

Dec. 19, 1939.

S. REPASY

2,184,020

WATCH AND JEWELRY CLEANING MACHINE

Filed June 14, 1937

2 Sheets-Sheet 1

Fig. 1.

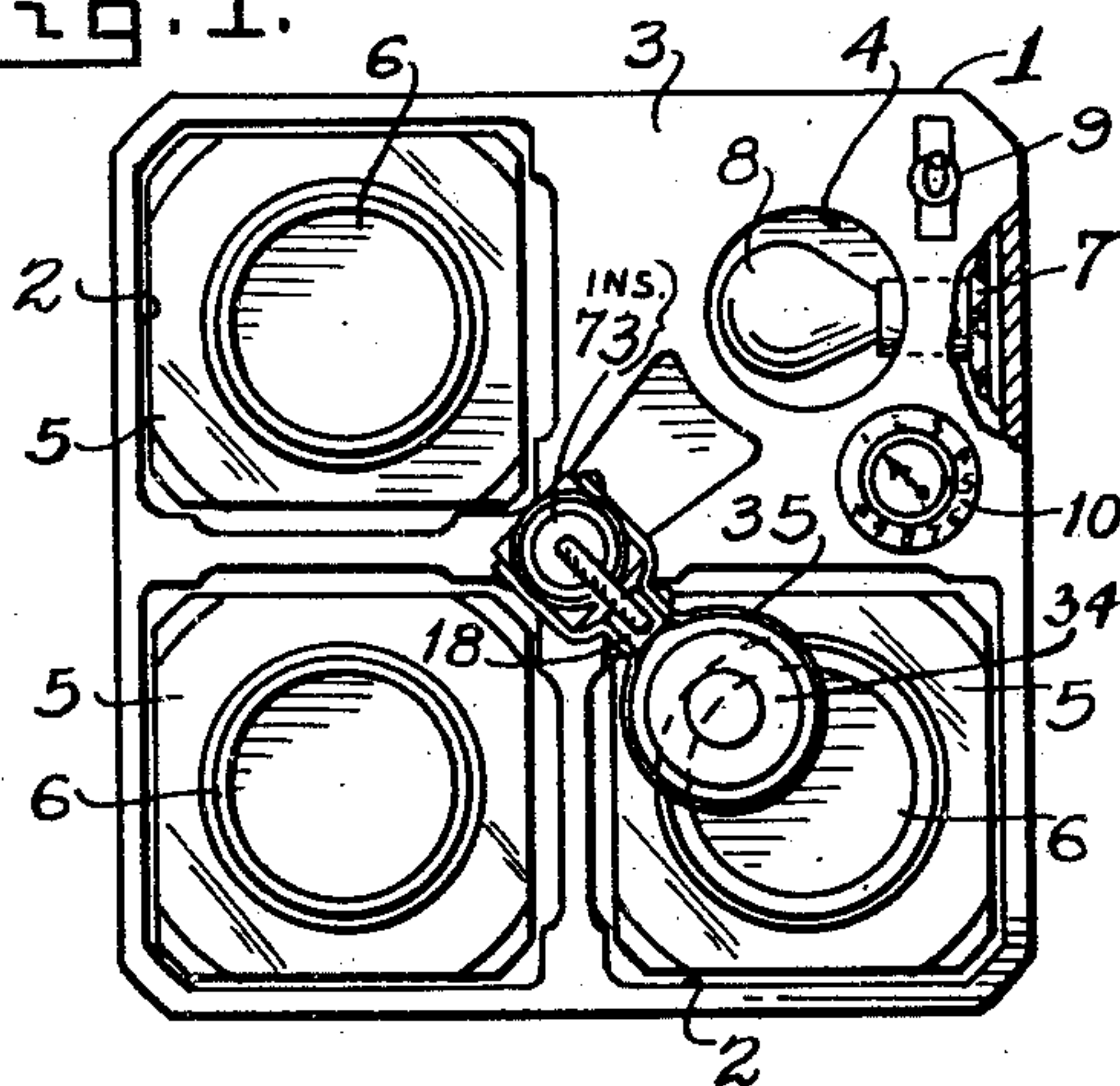


Fig. 3.

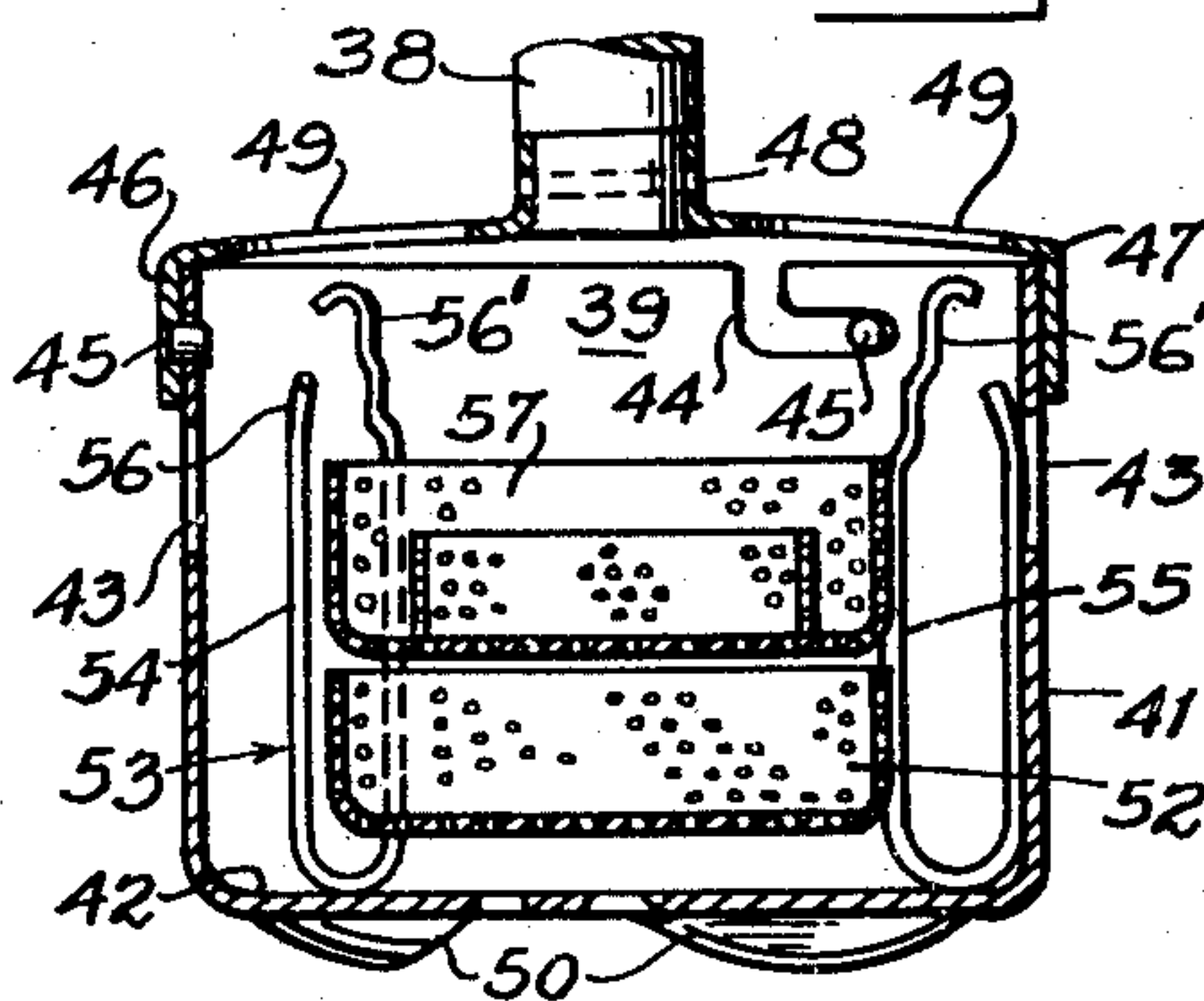


Fig. 2.

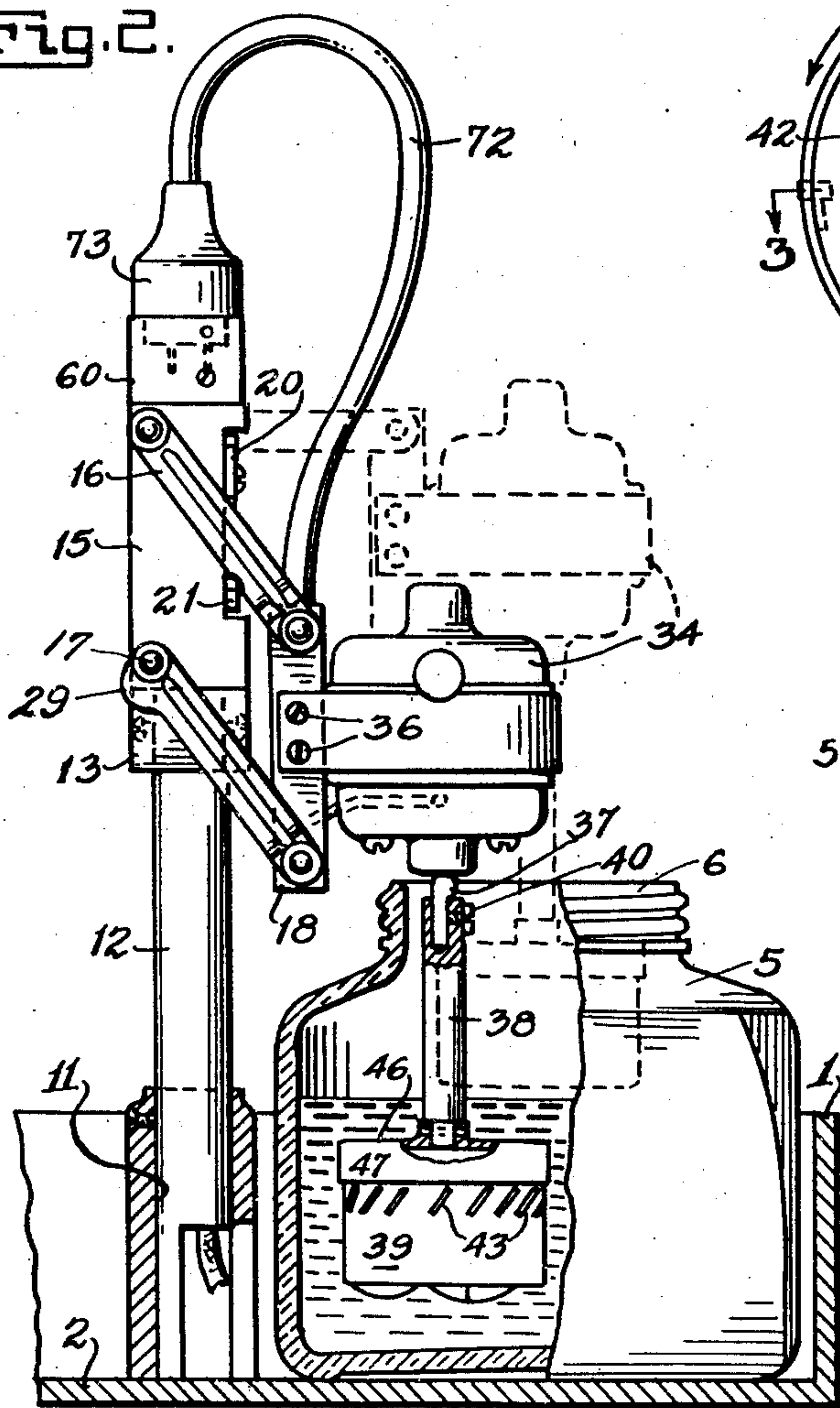


Fig. 4.

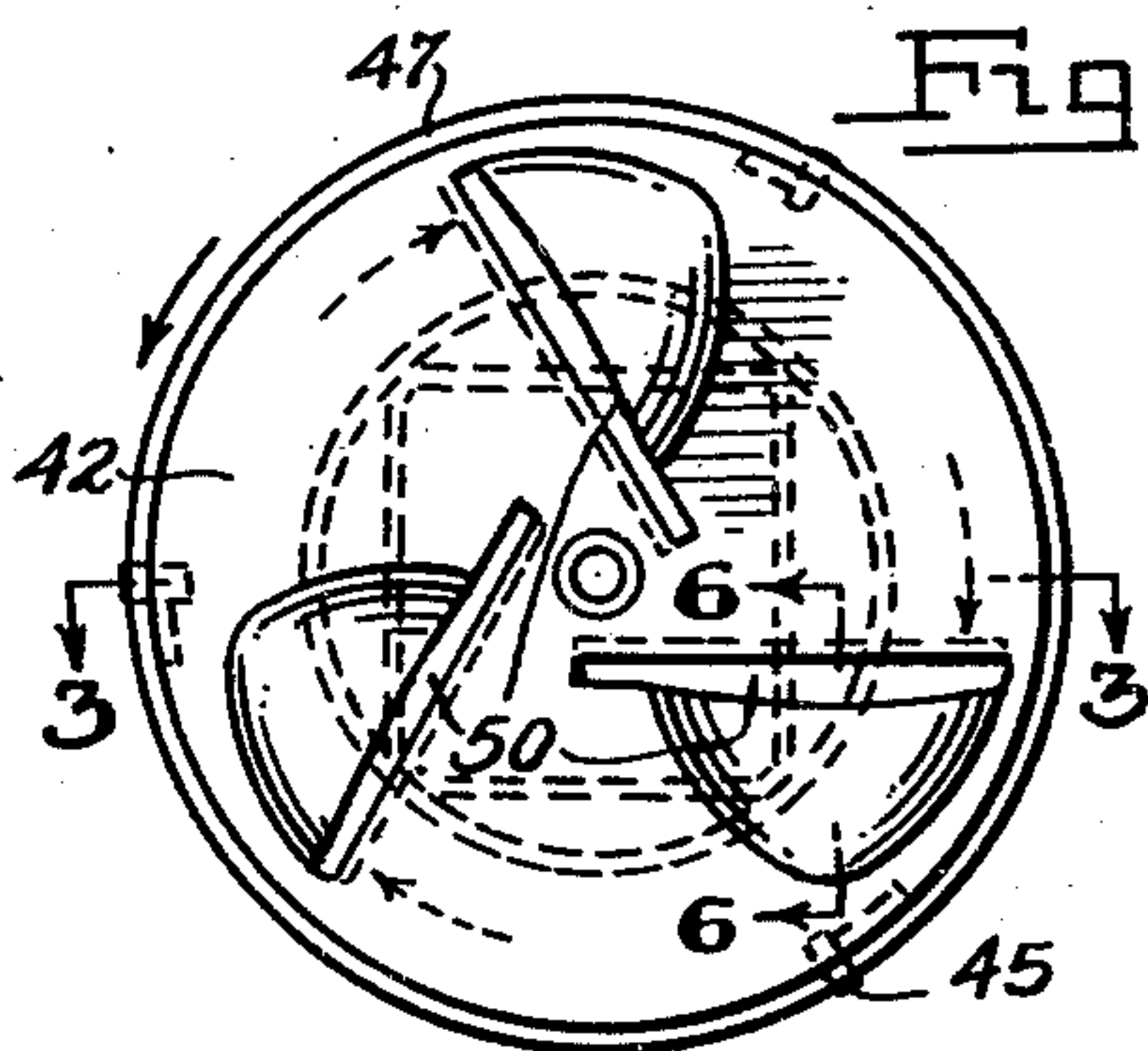


Fig. 5.

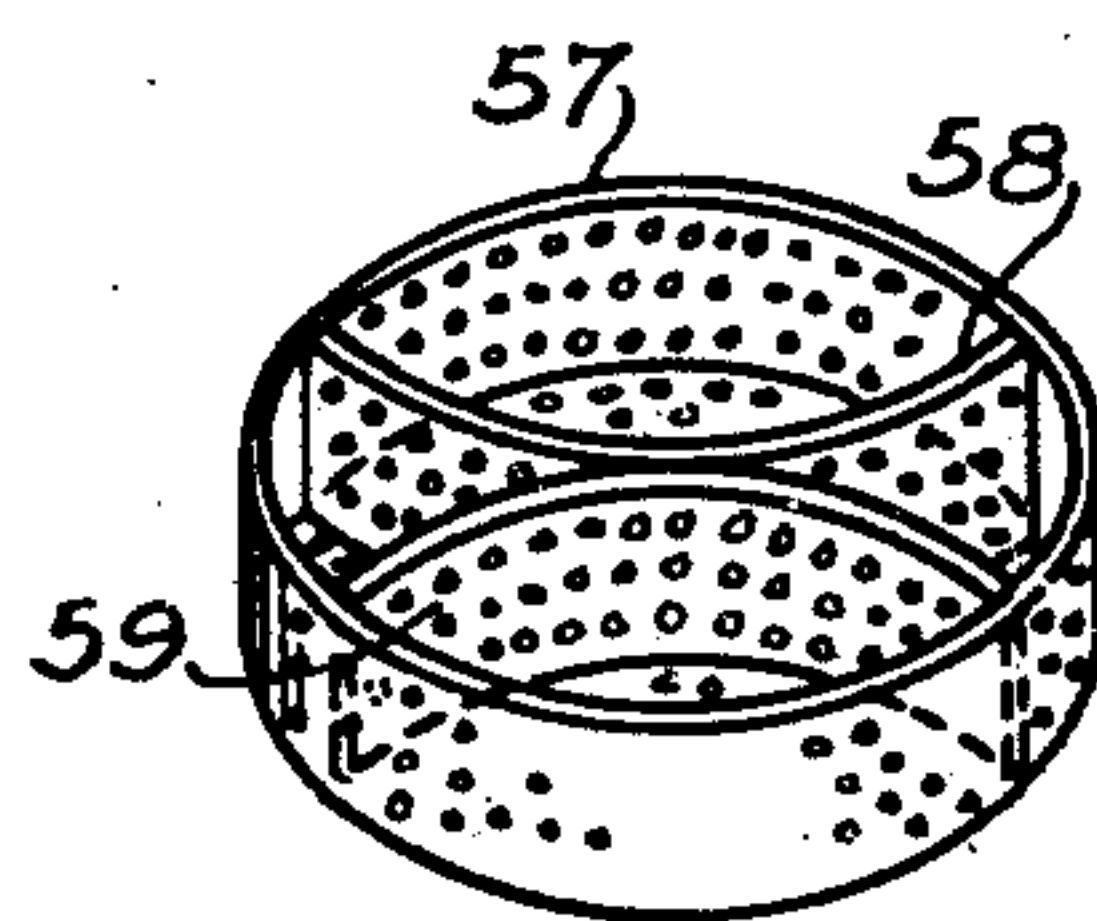
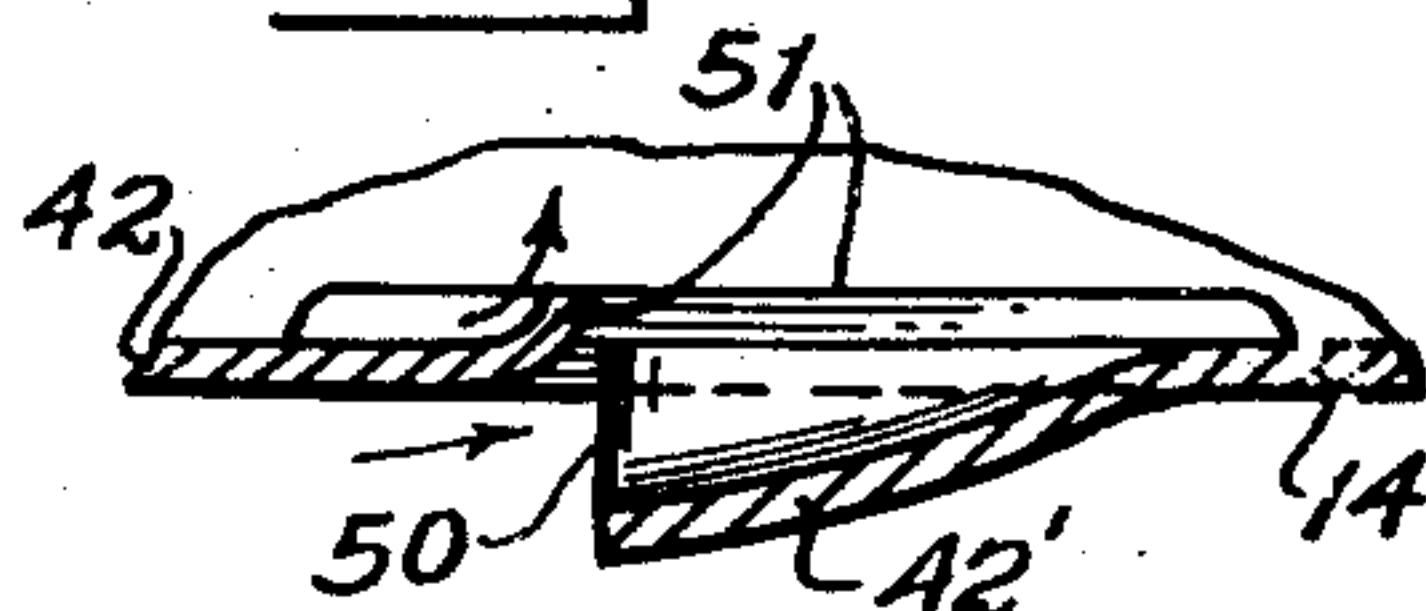


Fig. 6.



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Fig. 7.

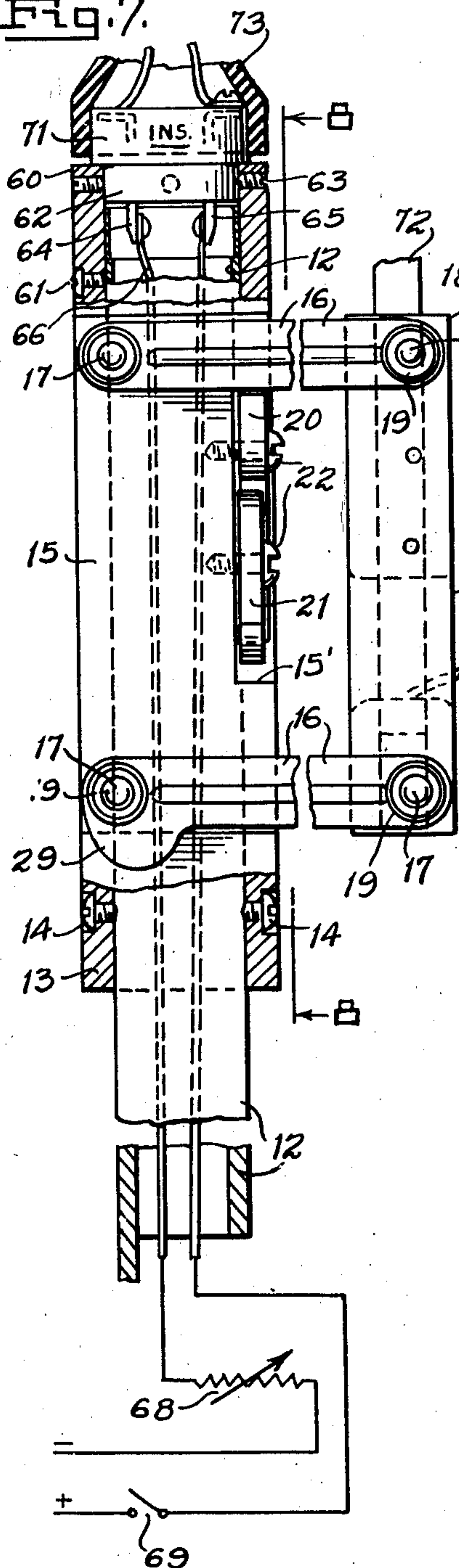


Fig. 8.

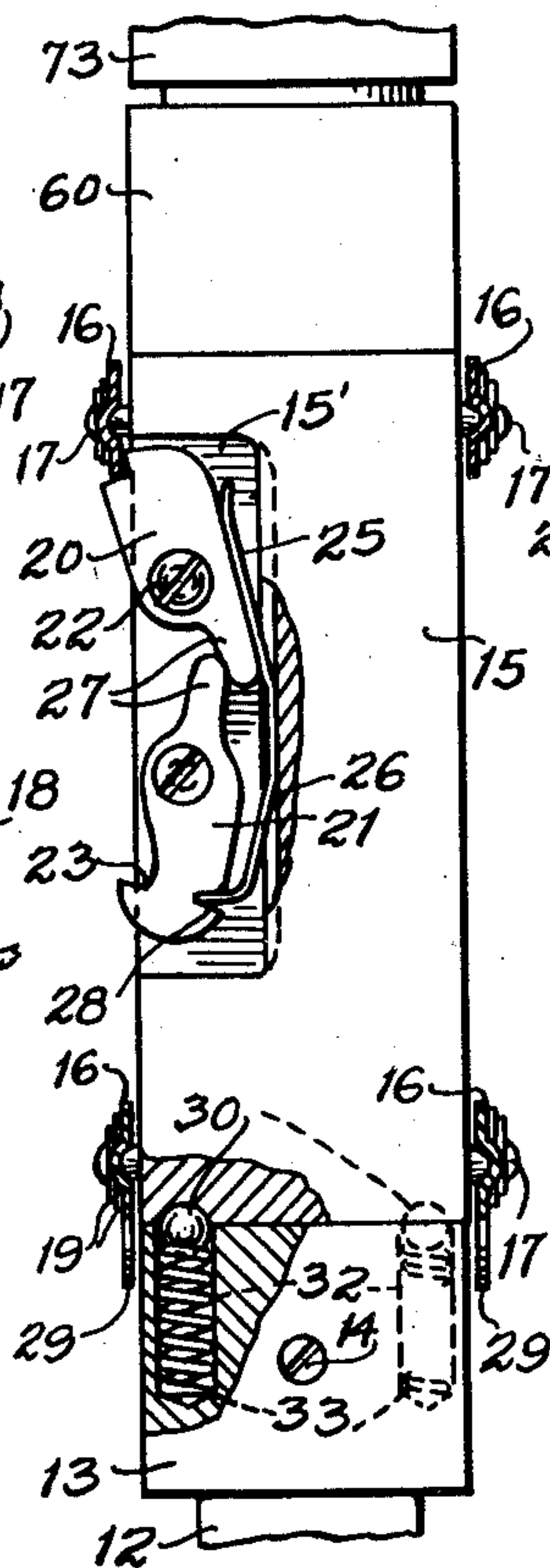


Fig. 9.

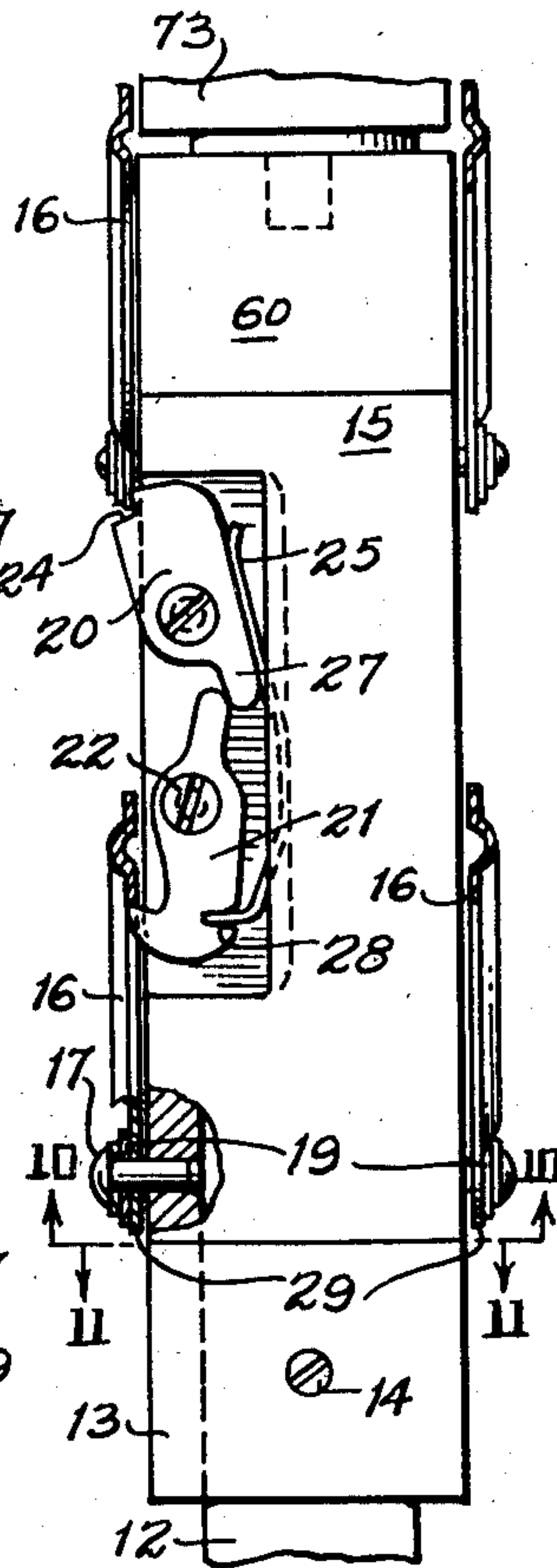


Fig. 10.

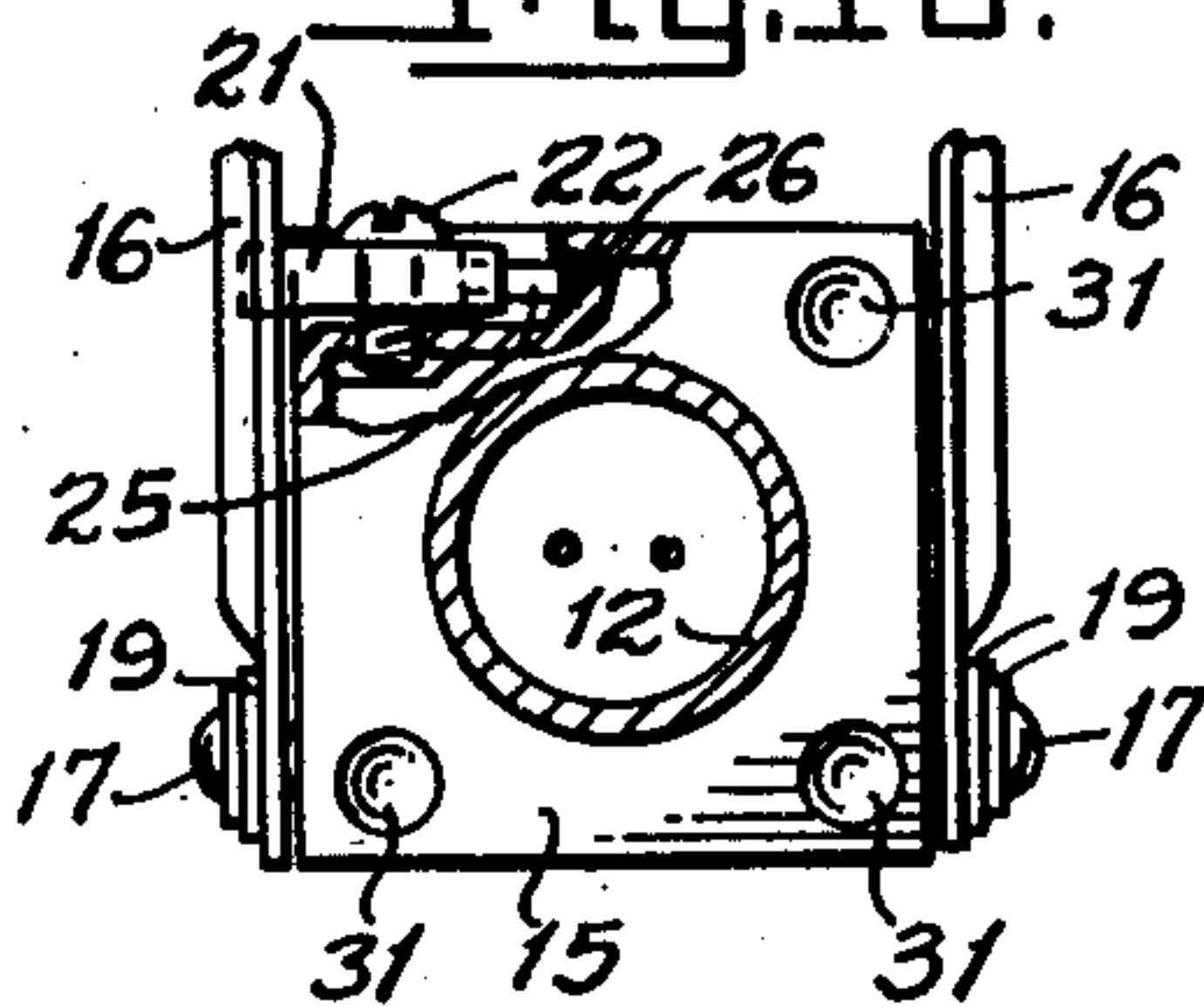
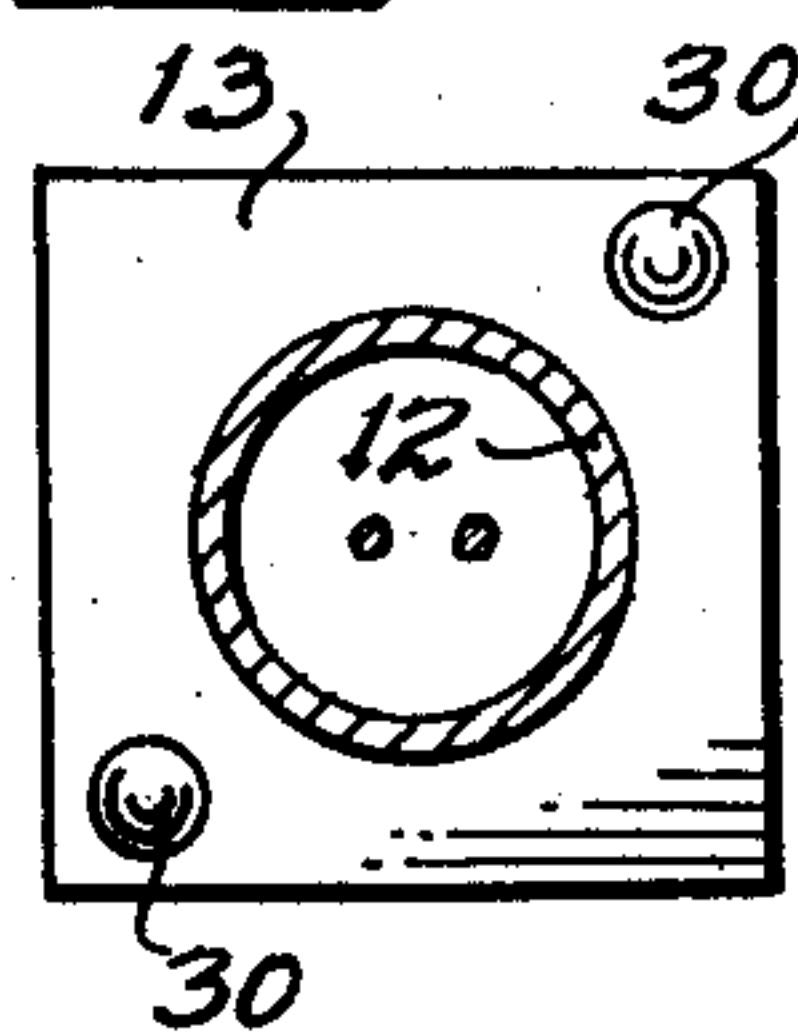


Fig. 11.



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## UNITED STATES PATENT OFFICE

2,184,020

## WATCH AND JEWELRY CLEANING MACHINE

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Application June 14, 1937, Serial No. 148,116

7 Claims. (Cl. 141—1)

This invention relates to devices for efficiently and dependably cleaning and drying machines and parts of machines, particularly, small machines and parts such as clocks, watches and the like. Such a device, however, may also be used to advantage for cleaning and/or drying most any article having corners, dents and crevices which are ordinarily hard and difficult to clean by hand and further, requires long and tedious efforts with doubtful results.

The device to be presently described, includes a series of rectangular containers, each having a particular cleansing fluid of predetermined qualities designed to clean and treat the article to be conditioned. Agitating means, including a receptacle to hold the machine and/or parts, is inserted in the container having the primary cleaning or conditioning fluid. An electric motor or other power device rotates the agitating means and receptacle at a controlled rate of speed causing the fluid to penetrate every nook and crevice of the article. The receptacle is so placed in the angled container in such a manner as to avoid a vortex or whirlpool in the fluid and thus, assure complete washing of the article and removal of all foreign substance.

Such an operation is repeated in other containers having other fluids to condition the article or articles being processed. Little or no care is necessary during the entire treatment.

After the last fluid treatment, the receptacle containing the parts being cleaned, may be shifted over a heating unit for complete drying of its contents.

Special means are provided for lowering and raising the receptacle and also for switching it from container to container with ease and safety. The receptacle has means to accommodate and protect the articles being cleaned and, also means to effectively cause a large stream of fluid to pass through and around the articles.

An object of this invention is the provision of a device capable of thoroughly and safely cleaning articles.

Another object is the design of an agitating device capable of entering a container and swinging to one side thereof.

Another object is the arrangement of a receptacle, which holds articles to be cleaned, with a turn-post, the turn-post being free to rotate when the receptacle is in raised position but fixed when the receptacle is in a lowered position.

And still another object is the provision of a receptacle and agitating unit pivoted so as to

move to a plurality of vertical fixed positions to perform a certain function in each position.

Applicant's invention may be practiced in a variety of forms but, for enabling one skilled in the art to make and use the same, one form of the invention is set forth in the accompanying drawings and description, it being understood that the drawings and description do not in any way limit the scope of the invention except as limited by the appended claims.

In the drawings:

Figure 1 shows a plan view of a form of the invention, parts being broken away for clarity.

Figure 2 shows an elevation with parts in section.

Figure 3, mostly in section, shows an enlarged view of an agitating receptacle with the internal removable frame and article holding baskets in place, the section being taken substantially on the line 3—3 of Figure 4.

Figure 4 is a bottom plan view of the agitating receptacle of Figure 3.

Figure 5 is a perspective of one of the article holding baskets.

Figure 6 is a detail in section taken substantially on the line 6—6 of Figure 4.

Figure 7 is a detail of the standard and swivel assembly, partly in section, also, the electrical wiring for operating the agitating motor.

Figure 8 is an elevation of the swivel assembly, partly in section, taken along the line 8—8 of Figure 7.

Figure 9 is a view similar to Figure 8 but showing the pivoted arms in uppermost latched position.

Figure 10 is a view, partly in section, taken along the line 10—10 of Figure 9, in the direction of the arrows.

Figure 11 is a view, partly in section, taken along the line 11—11 of Figure 9.

The numeral 1 of applicant's illustrated device represents a base or tray made of any suitable material such as metal, hard rubber, tough glass etc. The base is divided into a plurality of open top compartments 2 and a covered compartment 3, the cover thereof having a perforate portion 4. The compartments have a polygonal shape in plan view to accommodate similarly shaped containers 5 with wide mouths 6 adapted to be tightly covered by any suitable means. These containers may be of any substance appropriate to safely hold the fluids required for cleaning and treating purposes, glass being preferred in the present instance. One of the glass jars 5 may contain naphtha, benzine,



carbon tetrachloride or other fit solvent fluid for the prime cleansing bath of the articles to be treated. Another jar may contain a second bath for the articles, this bath being any of the fluids named, but, in a cleaner state to act as a rinsing solution to remove the viscous substance adhering to the articles from the first bath. The third jar may be merely an air chamber for removal of the surplus liquid, from the second bath, by centrifugal action or, this jar may contain a special drying agent to absorb the surplus liquid; such an agent may be any well known compound to absorb much of the liquid remaining upon the articles after the second bath.

The compartment 3 houses a lamp socket 7 fixed to one of the side walls of the compartment and an electric heating lamp 8 controlled by a suitable switch 9, wires from a source of electricity, alternating or direct current, connecting the socket and lamp. The lamp is located directly below the opening 4 so that the convective and radiant heat of the lamp will raise the temperature of any article placed above the opening. The cover of compartment 3 also supports a dial and current regulator 10, to be referred to later.

The center of the base 1 is provided with a compartment 11 in which is rigidly supported a tubular standard 12. A sleeve 13 having a rectangular outer surface, fixed to the standard by screws 14, supports an elongated sleeve or post 15. The post 15, and the sleeve 13 have cylindrical bores to snugly fit the standard 12; their rectangular outer surfaces being flush with one another. Means are provided, not shown, for oiling the surfaces between the standard and post so that the post will turn freely upon it.

Links 16 fluted for strengthening purposes are pivoted to opposite sides of a rectangular mobile post 18. Double washers 19 are provided between the head of the rivets or screws 17 and the flat surface of the swivel post 15 and the mobile post 18 so as to assure free operation of the mobile post in a vertical plane, always in parallelism with respect to the swivel post.

A recessed portion 15' of the swivel post provides a protected place to mount means to control the movement of the links and mobile post. Latch-elements 20 and 21 pivoted to the post 15 by screws or rivets 22 provide means for holding the links and the mobile post in certain predetermined positions. The mobile post is held in its upper-most position when one of the lower links is held in the notch 23 of the latch-element 21; in its median position when one of the upper links is held in the notch 24 of the latch element 20 and; in its lower-most position when one of the upper links is held in the notch 23. A ribbon spring 25, held in a recess 26 of the swivel post, continuously urge the notches of the latch-elements outwardly beyond the flat surface of the swivel post so as to always be in position to arrest the movement of the links. The outward movement of the notches is limited by their respective protrusions 27. To prevent the spring being displaced, one end of it is held in a slot 28 of the latch-element 21.

The lower link has a protruded portion 29 designed to prevent the swivel post turning upon the standard 12 when the mobile post 18 is in its lower-most or median position, turning being possible only when the post 18 is in its upper-most position. In this position, the mobile post 18 may swing completely around the standard. Means is provided, however, to releasably hold

the swivel post in certain predetermined positions so that the mobile post 18 can be stopped over a predetermined portion of one of the jars 5 or over the compartment 3. This is accomplished by means of spring pressed balls 30 which enter cavities 31 when in alignment therewith. Four ball cavities are provided, one in each corner of the post 15, diagonally opposite pairs cooperating with balls for arresting movement of the swivel post so as to stop the post 18 in a certain predetermined position over each of the four compartments in base 1. Only two balls, however, are provided as being sufficient to cause smooth operation of this feature. Bores 32 having coil springs 33 are provided as shown in the sleeve 13. Springs 33 continuously urge their respective balls upwardly so that the balls will automatically be forced into the cavities of the swivel post when in alignment therewith.

An electric motor 34, of suitable character and size preferably housed in a gasproof case, is rigidly held to the mobile post 18 by a metallic band 35 which is held to the post by rivets or screws 36. The shaft 37 of the motor is fixed to an extension 38 of an article holding and agitating device 39; a screw 40, threaded into the motor shaft and passing through the extension, holds the two rigidly together.

The receptacle 39 is preferably a cylindrical metallic box having a side wall 41 integral with a circular bottom 42. The side wall 41 has formed therein open slits 43, arranged preferably as shown, to provide a large number of egress passages, for liquid that may be in the receptacle. This wall also has bayonet slots 44 which each receive a pin 45 fixed to the flange 46 of a cover 47 so that the receptacle may readily be removed from the cover. The cover is fixed to the motor shaft, as shown, by a rivet 48 or other suitable means, to enable both to turn together; the shaft turning however, in a direction to always urge the pin 45 toward the blind end of the slot 44. The cover 47 is also provided with openings as indicated at 49. These openings also act as egress passages for the liquid being circulated through the receptacle 39.

The bottom 42 of the receptacle has openings 50 formed by slitting portions of the bottom and pressing the bottom 42' on one side of the slit to make a sizable opening in the form of a bellied louver. Such an opening is designed to scoop liquid into the container 39 and force the liquid through the receptacle and out the openings 43 and 49. At the threshold of each louvered opening 50 a portion of the bottom 42 is raised to form a lip 51 protruding inwardly of the receptacle. This lip has a plurality of functions; it permits a wider opening at 50 and, it also forms a curved baffle within the receptacle to aid the scooping action of opening 50 and also materially aid in thrusting upwardly the back wash liquid within the receptacle.

An open top perforated metallic basket 52, rectangular or round, is removably provided within the receptacle 39. This basket, like other parts of the equipment, should consist of material not injurable by the liquids employed in the jars 5, copper and bronze being suitable in many instances. To center the basket and hold it tightly in place, spring wires 53 are attached to the sides of the basket in any manner, preferably soldering. The wire is bent U-shape with extensions 54 and 55, extension 54 frictionally engaging the sides 41 of the receptacle. One end of the extension 54 is slightly bended inwardly as at 56 to



make removal of the basket easier. The other extension 55, is off set in steps and turned outward at its tip, as at 56', to receive and firmly hold differently sized parts, watch movements and the like.

Another open top perforated basket 57, of size and shape similar to basket 52 is superposed upon the latter, with the wire extensions 55 preventing it from slipping out of alignment with said basket 52. In this basket 57, semi-circular perforated partitions 58 and 59 form a plurality of compartments in the basket, to accommodate odd and disassembled watch parts or pieces of jewelry. It is well within applicant's contemplation that the basket 57 may be removed and other baskets substituted which have a particular shape to accommodate a particular work.

A tubular block 60 is mounted upon the swivel post 15 but fixed to the end of the standard 12 by set screw 61, the top of the set screw projecting into a cavity of the standard. The base 62 of an attachment plug is anchored within the block 60 by set screws 63. Female conductors within the base have extensions 64 and 65 upon which are soldered electrical wires 66 and 67. These wires lead to a suitable source of A. C. or D. C. current. Wire 66 conducts current through a variable rheostat 68 having the dial and finger adjustment feature 10. The obvious purpose of this rheostat is to adjust the speed of the motor 34. The other wire 67 conducts current through a convenient switch 69.

To complete the circuit to the motor, the male component part of the attachment plug 71 has attached to its terminals a flexible rubber covered two wire cable 72 which leads to the terminals of the electrical motor 34. A rubber, or any other suitable insulation, cover 73, gives added protection against shock and fire hazard.

By referring to Figure 4 it will be noted that the openings 50 that are formed in the bottom 42 of the receptacle 39 are offset or tangentially disposed with respect to the axis of said receptacle, and as a result of this arrangement, the liquid that is picked up by the louvers has increased turbulence, and therefore, much greater efficiency in cleaning the articles deposited in the receptacle 39.

Thus it will be seen that I have provided a watch and jewelry cleaning machine that is relatively simple in construction, inexpensive in manufacture and very effective in performing the functions for which it is intended.

It will be understood that minor changes in the size, form and construction of the various parts of my improved watch and jewelry cleaning machine may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. In a watch and jewelry cleaning machine, a receptacle, a post fixed to and extending upwardly from the center of said receptacle, a plurality of open-mouthed containers arranged in said receptacle around said post, a block on the upper portion of said post, said block having a plurality of side faces, a sleeve mounted for rotation on the post above said block, pairs of parallel links pivoted at one end to said sleeve one pair being disposed above the other, a post pivoted to the other ends of said links, a motor carried by said last mentioned post and a receptacle for holding parts to be cleaned carried by the shaft of said motor and adapted to enter the open mouths of said containers.

2. A watch and jewelry cleaning machine as set forth in claim 1, with projections on the lowermost pair of links for engaging the faces of the block on the post to prevent said sleeve from being rotated except when said links are moved into their uppermost positions.

3. A watch and jewelry cleaning machine as set forth in claim 1, with means for successively engaging the upper and lower pairs of links to maintain the same and the motor carrying post in differently elevated positions.

4. A watch and jewelry cleaning machine as set forth in claim 1, with co-operating spring pressed latching members pivotally mounted on said sleeve for engaging and supporting the pivoted links in different positions.

5. A watch and jewelry cleaning machine as set forth in claim 1, with co-operating means on top of said block and the under side of said sleeve for maintaining the latter in different predetermined positions on the post.

6. In a watch and jewelry cleaning machine, a receptacle, a post fixed to and extending upwardly from said receptacle, a plurality of open-mouthed containers disposed in said receptacle about said post, there being an electric lamp located in said receptacle, a block mounted on said post, a sleeve mounted for rotation on said post above said block, pairs of links pivotally connected to said sleeve, latching means mounted on said sleeve for successively engaging and holding said links in different positions, a post pivoted to the ends of the links opposite the ends that are pivoted to the sleeve, a motor carried by said last mentioned post and a receptacle for the articles to be cleaned carried by said motor and adapted to enter the open mouth of any one of the containers and also to be positioned above the electric lamp in said receptacle.

7. A watch and jewelry cleaning machine as set forth in claim 6, with co-operating means in the upper portion of said block and the under face of said sleeve for yieldingly maintaining said sleeve in different predetermined positions.

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