

No. 708,883.

Patented Sept. 9, 1902.

D. E. HODGENS
GAS GOVERNOR.

(Application filed Sept. 20, 1901.)

(No Model.)

Fig. 1

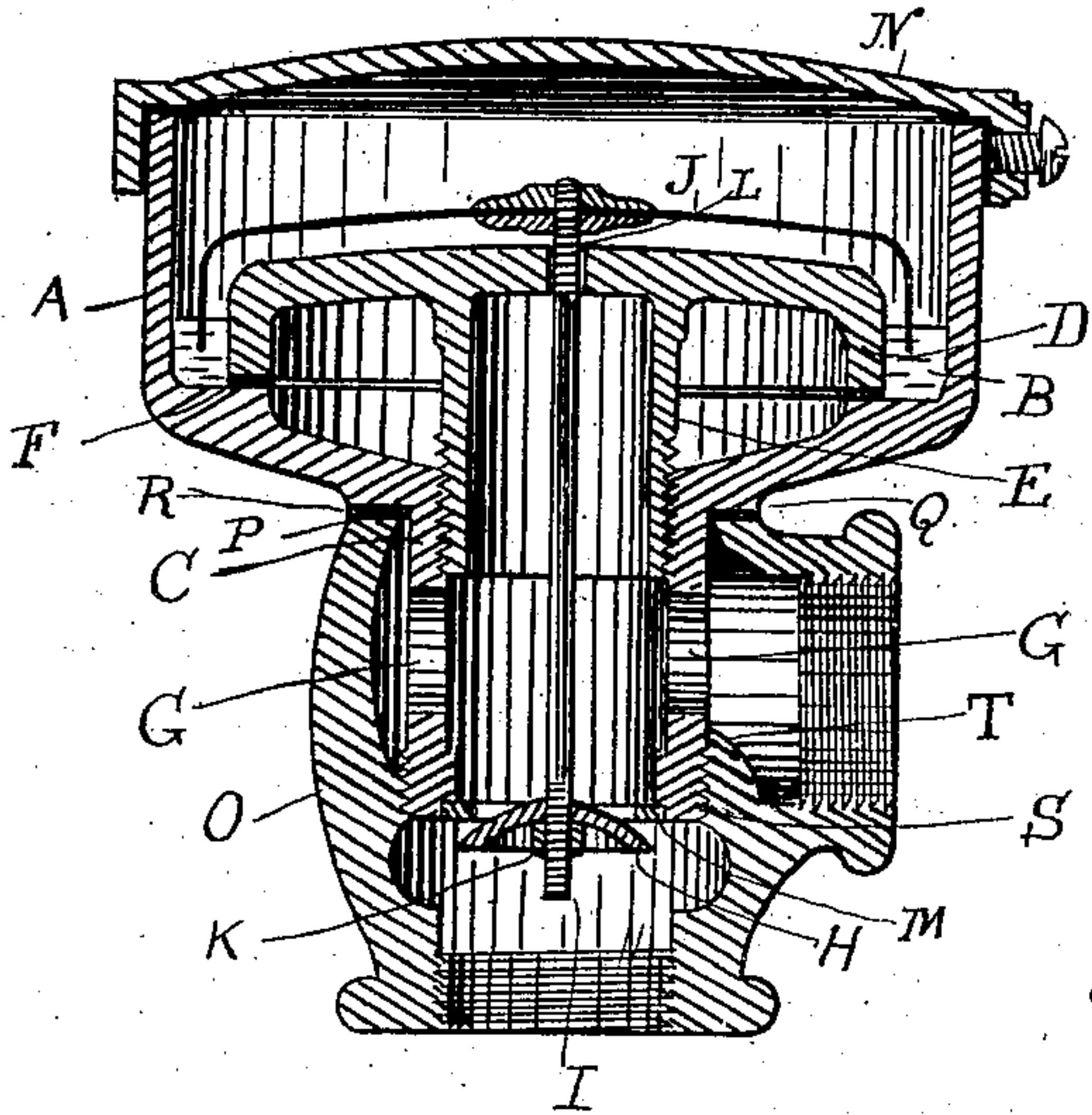


Fig. 3

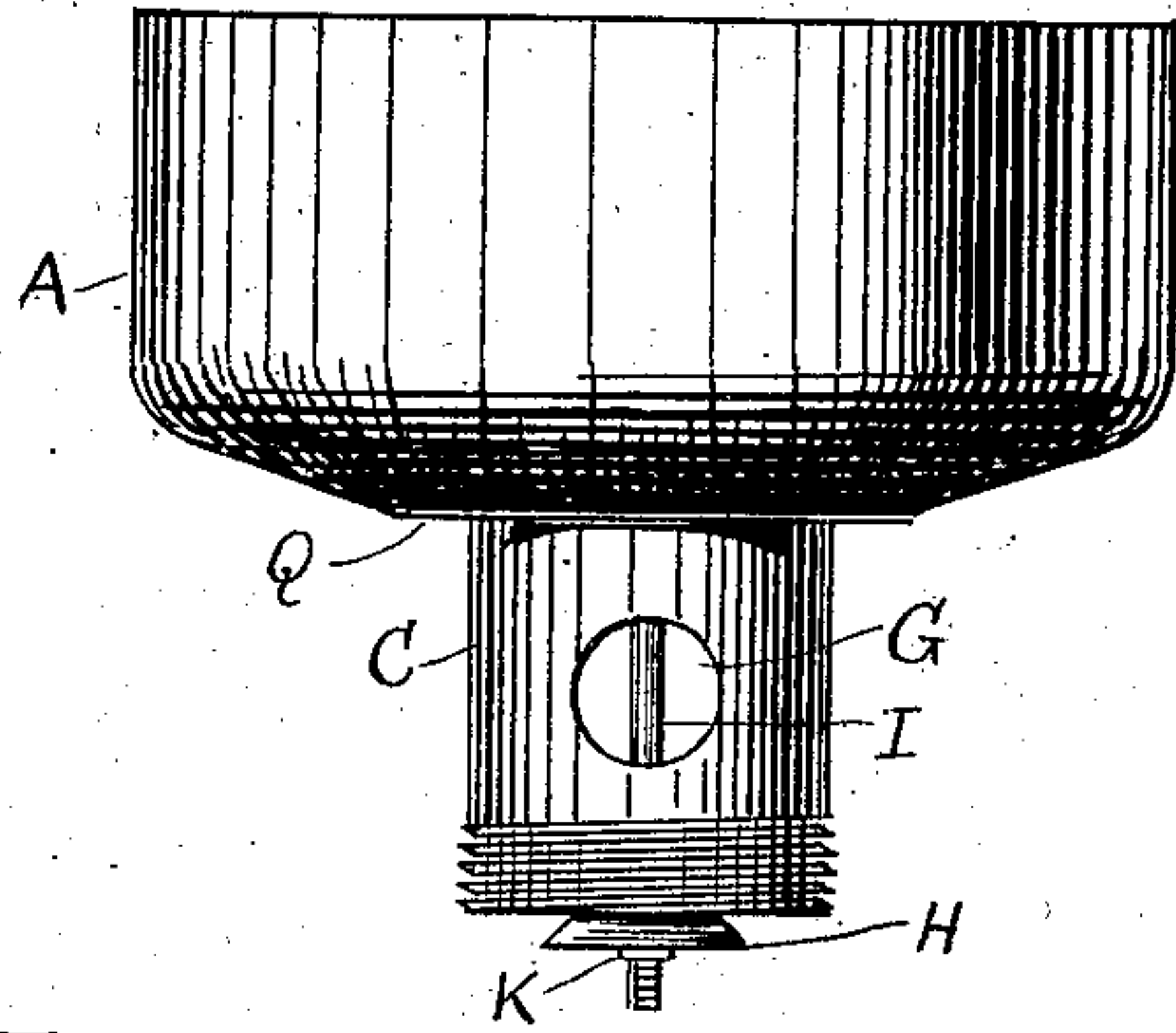


Fig. 4

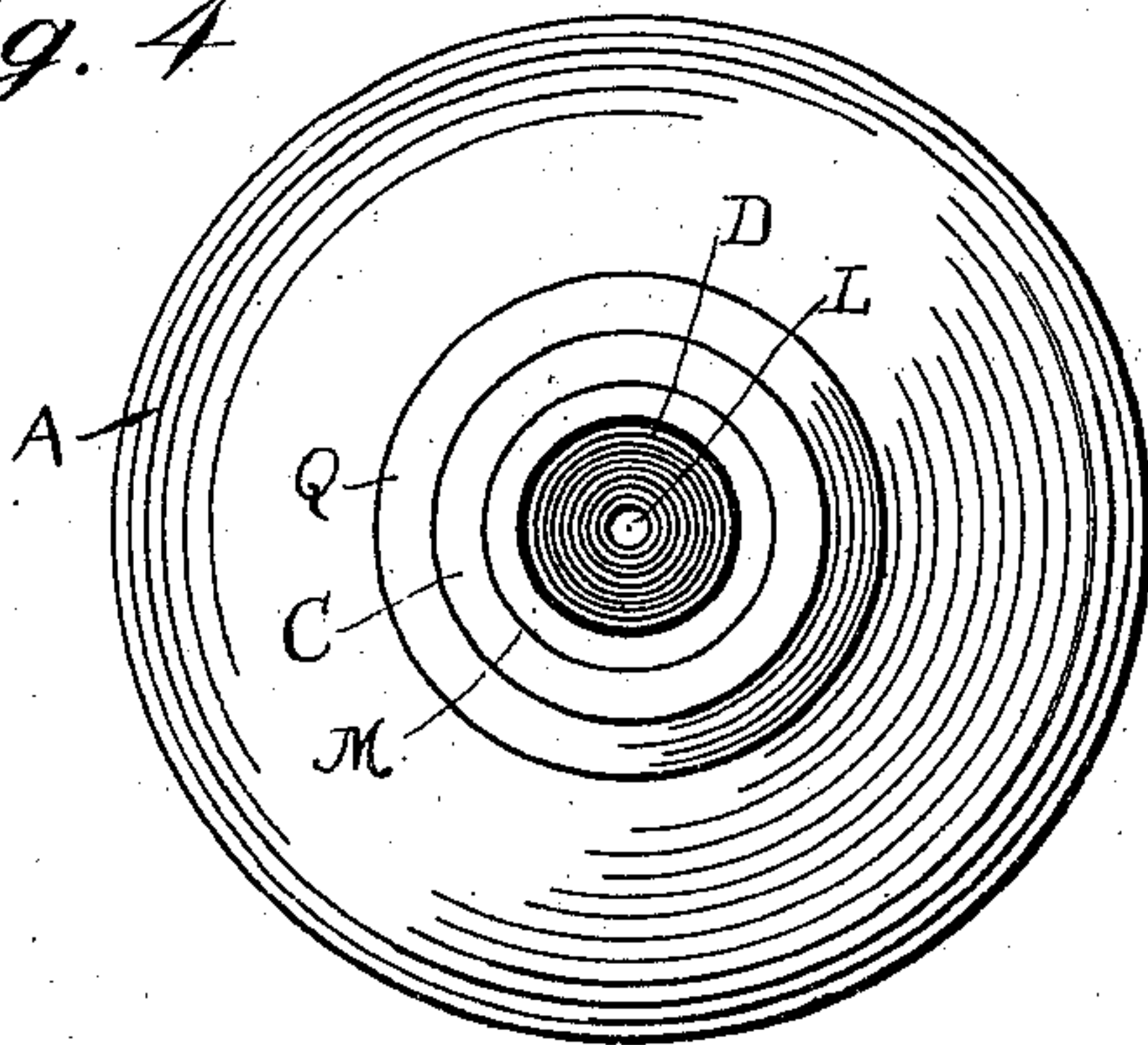


Fig. 2

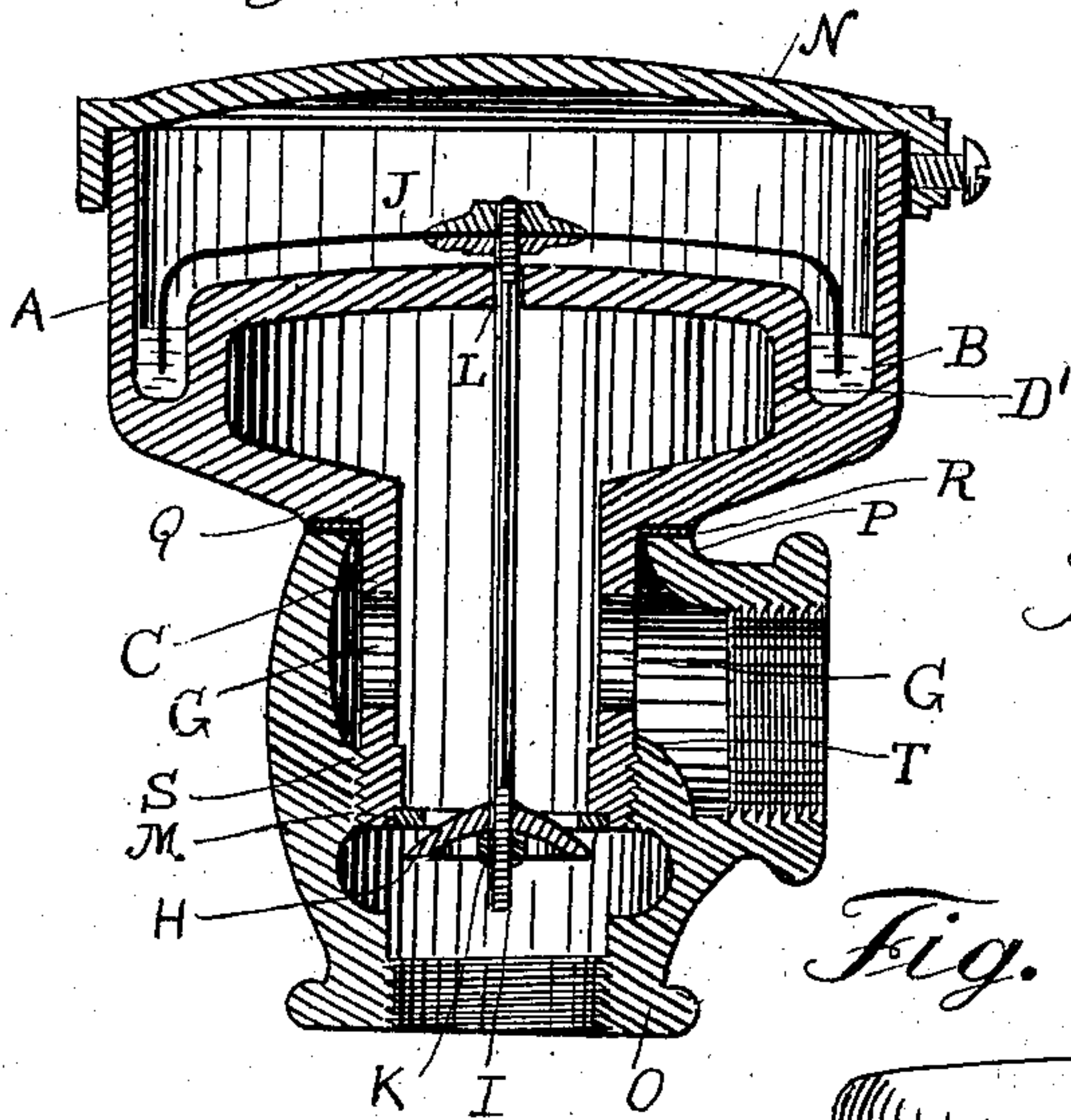


Fig. 5

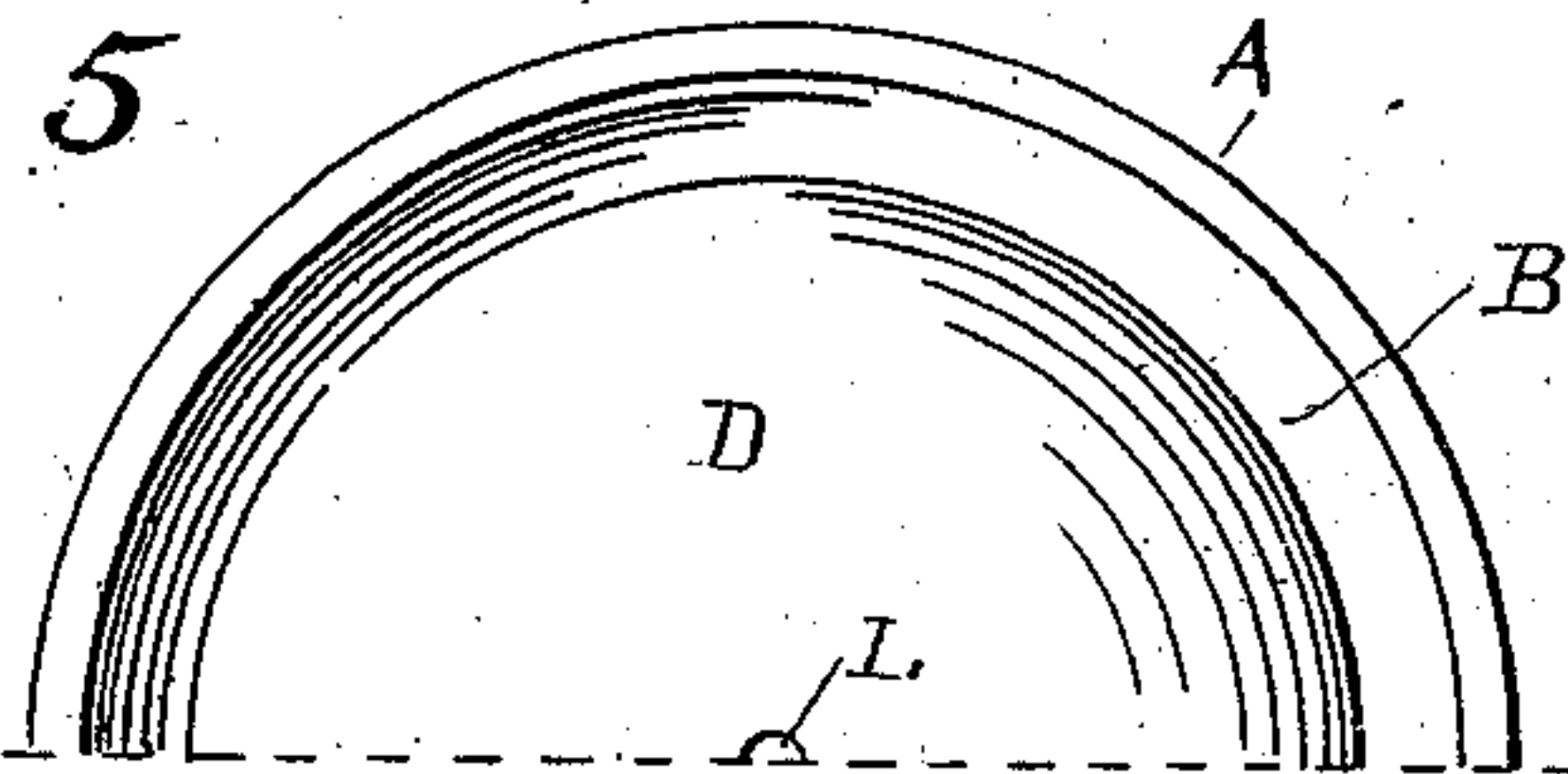
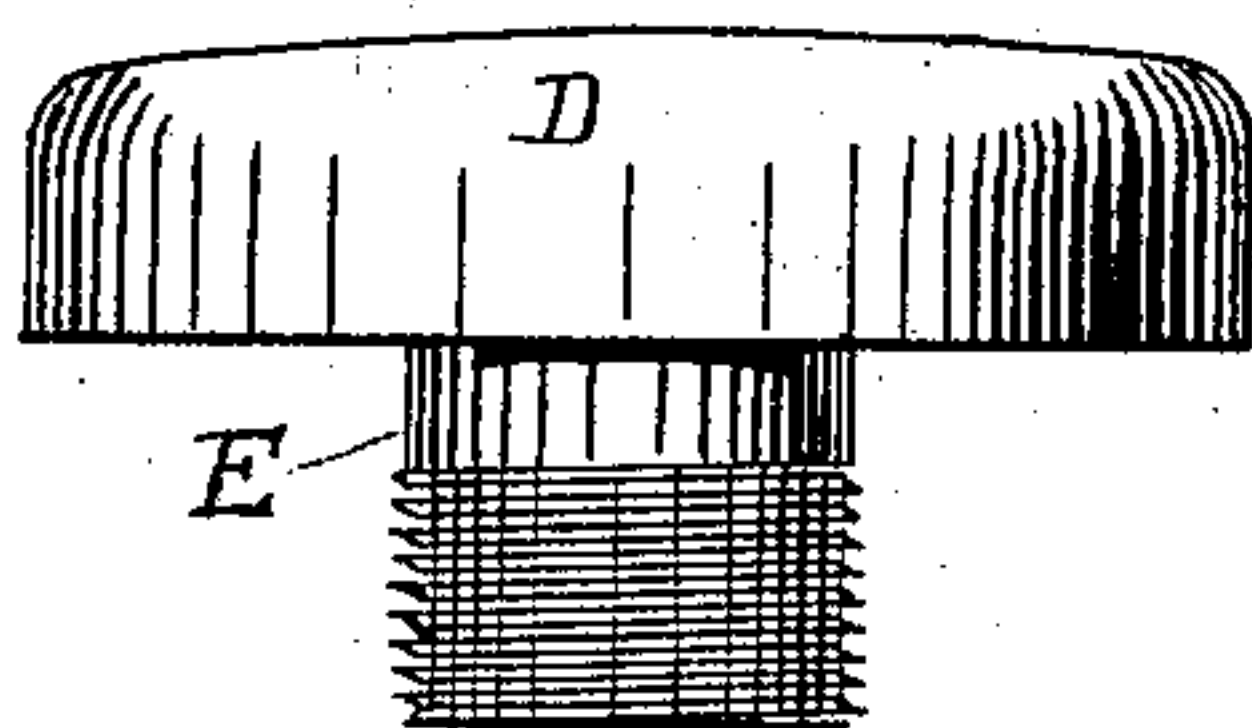


Fig. 6



WITNESSES:

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GAS-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 708,883, dated September 9, 1902.

Application filed September 20, 1901. Serial No. 75,965. (No model.)

To all whom it may concern:

Be it known that I, DAVID E. HODGENS, a citizen of the United States of America, and a resident of the city and county of San Francisco, in the State of California, have invented certain new and useful Improvements in Gas-Governors, of which the following is a specification.

This invention pertains to that class of devices which are employed to regulate the pressure of illuminating-gas at its passage from the supply to the delivery pipe.

The object of the invention is to simplify and thereby to cheapen and facilitate the construction, application, and overseeing or overhauling of such devices, to impart to them greater stability, and thus gain proportionate efficiency, and to some extent widen their range of usefulness by adapting them for use in the most limited space.

Reference will be made herein to the accompanying drawings, in which—

Figure 1 is a sectional elevation showing one form of my improved gas-governor. Fig. 2 is a similar view of a slightly-different form of the invention. Fig. 3 is a side elevation of the upper part of the governor, including its valve, but without cover. Fig. 4 is an inverted plan looking up from the bottom of Fig. 3, the governor-valve being omitted. Fig. 5 is a half plan, the opposite of Fig. 4. Fig. 6 is a detailed view of a removable piece appertaining to the form of the invention shown in Fig. 1. Of the last four views it may be noted Figs. 3, 4, and 5 can be read with either Fig. 1 or Fig. 2, while Fig. 6 relates to Fig. 1 solely.

In the said drawings, A represents a goblet-shaped vessel formed with an inner peripheral groove B and a hollow stem C, which is open at its lower end and made of uniform diameter for most of its length, but flaring at a sharp angle in the upper part to reach the under side of said groove all around the vessel. The groove B, as in other constructions of the class, is designed to hold a suitable sealing liquid, such as mercury, and I make it by raising the central bottom portion of the vessel A in either of two ways, respectively exemplified in Figs. 1 and 2. As shown in Fig. 1, the said central bottom portion (marked D therein) is a separate or separa-

ble part of the vessel A, which part overlaps somewhat the adjacent outer bottom portion, thus forming the inner wall of the groove B, and is provided with a perpendicular downwardly-running tubular extension E, screwed into the hollow stem C. A washer F is placed under the lapping edge of this removable piece D to effect a tight joint with the remainder of the vessel's bottom. Fig. 6 gives a full view of the said piece D in side elevation. In Fig. 2 the raised bottom portion (indicated there by D') is integral with the rest of the vessel A and, as in the other case, constitutes the inner wall of the groove B.

I do not use the lower basin extension or partitioned casing that is commonly found in other gas-governors, and to this extent I reduce the number of parts ordinarily employed, or, at least, the size and cost thereof. It is intended in my improved gas-governor that the gas supplied and to be delivered regulated as to pressure shall simply pass through the hollow stem C of the mercury-holding vessel A, letting it in at the open lower end of said stem and out through one or more lateral apertures, as G, provided in the straight portion of the same. I therefore arrange to control the flow at the said end of the stem C, which I accomplish by means of a float-valve of ordinary type, comprising the valve proper, H, a spindle I to guide and hold it up, and a bell-float J, attached to said spindle, all as illustrated in Figs. 1, 2, and 3. As there seen, the valve H consists of a hollow spherical segment having its convex side turned up toward the open lower end of the stem C and formed with a central internally-threaded hole engaging an external thread at the lower end of the spindle I, on which the valve is held in adjusted position by a nut K, screwed under it. The spindle I passes upwardly and centrally through the hollow stem C and up into the vessel A through a central opening L, made in the bottom thereof, D or D'. When the removable bottom D is used, then the spindle I passes also centrally through the tubular extension E of said removable bottom, as in Fig. 1. The upper end of the spindle I, that projects into the vessel A, is secured by screw-threads or other suitable means perpendicularly to the center of the bell-float J,

whose edges are sunk into the liquid seal contained in groove B. The float J, it is understood, rises and falls with the pressure of the gas reaching it through the opening L, and thus causes the suspended spindle-valve H to control the flow through the open lower end and apertured side of the hollow stem C. The seat for this valve is preferably a ring M, recessed in the lower end of said hollow stem and projecting more or less inwardly therefrom according to the diameter of the valve. The valve-float J and seal-holding groove B are protected by the cover N of the vessel A, which cover may be flanged and clamped to the side of the vessel, as shown, or otherwise fitted and secured in place.

The before-described seal-holding vessel, with its hollow stem and the thereto-connected float-valve, I combine with a pipe-coupling O of the T variety. This coupling serves as a closure for the valved stem, as well as a support and retaining means for the entire vessel, and at the same time furnishes a common connecting device for the supply and delivery pipes, which pipes are not shown because not necessary to the understanding of the invention. The cross member or barrel of the T O is disposed vertically, as seen in Figs. 1 and 2, to enable it to receive at its upper end the valved stem of the vessel A and furnish at the lower end, directly opposite, the connection for the supply-pipe. This therefore leaves the other member of the T horizontally disposed, and the same furnishes the connection for the delivery-pipe. The T O as a whole is so proportioned that its greatest width is about equal to its height. This construction and arrangement allow me to have the supply-pipe and delivery-pipe quite close together and both under the vessel A. The advantage thereby gained when a very restricted space only can be utilized is obvious. When using a beaded centrally-swelled T, such as is shown in Figs. 1 and 2, I omit or remove the bead at the upper end of the cross member that receives the valved stem C and more or less shorten or truncate the said upper end of the cross member in order to provide a threadless opening for said stem somewhat wider than the opposite opening for the supply-pipe in the lower beaded extremity of the T. Non-beaded and straight-walled T's are prepared or treated substantially in the same manner for like purposes. This upper end of the T is squared in order to provide a perfectly level seat P for the base of the flaring part of the hollow stem C of the vessel A, which base is similarly squared at Q and set upon a washer R, placed on said seat P. I can thus obtain a tight joint between the stem C and coupling O and have the whole vessel A firmly seated and well poised, so that the conditions will be most favorable to avoid vibration and secure the best results from the working of the valve. Furthermore, as the outer edges of the vessel A, where is located the seal-containing groove

B, are directly supported or braced from the seat P by the flare of the stem C the whole governor is thereby rendered quite solid, even the largest sized, at least sufficiently so to obviate all danger on the score of top-heaviness or wrenching of parts, which would not be the case were the stem C run straight up to the bottom of the vessel A. The stem C is secured in position by screwing its lower end into a suitably-threaded ring S, formed or inserted and fixed in the lower middle part of the coupling O, slightly above the base of the outlet connection for the delivery-pipe. The side apertures G of the stem are so placed that they will be about on a level with the upper part of said outlet when the stem C engages the ring S. It is not necessary, however, that they should be in line with it, as the said ring is made to carry the said stem inward or off the walls of the coupling, whether bulging or straight, and if the gas be not delivered directly into the outlet there will be sufficient space for it to circulate around the stem and in that way reach the delivery-pipe. This obviates the necessity of expert fitting in that no accuracy is required in alining the discharge-openings. The ring S is curved upward and inward, as at T, Figs. 1 and 2, to enable it to collect or shed condensations, which can easily be wiped off or dropped out after removing the vessel A.

It is intended that the coupling O above described shall remain attached to the gas-pipes, so that they need not be meddled with or disturbed whenever the mercury-holder and its float-valve are removed for inspection, cleaning, &c. This makes it an easy matter, even for an unskilled person, to take off these parts of the governor and put them back, and if they have to be brought to the shop for repairs the gas-service need not be discontinued, since the coupling remains in place and can be temporarily plugged at the end that receives the stem C. Besides, as said coupling is a separable part of the governor I can make it of one uniform size for several different sizes of valves and seal-holders by simply making the stem C of corresponding uniform thickness in its straight portion and varying the bore thereof to suit the valve to be used. Thus, for instance, by using a single coupling with a one-and-one-half-inch outlet I can accommodate five valves varying in diameter from one-half inch to one inch and a half, such as are employed to control the gas from a three-light to a forty-five-light meter, which means to govern the pressure of gas delivered to a number of burners ranging from nine to one hundred and thirty-five.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

In a gas-governor, a vessel A having an inwardly-extending lower portion and an open-ended laterally-apertured hollow stem C connecting with said inwardly-extending por-

tion, said stem being interiorly screw-threaded, a separable bottom piece D having an annular flange resting on the interior surface of the inwardly-extending portion of the vessel and coöperating with the surrounding wall of the vessel to form a groove B for liquid, a depending screw-threaded stem on the bottom piece engaging the interior screw-thread of the hollow stem C of the vessel to secure said bottom piece firmly in place, a float adapted to be immersed in the liquid in

the groove B, and a valve suspended from said float and arranged to regulate the opening at the lower end of the stem C, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID E. HODGENS. [L. S.]

Witnesses:

A. H. STE. MARIE,
GEO. T. KNOX.