

F. L. McGAHAN.

BLOWPIPE.

APPLICATION FILED AUG. 7, 1906.

955,092.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.

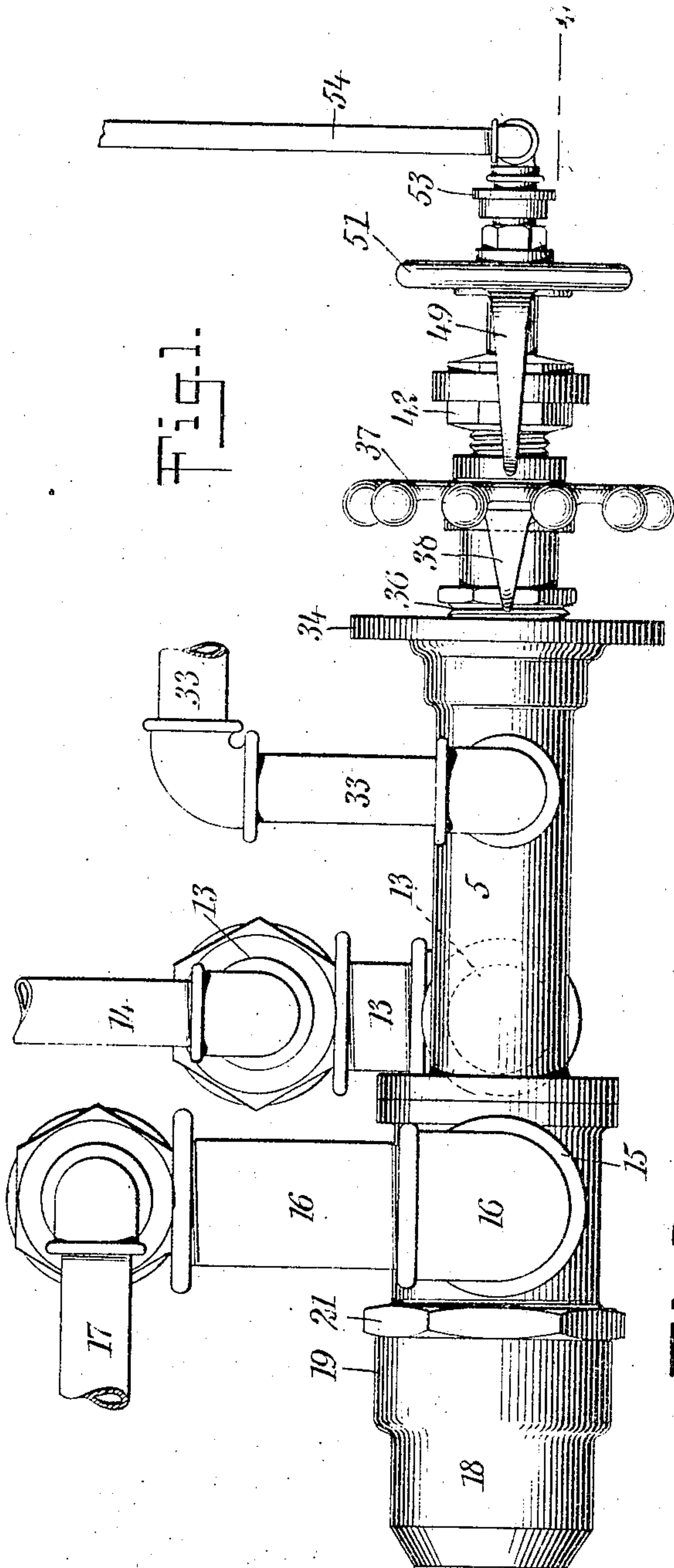


Fig. 1.

Fig. 3.

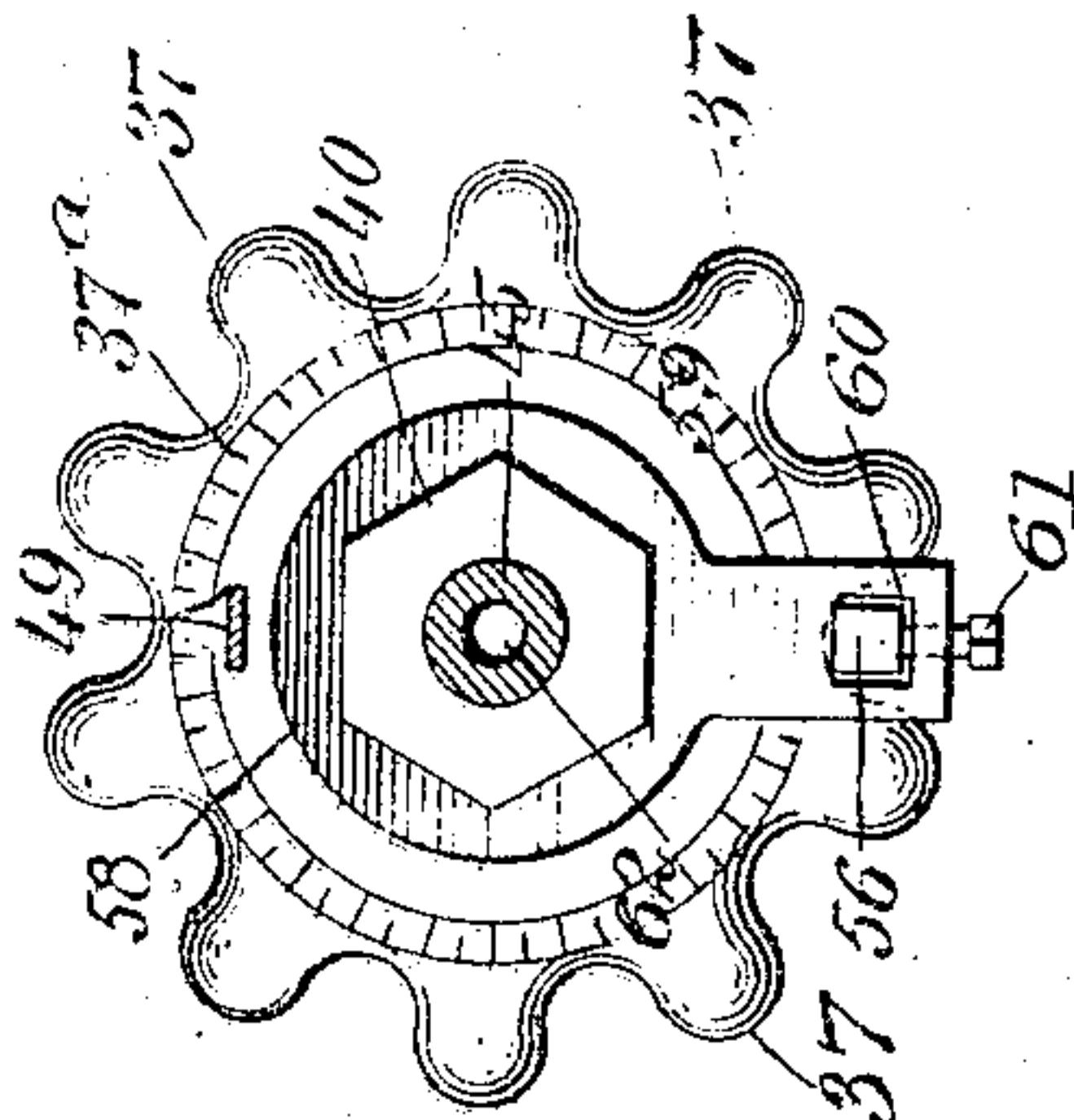
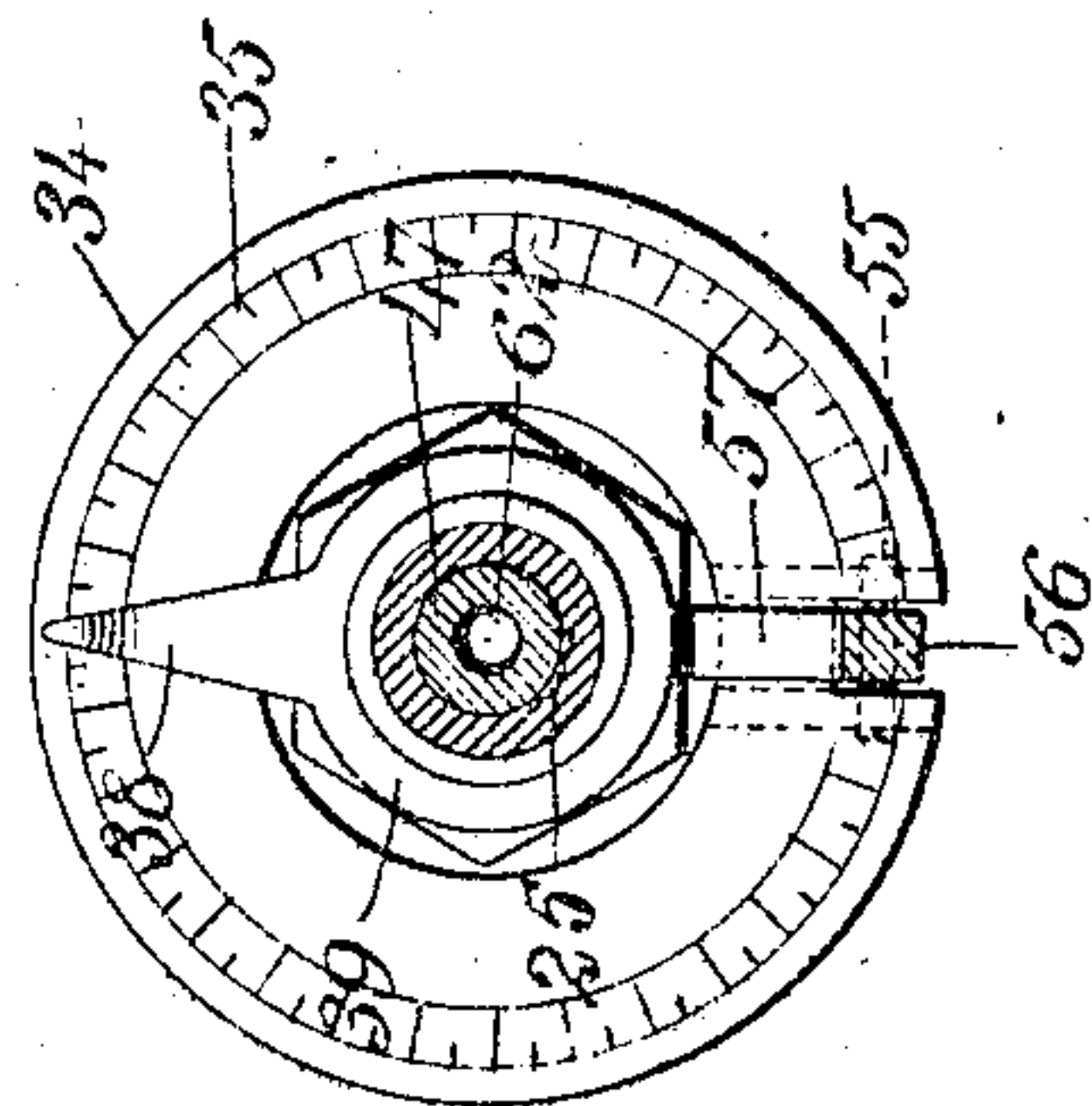


Fig. 2.



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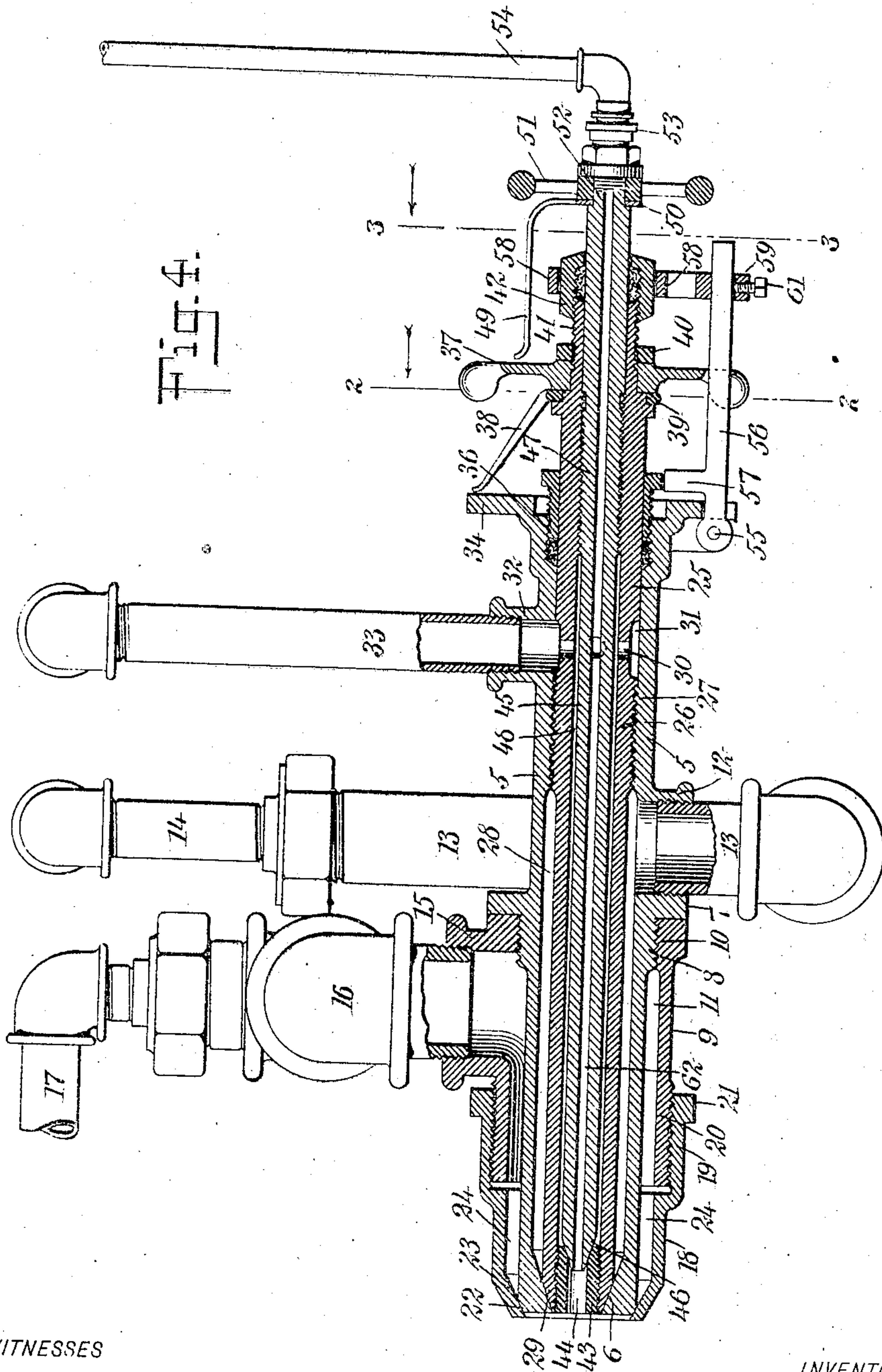
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# UNITED STATES PATENT OFFICE.

FREDERICK LUTHER McGAHAN, OF ST. LOUIS, MISSOURI.

## BLOWPIPE.

955,092.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed August 7, 1906. Serial No. 329,524.

*To all whom it may concern:*

Be it known that I, FREDERICK L. McGAHAN, a citizen of the United States, and a resident of St. Louis, State of Missouri, have invented a new and Improved Blow-pipe, of which the following is a full, clear, and exact description.

My invention relates to blowpipes of the kind employed in connection with liquid and aeriform fuels, my more particular object being to provide for accurate adjustment in the relative supply of different aeriform bodies, and for causing the admixture of various aeriform bodies to take place thoroughly within the burner.

My invention further contemplates an arrangement whereby the operator may at any moment know the relative proportions of the substances as supplied to the flame.

My invention further provides for preventing accidental change in the relative positions of various parts of the blowpipe, and especially such parts as are concerned in varying the proportions of the fluids supplied.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the figures, in which—

Figure 1 is a fragmentary plan showing my blowpipe complete and provided with various pipe connections for supplying the various liquid and aeriform bodies used during combustion; Fig. 2 is a vertical section upon the line 2—2 of Fig. 4, looking in the direction of the arrow and showing the indicating mechanism for apprising the operator as to the quantity of one of the aeriform bodies supplied to the blowpipe; Fig. 3 is a vertical section upon the line 3—3 of Fig. 4, looking in the direction of the arrow and showing the means for regulating the supply of one of the aeriform bodies, and also showing the means for indicating the relative quantity of another of the fuels supplied to the blowpipe; and Fig. 4 is a central vertical section through the body portion of the blowpipe, and showing the internal construction of the same.

A stationary sleeve 5 of general tubular form is provided with a contracted outlet 6, and also provided with an annular shoulder 7 and with a threaded portion 8 adjacent to the threaded shoulder. A sleeve 9

is provided at one of its ends with a portion 10, threaded internally as shown and fitted upon the threaded portion 8, so as to abut firmly against the annular shoulder 7. The sleeve 9 is separated from the sleeve 5 by an annular space 11. Integral with the sleeve 5 is a nipple 12, connected with which is a pipe 13 and communicating with this pipe is a smaller pipe 14. The two pipes just mentioned virtually constitute a single pipe which is used for supplying steam into the burner. The sleeve 9 is provided with a nipple 15 which connects with a larger pipe 16, the latter being in communication with a smaller pipe 17. The pipes 16, 17 constitute continuations of each other and may be considered as a single pipe. Its purpose is to supply air to the blowpipe. A sleeve 18 is provided with an enlarged portion 19, which is threaded internally and fits upon a threaded portion 20 of the sleeve 9. The sleeve 18 is provided with a number of facets 21, whereby its action is, to some extent, rendered analogous to that of a nut.

The stationary tubular member 5, at one of its ends, is provided with an annular bevel 22, which fits into a contracted portion 23 of the sleeve 18, so as to fit the same internally. If, however, the sleeve 18 be turned by aid of the facets 21, the beveled portions 22, 23 may be drawn slightly apart so as to leave an intermediate space of annular shape and this space may be adjusted at will. The space just mentioned merges into a larger space 24, which registers with the space 11, as will be understood from Fig. 4.

Mounted within the stationary sleeve 5 is a revoluble sleeve 25, provided externally with a threaded portion 26, which fits into a threaded surface 27 disposed internally of the stationary sleeve 5. The stationary sleeve 5 and the revoluble sleeve 25 are separated by an annular space 28. One end of the revoluble sleeve 25 is provided with a beveled surface 29 of substantially frusto-conical form, as may be seen at the left of Fig. 4. The revoluble sleeve 25 is also provided with radially-disposed passages 30 and with an annular channel 31 into which these passages merge. A nipple 32 is integral with the stationary sleeve 5 and is connected with a pipe 33, whereby oil is supplied to the burner. The stationary sleeve 5 is provided with a disk-like portion 34, having graduations 35, as indicated in Fig. 2, arranged in the form



of a circle. A stuffing box 36 renders the movable sleeve 25 gastight in relation to the stationary sleeve 5. A hand wheel 37 is connected rigidly with the revoluble sleeve 25 and is used for turning the same. This hand wheel is provided with graduations 37<sup>a</sup> arranged in the form of a circle.

A pointer 38 is provided with an annular portion 39, which is secured intermediate of the hand wheel 37 and the revoluble sleeve 25, being clamped therebetween so that the three parts last mentioned move together as a unit. A nut 40 engaging a thread 41 upon the sleeve 25, is the agency used for clamping together the three parts, 37, 39, 25, as just stated. A stuffing box 42 is mounted upon the threaded portion 41.

Fitting internally into one end of the sleeve 25, is a bushing 43, provided with an axial aperture 44. This bushing is threaded externally and the adjacent portion of the sleeve 25 is threaded internally so as to fit the bushing gastight. The bushing may be removed and replaced when destroyed by long continued use. Aside from this feature, however, the bushing 43 may be considered as merely a part of a contracted outlet belonging to the sleeve 25. A tube 45 is provided with a substantially frusto-conical end 46, which fits into the bushing 43, the latter being cored slightly to receive it. The tube 45 is further provided with a threaded portion 47, fitting a part of the sleeve 25 which is threaded to receive it. Intermediate of the tube 45 and the sleeve 25 is a cylindrical space 48, preferably smaller than the space 28. This cylindrical space 48 communicates through the radial passages 30 and annular passage 31 with the pipe 33, so that oil supplied by this pipe finds its way into the cylindrical passage 48. A pointer 49, made preferably of sheet metal, is provided with an annular portion 50, and is secured rigidly upon the tube 45. A hand wheel 51 is likewise secured rigidly upon this tube, for which purpose threads 52 are provided. A union 53 connects the tube 45 with a pipe 54, which is used for supplying oxygen.

Mounted upon the disk 34 is a pivot 55, and journaled upon this pivot is a locking lever 56, provided with a boss 57 adapted to prevent movement of the stuffing box 36. The stuffing box 42, which is of angular form, is fitted externally with a ring 58, having a portion 59 depending therefrom. This portion 59 is provided with a square hole 60 and with a set screw 61. The locking lever 56 is adapted to extend through the square hole 60 and to be engaged by the set screw 61. The hole through the tube 45 is shown at 62 and is comparatively small.

My invention is used as follows: The operator by aid of a suitable wrench, turns the sleeve 18 to such a degree as will separate the annular concentric surfaces 22, 23

sufficiently to allow an adequate air space through which air is drawn from the pipe 17 by the general action of the burner. The operator next grasps the hand wheel 37 and by turning it causes the rotation of the sleeve 25. In doing this he withdraws the frusto-conical or beveled end 29 slightly away from the inner portion of the contracted outlet 6. As the disk 34 is fixed, the graduations 35 may be relied upon to indicate the degree of angular movement given to the pointer 38 and consequently to the sleeve 25. The adjustment of this sleeve provides an annular space intermediate of the parts 6, 29, as above described, and the size of this space is so apportioned by aid of the pointer 38 and scale 35 as to admit a proper proportion or quantity of steam which passes in through the pipes 14, 13, as above described. In turning the sleeve 25, however, the operator turns the tube 45, so that these parts maintain the same relative position which they had before the movement of the hand wheel 37. The locking lever 56, which during the adjustment just described, has been hanging loosely, is now raised into the position indicated in Fig. 4. The ring 58 is slipped over the stuffing box 42 and set screw 61 tightened in position. This prevents any further movement of the sleeve 25 in either direction, for the reason that the hand wheel 37 is now unable to rotate. If, now, the operator desires to regulate the flow of oil through the pipe 33 into the blowpipe, he turns the hand wheel 51. As the tube 45 is threaded into the sleeve 25, the above mentioned movements of the sleeve 25 cause the tube 45 to move therewith so that no change takes place in the relative position of the sleeve 25 and the tube 45. If, therefore, at the beginning of the operation of adjustment the hand wheel 51 was in proper position relatively to the hand wheel 37 to give a suitable supply of oil into the space 48 and thence into the burner, the hand wheel 51 need not be disturbed. When the flow of oil is to be adjusted, the hand wheel 51 is turned and the operator notes the travel of the indicator 49 relatively to the scale 37<sup>a</sup>. Inasmuch as the scale 37<sup>a</sup> is movable, the operator reckons the movement of the indicator 49 from some definite part of the scale regardless of the general position of the hand wheel 37, and consequently of the scale. In other words, the operator picks out some part of the scale 37<sup>a</sup> for use as a reckoning point, and in adjusting the hand wheel 51 disregards the general position of the hand wheel 37 and considers merely the relative position between the indicator 49 and the aforesaid reckoning point.

I find that the contracted outlets used in this burner and shown at the left of Fig. 4, are of great advantage in securing proper



admixture of the substances which are to be combined by the combustion. I also find that this arrangement supplies the various ingredients in such manner as to render the combustion very thorough and thus make a very hot flame comparatively free from smoke and uncombined steam.

The indicating mechanisms employed are of peculiar value in cases where after long trial the best proportions have been worked out in practice, and where it is desirable to start the furnace off with a maximum of efficiency based of course, upon the measurements given by the indicator.

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

1. The combination of a pair of sleeves, one movable relatively to the other, a handle connected with one of said sleeves for moving the same, a stationary member disposed adjacent to both of said sleeves, a rocking lever pivotally connected with said stationary member, and means co-acting with said locking lever for temporarily preventing motion in said sleeves.

2. The combination of a stationary sleeve, a locking lever mounted thereupon, a movable sleeve, a hand wheel connected with said movable sleeve for the purpose of turning the same, and means for holding said locking lever upon said hand wheel for the

purpose of preventing the same from turning.

3. The combination of a stationary sleeve, a revoluble sleeve, an angular member carried thereby and adapted to turn therewith, a locking lever mounted upon said stationary sleeve, and a locking member connected with said locking lever and encircling said angular member for the purpose of temporarily preventing said revoluble sleeve from turning.

4. The combination of a stationary sleeve, a movable sleeve concentric therewith, a second movable sleeve concentric with said stationary sleeve, a locking bar pivotally mounted upon said stationary sleeve, a revoluble member mounted upon said first-mentioned movable sleeve for the purpose of turning the same, and mechanism co-acting with said second-mentioned movable sleeve for holding said locking bar in such position as to prevent rotation of said revoluble member mounted upon said second-mentioned movable sleeve.

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

FREDERICK LUTHER MCGAHAN.

Witnesses:

FRED. P. MERTZ,  
C. A. GREENLEAF, Jr.