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Patented Feb. 12, 1901.

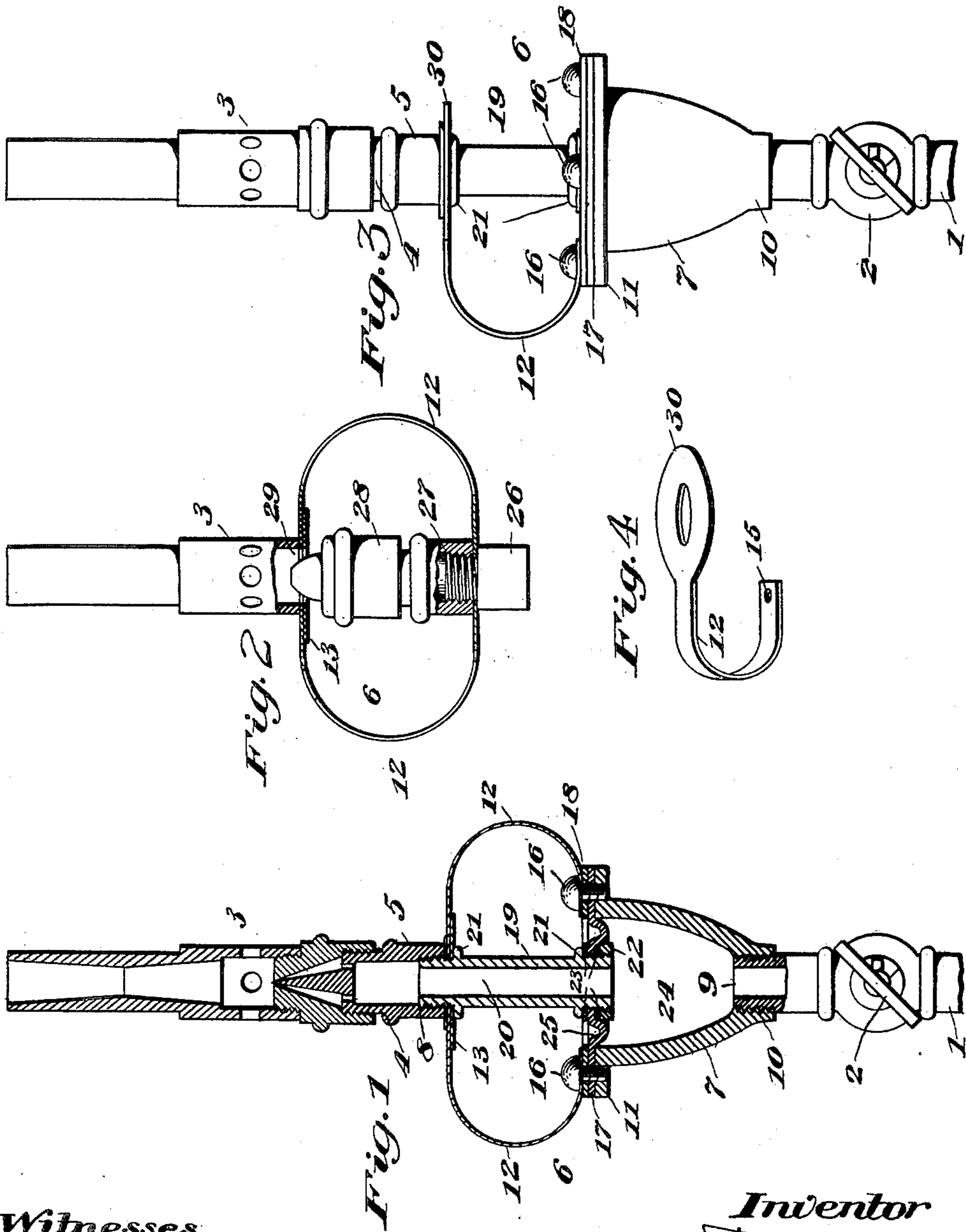
J. FRANKLIN.

ANTIVIBRATORY SUPPORT FOR GAS BURNERS.

(Application filed Apr. 8, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
J. H. Thorne  
M. J. Gallagher.

Inventor  
John Franklin,  
by John Ellis Jones,  
his attorney.

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2 Sheets—Sheet 2.

Fig. 8.

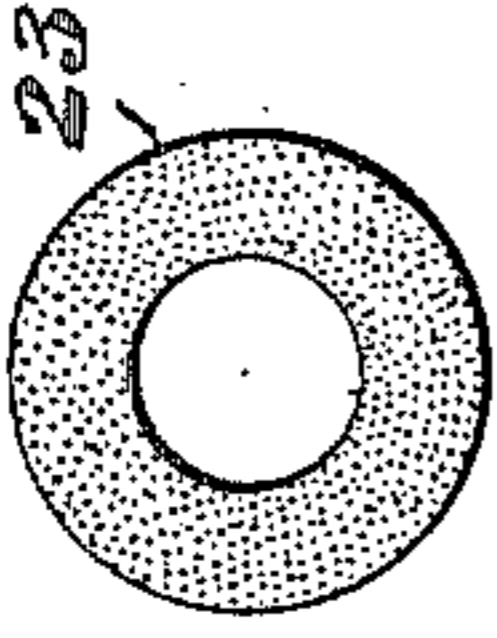


Fig. 11.

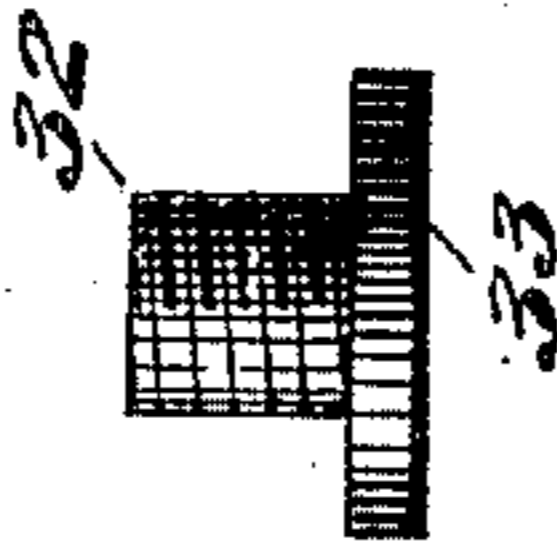


Fig. 7.

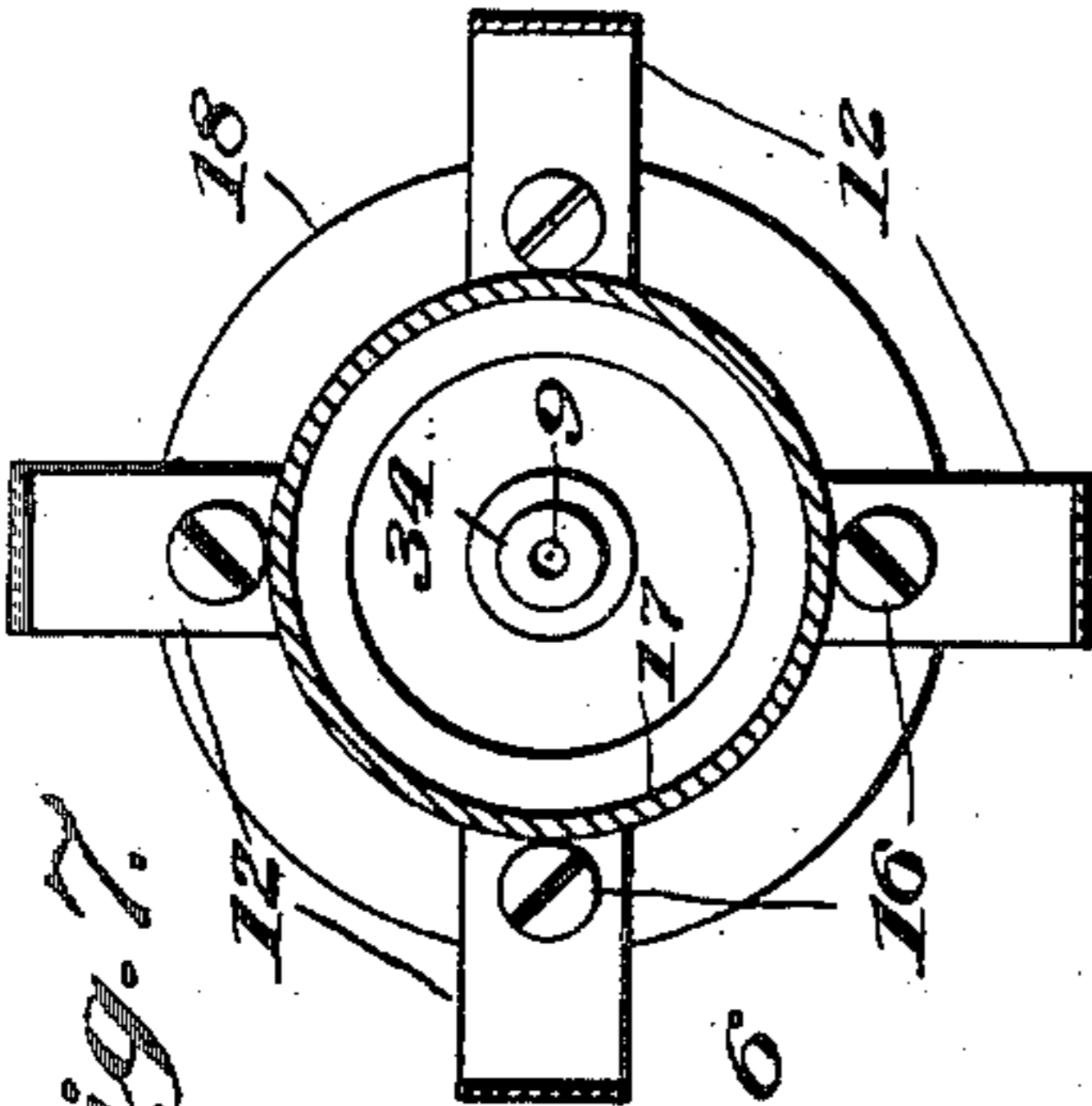


Fig. 6.

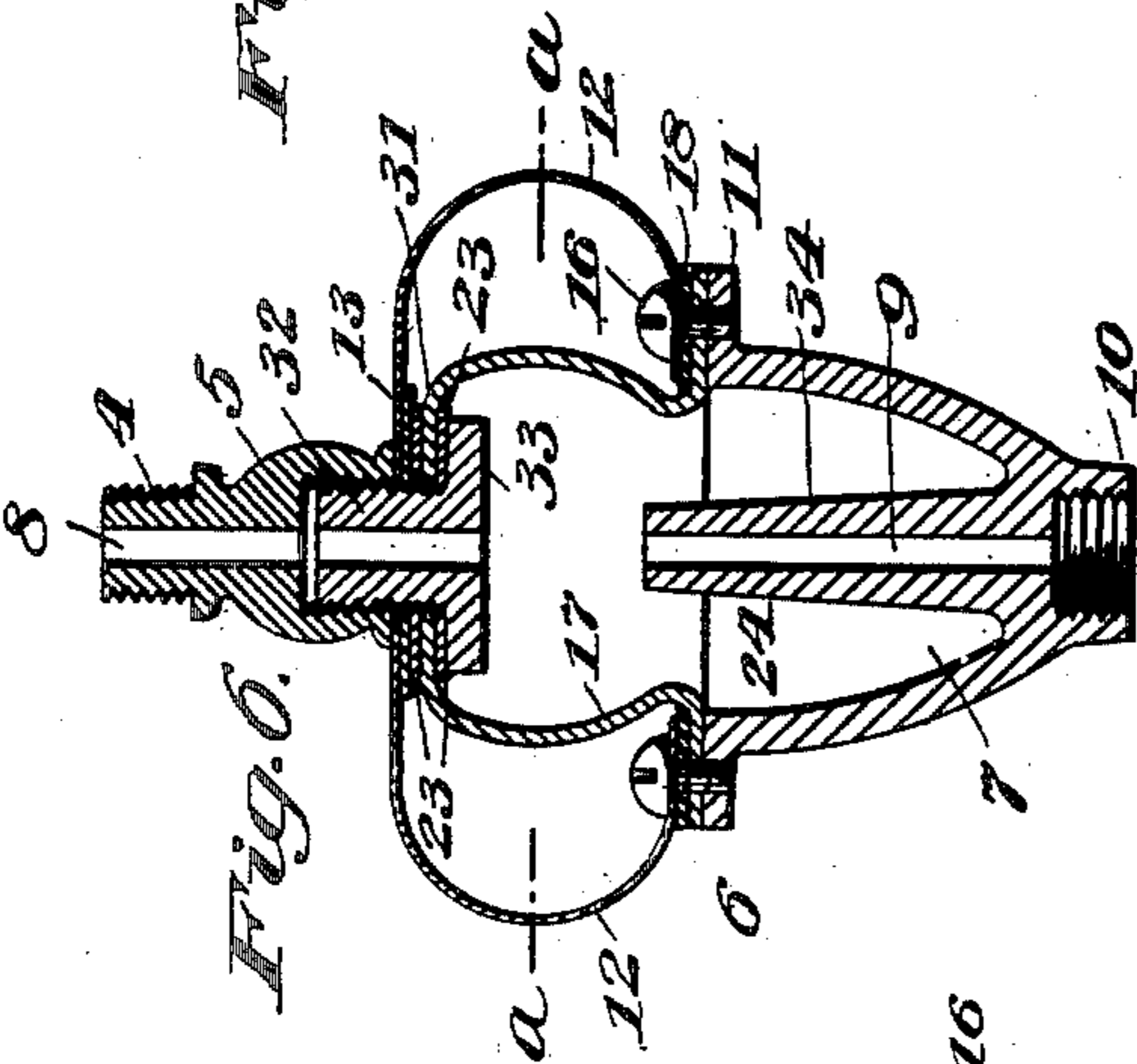


Fig. 5.

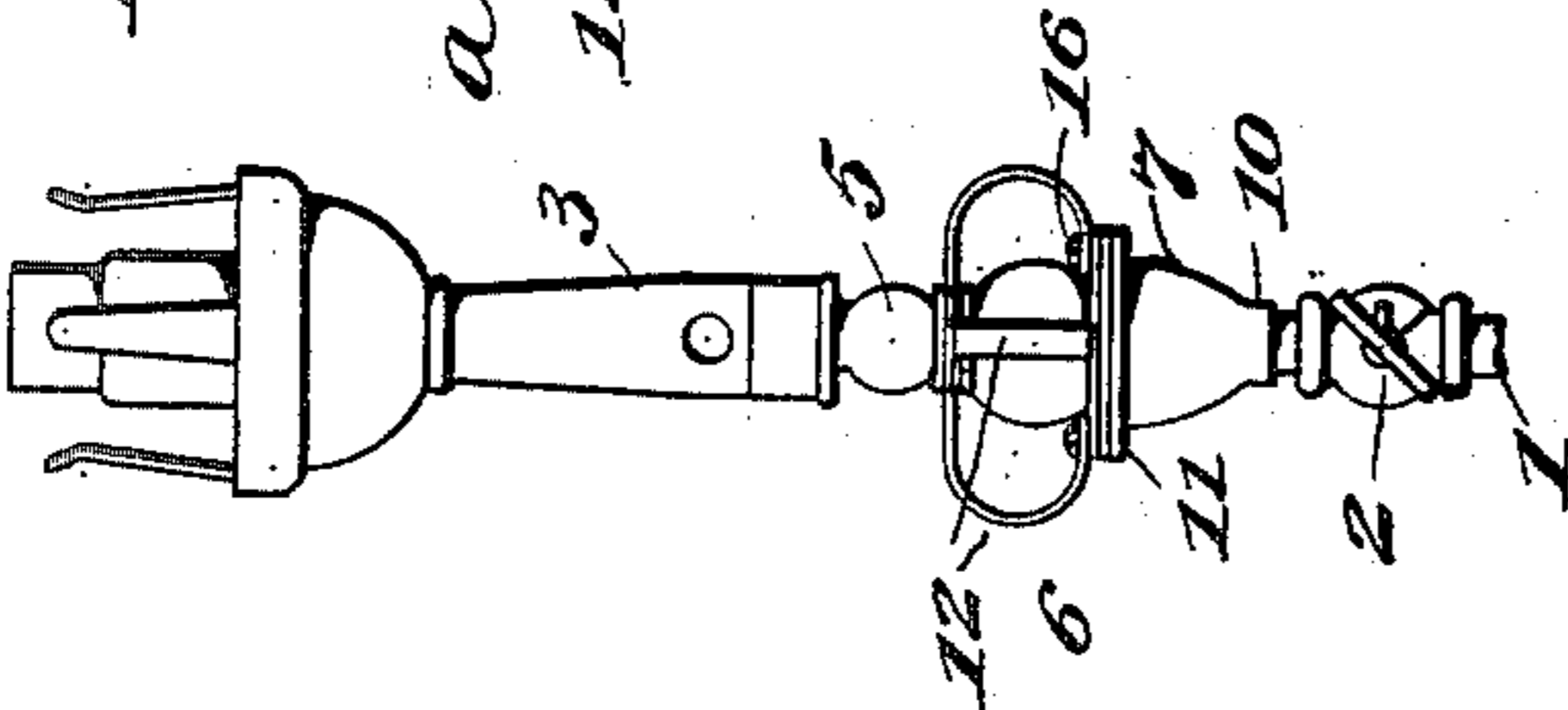


Fig. 12.

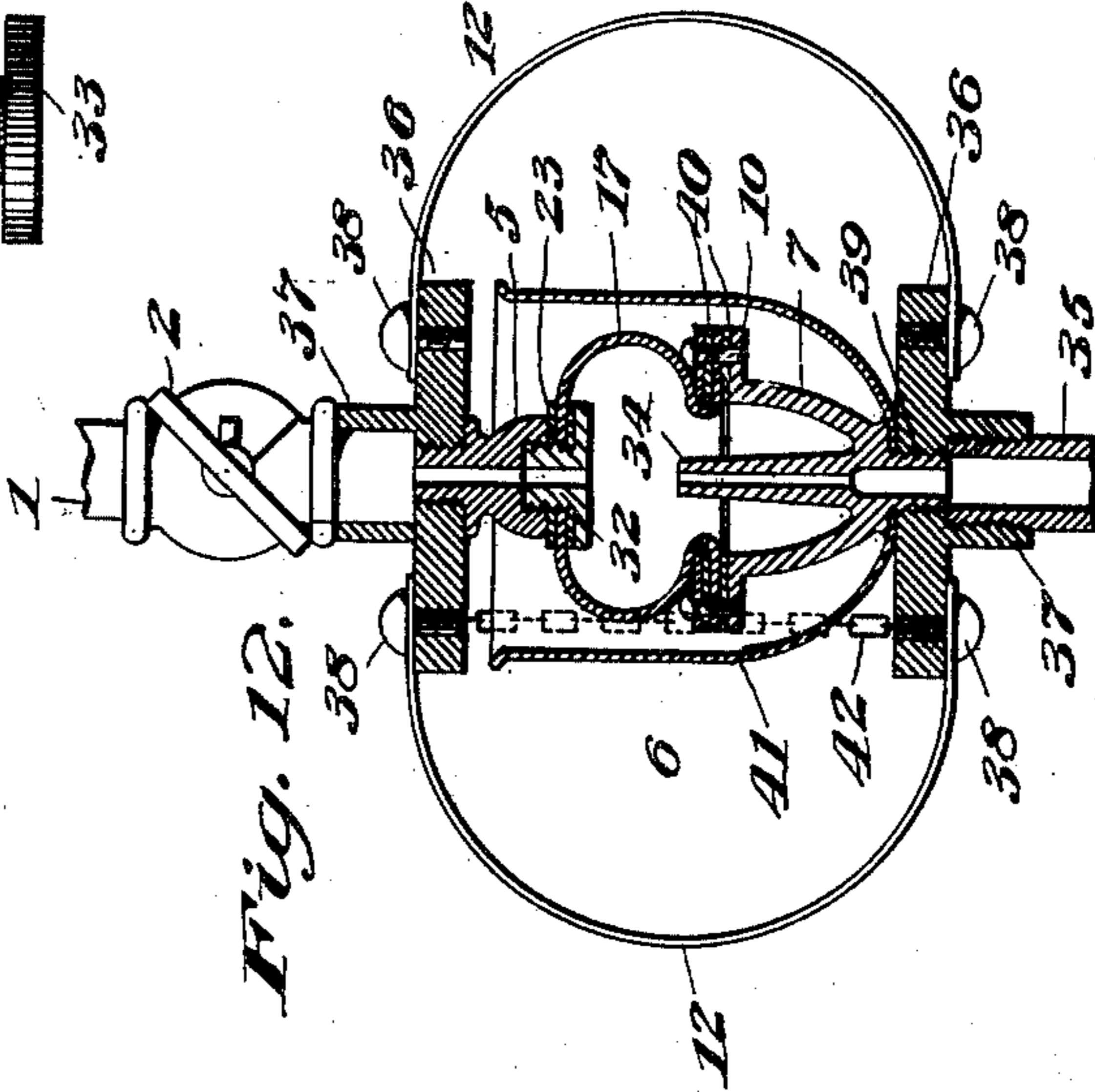


Fig. 10.

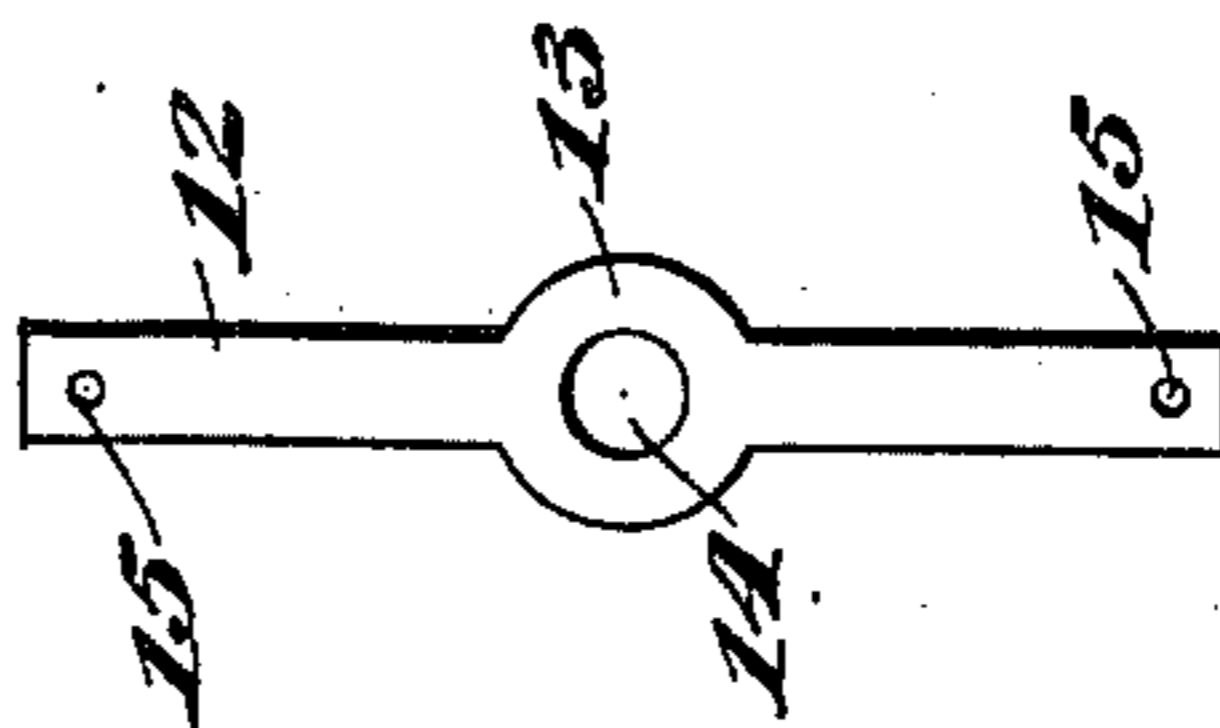
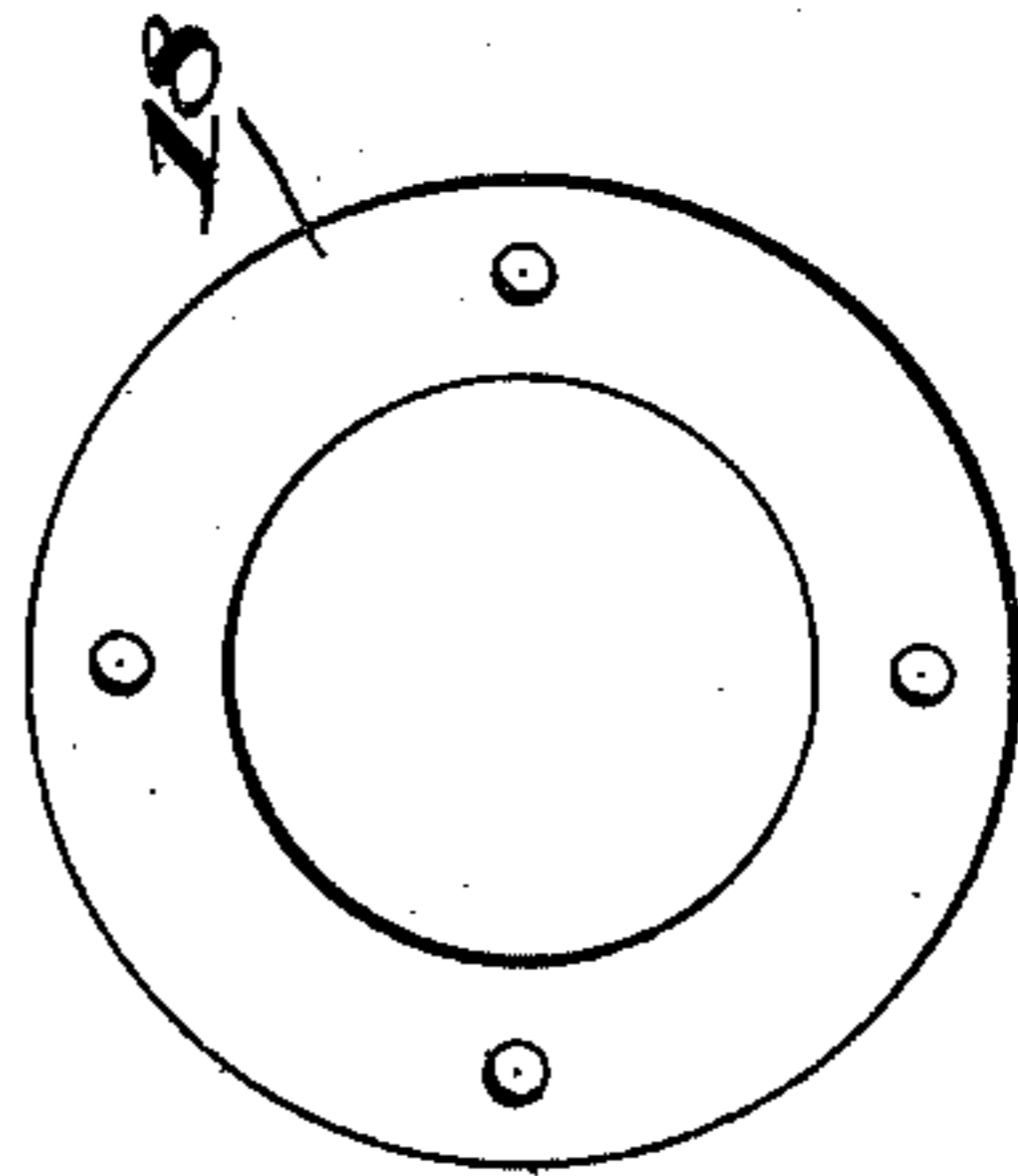


Fig. 9.



Witnesses

J. D. Thorne  
M. J. Gallagher.

Inventor

John Franklin,  
by John Ellis Jones,  
his Attorney.

# UNITED STATES PATENT OFFICE.

JOHN FRANKLIN, OF NORWOOD, OHIO.

## ANTIVIBRATORY SUPPORT FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 668,042, dated February 12, 1901.

Application filed April 6, 1900. Serial No. 11,848. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN FRANKLIN, a citizen of the United States of America, and a resident of Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Antivibratory Supports for Gas-Burners, of which the following is a specification.

This invention relates to certain improvements in antivibratory supports for that class of gas-burners which are provided with incandescent mantles; and the object of the invention is to provide simple and inexpensive supporting means especially adapted for taking up or minimizing the effects of vibration and sudden jars and shocks, so as to lessen the liability of breakage of the frail incandescent mantle carried by the burner, and thereby to effect a considerable economy in the cost of maintaining the burner.

The invention consists in certain novel features of the construction, combination, and arrangement of the several parts of the improved antivibratory burner-support whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my invention, Figure 1 is a view showing in side elevation a burner having an antivibratory support constructed according to my invention, the supporting means being shown in vertical axial section. Fig. 2 is a view similar to Fig. 1, but showing a modified form of the improved antivibratory support in which the flexible connection between the gas-supply pipe and the burner is omitted. Fig. 3 is a view similar to Fig. 1, but showing still another embodiment of my invention. Fig. 4 is a perspective view showing the spring-arm employed for sustaining the burner in the construction shown. Fig. 5 is an elevation drawn to a small scale and showing still another embodiment of my invention. Fig. 6 is an enlarged section taken axially through the device shown in Fig. 5. Fig. 7 is an enlarged section taken transversely through the support in the plane

indicated by the line *a a* in Fig. 6. Fig. 8 is a view showing one of the non-conducting gaskets or washers detached. Fig. 9 is a view showing the washer or annulus for binding the flexible diaphragm upon the base or body portion of the support. Fig. 10 is a view drawn to a smaller scale and showing the construction of the burner-sustaining spring-arms shown in Figs. 1, 2, and 5. Fig. 11 is a view showing detached the headed plug employed in the construction shown in Figs. 5 and 6 for holding the flexible diaphragm to the burner-fitting. Fig. 12 is a sectional view showing still another modified arrangement especially adapted for use in connection with hanging or suspended lamps.

Referring first to Fig. 1, 1 indicates the gas-supply pipe, having a cock 2, and 3 indicates the burner, arranged above the same, being carried on the threaded upper end 4 of a fitting 5, between which and the cock 2 is arranged the improved antivibratory support, (indicated as a whole by 6.) The burner 3 may be of any desired kind, since it is evident that the improved antivibratory support is adapted for use in connection with various forms of burner. The burner herein shown has a tube provided with a gas-passage in which the air and gas are mixed or mingled, the upper part of the passage being made with a gradually-increasing diameter, so as to accommodate expansion of the rising mixture due to heat from the walls of the tube. This special form of burner I do not claim herein, nor is the improved antivibratory support limited to use in connection with such a burner, since it is evident that the device is equally well adapted for use with other gas-burners.

The improved support 6 comprises two parts, the burner-fitting 5, above mentioned, and a base or body portion 7, which is secured to and forms substantially a continuation of the gas-supply pipe 1, and these two parts are provided with corresponding gas-passages 8 and 9. The base or body portion 7 is made, as herein shown, in a cup-like form, being expanded or flared from its lower end, where it is provided with a nipple 10 to receive the gas-pipe 1, to its upper open end or mouth, where it is provided with a horizontal encircling flange 11.

Between the base or body portion 7 and the burner-fitting 5 are extended a plurality of elastic arms 12, arranged, as herein shown, in two pairs at right angles to each other, the arms of each pair being diametrically opposite and being integrally connected at their upper parts by annular enlargements 13, centrally perforated, as shown at 14 in Fig. 10, which is a detail view showing a pair of said arms 12 detached. The arms 12 are also perforated at their ends, as shown at 15, for the passage of screws 16, by means of which the lower ends of the spring-arms are secured to the flange 11 of the base 7.

A gas-tight flexible connection is interposed between the two parts 5 and 7 of the support, said connection, as shown in Fig. 1, comprising a flexible diaphragm 17, of circular form, held at its edges upon the flange 11 of the base by means of a metal washer or annulus 18. (Shown in detail in Fig. 9.) The annulus 18 is held clamped on the flange 11 to form a gas-tight joint by means of the screws 16, which hold the lower ends of the spring-arms 12 on the flange 11. The diaphragm 17 may be constructed of leather, rubber, or other sufficiently flexible material, perforated at its central part for the passage of the lower end of a tubular plug or stem 19, the upper end of which is threaded and arranged to screw into a recess in the fitting 5, with the gas-passage 8 of which its hollow 20 is adapted for communication. The threaded upper end of the stem 19 is also passed through the openings 14 of the enlargements 13 of the spring-arms and is also provided with a flange or shoulder 21, between which and the under side of the fitting 5 the said enlargements are clamped, as shown in Fig. 1, so as to secure the burner on the support. The lower end of the stem or plug 19 is also provided with a flange or shoulder 21 and is screw-threaded to receive a nut 22, between which and said lower flange the edges of the central opening of the diaphragm 17 are clamped in such a way as to produce a tight joint. Washers or gaskets 23, of asbestos or other non-conducting material, as shown in Fig. 8, are provided above and below the diaphragm 17, being held on the lower end of the stem 19 to prevent damage to the diaphragm by charring or heating caused by conduction of heat from the burner downward.

A chamber 24 is produced in the base 7 beneath the diaphragm to receive and collect any residuum from the gas and prevent the diaphragm from becoming inoperative by gumming to the base from the hardening of such residuum. The central part of the diaphragm is made sufficiently loose to depend slightly into the chamber 24, as shown at 25, so as to receive and hold a supply of almond-oil, glycerin, or other non-volatile liquid to keep the diaphragm soft and flexible.

The gas-tight connection between the parts of the support is not in all cases absolutely

essential to the successful operation of the device and may in some cases be dispensed with. A construction of this nature is shown in Fig. 2, where the base or body portion 26 of the support is not made cup-shaped and the lower portions of the spring-arms 12 are clamped thereto by means of a part 27, screwing thereon in a way similar to the clamping of the upper parts of the arms in the construction shown in Fig. 1 by means of the stem or plug 19. The part 27 carries a needle-valve 28, which is arranged to discharge gas into the open lower end 29 of the burner 3, to the bottom of which the upper ends of the spring-arms 12 are secured by soldering or otherwise. There may also be but one or any desired number of the spring-arms 12, each of which is formed from a flat strip of sheet metal, such as hardened copper, brass, or other material not liable to corrosion. A form is shown in Fig. 3 wherein but one spring-arm 12 is provided, having an enlargement 30 at its upper end clamped to the fitting 5 by means of a flanged stem 19 and secured at its lower end to the flange 11 of the base 7 by means of a screw 16.

The construction shown in Figs. 5, 6, and 7 is similar to that shown in Fig. 1, except that the stem 19 is omitted and the diaphragm 17 is made in inverted-cup form, being clamped at its central upper part, as shown at 31, to the under side of the fitting 5 by means of a hollow plug 32, (shown in detail in Fig. 11,) said plug being screwed into said fitting and having a head 33 arranged beneath the diaphragm. Non-conducting washers or gaskets 23 are arranged above and below the diaphragm to prevent charring thereof, and the plug 32 also serves to bind the upper ends of the spring-arms 12 to the fitting. The base 7 is also provided with a central tubular stem 34, through which the gas-passage 9 is formed and which serves to carry the gas up across the chamber 24, so as to prevent eddy-currents in the same.

In operation when the improved antivibratory support is in place its spring-arms 12 effectually prevent damage to the incandescent mantle of the burner by minimizing or entirely absorbing vibration and sudden jars and shocks, which would otherwise tend to crack and damage the mantle, and thereby the life of the mantle is materially lengthened and an important economy is effected. Since the spring-arms merely extend across the space separating the adjacent ends of the two parts of which the support is formed, it is evident that the adjacent ends of the two parts are held in substantial alinement, while the necessary movement is permitted in overcoming vibration.

When used, the flexible diaphragm 17 affords an effective seal to prevent leakage of the gas between the base 7 and the burner-fitting 5 and is of an extremely lasting and inexpensive nature and capable of being

readily replaced in case it should be damaged.

The improved antivibratory support is especially well adapted for use on street-lamps and in tall buildings, factories, &c., where vibration quickly wears out the incandescent mantles. For factory-lamps of the suspended variety I prefer to employ a modified form of the improved antivibratory support, such as is shown in the sectional view, Fig. 12. In this form of the device the gas-supply pipe 1 depends from the ceiling and carries a cock 2, between which and the pipe 35, leading to the burner, (not shown,) the improved antivibratory support 6 is arranged. The support shown in Fig. 12 comprises two metal disks 36, having bosses 37 for the gas connections and connected by bent metal springs 12, the ends of which are secured to the disks 36 by means of screws 38. A cup-shaped base or body portion 7 is provided, having a threaded part 39, screwed in the lower disk 36 and provided with a gas-passage communicating with the passage 9 of the stem 34 of said base. A fitting 5 is also provided above the base and furnished with a threaded part screwed in the upper disk 36 and having a threaded socket to receive a hollow plug 32. A diaphragm 17 is extended between the fitting 5 and the base, being protected at its upper edges by asbestos washers 23 and also by similar washers 40 at its lower edge, where it is clamped on the flange 10 of the base. As the heated air and gases from the suspended lamp pass upward, I also provide a hood or shield 41, inclosing the base 6 and diaphragm 17, to further protect said diaphragm from charring or damage, the hood being secured to the lower disk and having its upper edge slightly below the upper disk. A chain or chains 42 extend between the disks 36 to prevent falling of the lamp in case the springs 12 should break.

From the above description it will be seen that the improved antivibratory support constructed according to my invention is of an extremely simple and inexpensive nature and is especially well adapted for the protection of the incandescent mantle, and it will also be apparent that the device is capable of some modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the several parts herein shown.

Having thus described my invention, I claim—

1. An antivibratory support for gas-burners and the like comprising two parts formed with corresponding gas-passages, a spring-arm formed of a strip of flat material having a perforated enlargement, a device for clamping said perforated enlargement to one part of the support and means for securing the spring-arm to the other part of the support, the central part of the spring-arm being

curved outwardly and extended across the space between said two parts of the support, substantially as set forth.

2. A support for gas-burners and the like comprising two parts formed with corresponding gas-passages, an elastic supporting device secured at its ends to the respective parts and extending across the space between them and adapted to hold one part sustained elastically above the other, and a flexible gas connection also extended across the space between said two parts, substantially as set forth.

3. A support for gas-burners and the like comprising two parts formed with corresponding gas-passages, an elastic supporting device secured to the respective parts and extending across the space between them and adapted to hold one part elastically sustained above the other, a flexible gas connection also extended across the space between the two parts and having one edge adapted for connection with one part, and a device having engagement with the other part for holding said connection thereto, substantially as set forth.

4. An antivibratory support for gas-burners and the like comprising two parts having corresponding gas-passages, a spring-arm secured at one end to one of said parts and extended across the space between the two parts and having at its other end perforation, a hollow plug passed through said perforation and engaged with one part of the support to hold the spring-arm thereto, and a flexible gas connection also extended across the space between the two parts with one edge secured to one part and its other edge held to the other part by said plug, substantially as set forth.

5. A support for gas-burners and the like comprising two parts having corresponding gas-passages, one part being expanded around its gas-passage, an elastic supporting device for sustaining one part elastically above the other, and a flexible diaphragm secured at its edges to the expanded part of the support and having its central part secured to the other part of the support, substantially as set forth.

6. A support for gas-burners and the like comprising two parts having corresponding gas-passages, one part being expanded around its gas-passage, an elastic supporting device for sustaining one part elastically above the other, a flexible diaphragm, and an annulus having means for securing it to the expanded part of the support over the edges of the diaphragm, the central part of the diaphragm being secured to the other part of the support, substantially as set forth.

7. In a support for gas-burners and the like, the combination of a cup-shaped base having a gas-passage and adapted for attachment to a gas-supply pipe, a burner-fitting arranged above said base and also provided with a gas-passage, a flexible diaphragm having its edges secured to the edges of said cup-shaped base and having a central opening, means for se-

curing the central part of the diaphragm to the burner-fitting with its opening corresponding with the gas-passage thereof, and means for elastically supporting the burner-fitting, substantially as set forth.

8. A support for gas-burners and the like comprising two parts held in movable relation to each other and a flexible diaphragm held at its edge portion on one part and having at its central portion a connection with the other part of the support, substantially as set forth.

9. A support for gas-burners and the like comprising two parts held in movable relation to each other and provided with corresponding gas-passages, one part being expanded around its gas-passage, and a flexible diaphragm held at its edges to said expanded part and having at its central portion a connection with the other part of the support and adapted to prevent the escape of gas between the two parts, substantially as set forth.

10. An antivibratory support for gas-burners and the like comprising two parts held in movable relation to each other, a flexible diaphragm held at its edge portion on one part and having a central opening, the other part of the support having a portion extended through the central opening of the diaphragm and a nut screwed upon said extended por-

tion for holding the diaphragm thereto, substantially as set forth.

11. An antivibratory support for gas-burners and the like comprising a burner-fitting, a tubular plug screwed into said fitting divergent spring-arms held by said tubular plug to the burner-fitting, a part to which the spring-arms are connected and which is adapted for connection with a gas-pipe and has a gas-passage adapted for communication with the bore of the tubular plug and means for preventing the escape of gas between the plug and the said part, substantially as set forth.

12. An antivibratory support for gas-burners and the like comprising a burner-fitting, elastic sustaining means for the burner-fitting, a part formed with a gas-passage, a flexible gas connection held to said part and a tubular plug engaged with the burner-fitting and arranged to connect both the sustaining means and said gas connection to said fitting, substantially as set forth.

Signed by me at Cincinnati, Ohio, this 4th day of April, 1900.

JOHN FRANKLIN.

Witnesses:

JOHN ELIAS JONES,  
M. J. GALLAGHER.