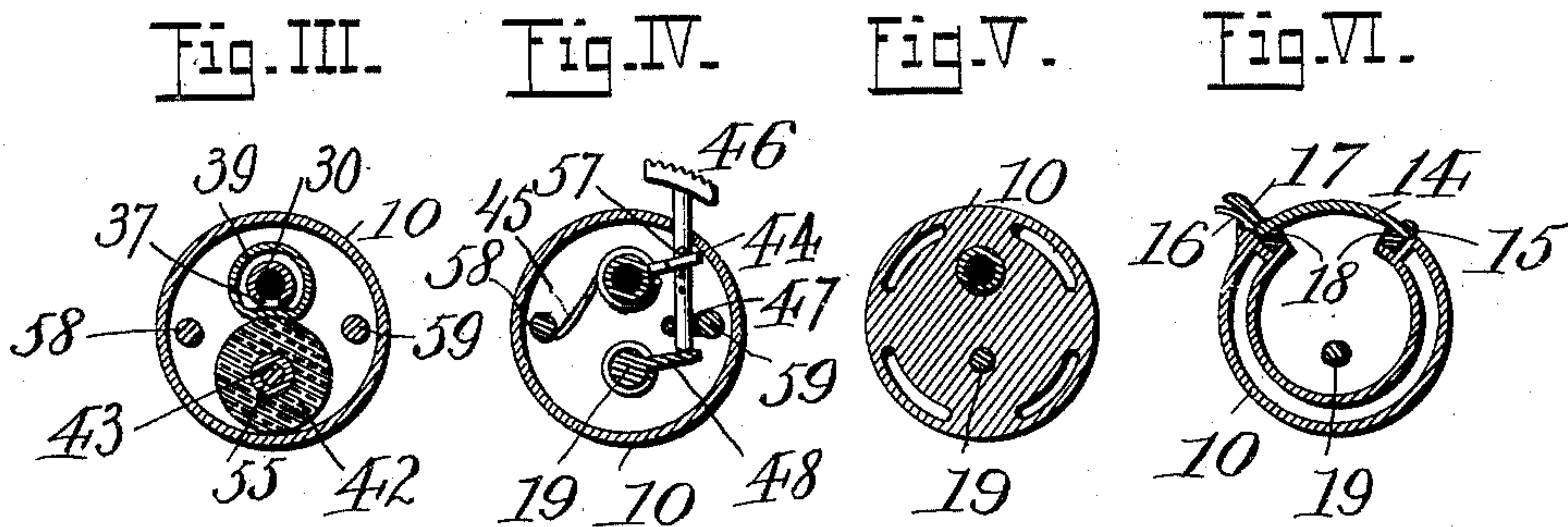
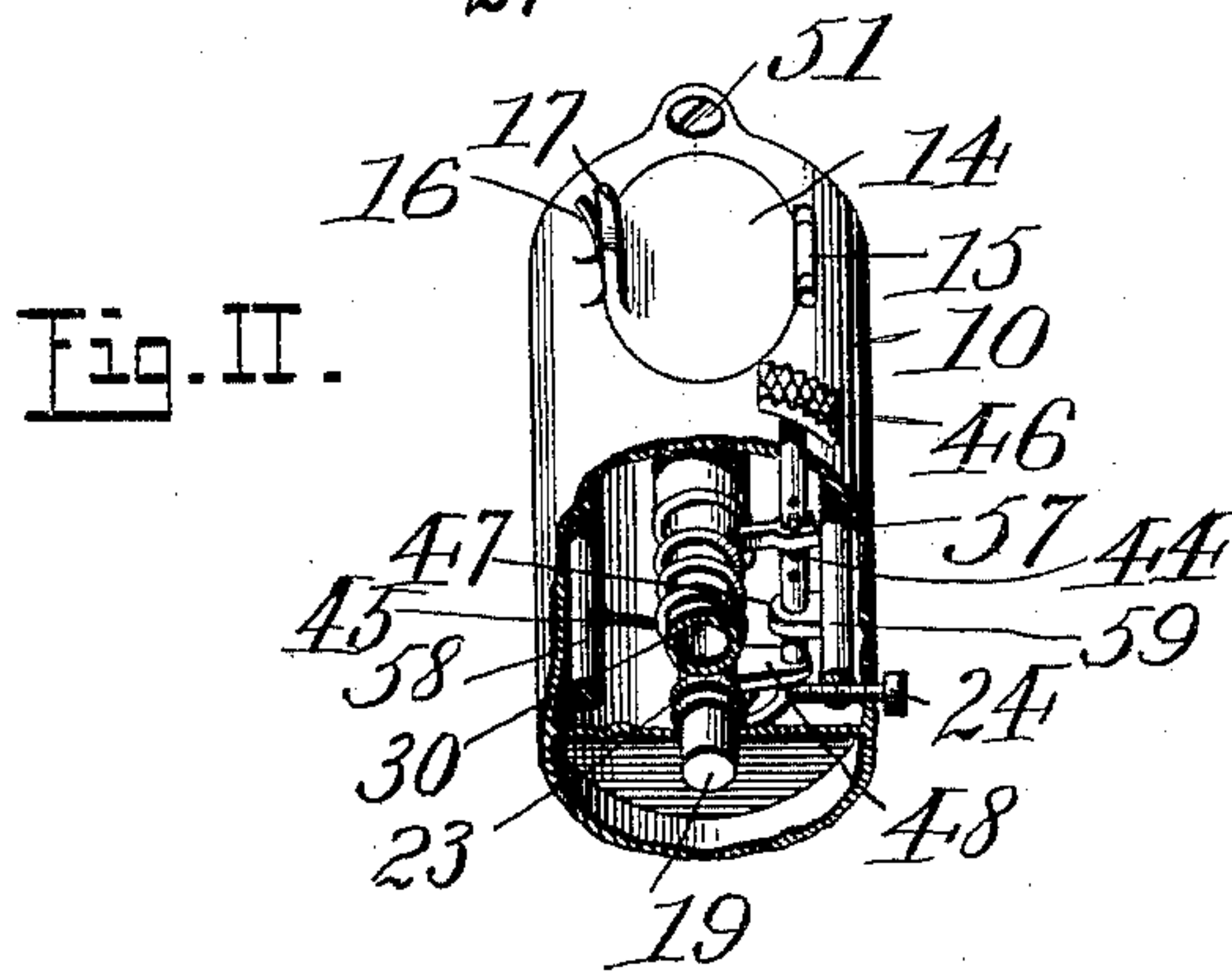
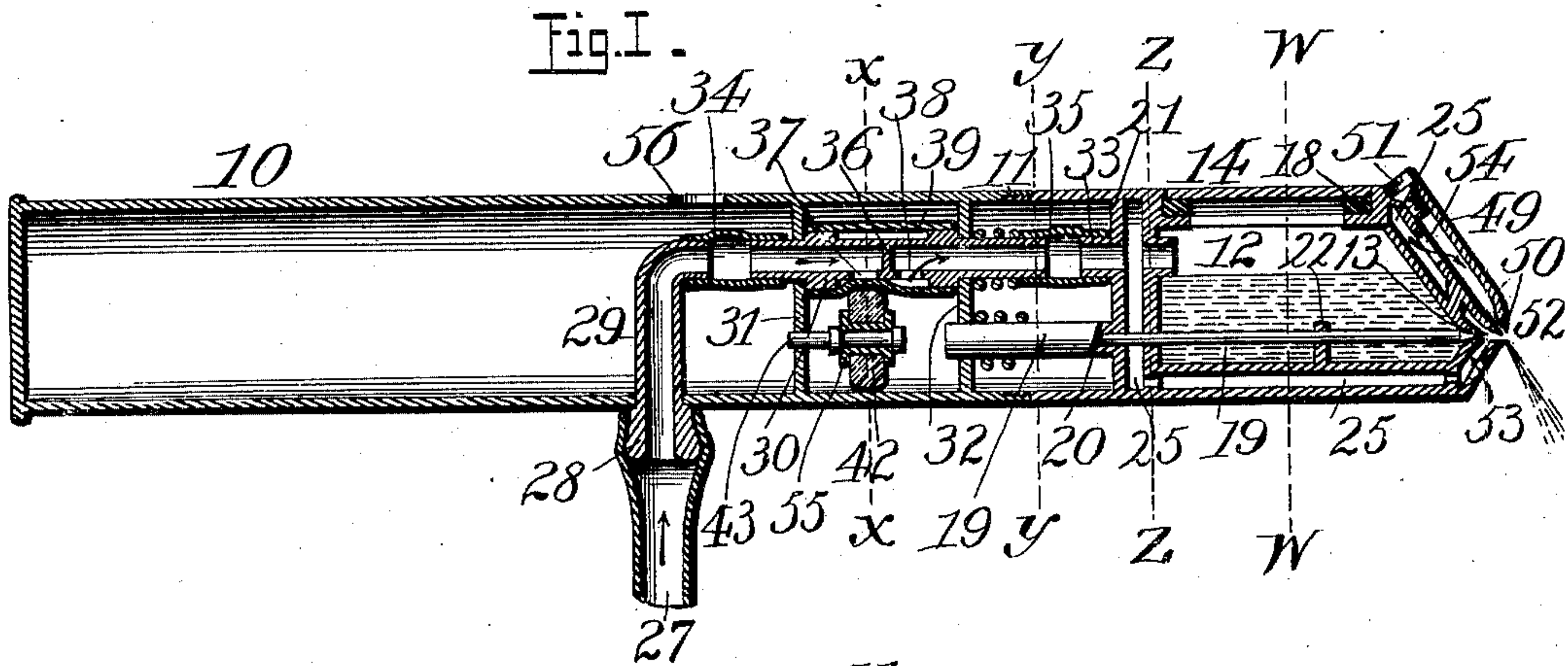


(No Model.)

C. L. BURDICK.  
AIR BRUSH.

No. 474,157.

Patented May 3, 1892.



Witnesses

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# UNITED STATES PATENT OFFICE.

CHARLES L. BURDICK, OF CHICAGO, ILLINOIS.

## AIR-BRUSH.

SPECIFICATION forming part of Letters Patent No. 474,157, dated May 3, 1892.

Application filed July 23, 1891. Serial No. 400,435. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES L. BURDICK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Air-Brushes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of devices whereby india-ink, water-colors, and other fluid paints may be applied in the form of spray to paper or canvas in making pictures; and its object is to provide a large convenient receptacle for the fluid paint, the said receptacle being in the form of a handle or implement convenient for use in applying the paint, and to provide the same with means whereby the operator may control both the amount of delivery of paint and the force of the air-blast acting thereon by a simple movement of the finger, and, further, to provide means for drawing in fresh air by the action of the jet of compressed air, whereby a more mellow effect may be produced in the distribution of the paint.

To this end my invention consists in the construction and combination of parts forming an air-brush, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I is a longitudinal section of an air-brush according to my invention. Fig. III is a transverse view, partly in perspective. Fig. II is a transverse section at the line *x*, Fig. I. Fig. IV is a transverse section at the line *y*, Fig. I. Fig. V is a transverse section at *z*, Fig. I; and Fig. VI is a transverse section at *w*, Fig. I.

10 represents the body of the instrument, which is made in tubular form, and for convenience of approaching its inner parts it may be made in two portions screwed together at 11.

12 represents the reservoir for containing paint. The delivery end of this reservoir is formed with a point to one side of the center of its body and perforated at 13 to form a delivery. A large inlet-opening at one side of the reservoir is provided with a lid 14, which is hinged to the shell 10 at 15, and pro-

vided with a spring-catch 16 to engage a nick in the shell, and with a projecting thumb-piece 17, whereby the catch may be disengaged and the lid opened.

18 represents a ring made of rubber or other suitably elastic material to serve as a packing to close the lid-joint against the escape of fluid paints when under pressure.

19 is a needle passing through the rear end of the reservoir and resting its conical point in a conical seat shaped in the delivery opening of the reservoir, which delivery and seat said needle fits and closes. This needle is enlarged in its rear end and provided with a slanting or screw-shaped shoulder 20, adapted to fit against a similarly slanted shoulder of the partition 21, which is fixed across within the shell.

22 is a stud projecting within the reservoir and perforated to serve as a slideway to guide the needle 19 accurately into its seat in the delivery 13.

23 is a spiral spring wound around the large portion of the needle 19 and acting to press it forward against the shoulder 20 and the delivery 13 to normally close it.

24 is a set-screw, against which the end of spring 23 rests.

25 is an air-passage nearly surrounding the reservoir 12 and occupying the space between the rear end 26 of the reservoir and the partition 21.

27 is a flexible tube or pipe, through which compressed air may be admitted to the instrument.

28 is a nipple to which the tube is attached, and 29 is an elbow-shaped pipe communicating therewith.

30 is a cylindrical pipe fitted to revolve in bearings 31 and 32, fixed within the shell 10.

33 is a nipple projecting from the partition 21 and communicating with a passage 25. The pipe 30 is located in line of the delivery end of the pipe 29 and the receiving-nipple 33, with a considerable space left between the adjacent ends. One of the said spaces is covered by a pipe 34, of rubber or other flexible material, connecting the pipes 29 and 30. 35 is a similar rubber pipe flexibly connecting the cylinder 30 with the nipple 33.

36 is a partition in the cylinder 30, stopping the passage through it.



37 is an outlet from the passage at one side of the partition, and 38 is an inlet to the passage at the other side of the partition.

39 is a tube of rubber or other flexible material, loosely surrounding the cylinder in the region of the said outlet and inlet and secured to the cylinder at the points 40 and 41.

42 is a roller of rubber or other elastic material journaled to revolve upon a stud 43 and provided with a suitable bushing 55. The periphery of this roller bears against the rubber pipe 29 and presses it against the cylinder 30 over the outlet 37, holding the said outlet normally closed. The cylinder 30 is provided with an arm 44, whereby the cylinder may be oscillated to move one way or the other to bring the outlet 37 away from the roller 42, whereby the outlet is opened and communication is established between the two portions of the cylinder, and 45 is a spring wound around the cylinder, whereby the same will be returned to its normal position, with the outlet 37 closed when pressure is removed from the arm 44.

46 is a finger-key passing through the shell 10 and a guiding-bracket 47 and bearing upon the said arm 44, and at the same time bearing upon another arm 48, which projects from the side of the needle 19.

49 is a nozzle fixed to the slanted or conical end of the shell 10, with its delivery end 50 pointing obliquely across the line of delivery 13 of the reservoir, and 51 is a screw in the rear end of the nozzle-tube, whereby the tube may be opened for cleaning purposes. The conical ends of the shell 10, surrounding the conical end of the reservoir 12, is formed as a narrow outlet 52 in direct line of the delivery 13, and 53 represents an inlet-opening, through which free air may be drawn into the passage 25 by the compressed air moving through the said passage and be discharged therewith at the outlet 52.

54 is an outlet from the passage-way 25 into the nozzle 49. There may be openings in the shell at any convenient points—such as 56—for the purpose of putting interior parts together, &c.

The operation is as follows: By pressing upon the thumb-piece 17 the catch 16 will be disengaged, and the lid 14 may be swung open to admit paint to the reservoir 12. Then the lid may be closed and the nipple 38 be connected with the flexible pipe 27, which communicates with any suitable source for supplying compressed air, and the instrument is ready for use. Now the operator, taking the shell in his hand, may guide the nozzle about over the picture as he pleases, pressing with his finger upon the key 46 more or less, to cause the delivery of paint to be heavy or light at will, and the nozzle pointing obliquely across the line of delivery of the paint drives the paint in fine spray more evenly than I have found it possible to do with a nozzle surrounding the paint-delivery only. In the present case the passage 25 ends in a

nozzle-like aperture surrounding the paint-delivery opening 13, and not only tends to draw out the paint on the injector or ejector principle, but it mingles therewith fresh air drawn in at the aperture 53, and so subdivides the paint that it cannot be delivered in blots, and this effect is further aided by the air coming freely and unmixed from the nozzle across the line of the paint-delivery. A pin 57 and a series of holes therefor in the key-rod 46 to engage the arm 44 enables the operator to adjust the cylinder action relative to the needle action, so as to open the air-valve 37 sooner or later relative to the opening of the paint-delivery 13, whereby a variety of effects may be produced.

58 and 59 represent rods for holding the frame-work connected with the shell in place, and the rod 58 serves as a support, against which the spring 45 may act. The roller 42, being elastic, will continue to change its point of contact and act like a cushion to press the flexible pipe 39 upon the outlet 37, to serve as a valve therefor, even though the elasticity of the pipe 39 were to fail.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. The combination, in air-brushes, of a shell in handle form tapered to a point and perforated at one end, a reservoir within the shell and separated therefrom by an air-passage, an opening through the shell and into the reservoir, a lid hinged to the shell to cover the said opening, and an elastic packing-ring around the opening to close the lid-joint, substantially as described.

2. The combination, in an air-brush, of a shell conical and perforated at one end, an ink-reservoir correspondingly conical and perforated within the shell, and an air-passage between the two, an air-supply pipe communicating with the said passage and with the rear portion of the said reservoir, a valve for the forward or delivery end of the said reservoir, another valve for the said air-supply pipe, and a single finger-key connected with both of the said valves, substantially as described, whereby a single movement of the operator's finger may control both the delivery of ink and the air-blast.

3. The combination of a tapered and perforated air-brush shell, a tapered and perforated reservoir therein, a needle fitted to close the last-named perforation and to slide longitudinally in attachments to the shell and having an enlarged portion with a slanting or screw-shaped shoulder, the said attachment adjacent to the said shoulder being slanting or screw-shaped to correspond thereto as a seat, a spring acting upon the needle to hold it against the said seat, an arm projecting to one side of the needle, and a finger-key extending to said arm from outside of the shell, substantially as described.

4. The combination of an air-brush shell having a delivery at one end, a reservoir



within the shell and having a corresponding delivery, an air-passage leading into the reservoir, whereby its contents may be ejected through the said delivery, and a nozzle connected with the air-passage and located to direct its delivery of air in a line crossing the line of delivery from the reservoir, substantially as described.

5. The combination of an air-brush shell, a reservoir for paint therein, the shell and reservoir having each a delivery and the said deliveries being in a line, a nozzle having a delivery in a line crossing the line of delivery of the said shell and reservoir, and air-passages connecting the said shell, reservoir, and nozzle deliveries with a source for supplying compressed air, substantially as described.

6. The combination of an air-brush shell having a delivery and a nozzle fixed to one side of the shell, with its line of delivery crossing the line of delivery of the shell, and means for supplying compressed air to both deliveries, substantially as described.

7. The combination, in an air-brush, of an ink-reservoir having a delivery-nozzle and a valve therefor, an air-supply pipe having a delivery-nozzle adjacent to the said reservoir-nozzle, and a passage from the air-supply pipe to the reservoir at a distance from its nozzle, a valve for the air-supply pipe, and a finger-key fitted to actuate both of the said valves, substantially as described.

8. The combination of an air-brush shell and a reservoir therein, having each a delivery-aperture, an air-tube communicating with passages leading thereto and ending in a nipple, another air-tube entering the shell and ending in line of the said nipple, another tube or pipe journaled to revolve in bearings in line of and between the said nipple and the second-named air-tube, flexible tubular connections between the said revolving tube and adjacent tube ends, a partition closing the revolving tube at its center, an aperture in the side of the revolving tube at each side of the partition, a flexible pipe around the revolving tube, loosely covering the region of the side aperture therein and tightly secured at its ends upon the tube, and a closer fitted to press the flexible pipe upon one of the said side apertures as a valve therefor, and means for revolving or rocking the said journaled tube, substantially as described.

9. The combination, in air-brushes, of a

shell or handle having a delivery-aperture, a supply-pipe connected with the handle, a communicating nipple within the handle, a tube journaled to revolve in the handle between the supply-pipe and nipple and connected with each by a flexible pipe and having a central partition and a side aperture at each side thereof, a flexible pipe loosely covering the said tube over the side apertures and secured to the tube beyond the apertures, a roller journaled upon a stud fixed in the handle to bear upon the said flexible covering-pipe, and means for revolving the journaled pipe, substantially as described.

10. The combination, in an air-brush, of the following elements, forming a valve therefor: a tube journaled to revolve in a handle and having a central partition, with a side aperture at each side thereof, a flexible pipe loosely covering the tube over the side apertures and fixed closely upon the tube beyond the apertures, a roller journaled in the handle to revolve against the said flexible pipe and bear it upon the journaled tube to close one of the holes therein, and means for revolving the journaled tube, substantially as described.

11. The combination, in air-brushes, of a handle containing a reservoir having a delivery-aperture, a needle fitted and provided with a spring to close said aperture, and further provided with a screw-thread or a slanting shoulder, and a bearing fitted thereto, and a rotating arm, an air-supply tube fitted with a valve to be opened and closed by revolving the tube, an arm upon the tube, and a key fitted in the handle and connected with both the said arm upon the needle and arm upon the tube, and means, substantially as described, for adjusting one of the arm connections with the key, as and for the purpose specified.

12. The combination, in air-brushes, of an adjustable paint-delivery, a nozzle directing an air-blast across the line of said delivery, and an aperture into the side of the air-passage, into which free air may be drawn by the action of compressed air, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES L. BURDICK.

Witnesses:

PARM S. DE GRAFF,  
DANIEL H. DONOVAN.