

No. 620,840.

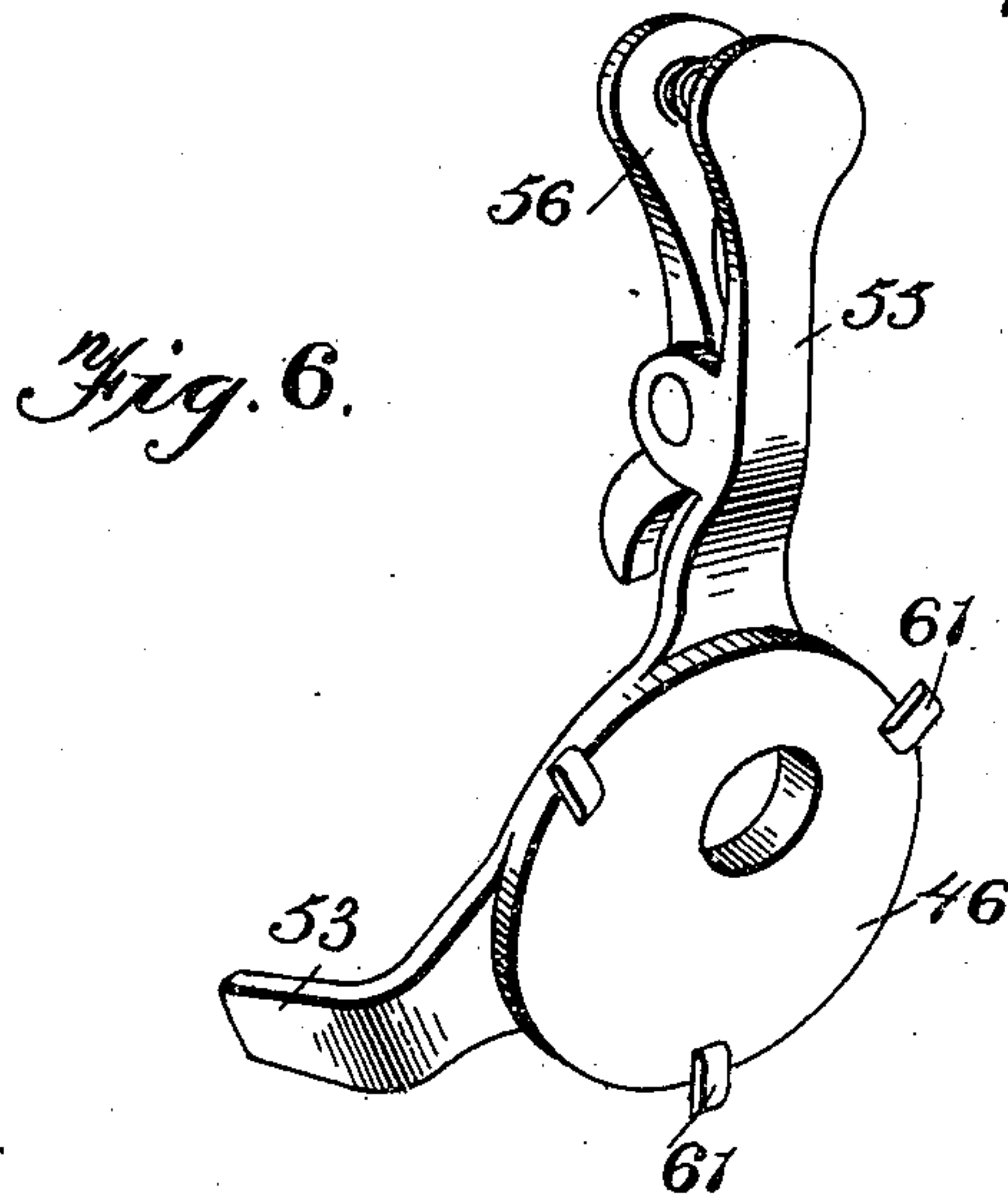
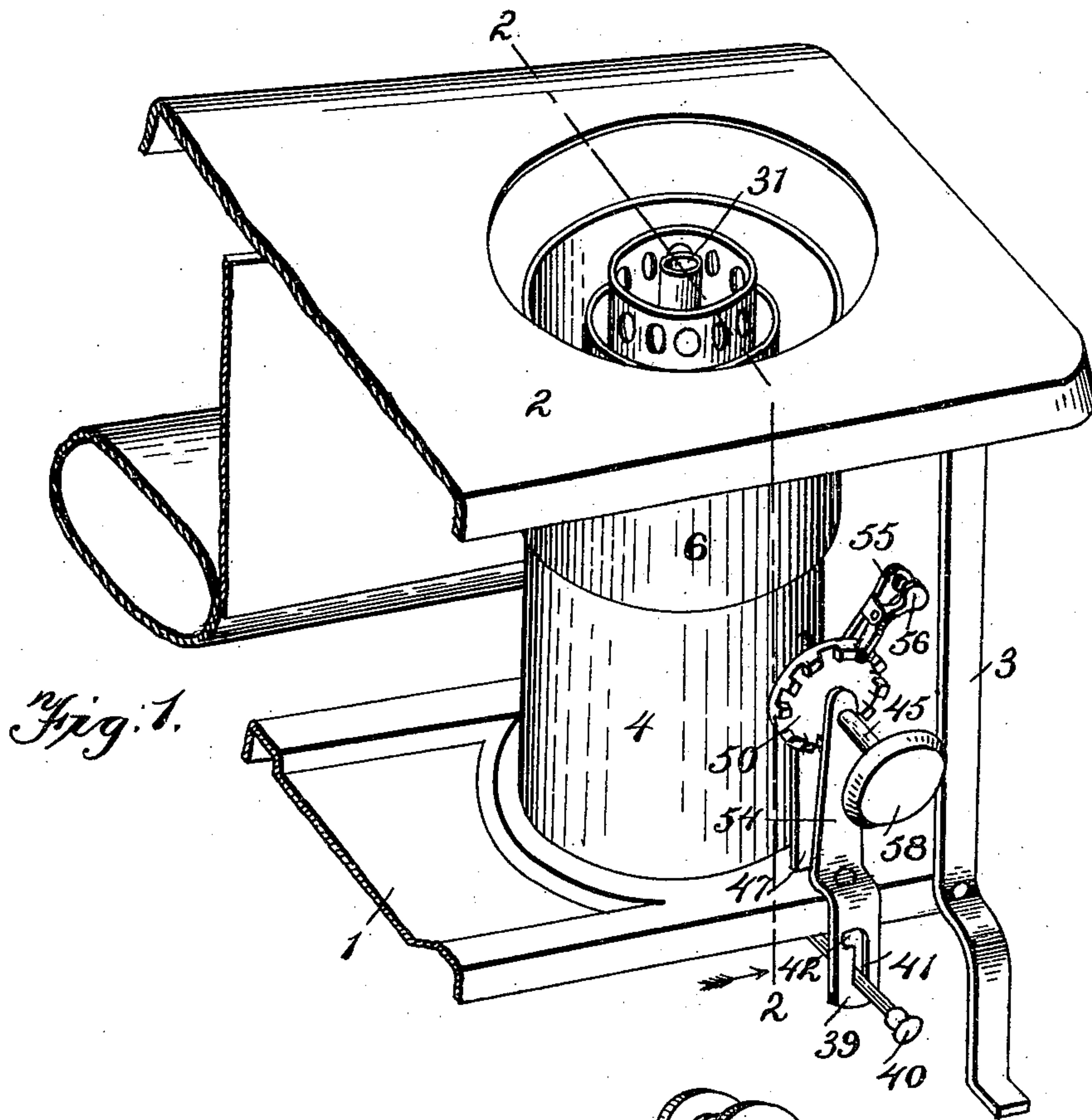
Patented Mar. 7, 1899.

A. J. BLACKFORD.
OIL BURNER.

(Application filed Dec. 21, 1898.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES

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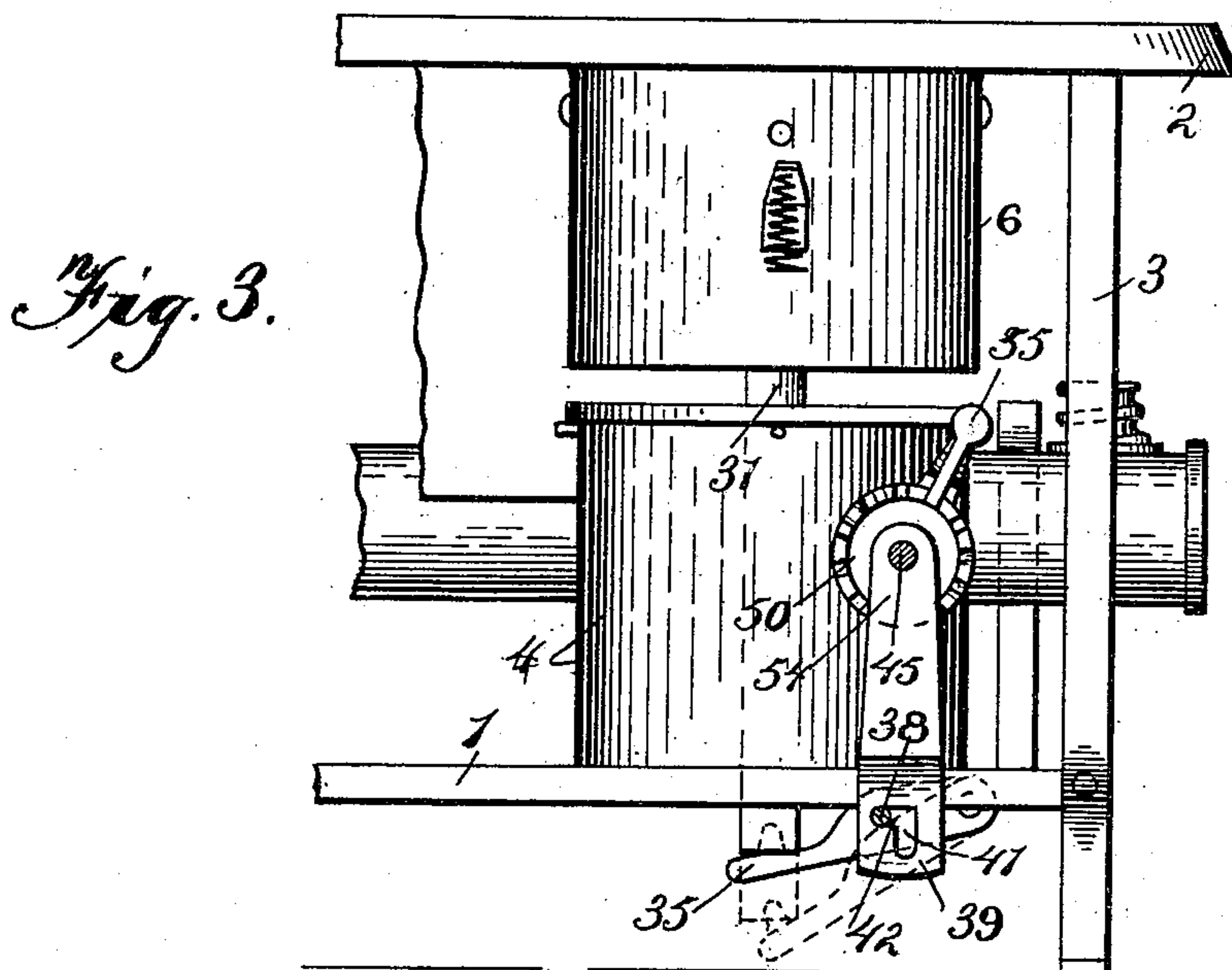
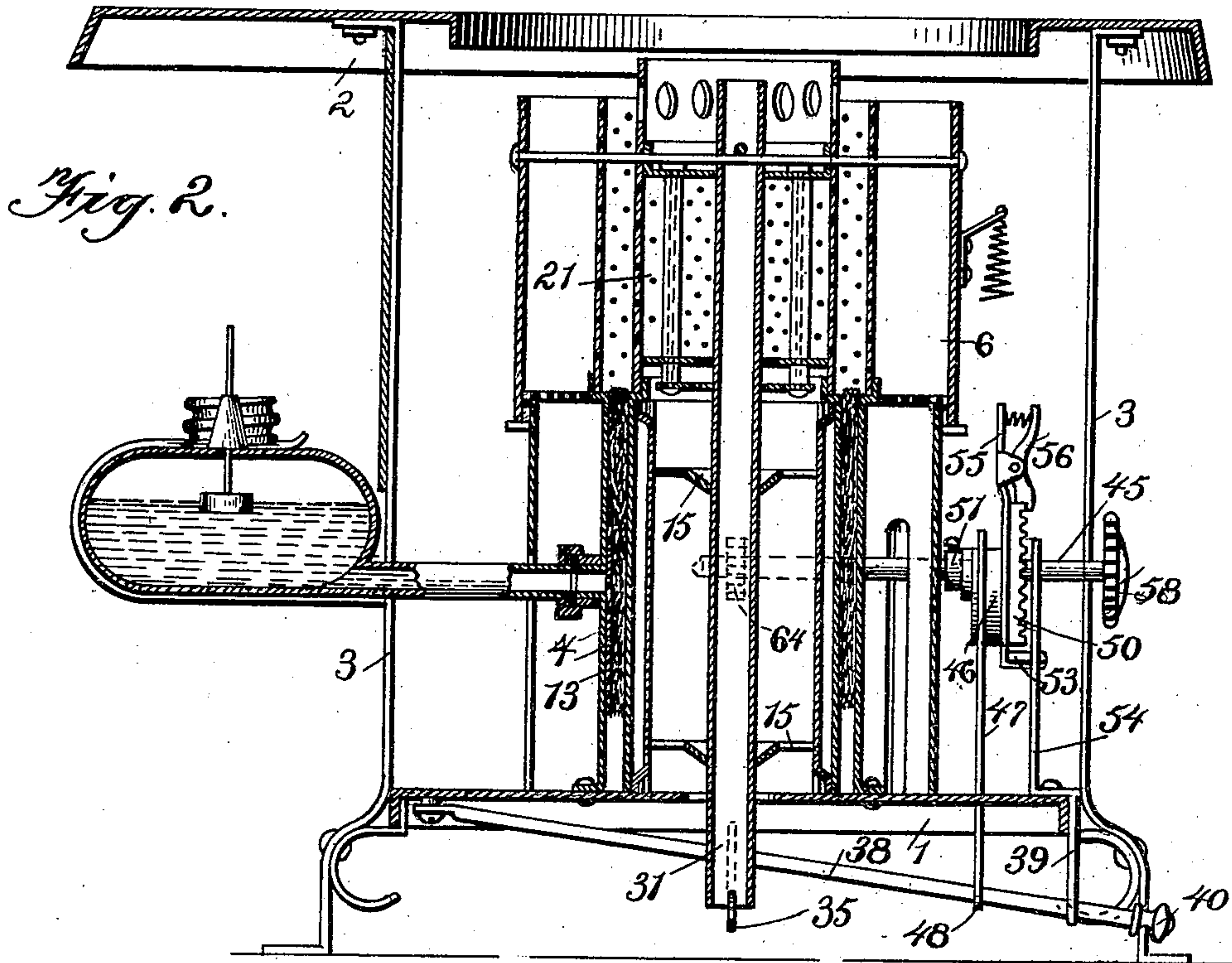
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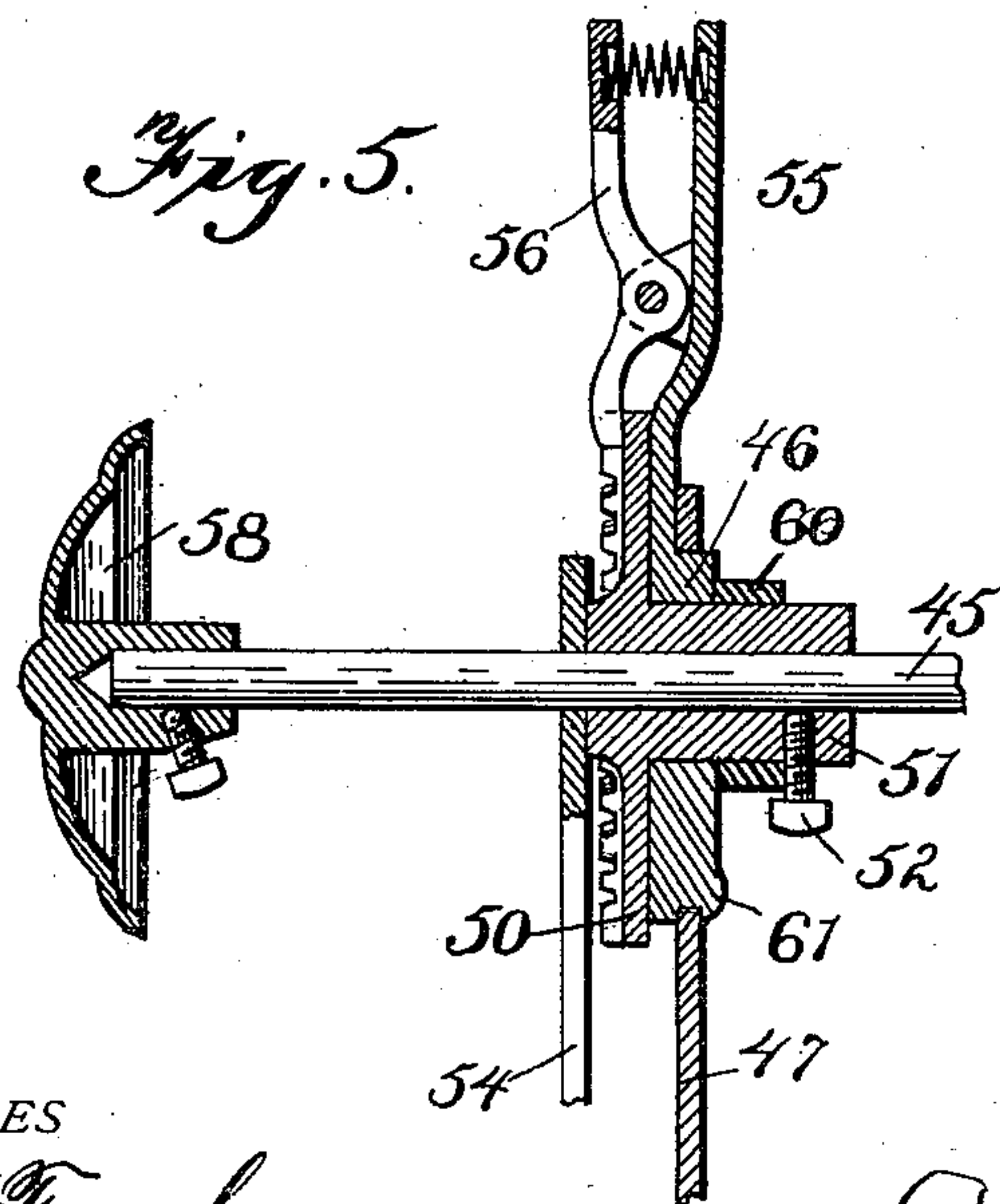
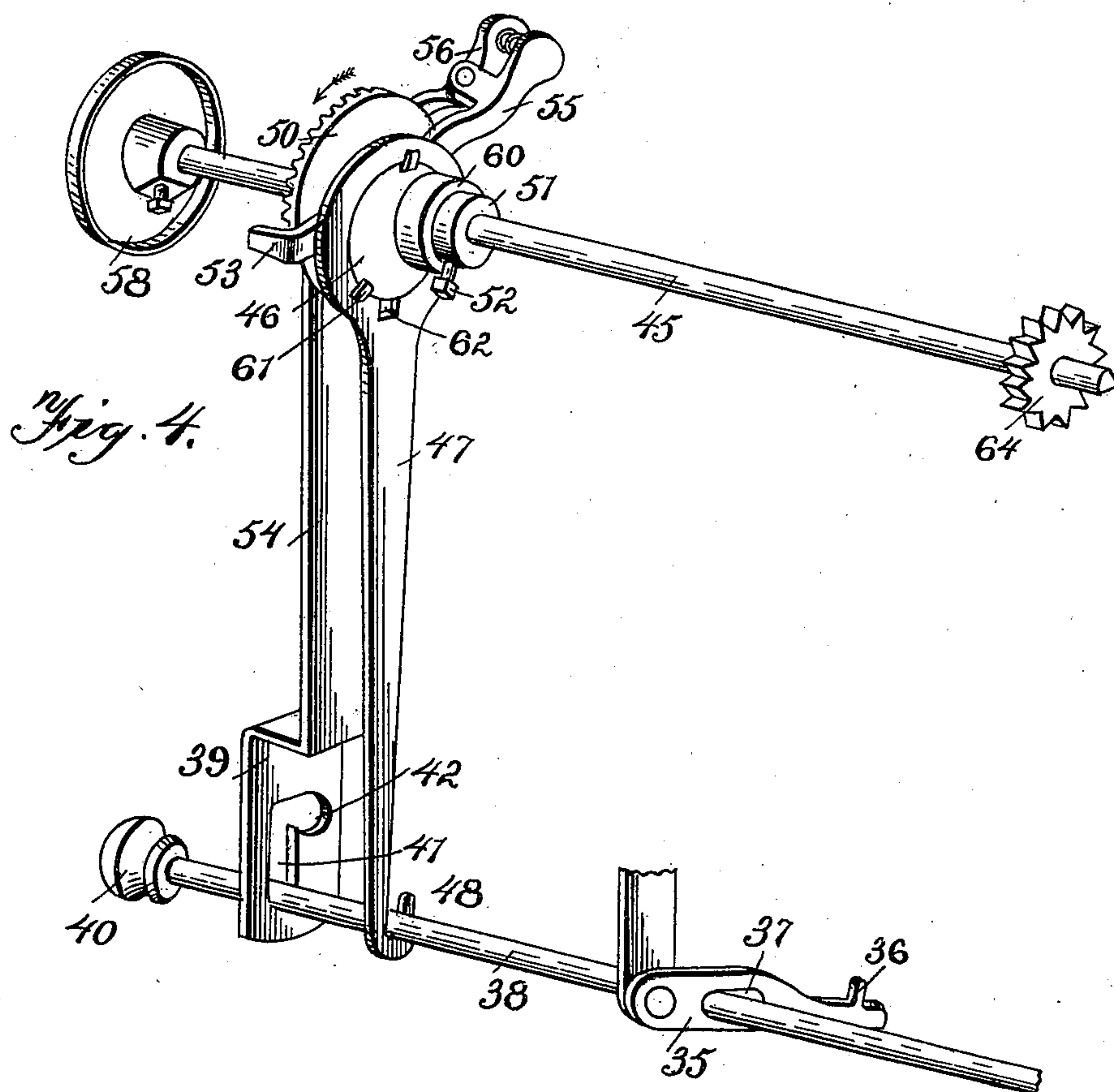
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(No Model.)

3 Sheets—Sheet 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

ATWELL J. BLACKFORD, OF CLEVELAND, OHIO.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 620,840, dated March 7, 1899.

Original application filed December 16, 1896, Serial No. 615,880. Divided and this application filed December 21, 1898. Serial No. 699,939. (No model.)

To all whom it may concern:

Be it known that I, ATWELL J. BLACKFORD, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Oil-Burners, of which the following is a specification, and which is a division of my application bearing Serial No. 615,880, filed December 16, 1896.

My invention relates to improvements in oil-burners, and pertains to that class of oil-burners wherein a movable combustion-section is used, all of which will be fully described hereinafter and particularly referred to in the claims.

The object of my present invention is to provide a burner having relatively separable generator and combustion sections and a flame-extinguisher, with means to separate the said sections and to set in motion the flame-extinguisher while the latter is being moved in a direction to extinguish the flame.

In the accompanying drawings, Figure 1 is a perspective view of a burner embodying my invention, being shown in position in a supporting-frame. Fig. 2 is a vertical sectional view of a burner, showing one form of burner having a movable combustion-section in connection with which my invention is adapted to be used, said section being taken on the dotted line 2 2 of Fig. 1 looking in the direction indicated by arrow. Fig. 3 is a front view of the burner, showing the combustion-section elevated for lighting by the lifting of the elevating-lever. Fig. 4 is an enlarged detached perspective view of the wick and combustion section raising mechanism. Fig. 5 is an enlarged vertical sectional view of the dial or notched wick-raiser, taken longitudinal its shaft. Fig. 6 is an enlarged detached perspective view of the cam for elevating the combustion-section and its attached catch and stop.

The subject-matter of this specification pertains solely to means for separating the generator and combustion sections when the flame-extinguisher is being moved in a direction to extinguish the flame, and no claim is made in this specification to the details of construction of the burner proper or to the lifting extension or its coacting elements inde-

pendent of the connection with the separating means and the flame-extinguisher, said construction and arrangement being the subject-matter of the parent application, Serial No. 615,880, of which this specification is a division.

Referring now to the drawings, 1 represents the lower or bottom portion, and 2 the upper or top portion, of an ordinary oil or gasolene stove frame, which is supported and connected by the end legs 3 in the usual or any other desired manner. The wick or generating section 4 is here shown as supported by the bottom 1 of the frame and between it and the top, the latter serving to support the object heated in the usual or any preferred style. The manner of supporting my generating-section, however, may be varied without affecting my present invention.

My invention is here shown in connection with what are known as "blue-flame oil-stoves," and in which 6 is the movable upper combustion-section, of any desired form or construction.

Attached to the wick in any desired manner is a wick-raising section 13, of the usual or any desired form.

The combustion-section 6 when in its operative position, as shown in Figs. 1 and 2, is supported by the generator or wick section 4. When it is desired to extinguish the flame, it is also desirable to raise this combustion-section from the generator-section to prevent the creeping of oil from the combustion-section, which when the burner is lighted will cause a disagreeable odor and smoke, as is well understood by those skilled in the art. The combustion-section is provided with a depending extension 31, which is guided and supported within the generator or wick section 4 by means of the spiders or guides 15, and this lifting extension 21 preferably passes down below the generator-section, as shown, and it is through the medium of this extension that the combustion-section is lifted by the mechanism which I will now describe and which forms the subject-matter of this specification irrespective of the particular construction of the generator-section or of the combustion-section, the construction of neither of which forms any part of my present invention.

A lever 35 is pivotally supported at one end in any suitable manner to the base 1 and has its opposite and free end engage the lower end of the lifting extension 31, and as the lower end of the lifting-section is either made tubular or provided with a cavity to receive the projection it serves to hold the free end of the lever in positive engagement with the lifting extension. This lever 35 is provided intermediate its ends with a longitudinal elongated opening 37, through which an operating rod or lever 38 freely passes, the inner end of the lever or rod 38 being connected in any suitable manner to the base 1 and its opposite end extending through a combined guiding and supporting plate 39, the projecting end 40 of the rod 38 serving as a handle, by means of which it is raised or lowered. The plate 39 is provided with a vertical slot 41, permitting the rod an up-and-down movement for elevating and lowering the combustion-section, the upper end of the slot 41 having a deflection or notch 42, adapted to receive the rod when it is elevated and support it in this position for holding the combustion-section in its elevated position, as illustrated in Fig. 3, to enable the burner to be lighted.

In this class of burners it is desirable to elevate the combustion-section, and thus carry the combustion-tube out of contact with the vaporizing-channels, for otherwise there will be an accumulation upon the combustion-tubes of the fluid from the wick, and when the burner is started there will be smoke and an unpleasant odor. I here provide means for accomplishing this automatically when the wick is lowered for extinguishing the burner, thus avoiding the necessity of depending upon the recollection of the operator to elevate the combustion-tubes after the wick has been lowered. This arrangement consists in providing an operative connection between the wick-raiser and the elevating mechanism, and it consists, essentially, in providing the wick-raising shaft with a crank or cam which is connected through a link or pitman with the elevating-rod. The form which I here show for effecting this automatic operation is the one I prefer and consists in providing the wick-raising shaft 45 with a cam 46, surrounded by the upper end of a pitman or link 47, the lower end of the pitman being provided with a hook 48 below and receiving the elevating-rod 38. This arrangement permits the independent operation of the rod 38 for raising the combustion-section to permit the lighting of the burner, while at the same time it automatically lifts the rod 38 when the shaft 45 is turned for lowering the wick. I also provide means for limiting the distance the wick shall be elevated, said means being capable of adjustment as the wick is used. This means consists in providing the wick-raising shaft 45 with an index or notched disk 50, the notches being preferably upon the outer face of the disk, as clearly shown. This disk is provided with

an elongated collar 51, surrounding the shaft 45 and extending inward. The inner end of the disk-collar is provided with a clamping-screw 52, by means of which the disk is made fast to the shaft. The cam 46 is placed loosely upon the collar 51 and is provided with a stop-arm 53, said arm being essentially L-shaped, as shown, so that when the cam has been rotated in the direction indicated by arrow in Fig. 4 for lowering the wick the said arm 53 will engage an extension 54, said extension here shown as being a part of the slotted plate 39. This extension 54, in addition to serving as a stop for the arm 53, also serves as a support for the extending end of the shaft 45. The cam 46 is also provided with an arm 55, carrying a spring-catch 56, the lower end of the catch adapted to engage the notches upon the dial-plate 50, thus serving to unite the cam to the disk, whereby when the shaft 45 is rotated the cam is rotated therewith.

In operation the wick is adjusted at the proper height for giving the best results, and then by pressing the upper end of the catch 56 to release its lower end from the dial-plate the cam is rotated until the arm 53 abuts against the extension 54, when a releasing of the catch will cause it to engage the dial-plate, and thus lock the cam thereto. In this way, the wick being adjusted, the operator turns the shaft 45 by the handle 58 until the arm 53 stops the rotation thereof by engagement with the extension or standard 54. The rod 38 is then lifted, carrying with it, as before described, the combustion-section, and then moved laterally into the deflection 42, which serves to hold it elevated while the burner is being lighted. Under ordinary usage the wick will not need adjustment for several weeks. When, however, it becomes necessary to further raise the wick on account of its being consumed, the cam is released from the dial-plate through the medium of the catch, as before explained, when the shaft 45 can be rotated independently of the cam sufficiently to make the proper adjustment. The proper adjustment being made, the arm 53 is carried in contact with the standard 54, and the burner is again ready for several additional weeks' usage without further adjustment. This arrangement not only always insures the wick being turned to the proper point without any attention on the part of the operator, but also insures the automatic locking of the cam (which carries the stop) to the dial-plate after the adjustment has been made. This is a great advantage over a device for locking the stop 53 which requires a separate operation, or, in other words, a lock which is not automatic, for otherwise the operator may forget to effect the locking of the stop after the adjustment has been made, which will permit the free and independent rotation of the wick-raising shaft, and the loss of time and trouble necessary to make the adjustment, in addition to the probability of turning the wick too high, causing

a smoking of the burner. In addition to this should the servant fail to set the non-automatic locks heretofore used, there is danger of inexperienced persons turning the wick so high as to produce an alarmingly high flame and even to turn the wick-rack out of contact with the rack-wheel, so that it cannot be again lowered without a downward pressure upon the rack. Under this very condition of affairs with the non-automatic locks the wick soon becomes fired its entire length, making a tremendous flame difficult to extinguish, and it has been necessary to remove the stove bodily from the house. With an automatic lock this cannot occur, for as soon as released it locks with the notched dial and prevents the wick being turned so high as to carry the rack out of contact with the rack-wheel, and the wick can be lowered at will. The catch 56 serves as a stop when the shaft is rotated in the direction for lowering the wick by engagement of its lower end with the standard 54.

While I here show the stop 53 as being carried by the cam for effecting the raising of the combustion-section when the wick is lowered, it will be understood that the stop may be used independent of the cam and serve its purpose. In other words, the use of a notched plate and a stop carrying a means for interlocking with the plate may be used upon a burner without the other mechanism for effecting the raising of the combustion-section. So, also, the mechanism for effecting the raising of the combustion-section may be used independent of the stop. In the present instance I have shown a simple way of combining the two results, although, as above stated, they may be independently used.

A sleeve or washer 60 is placed between the clamping-screw 52 and the cam for holding it in contact with the inner face of the dial-plate, by means of which when the screw 52 is removed the parts may be separated. The means for holding the pitman upon the cam consists of providing the cam with a plurality of projecting lugs 61, the strap of the pitman being between the lugs and the arms 53 and 55 of the cam. The wall of the strap of the pitman is provided with a notch 62, sufficiently large to permit one of the lugs to pass therethrough and which enables the strap to be placed upon and removed from the cam. At the opposite or inner end of the shaft 45 is provided a toothed wheel 64, which engages the wick tube or section 13 in the usual manner.

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

1. The combination of a vapor-generator, a combustion-section, a flame-extinguisher, means adapted to separate the generator and combustion sections, and to be set in motion by the flame-extinguisher while the latter is being moved in a direction to extinguish the flame.

2. The combination of a wick-tube, a wick-raiser, a combustion-chamber, and a train of mechanism adapted to transmit power from the wick-raiser to the combustion-section and to raise the latter when the wick is lowered.

3. The combination of a wick-tube, a wick-raiser, a combustion-section, a train of mechanism adapted to transmit power from the wick-raiser to the combustion-section, and to raise the latter when the wick is lowered, and regulating means compensating for the consumption of the wick.

4. A burner comprising a wick-tube, a wick-controller, a movable commingling-chamber, a member adapted to lift the commingling-chamber and to be set in motion by the lowering of the wick, substantially as described.

5. A burner comprising a wick-tube, a wick-controller, a movable commingling-chamber, a member adapted to lift the commingling-chamber, the controller when lowered forcibly actuating the lifting member and raising the commingling-chamber, substantially as described.

6. A wick-burner comprising separable wick and combustion sections, a wick-controller, and a connection between the wick-controller and one of said sections for separating the sections, substantially as described.

7. A wick-burner comprising vertically-separable wick and combustion sections, a wick-controller, and a vertically-movable lifting member connecting said controller and movable section, substantially as described.

8. A wick-burner comprising a wick-section, a combustion-section vertically movable in relation thereto, a rotating wick-controller, and an operative connection between said controller and movable section, substantially as described.

9. A wick-burner comprising a wick-section, a combustion-section vertically movable in relation thereto, a rotating wick-controller operating a vertically-movable member by the rotation of the controller, and an operative connection between said vertically-movable member and said movable section, substantially as described.

10. A wick-burner comprising a wick-section, a combustion-section vertically movable in relation thereto, a rotatable wick-controller carrying a cam, and a connection between said cam and said movable section, substantially as described.

11. A wick-burner comprising a wick-section, a combustion-section vertically movable in relation thereto, a horizontal lifting member for said movable section, a wick-controller, a connection having one end connected with the controller and its opposite end connected with the horizontal member to permit the latter to have an independent vertical movement, substantially as described.

12. A wick-burner comprising a wick-section, a combustion-section vertically movable in relation thereto, a wick-controlling shaft,

an adjustable stop for said shaft, and an operative connection between said movable section and said shaft, substantially as described.

13. A wick-burner comprising a wick-section, a combustion-section, the latter vertically movable in relation to the wick-section, a wick-controlling shaft, a stop connected adjustably with said shaft, a cam carried by one of said members, and a connection between
10 said cam and the movable section, substantially as described.

14. A wick-burner comprising a wick-section, a combustion-section, the latter vertically movable in relation to the wick-section,
15 a wick-controlling shaft, a cam loose upon said shaft, a locking member carried by the cam for locking it to the shaft, a shaft-stop carried by said cam, and a connection between the cam and said movable section, substantially as described.
20

15. The combination of a vapor-generator comprising a wick-tube and a wick therein, a superimposed combustion-chamber, a wick-raiser, means for separating the vapor-generator and combustion-chamber, said means
25 adapted to be set into operation by the wick-raiser while the latter is being moved in the

direction to extinguish the flame, and means for compensating for the combustion of the wick. 30

16. The combination of a vapor-generator, a superimposed combustion-chamber, a flame-extinguisher, and means for separating the vapor-generator and combustion-chamber adapted to transmit motion from the flame-extinguisher to the combustion-chamber while
35 the flame-extinguisher is being moved in a direction to extinguish the flame.

17. A wick-burner comprising a wick-section, a combustion-section, the latter vertically movable in relation to the wick-section,
40 a wick-controlling shaft, a cam loose upon said shaft, a locking member for connecting the cam and the shaft, and a connection between said cam and the movable section, substantially as described. 45

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ATWELL J. BLACKFORD.

Witnesses:

LYMAN H. REED,
T. M. SOURBECK.