

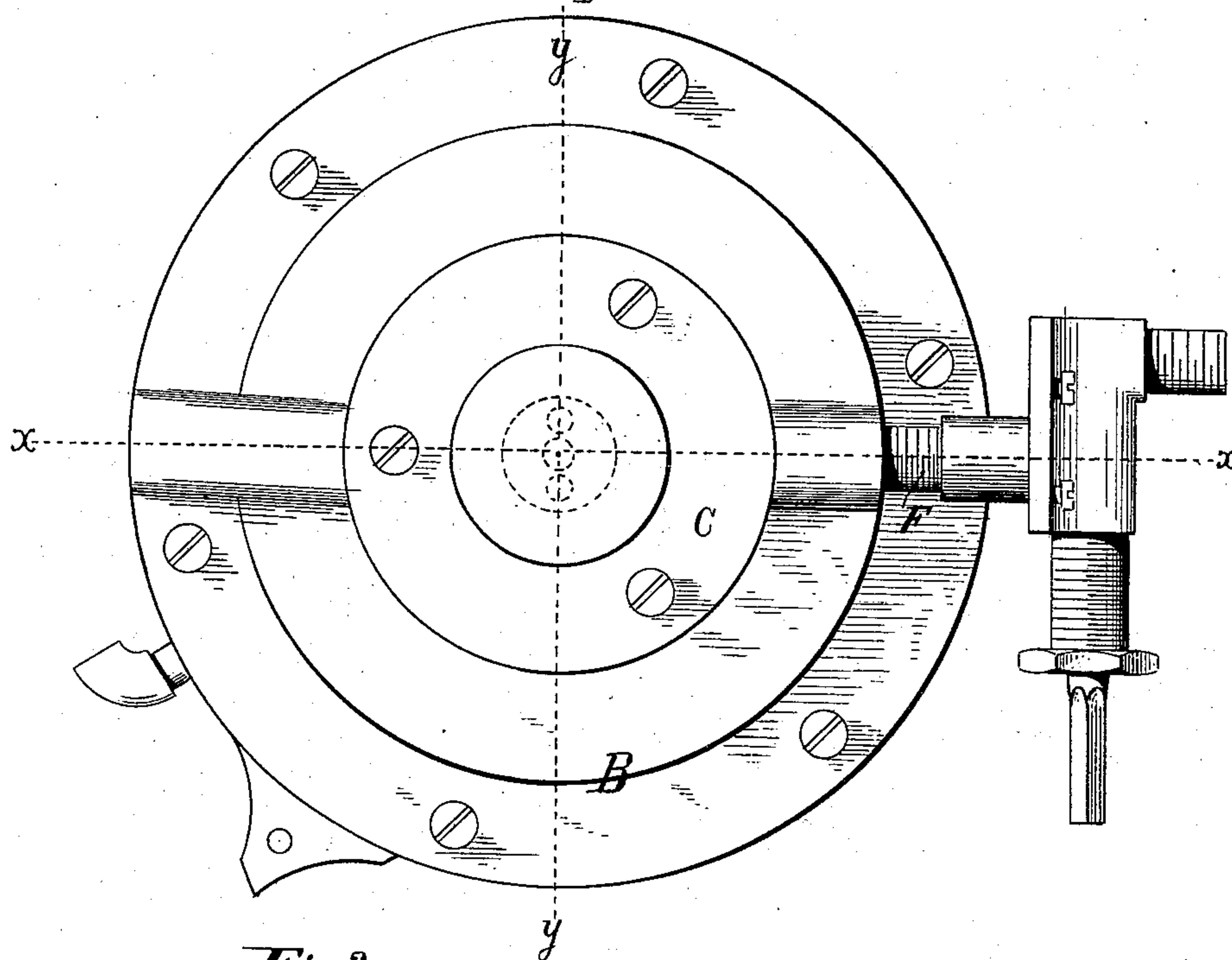
(No Model.)

A. H. PHILLIPPI.  
PRESSURE REGULATOR FOR CARBURETORS, &c.

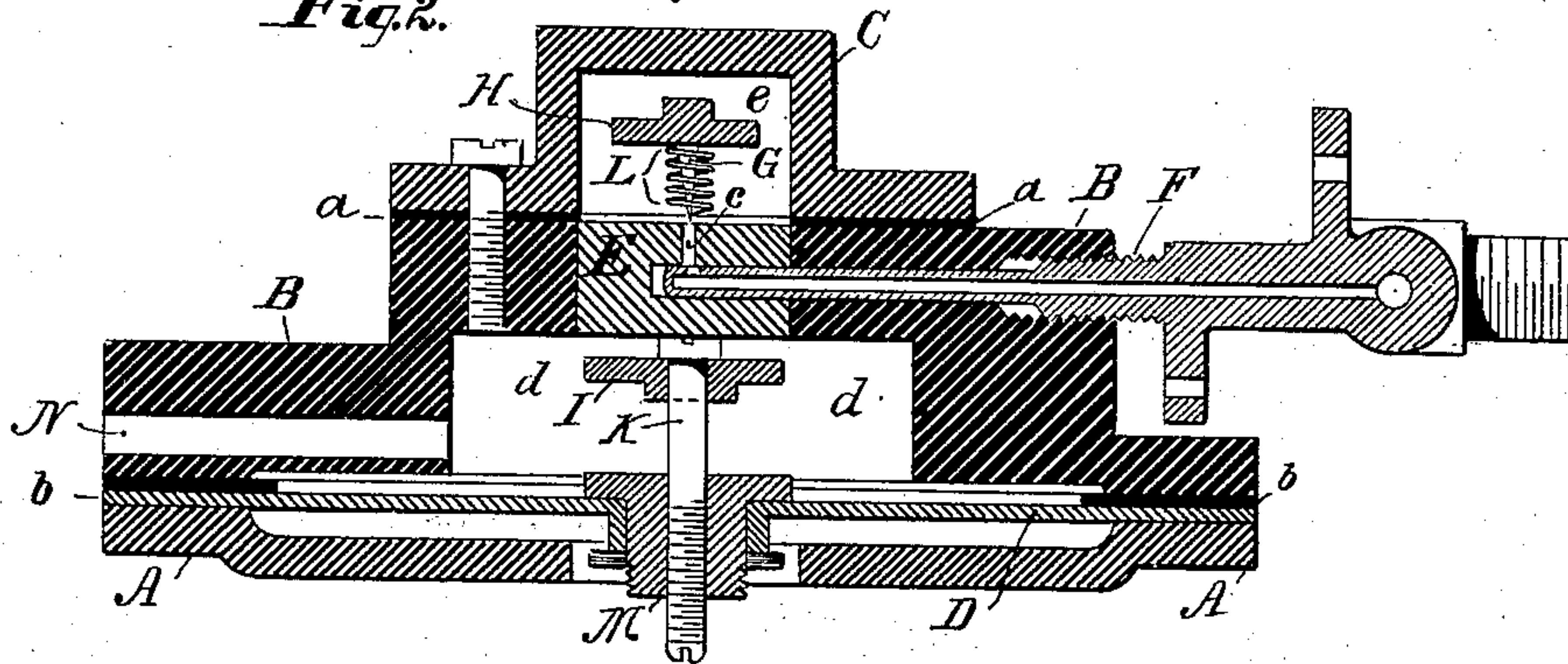
No. 324,160.

Patented Aug. 11, 1885.

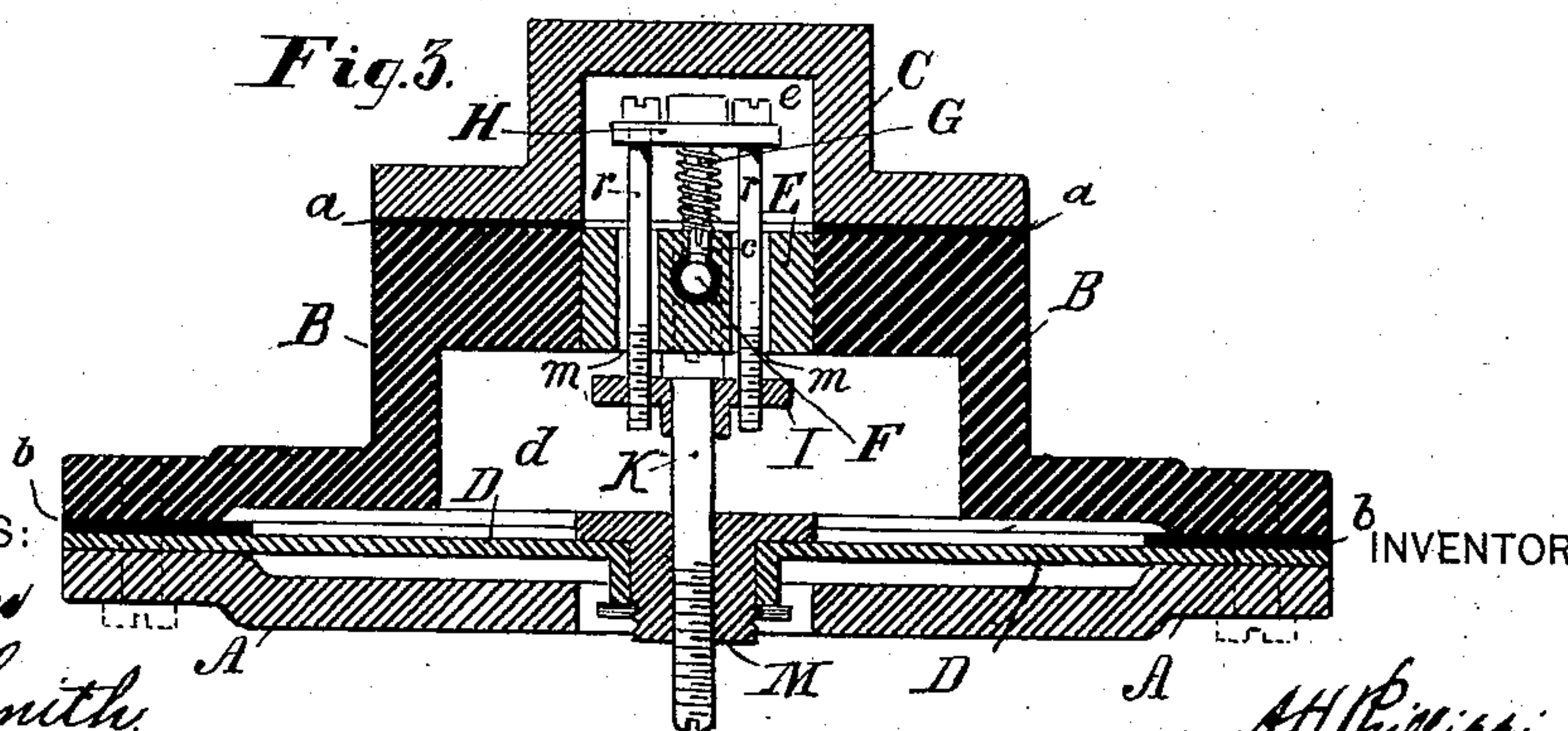
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ABRAHAM H. PHILLIPPI, OF READING, PENNSYLVANIA.

## PRESSURE-REGULATOR FOR CARBURETORS, &c.

SPECIFICATION forming part of Letters Patent No. 324,160, dated August 11, 1885.

Application filed July 19, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, ABRAHAM H. PHILLIPPI, of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful improvements in pressure-regulators for use in connection with carburetors, compressed gas reservoirs, or other apparatus where a uniform flow of air or gas under pressure is desired.

The following is a specification of my invention, reference being had to the accompanying drawings, wherein Figure 1 is a top or plan view of the apparatus, and Figs. 2 and 3 are vertical sections through the same on the lines *x x* and *y y*, respectively.

The main objects of my invention are to simplify the construction of the valve and to insure its prompt movement in either direction under variations in pressure.

The inclosing shell or case which contains the valve and its actuating devices is of substantially a flat circular form, and is cast preferably in three sections, A, B, and C, respectively united by means of screws, as shown, and having annular washers *a b* interposed between the joints. The central portion, E, of the piece B (which forms the valve-seat) is preferably composed of a cylindrical plug of brass, indicated by the different sectional shading. The shell thus formed contains an upper chamber, *e*, and a lower chamber, *d*, which communicate by means of two holes, *m m*, passing through the brass plug E. The inlet-pipe F passes through the piece B and extends to a short distance past the center of the plug E, where it is provided with an orifice in communication with the duct *c* of circular cross-section, leading to the upper chamber, *e*. The duct *c* is controlled by the needle-valve G, suspended from a yoke, H, whose supports *r r* extend through the holes *m m*, and are secured to a second yoke, I. The diameter of the supports *r* is considerably less than that of the holes *m m*, so that passages of annular form remain open. A spiral spring, L, surrounds the valve G and normally presses the yoke H away from the valve-seat E. The lower yoke, I, is loosely attached to a screw-stem, K, whose threaded end engages with a nut, M, mounted upon the center of a thin brass diaphragm, D, extending across

the bottom of the chamber *d* and tightly secured at its periphery between the pieces A B. An exit-pipe, N, leads from the chamber *d* to any desired point where the gas, &c., is to be utilized.

The operation of the valve is as follows: The gas enters through the pipe F and passes through the duct *c* to the chamber *e*, thence to the chamber *d* through the holes *m m*, and finally out through the pipe N. The pressure of the gas in the chamber *d* tends to force the diaphragm D downward, and thus to force the needle-valve G into the duct *c*, diminishing the supply until the proper tension is reached. This movement, however, compresses the spring L, so that when a release of pressure upon the diaphragm D takes place the valve G is immediately raised. This arrangement not only prevents the needle-valve G from sticking to its seat, but insures its prompt movement in response to diminished pressure, a result not always obtained when the movement of the diaphragm D is alone depended on to open the valve.

The adjustment to any desired degree of pressure is effected by means of the nut M and screw K, which latter turns freely within the yoke I.

I do not claim, broadly, the use of a needle-valve in a pressure-regulator, nor do I claim a valve operated by direct attachment to a diaphragm; but,

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a gas-regulator, the main frame composed of the central chambered casting, B, and the upper and lower castings, C A, bolted thereto, the casting A serving to hold the diaphragm D and the casting C being formed with chamber *e*, substantially as shown and described.

2. The casting B, having a passage to receive a pipe, F, the same entering plug E and communicating with duct *c*, and the plug E, formed with passages *m*, in combination with chambered casting C, diaphragm D, and needle-valve G, arranged over duct *c* and connected with the diaphragm D by yokes and rods, the latter passing through passages *m*, substantially as shown and described.

3. The combination of the chambers *e* and *d*, communicating by means of the holes *m m*, the inlet-duct *c*, leading to said chamber *e*, the needle-valve *G*, and spring *L* attached to the yoke *H*, the supports *r r*, extending from said yoke *H* through the holes *m m* to the yoke *I*, the diaphragm *D* situated within the chamber *d* and connected with said yoke *I* by means of the nut *M* and adjusting-screw *K*, and the outlet *N*, leading from said chamber *d*, the whole arranged and operating substantially as set forth.

4. The diaphragm *D*, provided with nut *M*, in combination with screw-rod *K*, fitted in nut *M* and attached to the yoke *I* of the valve-actuating devices, so that the valve may be adjusted by turning rod *K*, substantially as described.

5. The chambered casting *B*, formed or provided with the bridge-piece or plug *E*, having duct *c*, communicating with a passage to receive gas-pipe *F* and formed with the side passages, *m m*, for the rods that connect the valve-yoke to the diaphragm, substantially as and for the purposes set forth.

6. The valve *G*, attached to yoke *H* and enclosed by the chamber *e*, and the rods *r*, attached to the yoke and passing loosely through the holes *m* in plug *E* and attached to the lower yoke, *I*, in chamber *d*, in combination with diaphragm *D*, connected to yoke *I* by rod *K*, substantially as described.

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Witnesses:

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