

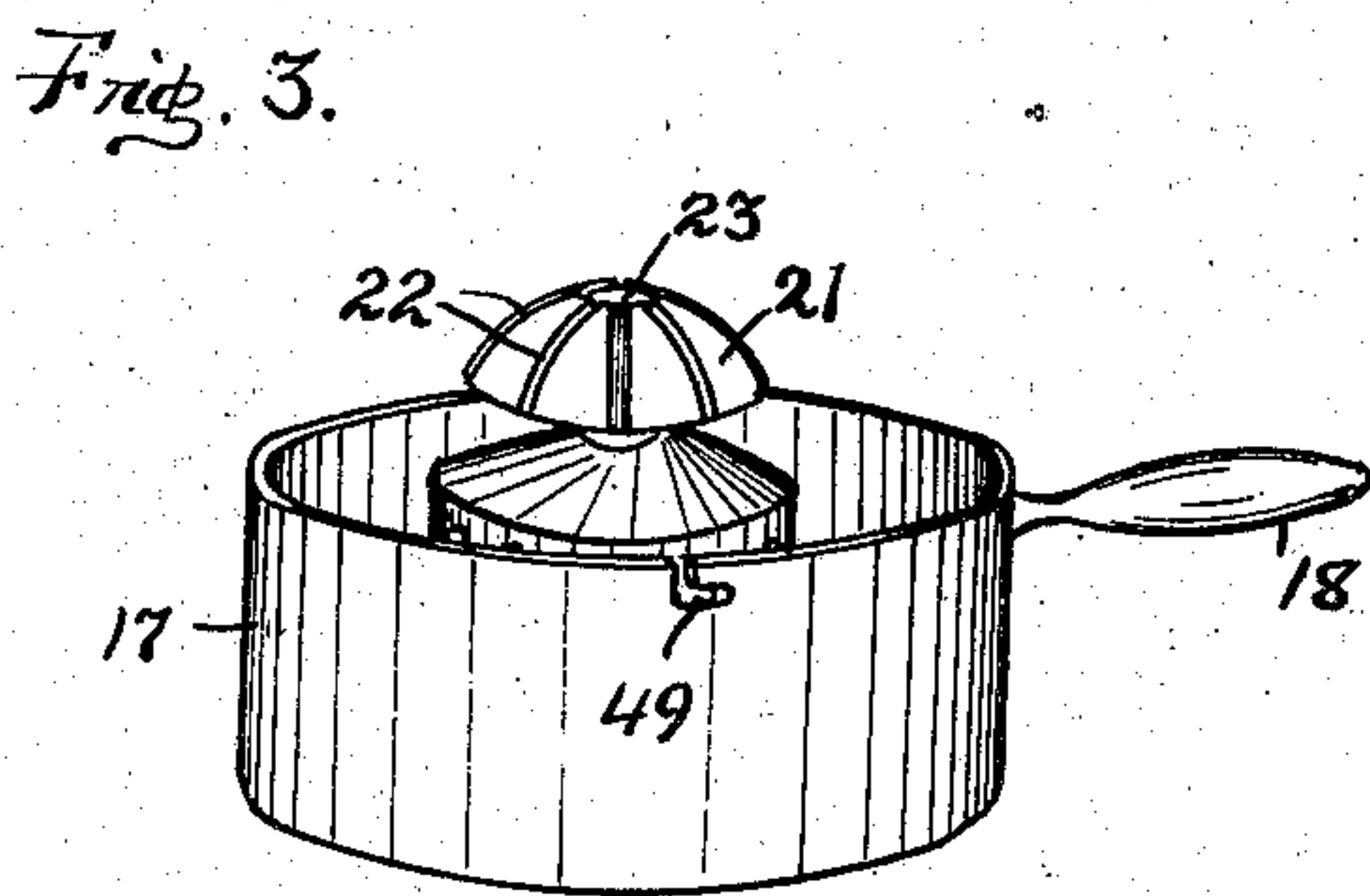
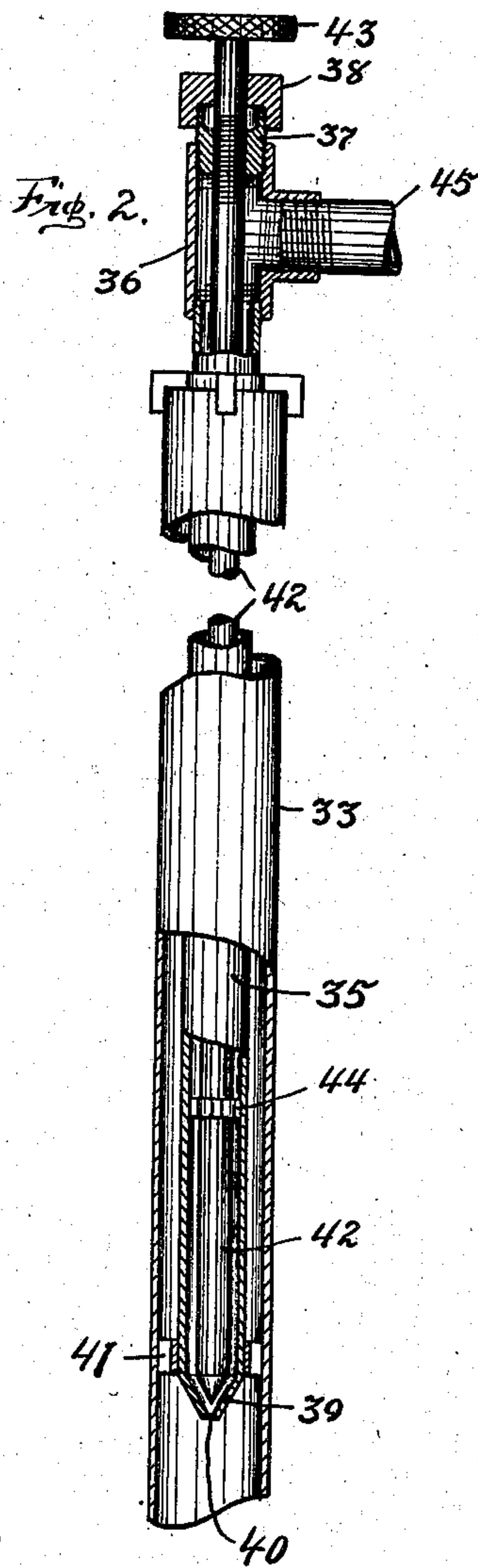
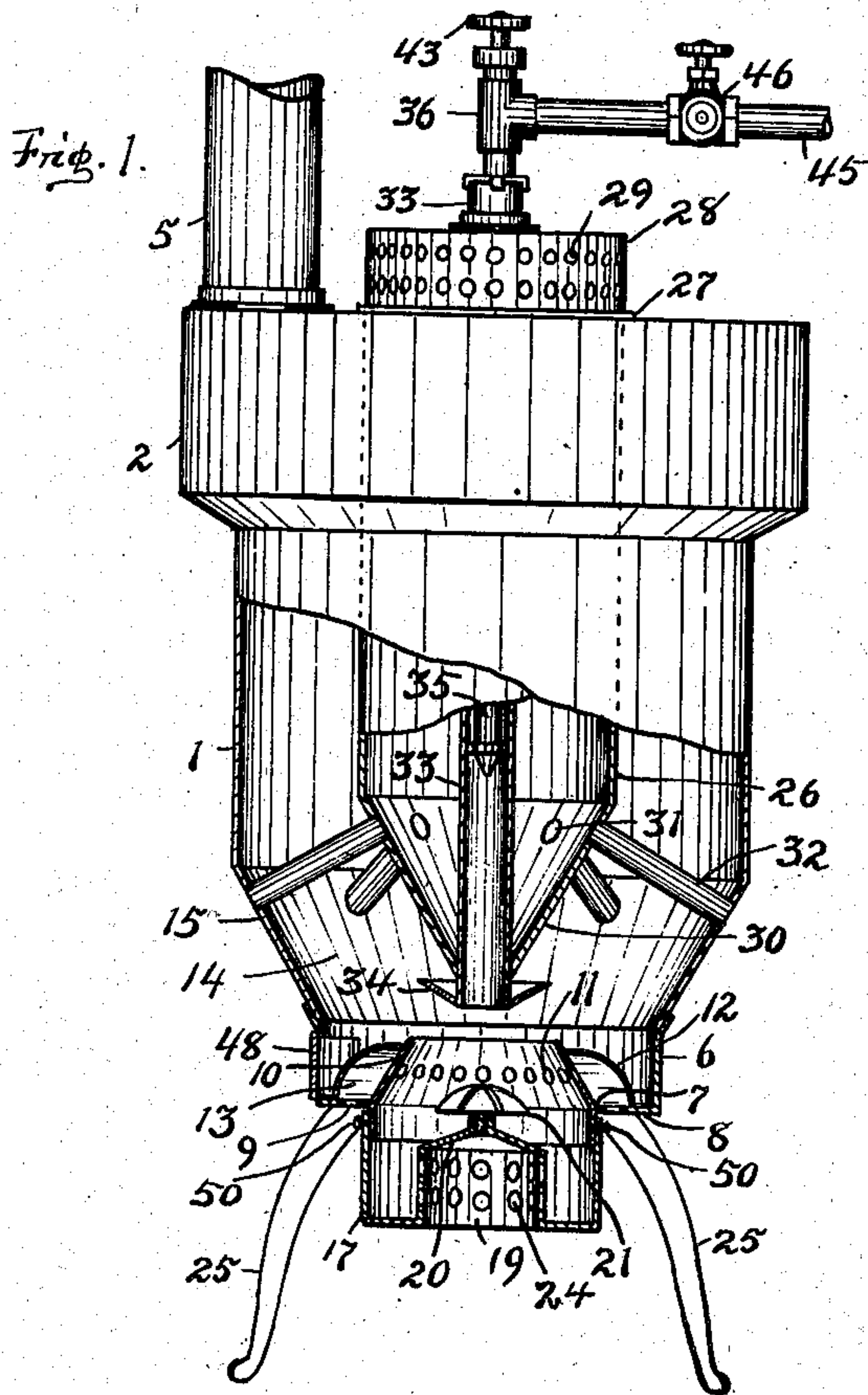
No. 840,657.

PATENTED JAN. 8, 1907.

F. M. REED.
OIL BURNING STOVE.

APPLICATION FILED JULY 11, 1904. RENEWED AUG. 27, 1906.

2 SHEETS—SHEET 1.



WITNESSES:
H. G. Zume
Augusta Viberg.

Franklin M. Reed INVENTOR.
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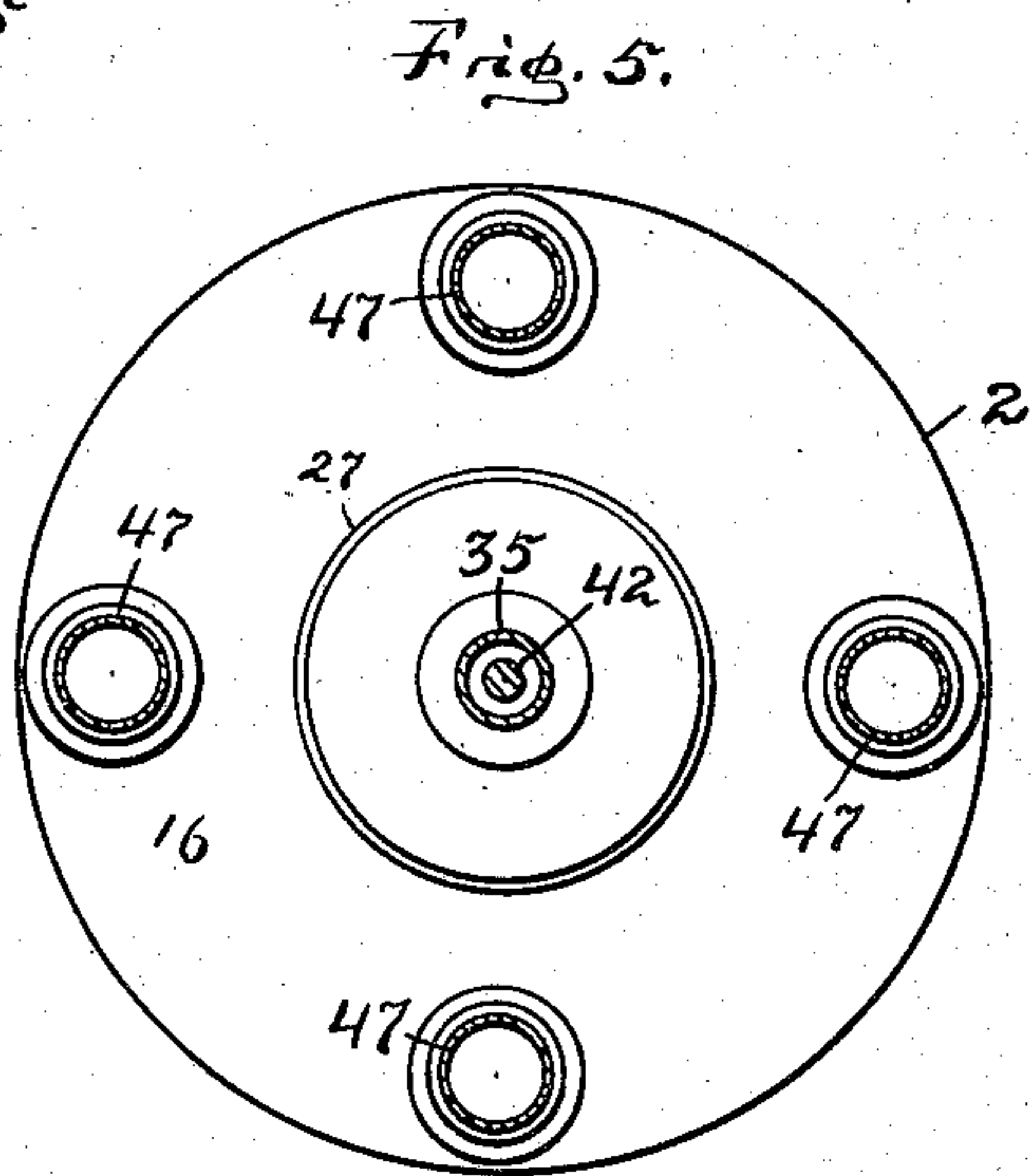
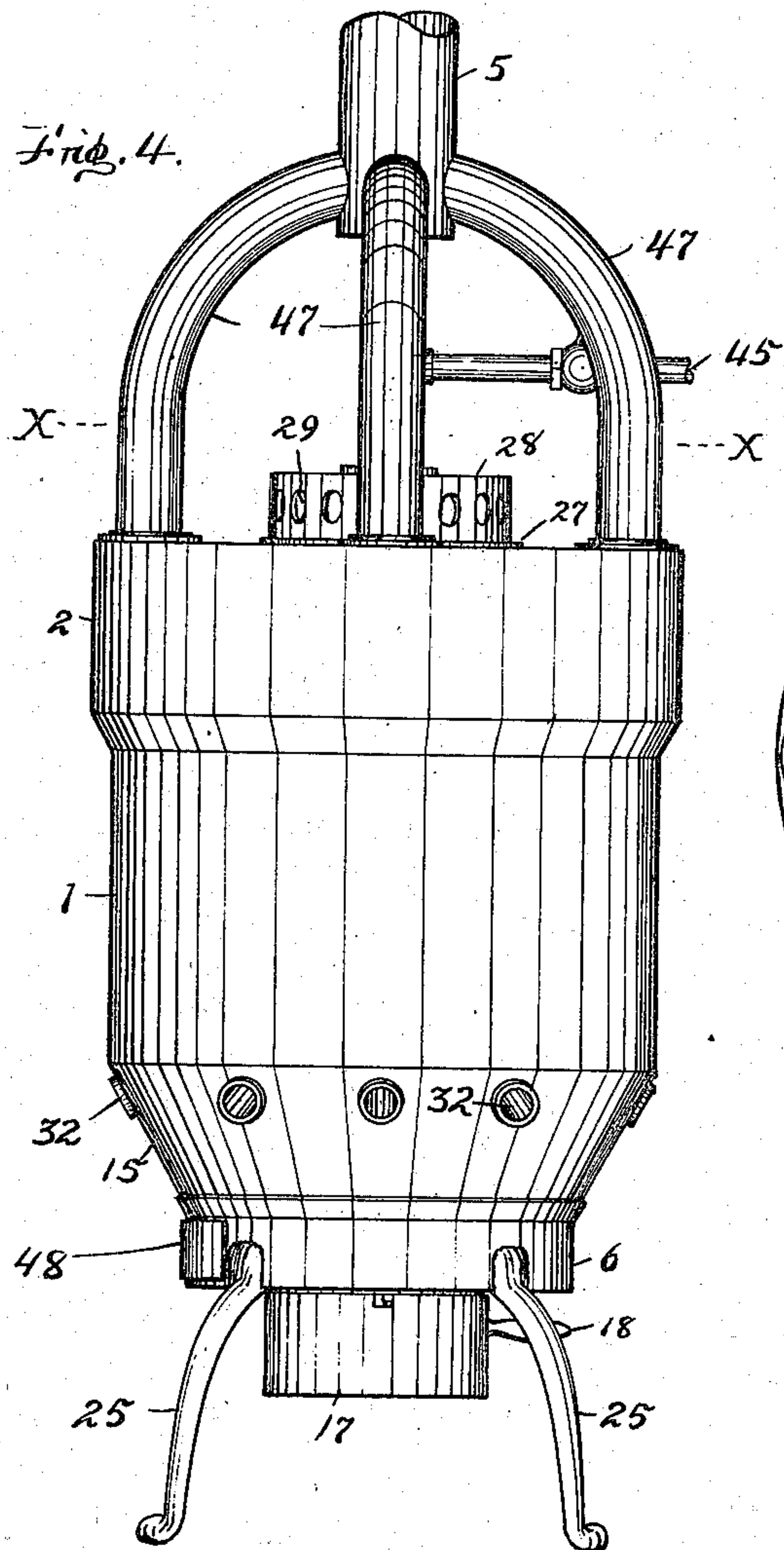
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2 SHEETS—SHEET 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

FRANKLIN M. REED, OF FORT WAYNE, INDIANA, ASSIGNOR TO WAYNE STOVE COMPANY, OF FORT WAYNE, INDIANA, A CORPORATION OF INDIANA.

OIL-BURNING STOVE.

No. 840,657.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed July 11, 1904. Renewed August 27, 1906. Serial No. 332,201.

To all whom it may concern:

Be it known that I, FRANKLIN M. REED, a citizen of the United States, residing at Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Oil-Burning Stoves; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in oil-burning stoves for heating and domestic purposes.

It is well known that no heating or cooking stove has yet been provided that secures a commercially successful and odorless combustion of fuel-oils, and particularly of crude oil.

The object, therefore, of my present invention is to provide a cheap, simple, and efficient stove adapted for a perfect regulation and practically odorless consumption of fuel-oils, including crude petroleum, secured by the coöperation of a novel vaporizer, a novel arrangement of combustion-chamber, a novel means for conducting the smoke therefrom, novel means for securing a double radiation, novel means for supplying fresh air to the combustion and radiating chambers, and novel means for regulating the fuel-oil supply.

My present invention consists of a heating-stove comprising two upright concentric cylindrical heating-shells having an interposed annular air-chamber, a combustion-chamber arranged at the base of the outer shell and beneath the inner shell and communicating with the outside air by means of an annular chamber and downdraft-tube, a detachable vaporizer of novel construction, novel means of supplying fresh air to the stove, novel means for securing a double radiation, and a novel means for controlling the supply of liquid fuel to the stove.

The principal novel features of my invention are the construction and arrangement of the vaporizer, the means for securing an improved radiation, the means for securing a perfect and odorless combustion of the fuel-oil, and the means for controlling the oil-supply within the stove.

In the accompanying drawings similar reference-numerals indicate like parts throughout the several views, in which—

Figure 1 is a view in elevation of my invention broken away in part to show the relative arrangement of the coöperative parts. Fig. 2 is an enlarged detail of the pendent feed-valve in position in its containing-tube, broken away in part, and showing the relative arrangement of its operative parts. Fig. 3 is an enlarged perspective detail of the vaporizer. Fig. 4 is a side elevation of my invention, showing a modified means of connecting the smoke-chamber of the outer shell with the smoke-flue. Fig. 5 is a cross-section of Fig. 4, taken on the line $x x$.

The outer shell 1, preferably of sheet metal, has an enlarged cylindrical top 2, upon which is mounted a proper stovepipe 5, and has upon its contracted lower end a fixed contracted pendent extension 6, having a central circular opening 7 and a horizontal annular flange 8, provided with a series of vertical perforations or air-inlet openings 9. In this opening 7 is rigidly fixed in any proper manner a short shell or casing 10 open at both ends and tapering at its upper end or that portion thereof which is within the extension 6. This tapering portion is provided with a series of inlet air-openings 11, which are inclosed by an annular casing 12, whose upper edge is fixed to the casing 10 at or near its upper end and whose lower edge is secured to the upper face of the flange of the extension 6 outside of the perforations 9, thereby forming an annular chamber 13, through which fresh air is supplied to the interior of the casing forming the vaporizing-chamber, and also to the combustion-chamber 14, which is the space within the lower tapering portion 15 of the outer shell 1.

The top of the outer shell is closed by a top 16, and the lower tapering end forms the combustion-chamber, as described. While this outer shell is preferably provided with the enlarged top portion 2, as shown, this feature may be omitted, if desired.

The vaporizer consists of an open-topped cylindrical casing 17, having a proper handle 18 and having the central portion of its bottom upraised into a concentric cylindrical casing 19, having a closed inclined top 20, surmounted by a rosette 21, having a series

of radial grooves 22 leading from a shallow central recess 23, Fig. 3.

The sides of the casing 19 are provided with a series of inlet air-openings 24 for the supply of air to the combustion-chamber.

The stove is supported upon a plurality of suitable feet 25, whose upper ends are detachably secured to the extension 6 in any proper manner.

In a central opening in the top 16 of the outer shell 1 is arranged a pendent concentric inner shell 26, having a supporting ring or flange 27, which normally rests upon the said top 16 and supports the inner shell and has its upper end closed. Above the said flange 27 the inner shell has an extension 28, provided with a plurality of lateral outlet-perforations 29. The lower end 30 of this inner shell is conical and is provided with a series of lateral openings 31, in which are secured the respective inner ends of the air-inlet pipes 32, whose outer ends are fixed in suitable lateral openings in the outer shell 1.

In substantially concentric arrangement in the inner shell is fixed the vertical downdraft-tube 33, whose upper end projects above the top thereof and whose lower end projects below the lower end thereof and is provided with a flaring flame-shield 34, which is arranged directly above the vaporizer and the combustion-chamber.

In concentric arrangement in the tube 33 is loosely suspended an inner tube 35, having its open upper end externally screw-threaded and secured in the union 36, whose upper end is closed by a screw-plug 37, which in turn is surmounted by a nut 38, Fig. 2. This inner tube 35 has its lower end formed into a conical valve-seat 39 and provided with a small outlet-opening 40. This inner tube 35 is firmly secured against lateral derangement by one or more fixed spiders or guides 41 secured thereto.

In concentric arrangement in the inner tube 35 is loosely mounted the vertical needle-valve 42, which is mounted in the plug 37 by a screw-threaded connection, passes loosely through the nut 38, has its upper end provided with a thumb-nut 43, and has its conical lower end adapted to snugly fit the valve-seat 39 and tightly close the opening 40. This valve 42 is secured against lateral derangement by means of the winged guide 44 fixed thereon.

A feed-pipe 45, leading from a suitable supply, has its adjacent end secured in the three-way union 36 and is provided with a controlling-valve 46.

In Fig. 4 is shown a modified connection of the smoke-pipe with the interior of the shell 1, consisting of a plurality of curved pipes 47, preferably four in number, whose lower ends are fixed in suitable openings in the top 16 of the outer shell and whose upper ends are fixed in any proper manner in the adja-

cent end of the pipe 5, thereby facilitating the escape of the smoke from the shell 1.

The vaporizer 17 has a pair of angular slots 49 in diametric relation and adapted for an interlocking engagement with the opposite pins 50, fixed in the sides of the casing 10, whereby the vaporizer can be readily detached at pleasure.

The operation and manner of employing my invention thus described are obvious and, briefly stated, are as follows: The operator first opens the valve 46 in the feed-pipe 45, thereby admitting the fuel-oil to the inner tube 35. He then raises the valve 42 from its seat by means of the thumb-nut 43 sufficiently to permit the escape of a few drops of oil through the opening 40, after which they descending by gravity to the vaporizer, striking in the recess 23 of the rosette 21 will break up into a fine spray, which can readily and conveniently be ignited through the door 48 of the extension 6, after which the supply of fuel-oil can be readily regulated at pleasure by means of the needle-valve 42. As each particle of oil upon its escape from the valve 42 is converted into a fine spray by striking upon the rosette 21 of the vaporizer and a constant supply of fresh air is maintained through the downdraft-tube 33 and through the openings 11 and 24, it is evident there will be a perfect mixture of oxygen with the fuel-oil spray, thereby maintaining a constant flame in the combustion-chamber, which is deflected from a direct contact with the lower end of the inner shell by the flame-shield 34. It is evident that the inner shell will be continuously supplied with fresh air through the radial tubes 32 and that as this air is heated in the interior of the inner shell it will continuously ascend and escape into the room to be heated through the perforations 29. I thus secure a double radiation by my invention, one being from the inner shell, as described, and the other from the outer shell in which the heat is generated. A continuous downdraft of fresh air through the tube 33 directly to the combustion-chamber and the atomizer materially aids in securing a perfect combustion of the fuel-oil and securely prevents any escape of odor therethrough from the combustion-chamber.

Having thus described my invention and the manner of employing the same, what I desire to secure by Letters Patent is—

1. An oil-burning stove consisting of an inner and an outer shell in concentric arrangement, the outer shell having its top provided with an outlet-pipe for the products of combustion, and having its lower end provided with inlet air-openings, and having a combustion-chamber in its base, the inner shell having air-inlet openings at its base and having air-outlet openings at its top; a vaporizer detachably mounted in the base of the outer shell; a downdraft-tube mounted in the inner

5 shell in vertical arrangement and provided upon its lower protruding end with a fixed flame-deflector above or within the combustion-chamber; and a feed-valve in said tube adapted to control the fuel-supply.

10 2. In an oil-burning stove an inner and an outer shell, the interior of the inner shell being in communication with the outer air at both its extremities, and the outer shell having a combustion-chamber in its base and inlet air-openings thereto; a vaporizer arranged in the combustion-chamber; a downdraft-tube passing through the inner shell and leading to the combustion-chamber, and provided upon its lower end with a flame-deflector; and a feed-valve mounted in said tube in cooperative arrangement with the vaporizer.

15 3. The combination in an oil-burning stove of an inner and an outer shell in vertical arrangement, the inner shell having always open means for communicating with the outer air at both ends, and the outer shell having a combustion-chamber in its base and inlet-openings thereto; a vaporizer arranged in the combustion-chamber; a centrally-ar-

ranged downdraft-tube passing through the inner shell and terminating in the combustion-chamber directly above the vaporizer; a flame-deflector fixed on the lower end of the said tube; and a feed-valve consisting of a tube mounted in said downdraft-tube, and having a valve-seat in its lower end, and a valve-stem mounted in the said tube by a screw-threaded connection and adapted to fit the said valve-seat.

35 4. In an oil-burning stove a vaporizer consisting of a two-part cylindrical shell, the lower part or section having a raised cylindrical bottom provided with a series of lateral air-inlet perforations and surmounted by a rosette as described, the upper section being of frusto-conical form open at the top and provided with lateral perforations.

40 Signed by me at Fort Wayne, Allen county, State of Indiana, this 4th day of July, A. D. 1904.

FRANKLIN M. REED.

Witnesses:

WATTS P. DENNY,
AUGUSTA VIBERG.