

No. 703,070.

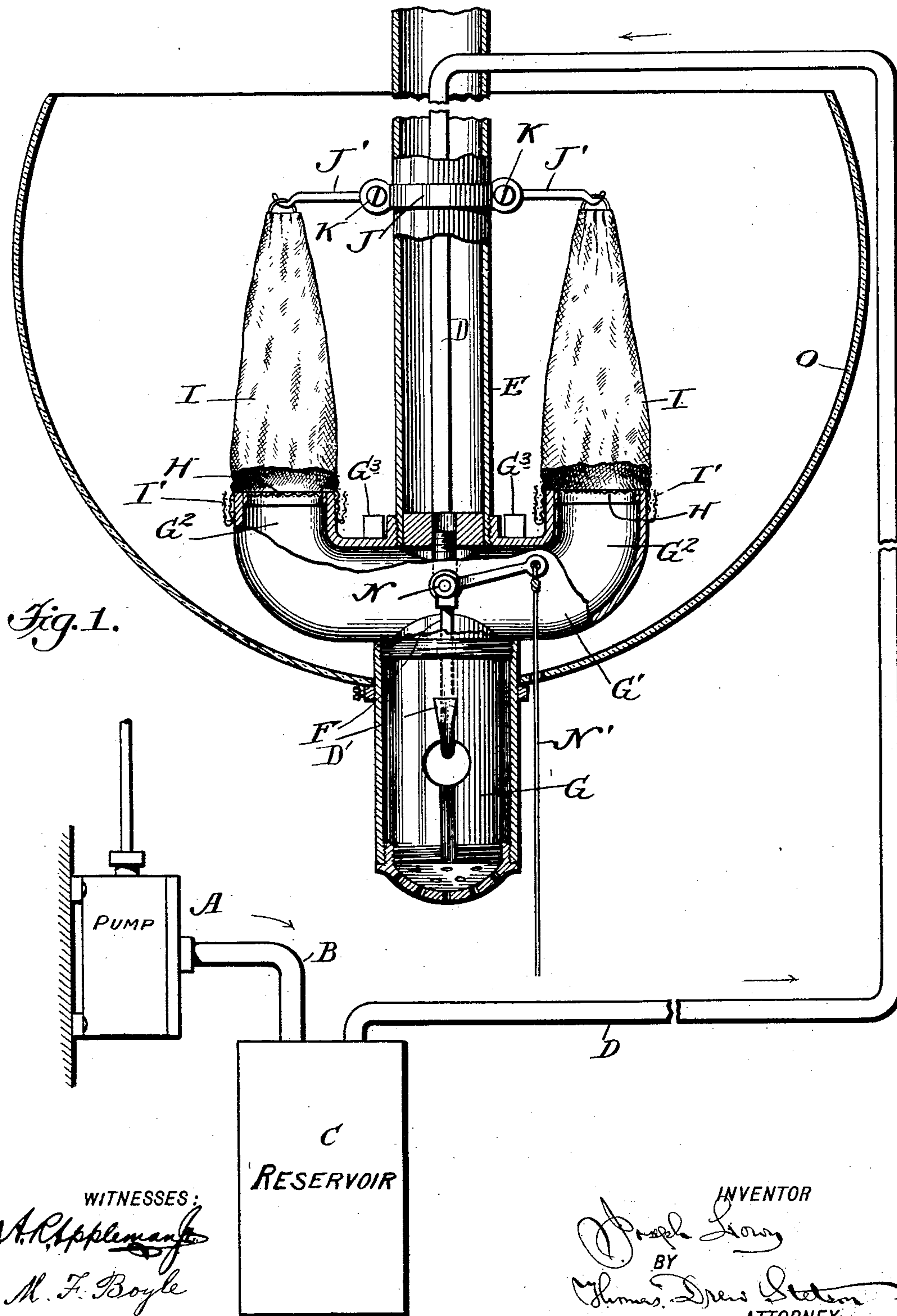
Patented June 24, 1902.

J. LOWY.
INCANDESCENT GAS LAMP.

(Application filed June 14, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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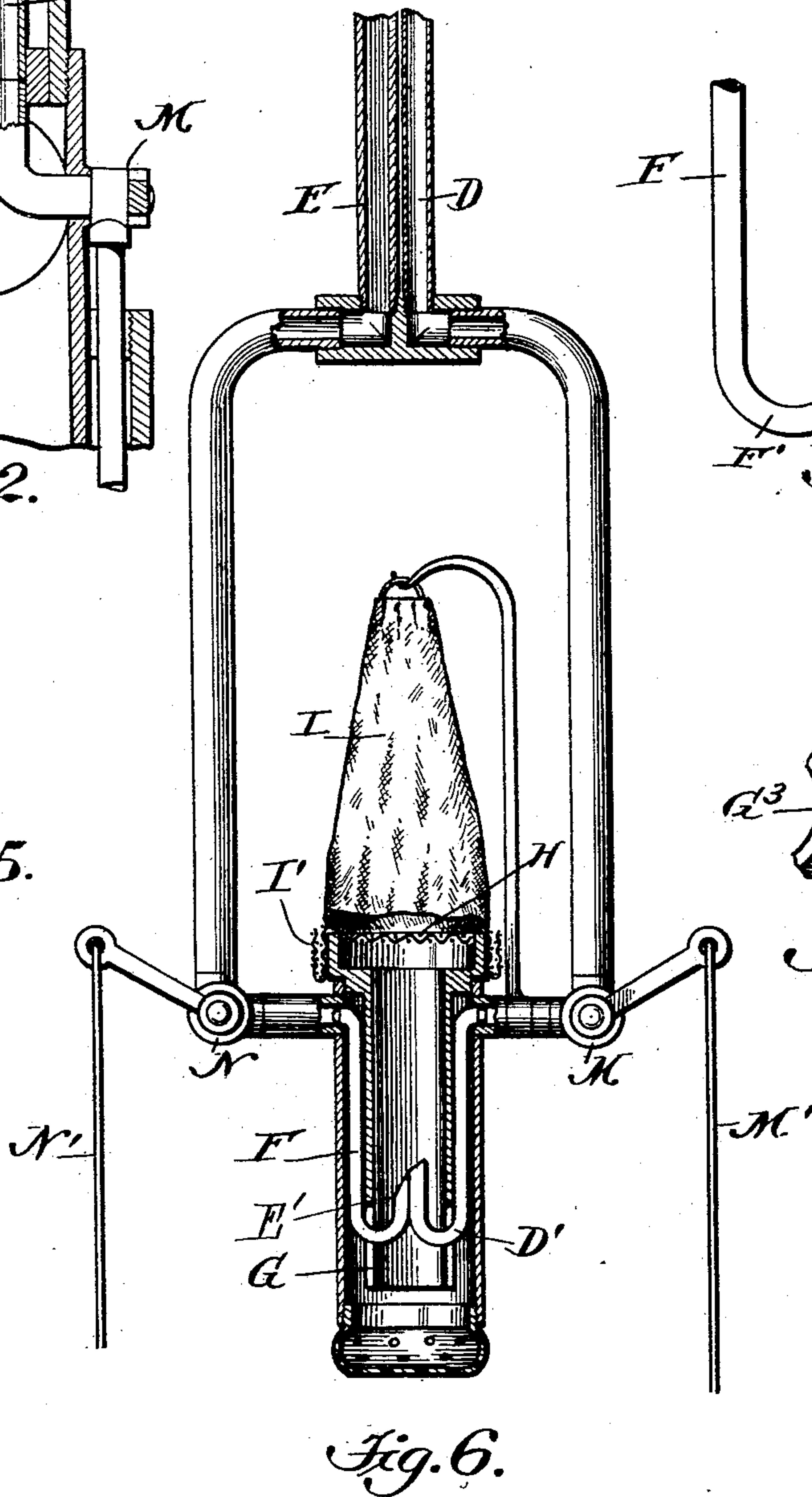
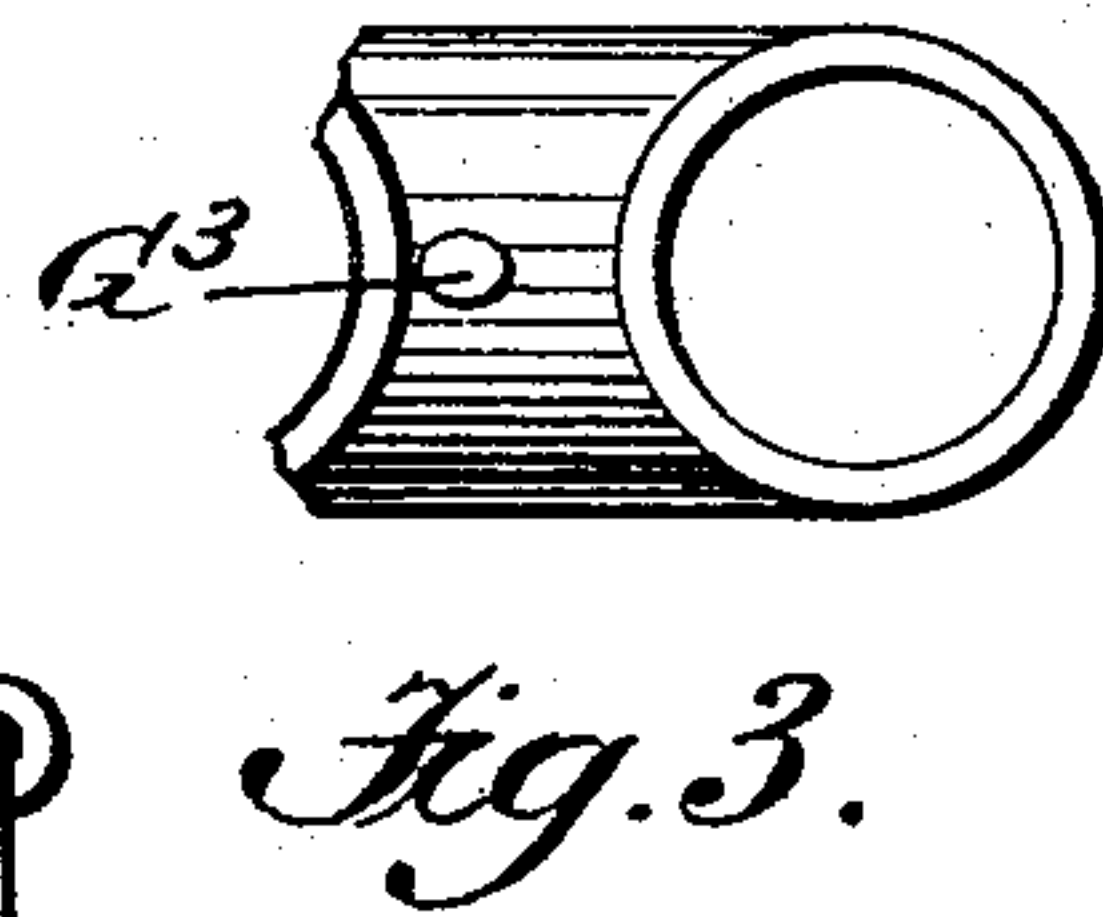
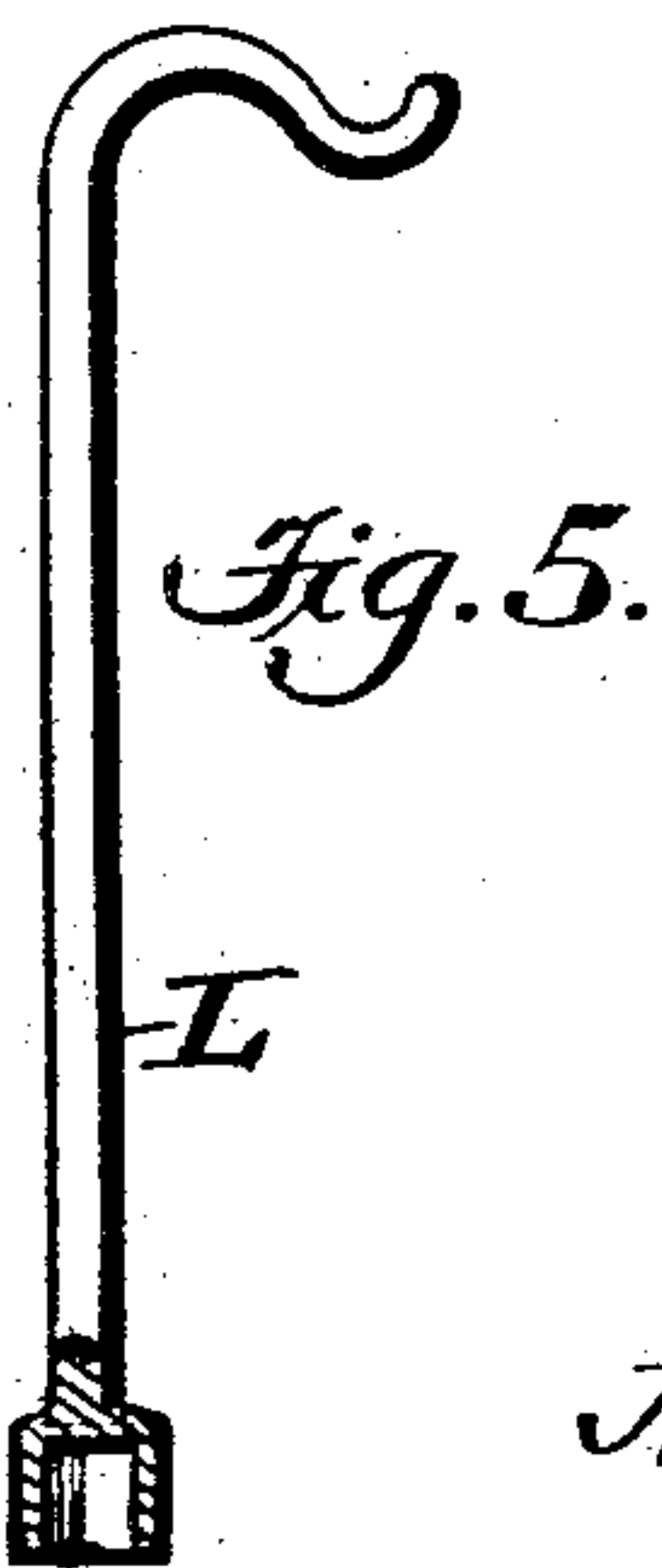
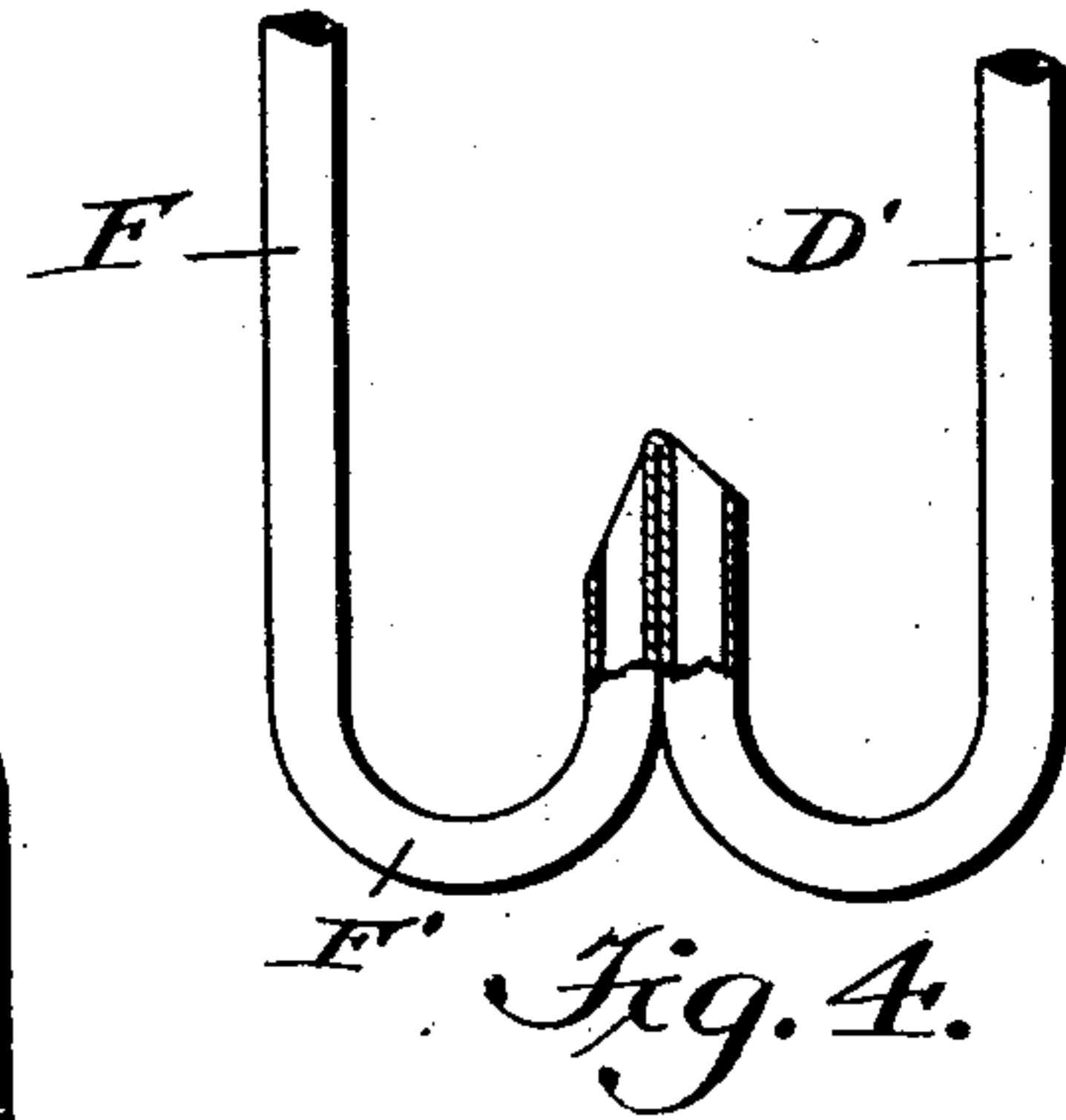
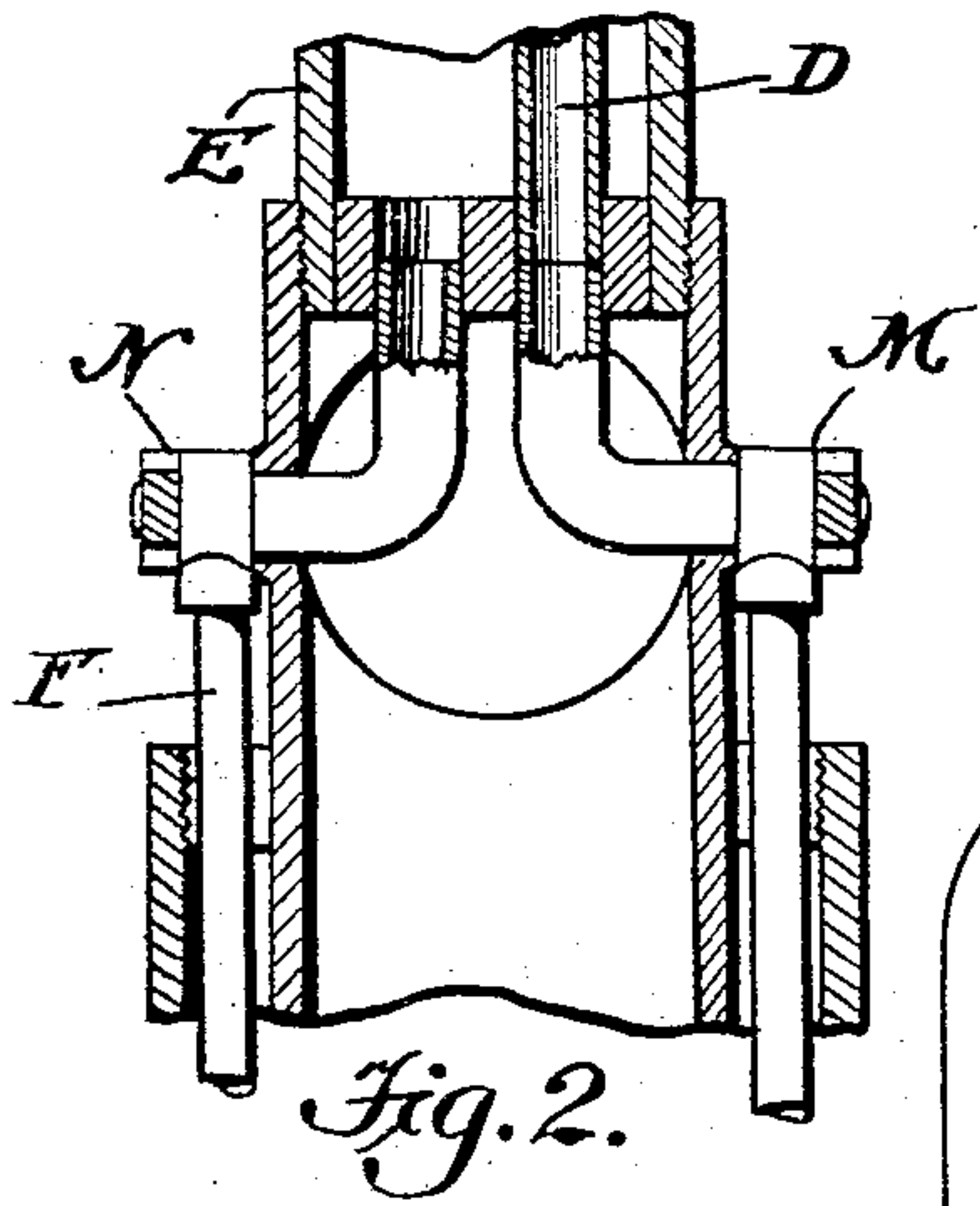
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(Application filed June 14, 1901.)

(No Model.)

3 Sheets—Sheet 2.



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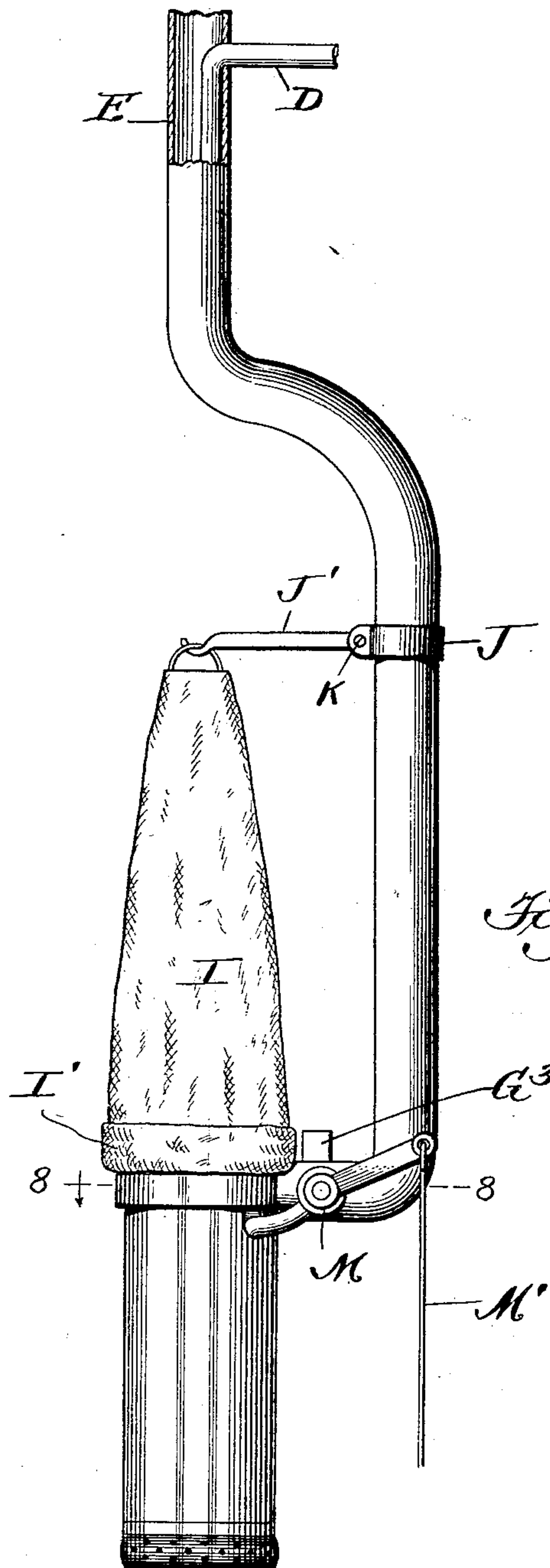
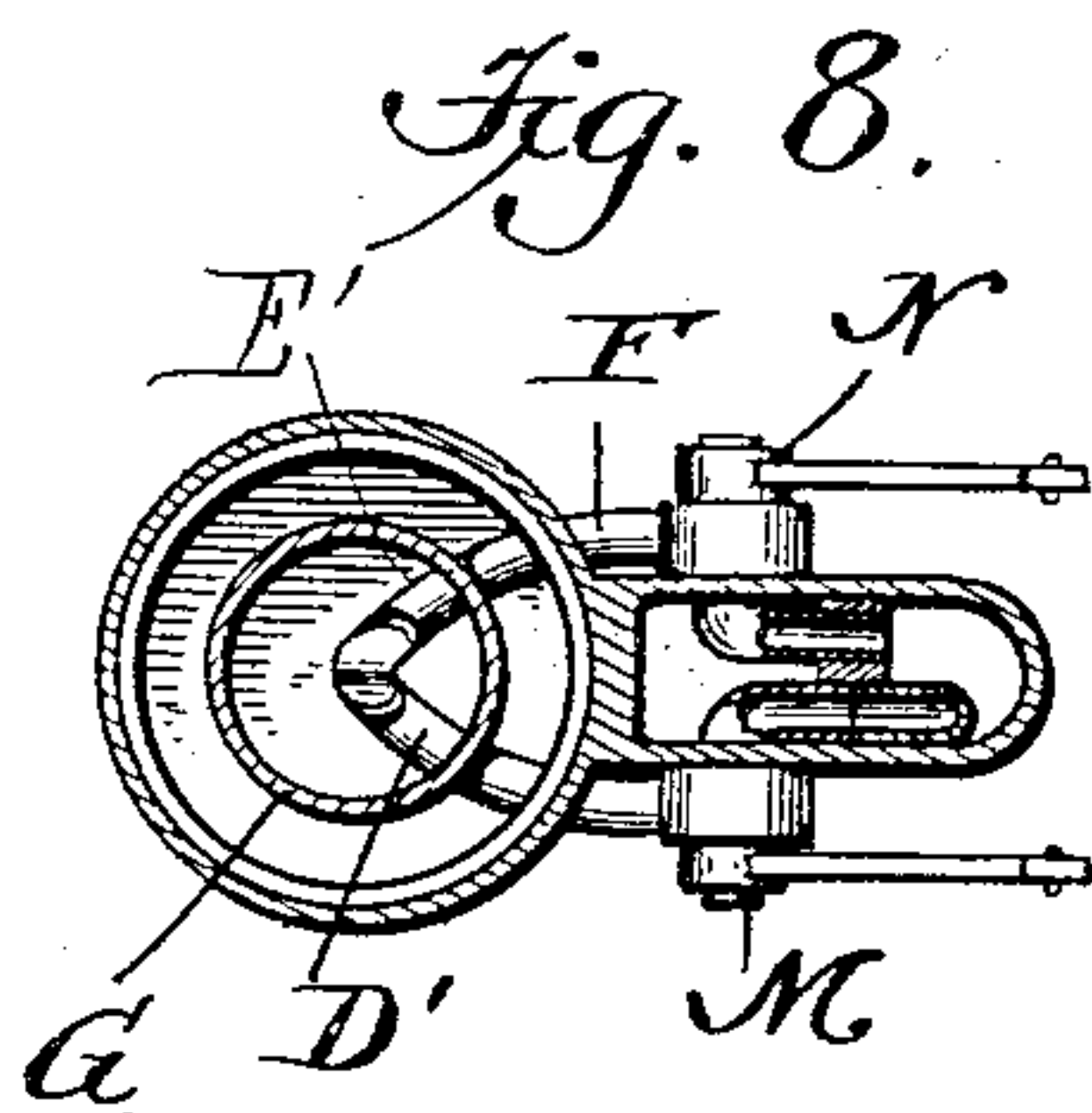
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(Application filed June 14, 1901.)

(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

JOSEPH LOWY, OF NEW YORK, N. Y.

INCANDESCENT GAS-LAMP.

SPECIFICATION forming part of Letters Patent No. 703,070, dated June 24, 1902.

Application filed June 14, 1901. Serial No. 64,517. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH LOWY, incandescent-light manufacturer, a citizen of the United States, residing in the borough of Manhattan, in the city and State of New York, have invented a certain new and useful Improvement in Incandescent Gas-Lamps, of which the following is a specification.

My invention provides simple and efficient means for supplying thoroughly-mixed air and gas in the right proportions to the combustion zone in which is an incandescent mantle supported in any ordinary or suitable manner. I will now describe it as applied to a lamp having two burners. I supply the air at a pressure above that of the gas, bring down the gas and the air from a higher point through small pipes so conditioned as to heat both the elements, and induce the required high temperature in the mantle with smaller expenditure of gas. I can use either one or a number of burners supplied through one air-pipe and one gas-pipe. I will describe it mainly as having two burners thus associated. I provide for possible failure of the highly-heated mantle-supports by providing attachments to be applied in such cases and make the bases of the mantles specially strong by folding the material before the burning.

The following is a description of what I consider the best manner of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a vertical section, partly in elevation. Fig. 2 is a section of a small portion, on a larger scale, at right angles to Fig. 1. Fig. 3 is a top view of a portion. Fig. 4 shows certain portions in elevation on a larger scale. The portion near the point of delivery at the center is a central vertical section. Fig. 5 is an elevation, partly in section, showing an attachment. Fig. 6 is a vertical section, partly in elevation, on a smaller scale, showing a modification. Fig. 7 is an elevation showing a further modification. Fig. 8 is a horizontal section on the line 8 8 in Fig. 7.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

Referring to Figs. 1 to 5, inclusive, A is a pump operated by a small hydraulic motor or

by other suitable means taking in atmospheric air from the apartment and driving it at an increased pressure, which may, for example, be half a pound per square inch, through a pipe B into the reservoir C, which should be sufficiently capacious to allow the elasticity of the air to practically extinguish the fluctuations in pressure due to the action of the pump and allow the air to issue therefrom in a uniform stream. D is a pipe leading such compressed air to the ceiling of the apartment, and thence horizontally to a point over the lamp, and thence downward in a straight line or approximately straight line through a space which is intensely heated by the lamp. Below this the pipe D, having been deflected to one side, (see Fig. 2,) is continued downward, and its lower end is hook-formed by being bent inward and upward. The extremity is slightly flattened, so as to reduce its area and insure the issuance of the air in a thin sheet of considerable width. The pipe D should be only about one-eighth of an inch in diameter.

Gas taken at ordinary street-pressure through the ordinary supply-pipe (not shown) is led down through a gas-pipe E, which is of larger diameter than the air-pipe D and is similarly exposed to the heat from the incandescent mantles to be presently described. The lower end of the pipe E is closed and the passage is continued outward, downward, and inward by a smaller pipe F, which communicates from the interior of E down to the same level as the bend in the air-pipe, at which point this gas-pipe is correspondingly bent, and its hook portion F' is flattened at the end and brought into close proximity to the corresponding end D' of the air-pipe. The delivery end of the gas-pipe should be about a quarter of an inch below the delivery end of the air-pipe.

G is a short length of tubing inclosing the hook ends D' E' of both the air and gas pipes. It communicates at its upper end with a hollow cross-piece G', each end of which is provided with an upward extension G², open at the top, where I employ a wire-gauze or perforated plate H, constituting, with the connections, what is commonly known as a "Bunsen" burner. Through these the previously-heated mingled gas and air flow upward.

The combustion is confined to the spaces above this burner. I have shown the lower portion of the short open-ended tube G as guarded by a perforated cap and the hooked end of the small pipe D' as entering through a hole, with a slot extending therefrom to the bottom. This precise construction is not essential. The modifications, Figs. 6 and 7, show a loosely-inclosing tube with such cap thereon. It is only important that the heat received above be retained and that much air in addition to that received through the small pipe D be drawn in through the bottom of the tube G.

I and I' are mantles, which may be in all respects similar in character and form to those which are now in use, except for a reinforce at the lower end. Each is adapted to match loosely over the Bunsen burner H and is suspended from an arm J' on a ring J, fitted adjustably on a pipe E. A pinching-screw K secures it at the proper level.

O is a globe of clear glass, or it may be conditioned by grinding or other preparation for diffusing the light. In either condition it performs the important function of protecting the delicate mantle from the injury which might result from blasts of air.

I have discovered that it is practicable with my construction to reinforce the strength of the delicate mantle at an early stage in its manufacture. This is effected by folding upward a portion I' at the lower edge of each mantle. Its effect in reducing the intensity of the incandescence makes it important to thus turn up only the right amount. Under ordinary conditions the breadth of this reinforce should be about half an inch.

M (see Fig. 2) is a cock controlling the flow of air through the pipe D, and there is a wire M', connected to the lever of the cock and pendent therefrom, extending down to a point where it may be conveniently reached to operate the cock. N is a cock similarly controlling the gas-pipe E and correspondingly equipped with a pendent wire N'. The ends of the wires M' and N' should be different, as by carrying a tassel or small knob on one and leaving the other plain, to avoid mistakes in operating.

In all lamps of this class the light is due to a very high temperature induced and maintained in the solid material of the mantles. The entire useful effect of the gas consumed is obtained through the generation of heat. My invention by heating both the gas and the air in their descent through the pipes D and E reduces the consumption of gas by an effect analogous to the hot-air blast in iron manufacture; but my experiments indicate that in consequence of increased intimacy of mixture or from some other cause which I am not fully able to explain the improvement in the light and the economy of gas is more increased than seems reasonably due to such cause alone. I believe that the short-

lived portions of my apparatus (the mantles) are longer lived when thus supplied with heated air and gas previously well mixed.

The arms J' being exposed to an intensely high temperature are liable to fail. I propose to furnish with each lamp a pair of attachments L, (see Fig. 5,) which may be matched, respectively, upon the spurs G³ (see Fig. 1) and will serve to hold up the mantles in such cases.

The escape of heat by radiation from the pipes D and E where they are exposed in the bottom of the structure is retarded by inclosing each pipe with an asbestos compound or other suitable coating. (Not shown.)

In the operation of my invention air at atmospheric pressure is drawn in at the bottom of the pipe D and mingled with the thin currents flowing from the upturned flattened ends D' E'. The amount of air thus admitted may be equal to or considerably in excess of the previously-compressed air discharged upward at a high velocity from the flattened end D'.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. Instead of the two mantles and corresponding parts shown the invention may be applied with only one or there may be three or more.

Fig. 6 shows a modification employing only one mantle. In this the pipes which bring the gas and air are separate until a point is reached immediately over the light. The single mantle is shown as suspended by a support which is mounted on the horizontal tube. This may serve equally well if made as shown in Fig. 5 and attached in the same manner as the support, Fig. 5, is attached to the form shown in Fig. 1.

Figs. 7 and 8 show another form adapted for a single mantle. In this the air-pipe comes down, as in the main form, in the interior of the gas-pipe. Both pipes descend over the mantle and approach so near that as in all the other cases the heat from the mantle is received by the pipes above and raises the contents to a high temperature. In this and in all the forms the exit for the gas-pipe is in contact with the exit for the air-pipe. As shown in Fig. 8, the two pipes are made in one and connected at one end to the gas-passage and receive hot gas and at the other end to the gas-passage and receive the hot air. The provision for the escape of the gas and air received at the two ends is made by cutting out a portion of the pipe and bending it sharply upon itself near the mid-length of the cut.

I claim as my invention—

1. In an incandescent gas-lamp, the pipe D bringing air under pressure and a second pipe E bringing gas, each extended down to a level below the flame and bent upward, in combination with an inclosing tube G and with a horizontal chamber G' opening into the up-

per end thereof and with a plurality of burners, all arranged for joint operation substantially as herein specified.

2. In an incandescent gas-lamp, the pipe D
5 bringing air under pressure and a second pipe
E bringing gas, each extended down to a level
below the flame and bent upward and each
toward the other, in combination with an in-
closing tube G, having its base open to the
10 atmosphere, and with a horizontal chamber
G' in connection therewith and with a plu-
rality of burners, and provisions for suspend-

ing mantles in the proper relations to such
burners and for attaching temporary sup-
ports for such mantles when required, all sub- 15
stantially as herein specified.

In testimony that I claim the invention
above set forth I affix my signature in pres-
ence of two witnesses.

JOSEPH LOWY.

Witnesses:

J. B. CLAUTICE,
M. F. BOYLE.