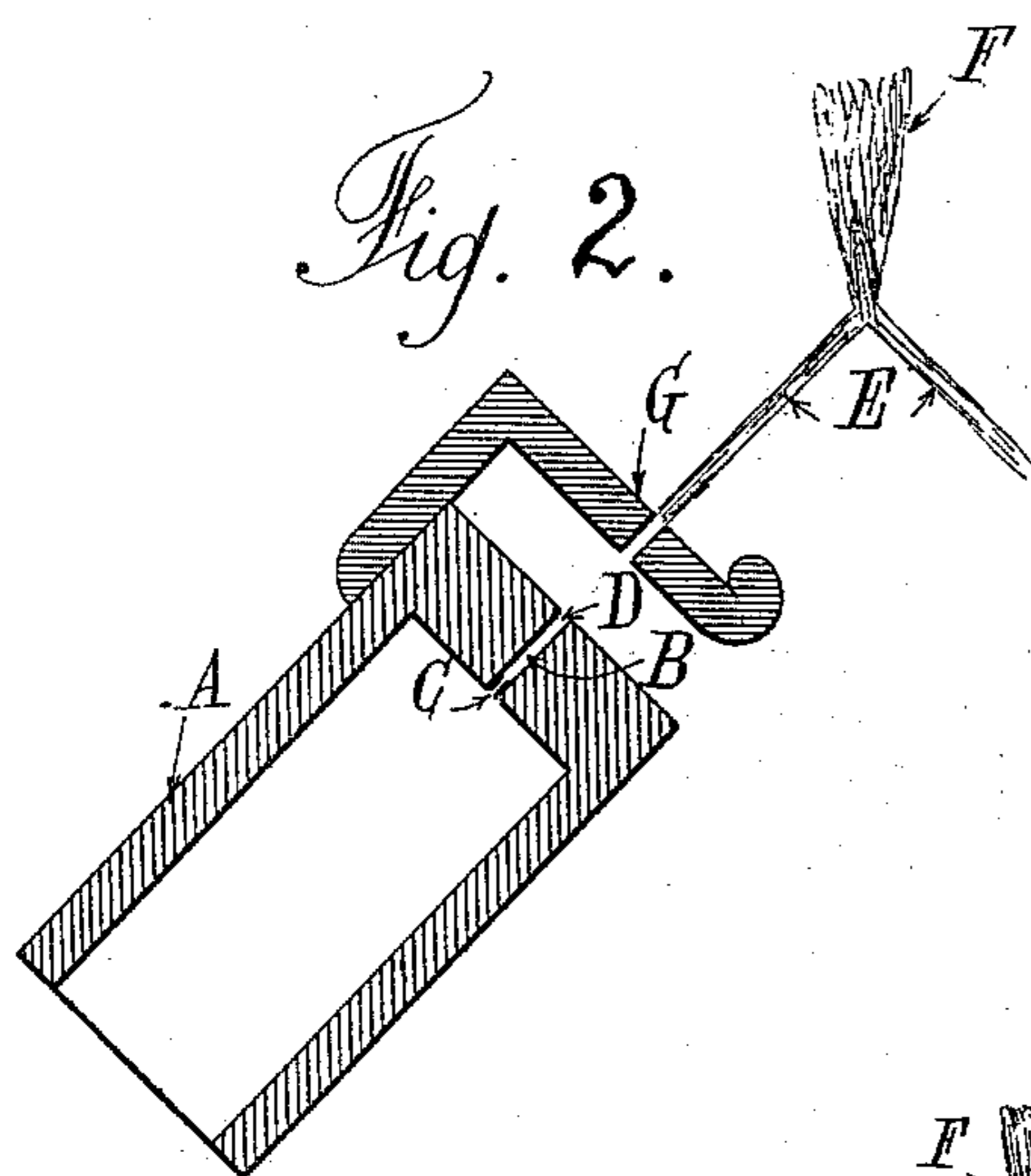
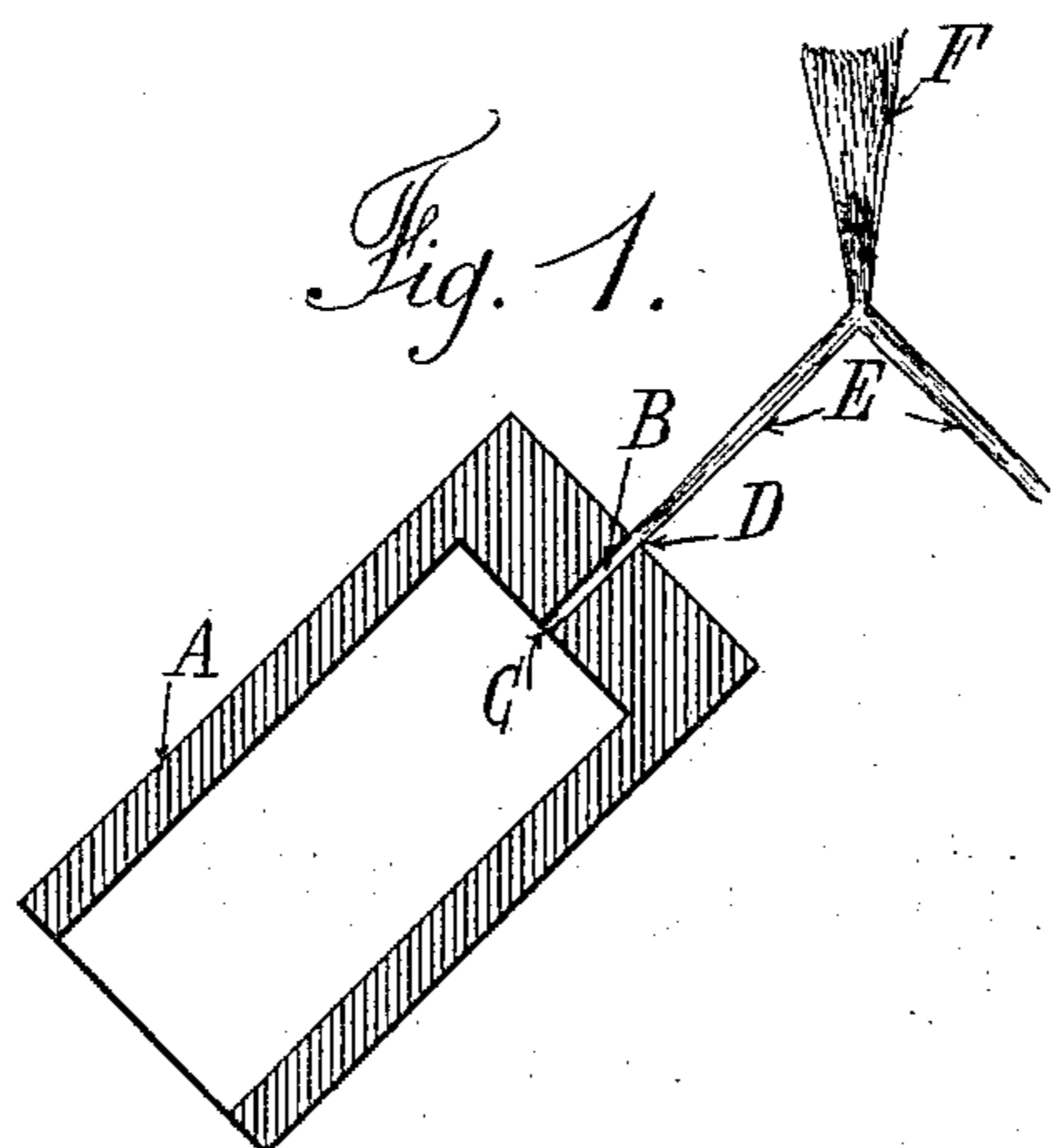
No. 713,632.

Patented Nov. 18, 1902.

R. GRANJON & E. ISNARD.
ACETYLENE GAS BURNER.

(Application filed Sept. 3, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

RAPHAEL GRANJON AND EDOUARD ISNARD, OF MARSEILLES, FRANCE.

ACETYLENE-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 713,632, dated November 18, 1902.

Application filed September 3, 1901. Serial No. 74,189. (No model.)

To all whom it may concern:

Be it known that we, RAPHAEL GRANJON and EDOUARD ISNARD, civil engineers, of the city of Marseilles, Republic of France, have
5 invented a new and useful Improvement in and Connected with Acetylene-Gas Burners, which improvement is fully set forth in the following specification.

Our system is applicable to the usual acetylene-gas burners for direct luminous combustion, and more especially to the burners called
10 "conjugate" burners, with or without air-supply, whose combustion is effected by the impact of two gas-jets, the impact producing a flat frame perpendicular to the plane of the
15 gas-adduction jets.

Although our researches have been particularly devoted to acetylene-gas burners, and although we claim the arrangement herein
20 after described more particularly in connection with the combustion of acetylene gas, we also reserve to ourselves the right of applying the design of burner herewith described for use with all other illuminating-gases.

25 While studying the causes of the various phenomena which we have observed in the different ways of burning acetylene and while experimenting with different apparatus to verify the hypotheses that we formulated on
30 this subject, we concluded and confirmed that if immediately after the pure gas leaves the exit-openings in an acetylene-burner with conjugate flames—for example, the orifice for regulating the consumption of the burners
35 and formed by round holes which allow the gas to escape in the form of straight stiff uniform jets—we conduct the gas-jets in a casing or cap arranged in the same direction as each of these jets, the interior diameter of this
40 cap being larger than the diameter of the gas-exit openings, the illuminating power of the flame produced by the addition of such an arrangement is rendered much greater than that obtained from the combustion of the pure gas
45 immediately after it has left the exit-openings or after it has left the ordinary appliances for supplying air. This result, which is greatly to be desired when light is being
50 produced from acetylene, is most probably effected by the special detention in the said casing or cap of the acetylene-jet escaping

from the exit-openings in the burner. It is not always convenient to inquire into or explain probable causes, but simply to describe this new arrangement, as well as its industrial
55 application and immediate importance.

In order that our invention may be clearly understood in all its details, we annex hereto a sheet of drawings illustrating diagrammatically the characteristic features of our in-
60 vention, in which—

Figures 1 and 2 are sections of two forms of burner-caps constructed according to this invention, and Fig. 3 shows a burner equipped
65 with caps embodying the invention.

Referring to the accompanying drawings, A is the body of the burner-cap.

B is the passage of constant or uniform size or diameter throughout, constituting our improvement and forming the subject of our
70 present invention.

C is the exit-opening of the burner, the size of which varies according to the consumption of the burner.

D is exit-opening of the passage B, out of
75 which the gas escapes.

E represents the gas-jets ignited as they leave the burner-cap.

F is the flame produced by the impact of the two jets.
80

As we have mentioned above, the passage B, which we arrange above the gas-exit opening C, must be larger than said opening C. Our experiments demonstrated that this was
85 necessary. At the same time the relative size of passage B and exit-opening C should be varied to suit the shape and consumption of the burners, as well as the pressure of the gas and other circumstances. For example, excellent results have been obtained with the
90 following dimensions: For a delivery of five liters of acetylene gas per hour, opening C, about three-tenths millimeter in diameter, passage B, four-tenths millimeter in diameter; for seven and one-half liters, opening C, .0325 millimeter, passage B, .05 millimeter;
95 for delivery of ten liters of acetylene gas per hour, opening C, .035 millimeter, passage B, .055 millimeter diameter. The same applies to its length, which may be reduced until it
100 forms a simple opening, or in certain cases it may be from six to eight millimeters or more

in length, thereby greatly altering its effect. At the same time a passage of from three to five millimeters length appeared to us from our first experiments to be more advantageous. In short, modifications in size may be made within wide limits without departing from the principle of the invention. Improved combustion of acetylene can therefore be obtained with our appliance, and said appliance can be applied to ordinary burners independently of other improvements which may be effected therein, these other said improvements having principally for their object to prevent the fouling of the said burners.

15 We are quite aware of the fact that in non-fouling burners or burners with air-supply the gas-jet before its ignition passes through an opening the diameter of which is considerably greater than that of the pure-gas-exit openings. This channel, however, must not be confused with that forming the object of our new appliance. Said channel in the old structures is solely provided to prevent the fouling of the burners. Furthermore, its diameter is so large that we are able to deny its similarity to our arrangement, in which expansion and discharge passage B is made smaller in proportion to the size of the exit-opening C. Besides, this channel in the old structures has never had any effect to increase the illuminating power. It cannot, therefore, be compared in any way with our appliance whose place it takes in these kinds of burners.

What we claim, and desire to secure by Letters Patent, is—

1. A gas-burner having a gas-exit opening communicating with an expansion and discharge passage of uniform size throughout its length and of greater diameter than the diameter of said exit-opening, the approximate maximum diameter of the passage being twice the diameter of the exit-opening, said passage having openings only at its inner end where it joins and is closed around the gas-exit opening and at its outer end from which the gas is discharged.

2. A gas-burner having a cylindrical gas-exit opening communicating with a cylindrical expansion and discharge passage of uniform size throughout its length, said gas-exit opening and expansion and discharge passage having a common axis, said expansion and discharge passage having openings only at its inner end where it joins and is closed around the gas-exit opening and at its outer end from which the gas is discharged and being of an approximate maximum diameter twice the diameter of the gas-exit opening.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

RAPHAEL GRANJON.
EDOUARD ISNARD.

Witnesses:

SEREN JULES,
D. DE VALLEY.