

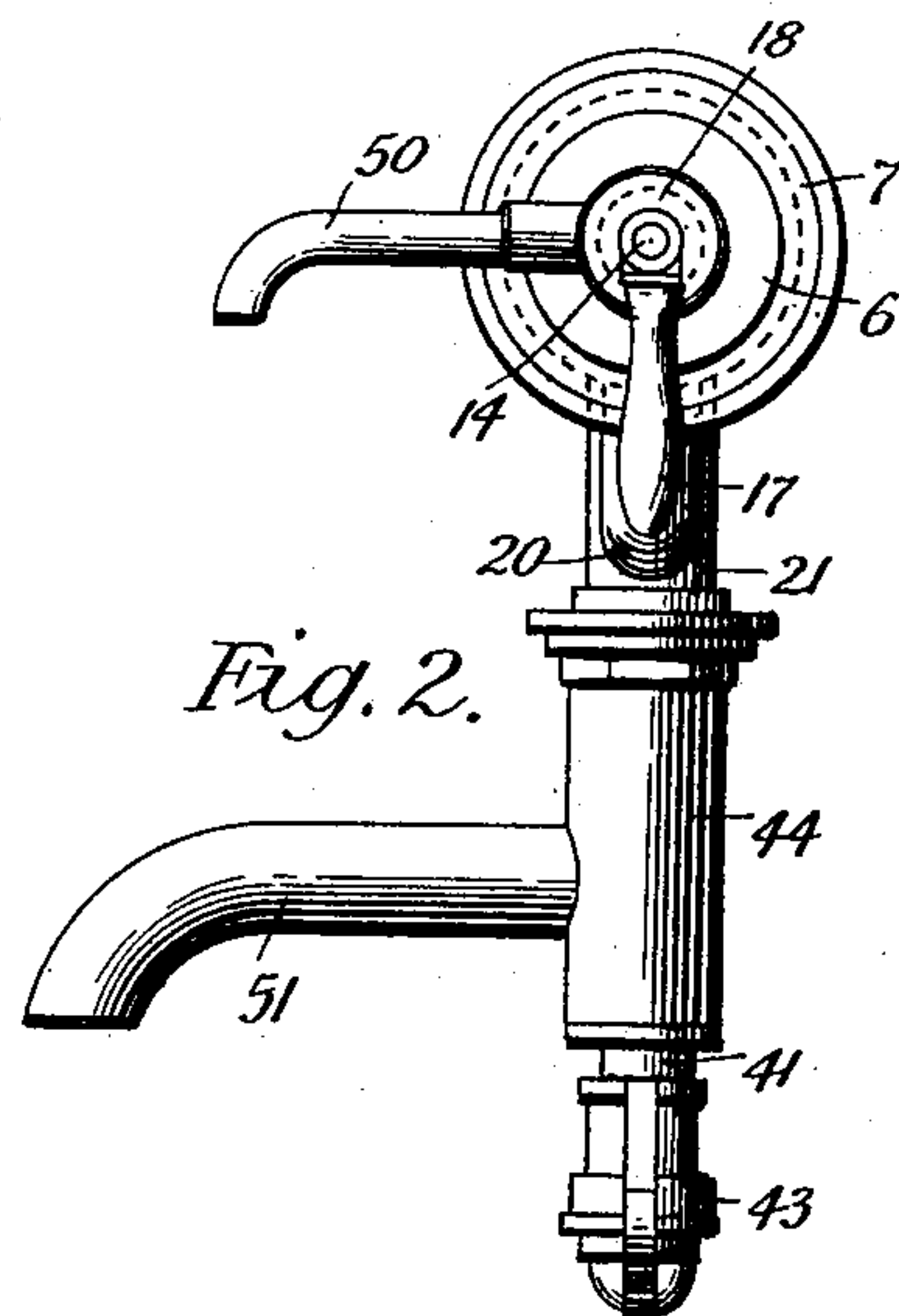
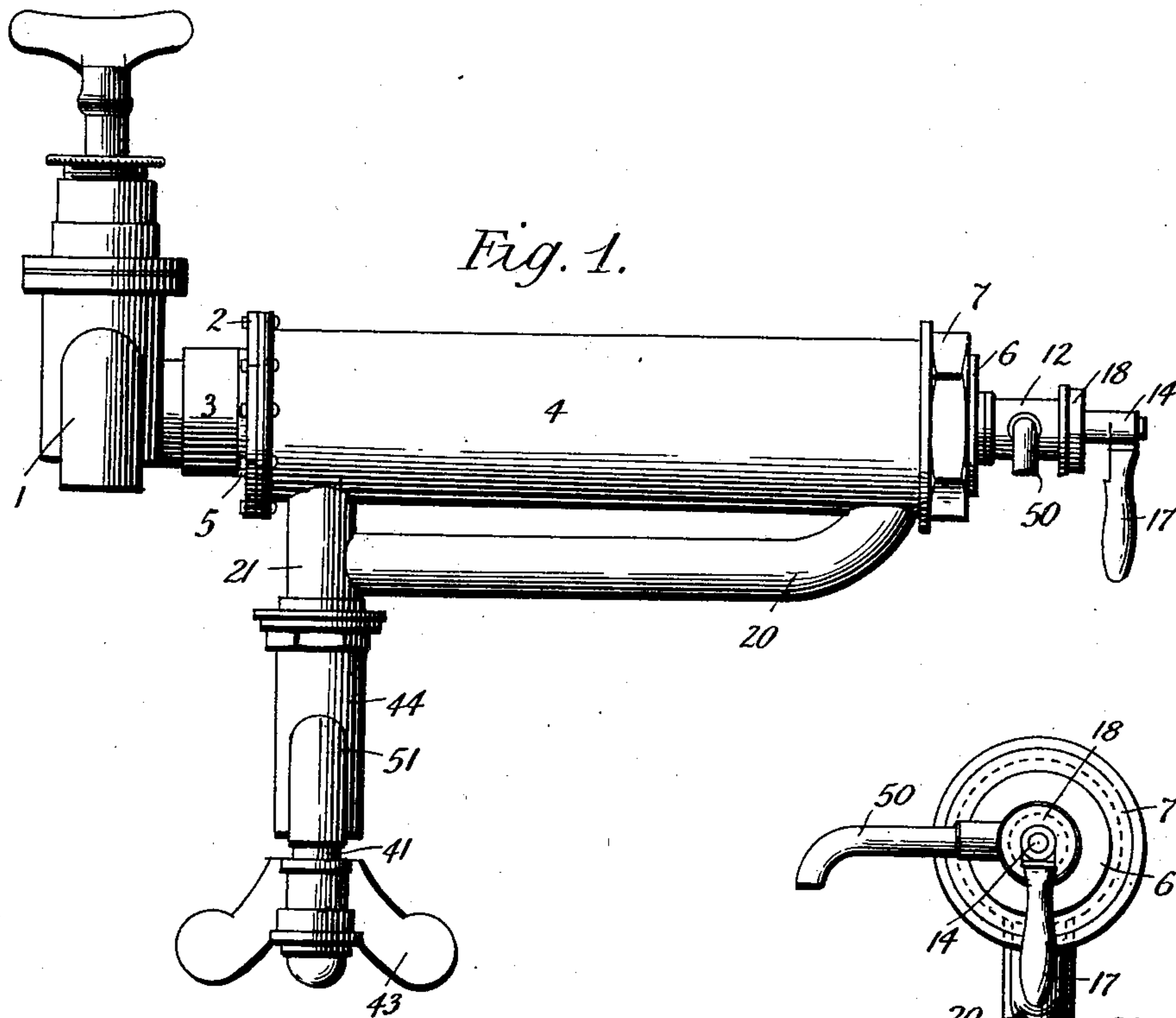
No. 685,159.

Patented Oct. 22, 1901.

A. J. MADDEN.  
CLEANSING FILTER.  
(Application filed July 16, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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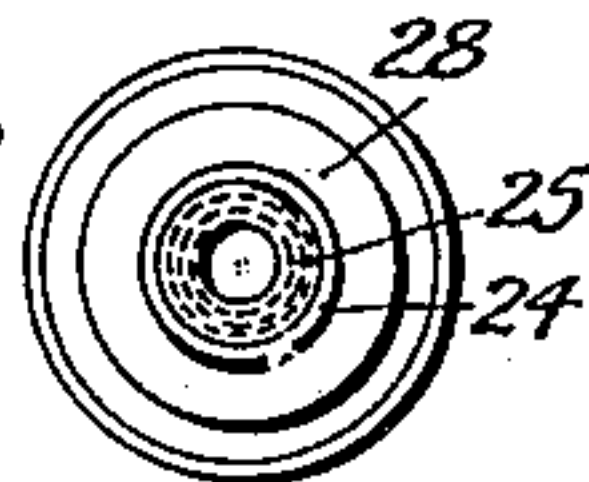
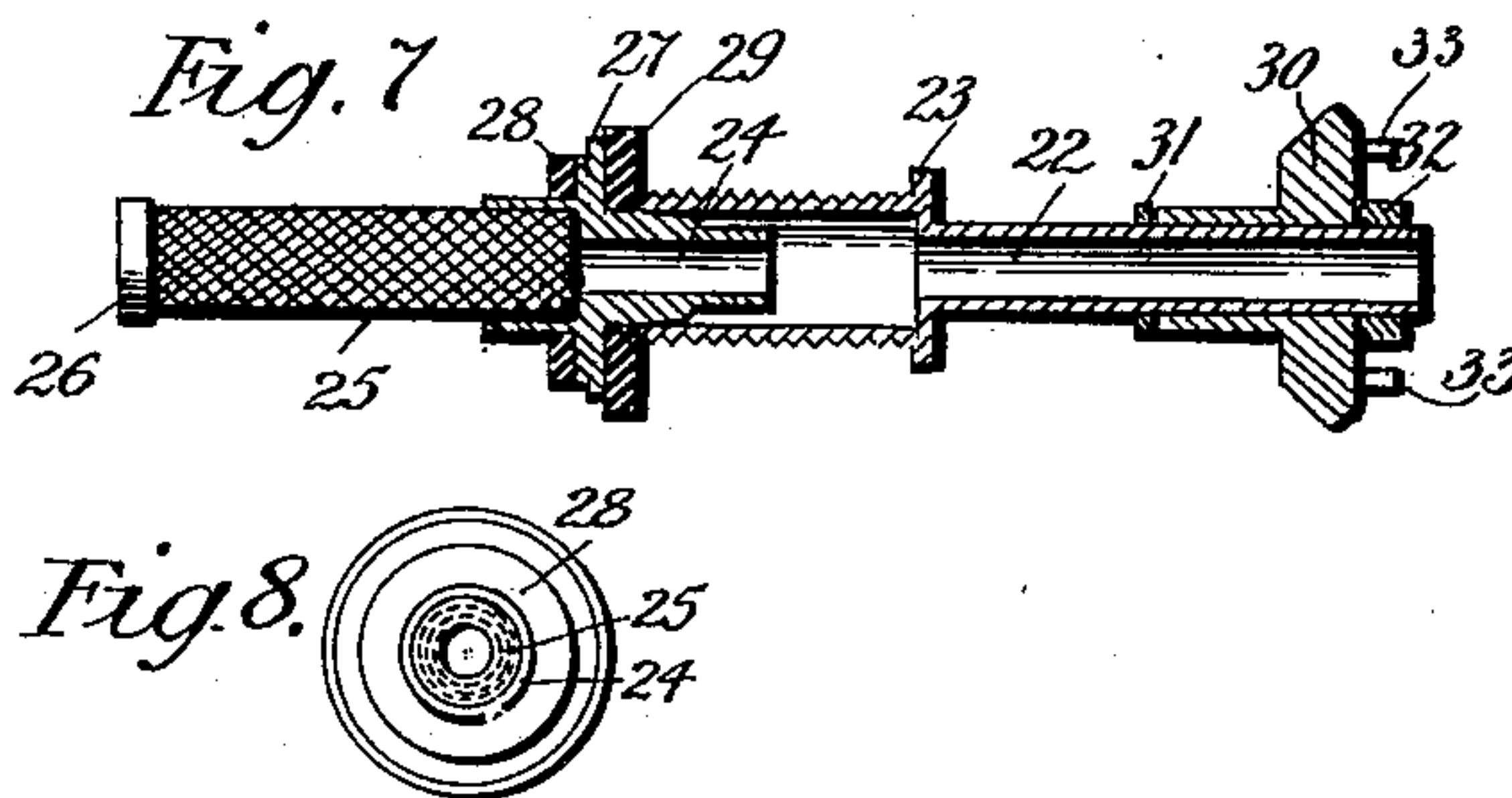
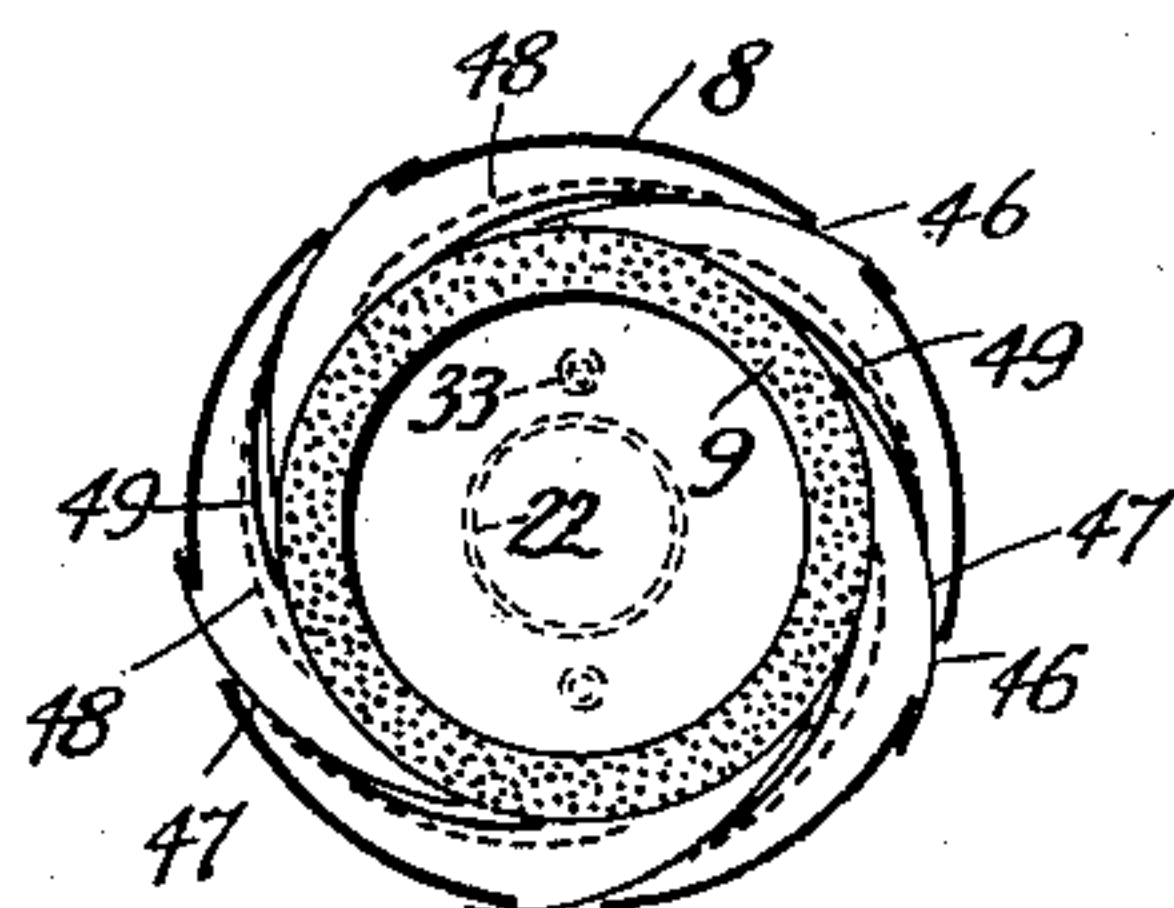
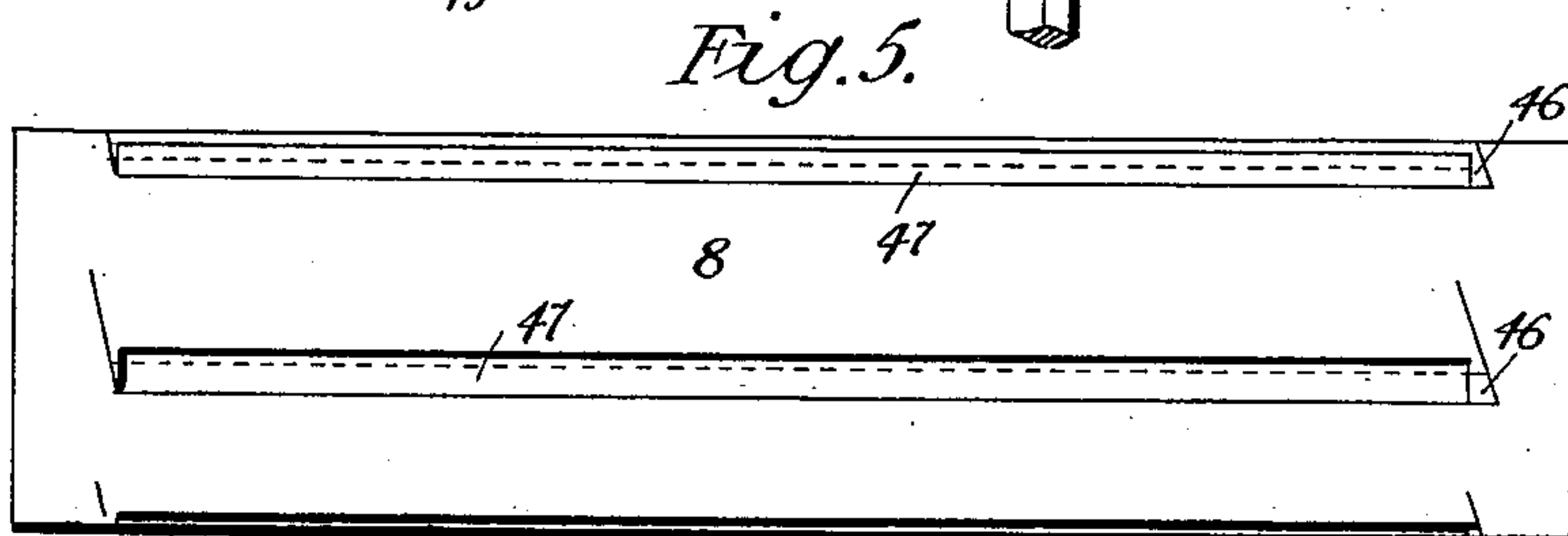
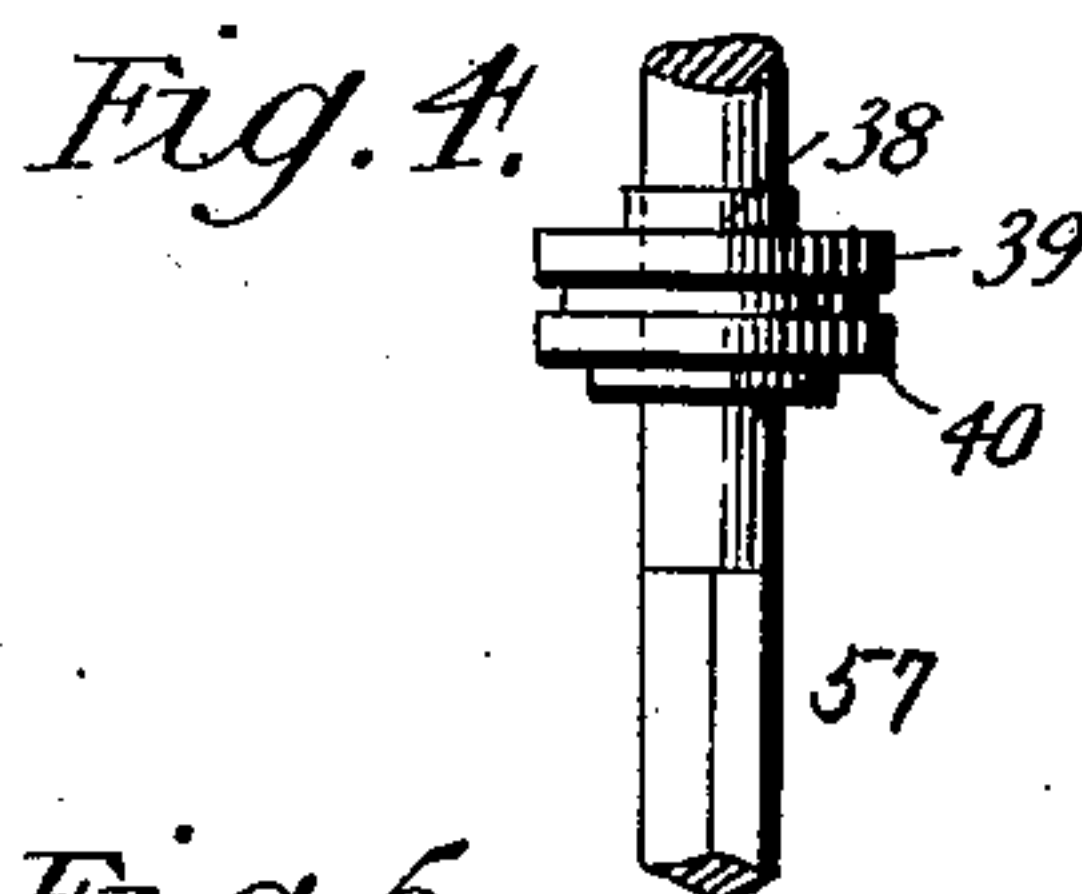
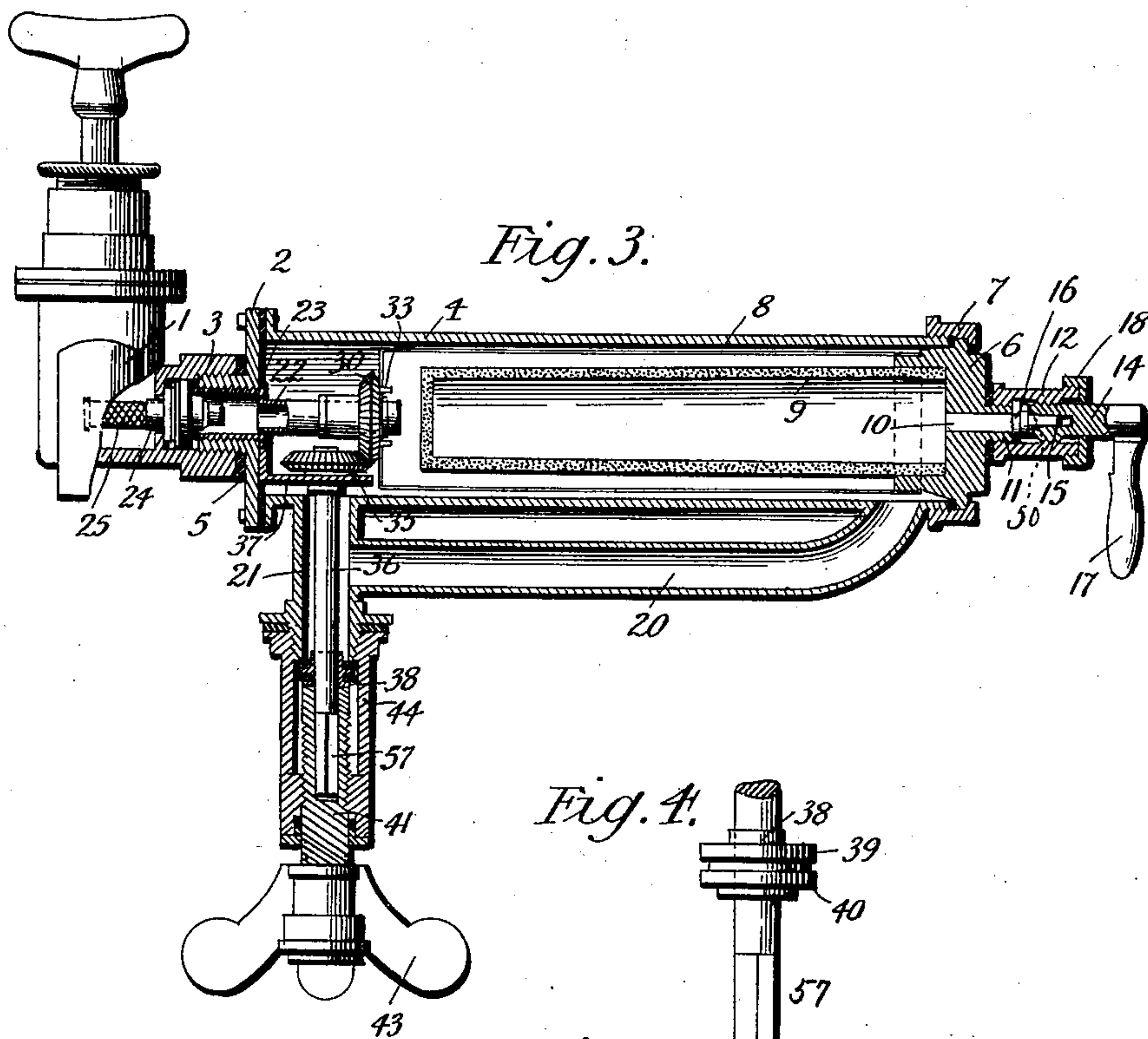
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A. J. MADDEN.  
CLEANSING FILTER.  
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(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

AUGUSTINE JOHN MADDEN, OF MELBOURNE, VICTORIA.

## CLEANSING FILTER.

SPECIFICATION forming part of Letters Patent No. 685,159, dated October 22, 1901.

Application filed July 16, 1900. Serial No. 23,813. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUSTINE JOHN MADDEN, a subject of the Queen of Great Britain, residing at 187 Little Collins street, Melbourne, Victoria, have invented a certain new and useful Cleansing Filter, of which the following is a specification.

This invention has been devised to provide an efficient high-class filter so constructed that the simple action of the person turning on or off a tap (that takes the place of the ordinary draw-off cock on a water-pipe) causes the filter to automatically cleanse and flush away the residue or filtrate from time to time accumulating in it.

In order to make the invention clear, I will describe same with reference to the accompanying sheet of drawings, in which—

Figure 1 represents a front elevation of the filter; Fig. 2, an end elevation; Fig. 3, a longitudinal vertical section; Fig. 4, a detail of a valve and rod employed; Fig. 5, a longitudinal view of the scraper-brush detached; Fig. 6, a cross-section through scraper-brush and filtering-body; Fig. 7, a detail of gauze strainer and its connections employed at entrance to filter; Fig. 8, a cross-section through gauze.

In a water-service pipe or tap 1 I form an opening at side with socket 3, having internal screw-thread to receive the end 2 of cylinder 4. The cylinder end 2 has screw portion entering socket, a washer 5 being employed between cylinder and socket. The other end of the cylinder is closed in with water-tight construction and is provided with a small tap for the outlet of filtered water. The construction of this part is as follows: 6 represents the end of cylinder, which is held in position by cap 7 and is stepped, so as to form a bearing for end of scraper-barrel 8, and recessed to hold end of tube 9, of filtering material. A hole 10 passes through center of this cylinder end, and it has projecting screwed portion 11, the end of which forms seating for filter tap-valve. A small cylinder 12 screws on the said portion 11 and which has outlet-pipe 50 for filtered water. A tap-spindle 14 screws into end of small cylinder 12. This spindle is hollow and receives rod 15 of valve 16 and is provided with handle 17. The small cylinder 12 is closed by a cap 18.

The main cylinder 4 has a pipe 20 commu-

nicating with it, which meets a down-pipe 21, also connected with main cylinder.

A hollow shaft 22 is screwed into the end 2 of the cylinder 4. This shaft (see Fig. 7) is stepped and has flange 23 upon it, which abuts against end of cylinder. A hollow tube 24 enters one end of hollow shaft and which is recessed to receive the end of strainer 25, which is constructed of spirally-rolled wire-gauze, closed at its end with cap 26. The tube 24 has flange 27 upon it, with leather washers 28 29 on either side of it to form a water-tight joint at its connection with the water-service pipe or tap 1. The hollow shaft 22 carries loosely at its other end beveled-toothed wheel 30, which is held between stop-collars 31 and 32 on shaft. The face of the beveled wheel carries projecting pins 33, which enter holes formed in end of scraper-barrel 8. The end of hollow shaft 22 also projects through a hole formed in end of barrel.

The beveled toothed wheel 30 gears with corresponding beveled-toothed wheel 35, set upon rod 36. This wheel is supported upon bracket 37, secured to end of cylinder. The rod 36 is set in the pipe 21 and has square end 57. A sleeve 38 is set upon the round portion of rod 36 and carries washers 39 40, which rest upon flanges on the sleeve, so forming a sliding valve. The square end of the rod enters tap-rod 41, the top of which bears on the valve. This rod is hollowed square to receive square end of valve-rod, so that while rod acts on the valve to raise it the valve-rod and beveled-pinion 35 will remain at a stationary level. The screw-rod 41 terminates in tap-handle 43. This screw-rod passes through screwed portion of pipe 44 and which has outlet-pipe 51 and which is screwed into end of pipe 21, so as to form a water-tight joint.

The scraper before mentioned is constructed (see Figs. 5 and 6) of a metal barrel or cylinder having a number of longitudinal grooves. Metal plates 47 are connected with the peripheral surface of the barrel and enter same through the slots, and to these plates are secured one or more strips of wire-gauze 48, and between which scraper-plates is placed a rubber strip 49. The scraper-plates, rubber strips, and wire-gauze form brushes which act lightly upon the surface of the filtering-tube 9 and have a certain amount of spring.



The brushes are thus adapted to move over the surface of the filtering-tube in either direction—forward or backward.

The material of which the porous tube 9 is constructed should vary in porosity to suit the higher or lower pressures of water or other liquids to be filtered, the porosity increasing as the pressure lowers, and vice versa, so that my apparatus may be used either as a "low" or "high" pressure filter, as may be predetermined.

The filter is operated as follows: The water from the pipe-service enters the filter through the gauze 25 and is thus screened, the rough sediment being washed away when the tap is turned on. The water thus partially filtered passes through the hollow tube 24 and shaft 22 and, being under pressure, passes through the porous filtering-tube to its inside and passes through the outlet-opening 10 at end of cylinder and out by pipe 50 when the tap 17 is turned—that is, when the tap 17 is turned the spindle 14 recedes from the opening 10 and the water-pressure will act upon the valve 16, so as to force it back and open the passage to the outer pipe 50. The valve-spindle 15 is thus loose in the recess in the tap-spindle 14. The scraper 8 is rotated whenever the tap 43 is employed. This is the usual "household" tap, the turning on of which will cause the rod 36 to be rotated, so as to actuate the bevel-gearing which is connected with the scraper-barrel, the tap at the same time opening or closing the valve 38, which controls the outlet-pipe 51. The scraper-barrel, with its brushes, is thus revolved around the porous filtering-tube. The water rushing around the outside of said tube carries with it all sediment or slimes that the scraper-brushes have removed. When the tap 43 is turned off again, the scraper-brushes revolve in an opposite direction, thereby completely removing any remaining sediment or slime and which will be carried away on the next turning on of the tap 43.

The filtered water from the interior of porous tube 9 may be obtained at will by turning on the tap 17, which will allow a flow of water by outlet-pipe 50.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In combination a cylinder connected with water-supply pipe, a tubular body of filtering substance set within same and having its inside communicating with outlet-duct for filtered water at end of cylinder, a pipe connected with the cylinder and having a household tap, a scraper-barrel encircling the filtering-body and having means connected with the household tap whereby it is rotated on the turning on or off of said tap, substantially as and for the purposes set forth.

2. In combination a cylinder connected at one end to water-supply pipe and having filtered - water outlet at other end, a gauze

strainer set in the supply-pipe, a hollow shaft communicating with same, a tubular filtering-body attached to cylinder end, a branch pipe from main cylinder, a scraper-barrel and means for actuating same by the turning on or off of a tap on the branch pipe substantially as and for the purposes set forth.

3. In combination a cylinder connected at one end with water-service pipe and having outlet for filtered water at other end, a cover 6 carrying tubular filtering-body 9, a scraper-barrel encircling the filtering-body having bearing at one end in the cylinder-cover and at the other end means connected with tap in branch pipe whereby it is rotated on the turning on or off of said tap substantially as and for the purposes set forth.

4. In combination a cylinder connected with water-service pipe at one end and having outlet for filtered water at other end, a tubular filtering-body connected with one end of cylinder, a scraper-barrel encircling same, a hollow shaft supported by cylinder, a loose bevel-pinion on same connected with scraper-barrel, a branch pipe 21 with extension 44 connected with cylinder, a valve-rod in same carrying fixed pinion gearing with loose pinion on hollow shaft and having square end a loose valve on the rod, a hollow screw-rod entering extension 44 and bearing on valve and receiving end of valve-rod whereby the bevel-pinion is rotated at a constant level while the valve will rise and fall on turning of screw-rod substantially as and for the purposes set forth.

5. In combination a cylinder connected with water-service pipe at one end and having outlet for filtered water at other end, a tubular filtering-body connected with one end of cylinder, a scraper-barrel encircling the porous tube and constructed with scraper-plates 47, rubber strips 49 and wire-gauze strips 48 impinging on surface of filtering-body, a branch pipe and means connected with household tap on branch pipe for actuating the scraper substantially as and for the purposes set forth.

6. In combination a cylinder 4 attached at one end to socket of tap 1, its other end having cover 6 which carries tubular filtering-body 9, a water-channel through the cover, an outlet-cylinder 12 with pipe 50 communicating with same and a valve 16 actuated by screw-rod 14 in the cylinder 12, a scraper-barrel set within the cylinder and encircling the tubular filtering-body, a branch pipe 21 with tap and means whereby scraper-barrel is rotated on turning of tap substantially as and for the purposes set forth.

7. In combination a cylinder connected at one end to tap and having cover 6 at other end carrying tubular filtering-body 9, a scraper-barrel 8 having brushes impinging on filtering-body and bearing at one end on the cover 6, an outlet-passage and tap connected with the cover 6, a gauze strainer supported on a valve-tube 24 at entrance to filter, a hollow



shaft 22 connected with same and carrying  
loose bevel-pinion connected with scraper-  
barrel, branch pipes 20, 21 from cylinder 4,  
a rod 36 in pipe 21 having square end and  
5 carrying bevel-pinion 35 (to gear with pin-  
ion 30) supported by a bracket 37, a loose  
valve on the rod 36 a pipe extension 44, a  
screw-rod 41 having square hole to receive  
square end of rod 36 such rod screwing into  
10 pipe extension and bearing on valve and hav-  
ing handle substantially as and for the pur-  
poses described.

8. In a filter, a cylinder connected at one  
end with a service-pipe and having a valve-

controlled outlet at its opposite end, a filter- 15  
barrel mounted in the cylinder, a branch  
pipe leading from the cylinder and having a  
valve-controlled outlet, a scraper in the cyl-  
inder, and means operated by the opening or  
closing of said valve for rotating the scraper, 20  
substantially as specified.

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

AUGUSTINE JOHN MADDEN.

Witnesses:

A. O. SACHSE,  
A. HARKER.