

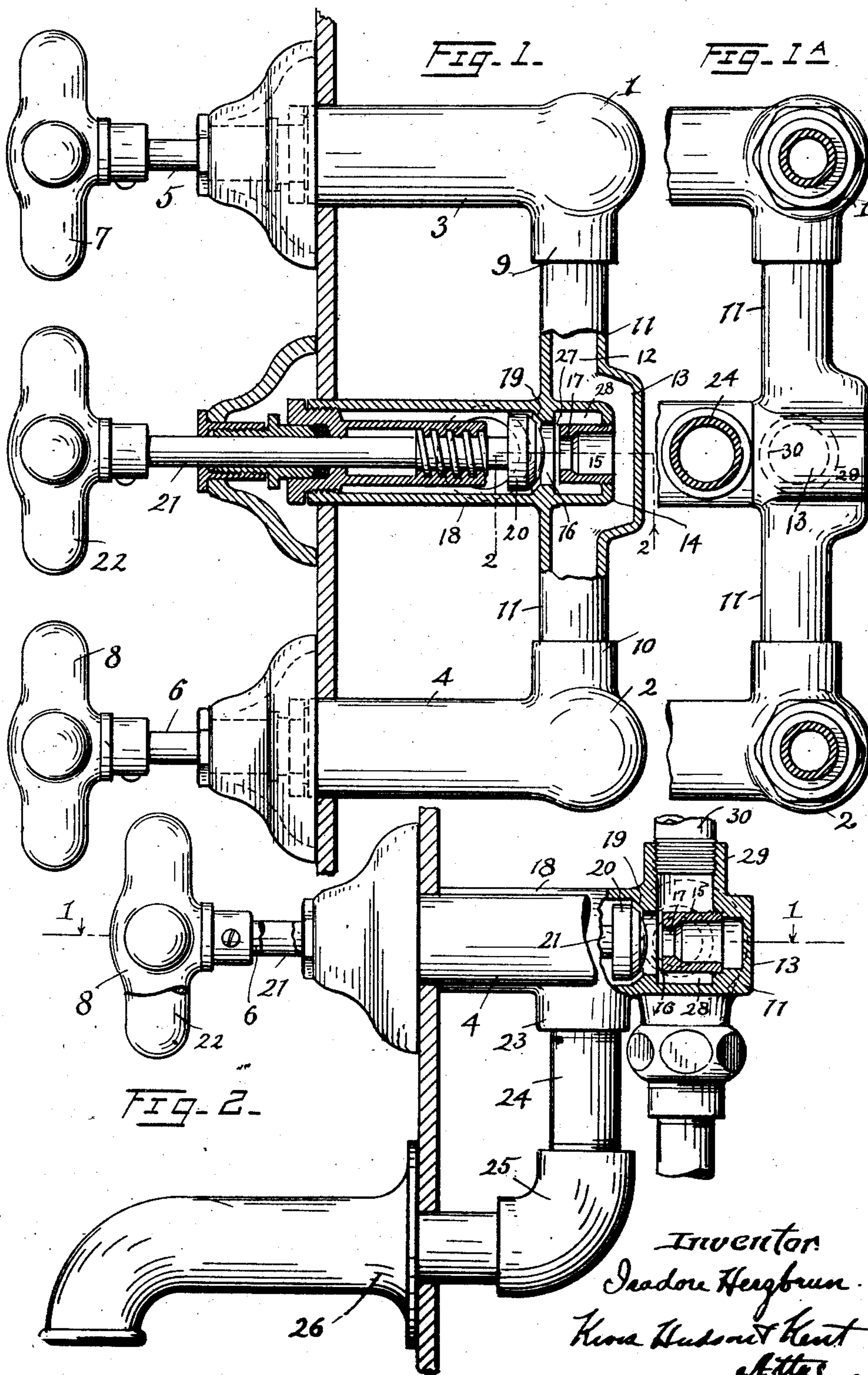
Oct. 7, 1930.

I. HERZBRUN

1,777,434

DEVICE FOR CONTROLLING THE DISCHARGE OF LIQUIDS

Original Filed Nov. 26, 1926 4 Sheets-Sheet 1



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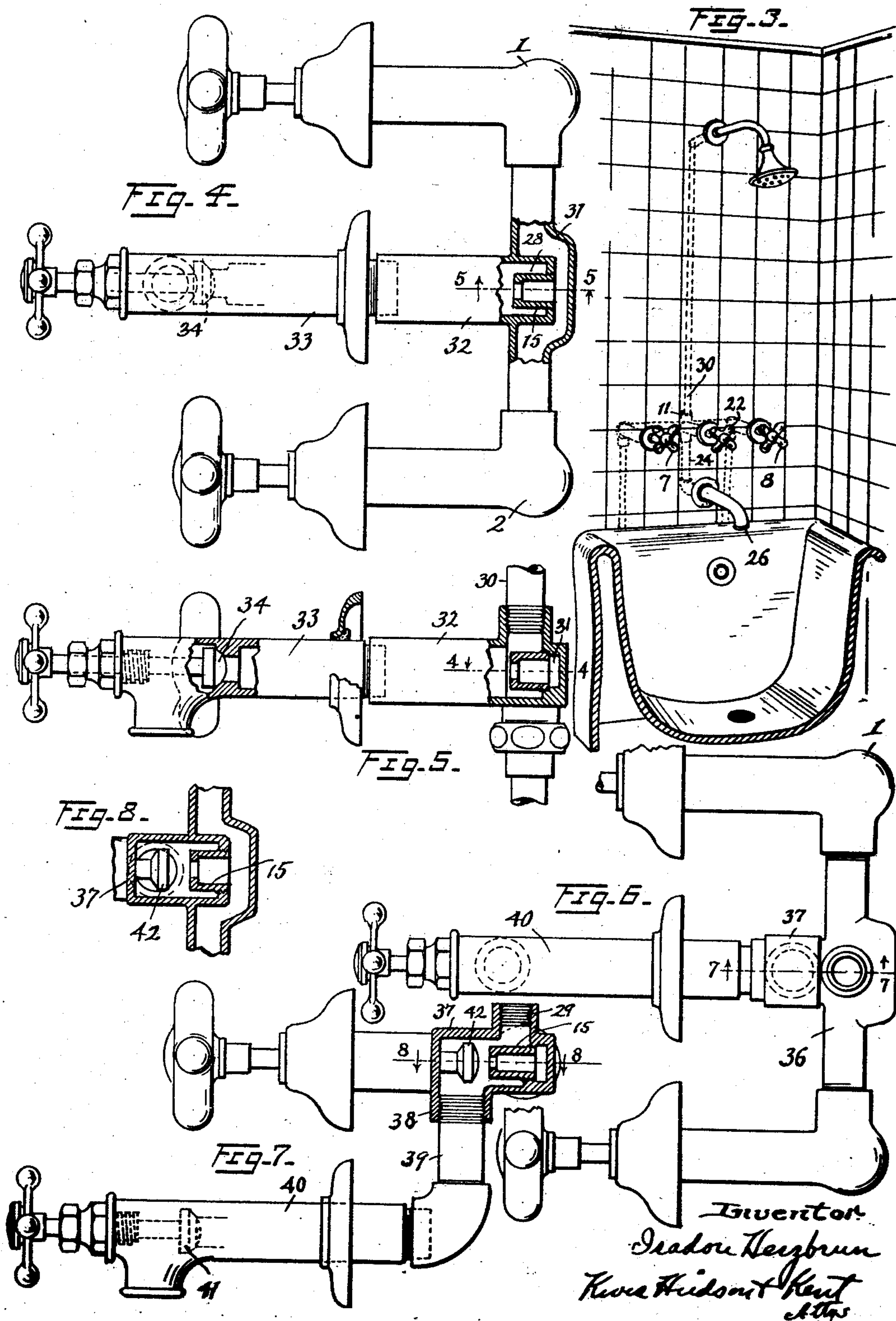
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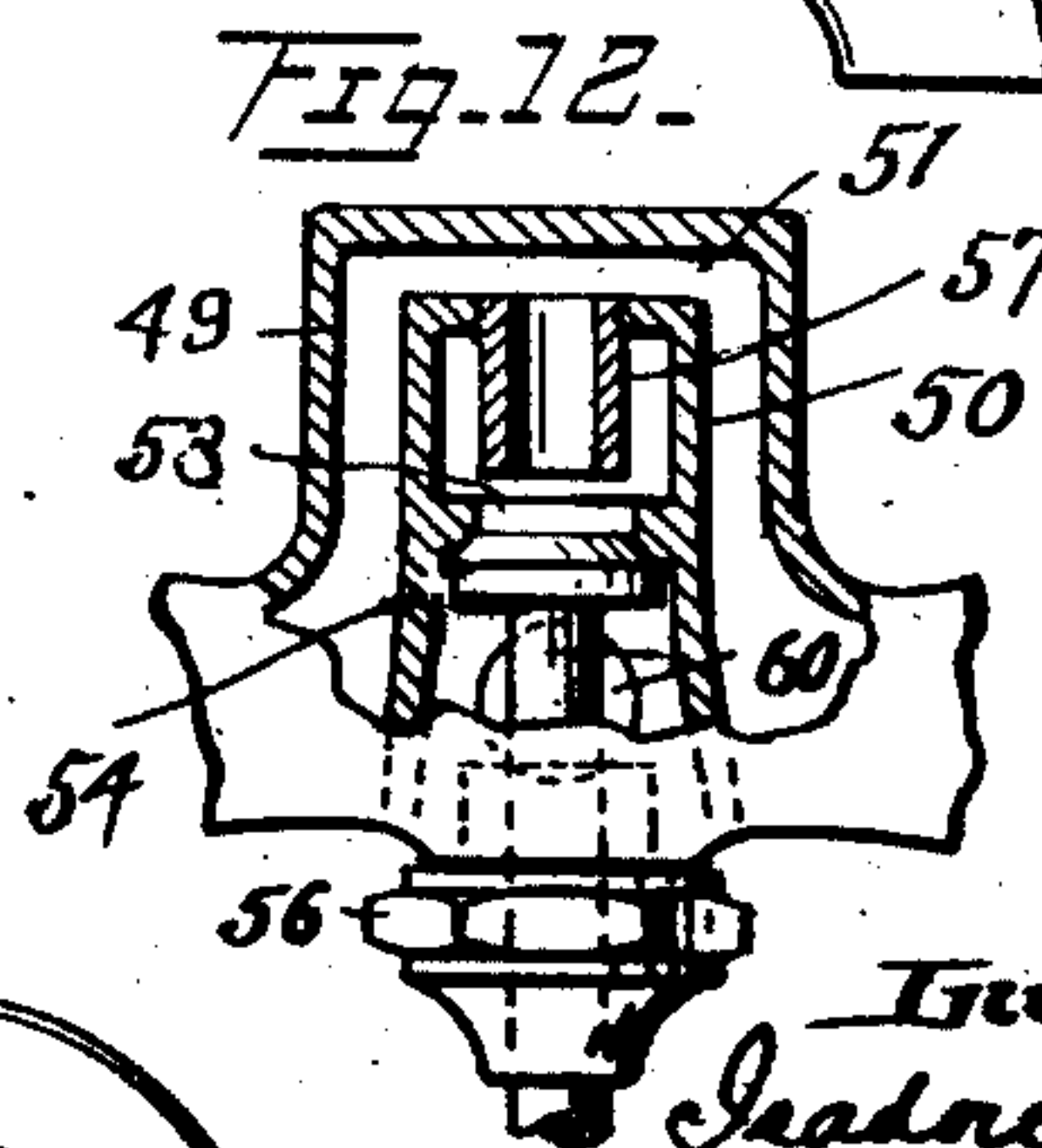
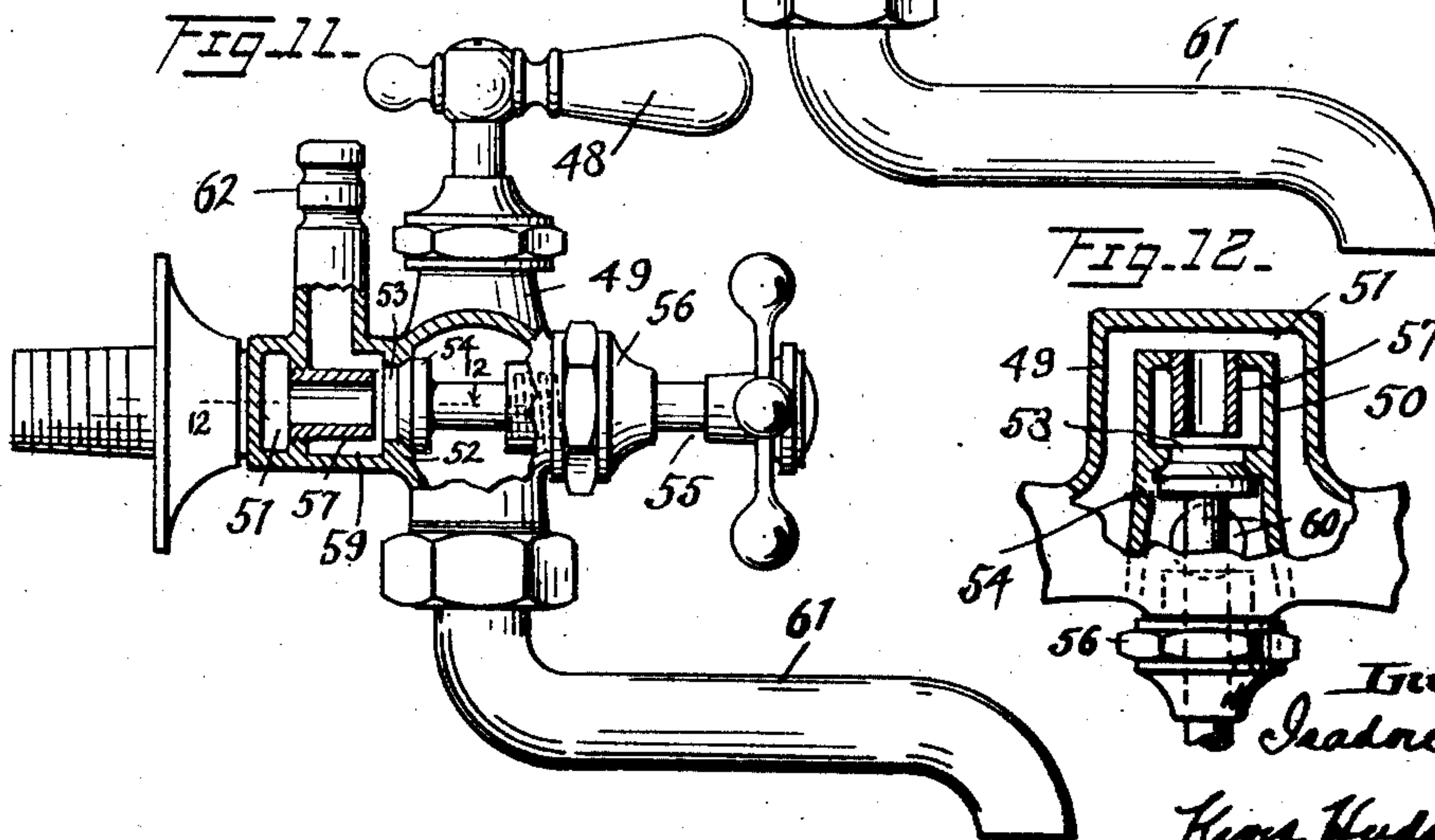
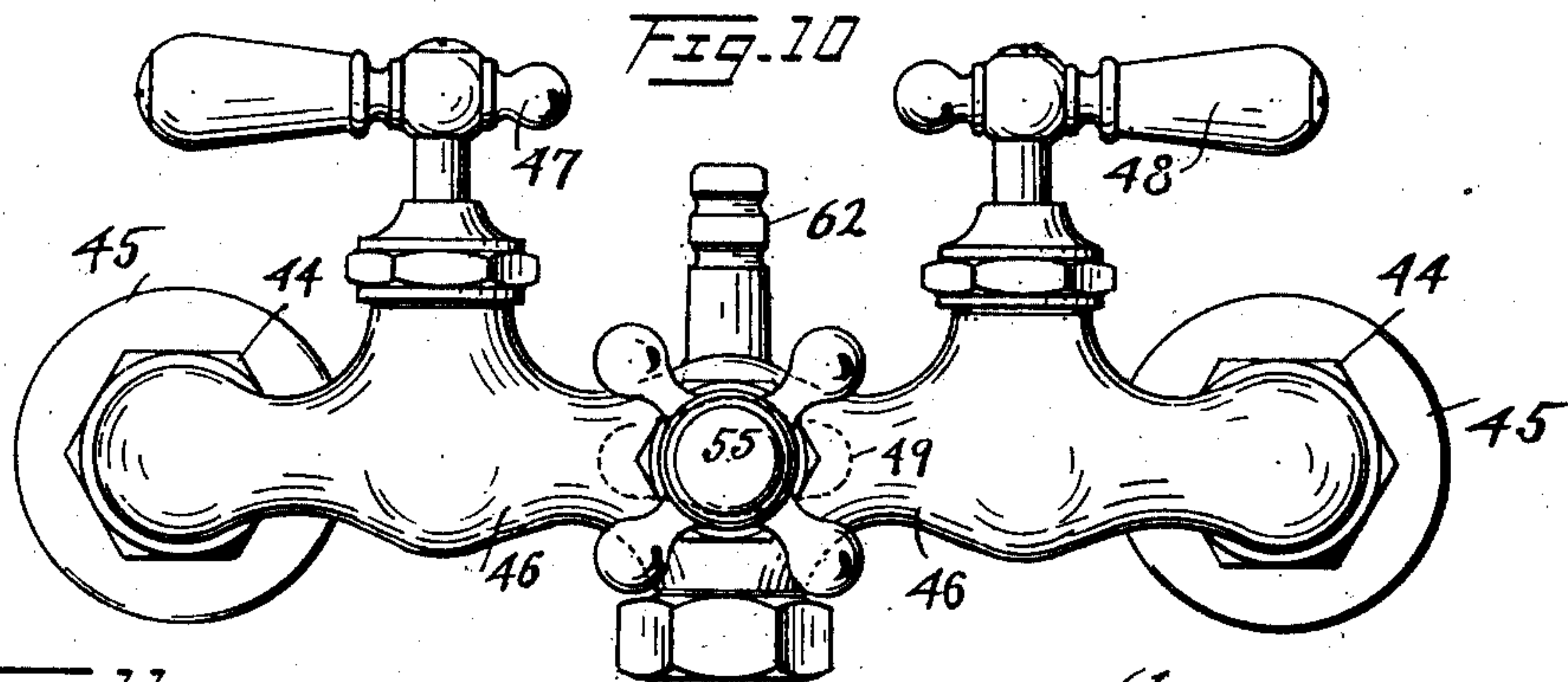
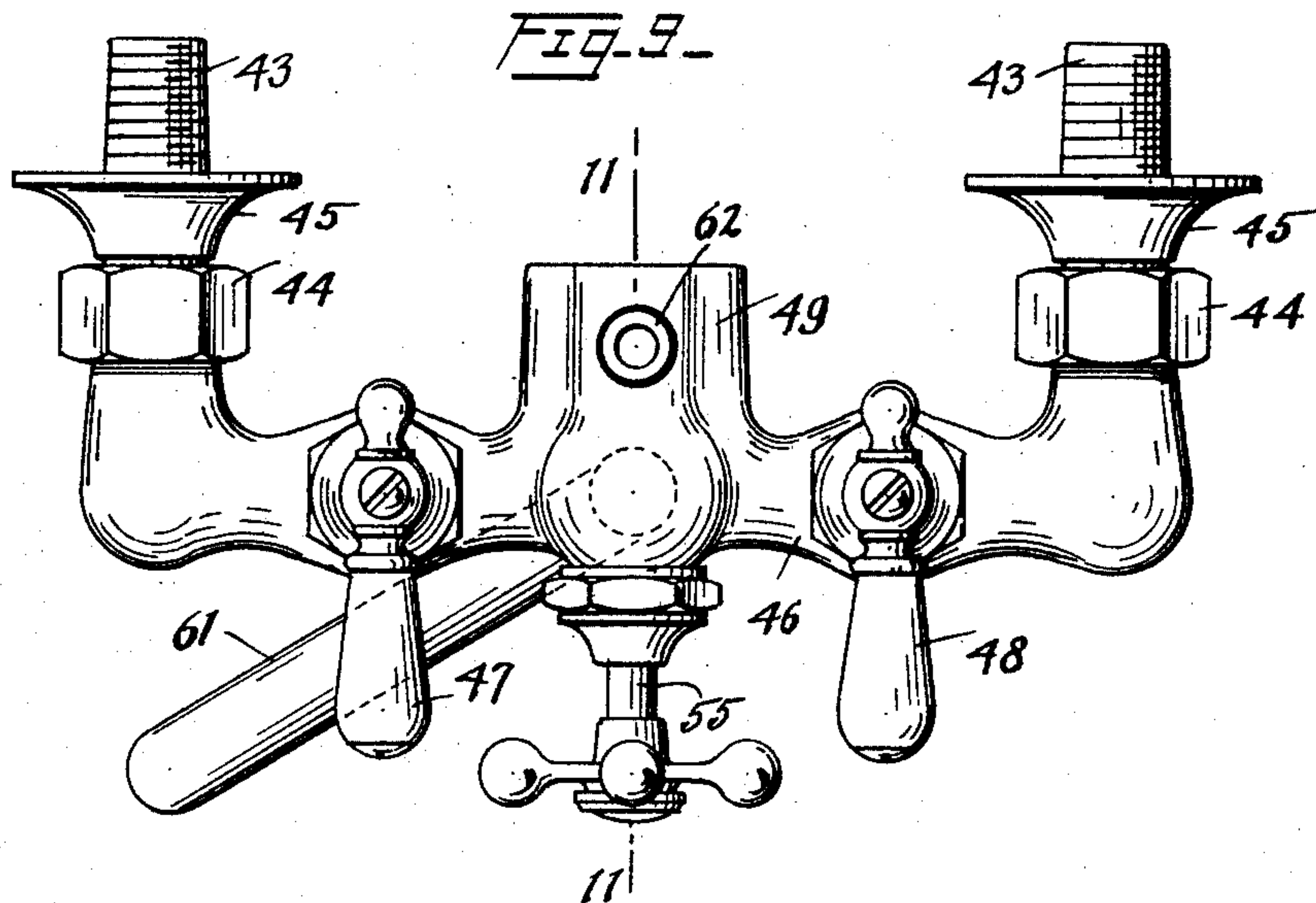
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# DEVICE FOR CONTROLLING THE DISCHARGE OF LIQUIDS

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Fig. 13.

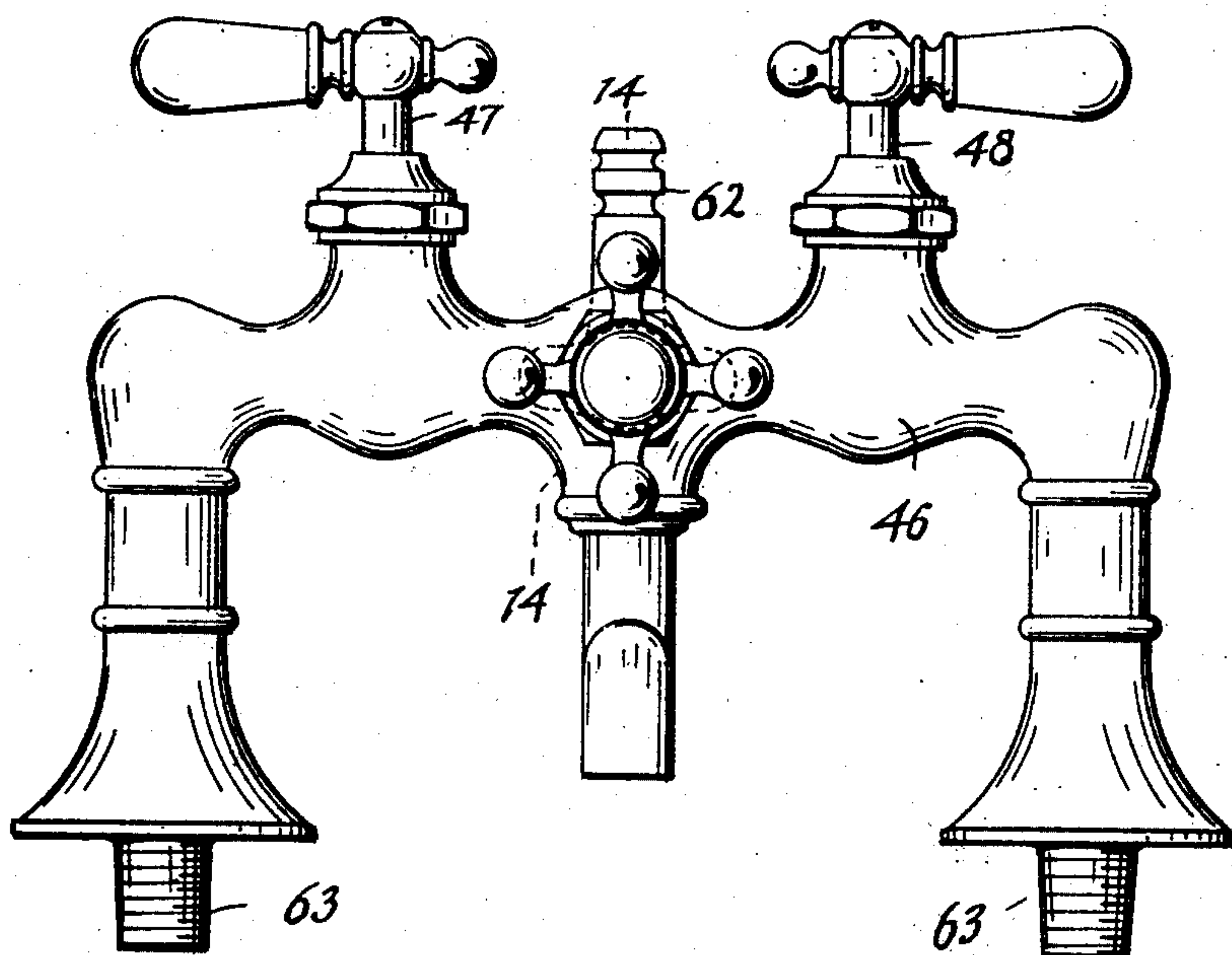
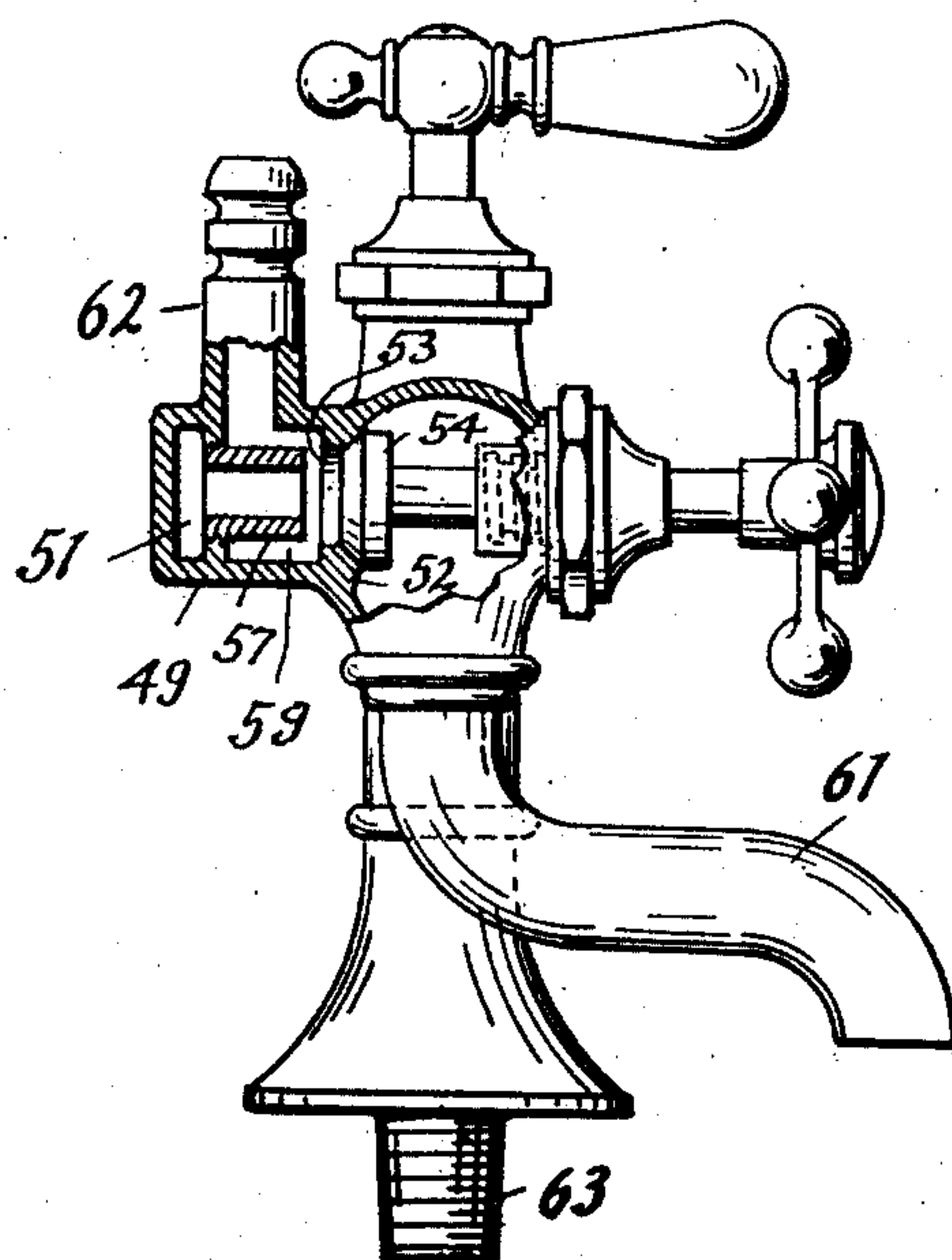


Fig. 14.



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# UNITED STATES PATENT OFFICE

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DEVICE FOR CONTROLLING THE DISCHARGE OF LIQUIDS

Application filed November 26, 1926, Serial No. 150,705. Renewed January 20, 1930.

This invention relates to a diverter adapted for use with plumbing fixtures by which water or other liquid under pressure may be discharged through either of two spaced outlets, the diverter of the present invention being applicable to bath room plumbing fixtures for controlling the delivery of water to the bath tub spout or to an overhead shower nozzle, and it is also applicable to kitchen sink or wash bowl fixtures for directing the water through the usual spout or through a spray nozzle connected to the fixture. The present invention is an improvement on the device shown in my co-pending application, Serial No. 130,830, filed August 23, 1926, and has for an object to provide a diverter of simpler and more compact construction which is adapted to be used in plumbing fixtures of various types.

A further object is to provide a combined diverter and mixing chamber adapted to be connected between hot and cold water pipes and to deliver the water to either of two outlets.

With the above and other objects in view, the invention may be said to comprise the device as illustrated in the accompanying drawings hereinafter described and particularly set forth in the appended claims, together with such variations and modifications thereof as will be apparent to one skilled in the art to which the invention appertains.

Reference should be had to the accompanying drawings, forming a part of the specification, in which:

Fig. 1 is a plan view of the plumbing fixture of which the diverter forms a part, the diverter casing being broken away and shown in section on the line indicated at 1—1 in Fig. 2;

Fig. 1<sup>a</sup> is a bottom plan view of the fixture shown in Fig. 1;

Fig. 2 is a side elevation of the fixture shown in Fig. 1 with the diverter casing broken away and shown in section on the line indicated at 2—2 in Fig. 1;

Fig. 3 is a perspective view showing the device applied to bath room fixtures for delivering the hot and cold water either to the

bath tub spout or to the overhead shower nozzle;

Fig. 4 is a plan view showing the invention applied to a modified form of plumbing fixture, the diverter casing being partially broken away and shown in section on the line indicated at 4—4 in Fig. 5;

Fig. 5 is a side elevation of the fixture shown in Fig. 4 with a portion of the diverter casing broken away and shown in section on the line indicated at 5—5 in Fig. 4;

Fig. 6 is a plan view of another form of plumbing fixture with the diverter embodied therein;

Fig. 7 is a side elevation of the fixture shown in Fig. 6 with the diverter casing broken away and shown in section on the line indicated at 7—7 in Fig. 6;

Fig. 8 is a section taken on the line indicated at 8—8 in Fig. 7;

Fig. 9 is a top plan view of a hot and cold water cock for kitchen sinks which includes as a part thereof the diverter of the present invention;

Fig. 10 is a front elevation of the cock shown in Fig. 9;

Fig. 11 is a side elevation of the cock shown in Figs. 9 and 10 with the diverter casing broken away and shown in section on the line indicated at 11—11 in Fig. 9;

Fig. 12 is a section taken on the line indicated at 12—12 in Fig. 11;

Fig. 13 is a front elevation of a hot and cold water cock adapted to be attached to a wash bowl, the diverter of the present invention forming a part thereof; and

Fig. 14 is a side elevation of the cock shown in Fig. 13 with the diverter casing broken away and shown in section on the line indicated at 14—14 in Fig. 13.

In Figs. 1, 2, and 3 there is shown a fixture for controlling the flow of water to two outlets, such as a tub spout and an overhead shower nozzle, associated with a bath tub. This fixture has fittings 1 and 2 adapted to be attached to hot and cold water pipes and these fittings have forwardly extending valve casings 3 and 4 in which are mounted suitable valves for controlling the delivery of the hot and cold water. The casings 3 and 4 extend



at their forward ends through the wall of the bath room and stems 5 and 6 of the hot and cold water valves project beyond the forward ends of the casings and carry suitable handles 7 and 8 which may be operated to open or close the valves. The fittings 1 and 2 have inwardly extending nipples 9 and 10 to which the opposite ends of the diverter fitting 11 are connected. The fitting 11 has a passageway 12 which extends the full length thereof through which hot water may pass from one end and cold water from the other. The fitting 11 has an enlarged central portion 13, in the interior of which there is formed a chamber 14, the walls of which are formed integrally with the fitting, the chamber 14 extending from the front side of the fitting toward the rear side thereof and from the top to the bottom of the fitting, the passage 12 extending past the rear end of the chamber. A nozzle 15 is secured in a threaded opening in the rear end of the chamber 14 and extends forwardly to a point adjacent the forward end of the chamber, the front wall of the chamber having an opening 16 of slightly larger diameter than the nozzle 15 through which the nozzle may be inserted when it is secured in place to the rear wall of the chamber. The nozzle 15 is in alignment with the opening 16 and has a restricted opening 17 at its forward end through which the stream of water is directed centrally through the opening 16. A tubular valve casing 18 is formed integrally with the fitting 11 and extends forwardly from the chamber 14, the opening 16 being positioned centrally of the casing 18. A valve seat 19 is formed around the opening 16 on the outer side of the chamber wall and a valve 20 formed to fit upon the seat 19 is mounted in the casing 18 for the movement toward or from the seat. The valve 20 has a stem 21 extending forwardly through the outer end of the casing 18 and this stem is provided with a handle 22 midway between the handles 7 and 8 of the hot and cold water valves by means of which the valve stem may be turned to advance or retract the valve. Projecting downwardly from the under side of the casing 18 immediately in front of the opening 16 there is a nipple 23 to which is attached a short vertical pipe 24 which is connected by means of an elbow 25 to the tub spout 26.

The nozzle 15 extends from the rear wall of the chamber 14 to adjacent the front wall of the chamber, there being a narrow opening 27 between the end of the nozzle 15 and the wall of the chamber through which communication is established between the passageway through the nozzle 15 and opening 16 and a space 28 in the chamber 14 surrounding the nozzle 15. At the top of the fitting 11 there is an upwardly extending nipple 29 adapted to receive a pipe 30, the

nipple 29 opening into the space 28 surrounding the nozzle 15.

Assuming the valve 20 is in open position, the hot and cold water coming from the opposite ends of the fitting 11 enters the rear end of the nozzle 15 and is directed through the opening 16 into the valve casing 18 and passes downwardly through the pipe 24 to the tub spout 26. The nozzle 15 serves to direct the stream of water through the opening 16 and to create a suction through the restricted opening 27 so that all of the water is carried into the chamber 18 and through the spout 26. If the valve 20 be closed, the water passing through the nozzle 15 will be forced laterally through the restricted opening 27 into the space 28 surrounding the nozzle and through the nipple 29 to the pipe 30 leading to the overhead nozzle or other discharge outlet.

Figs. 4 and 5 are a modification of the invention in which all of the valves are placed at the level of the tub spout. In this modification, the construction of the diverter fitting is the same as in the modification above described, except that the valve is not mounted directly in the forwardly extending portion of the diverter casing, which, in this instance, forms the discharge conduit. The diverter fitting 31 shown in Figs. 4 and 5 has a forwardly extending tubular portion 32 formed integrally therewith midway between the ends thereof, and this extension forms a continuation of the chamber 14 into which the nozzle 15 projects. To the forward end of the tubular extension 32 there is attached a discharge spout 33 which is provided with a closure valve 34 by means of which the flow of water through the spout may be cut off.

When the valve 34 is open, the water is forced by the nozzle 15 through the spout 33. When the valve 34 is closed back pressure is developed which forces the water into the space 28 surrounding the nozzle 15 and out through the discharge conduit 30.

Figs. 6, 7, and 8 of the drawings show a modified form of diverter fitting for use with a valve controlled discharge spout where the spout is positioned at a level below that of the fitting. In this case, fitting 36 is provided with a short forwardly projecting extension 37 into which the nozzle 15 delivers, the extension 37 having on the under side thereof a nipple 38 adapted to receive a vertical pipe 39 which is connected at its lower end to a discharge spout 40 which is provided with a valve 41 by means of which it may be opened and closed. As in the modification previously described, the nozzle 15 serves to maintain the flow through the discharge spout when the valve is open and when the valve is closed the resulting back pressure forces the water up through the discharge pipe 30. It has been found desirable, however, in this modi-



fication to provide a deflector or baffle member 42 in the extension 37 a short distance ahead of the nozzle 15 in order to deflect the stream downwardly immediately adjacent the nozzle and prevent creation of back pressure in the elbow formed by the extension 37.

In Figs. 9 to 12, the invention is shown applied to a kitchen sink cock which is provided with threaded nipples 43 at the opposite ends thereof adapted to be connected to hot and cold water pipes, the nipples 43 being provided with nuts 44 and collars 45 by means of which the cock may be clamped to the wall of a kitchen sink. Nipples 43 are connected by a hollow member 46 at right angles thereto in which hot and cold water valves 47 and 48 are mounted. Between the valves 47 and 48 the connecting portion 46 has an enlarged central portion 49 within which there is formed an inner chamber 50 which extends from the front wall of the enlarged portion of the fitting toward the rear wall thereof, there being a passage 51 extending around the rear end of the chamber. The side walls of the chamber 50 extend from the top to the bottom of the enlarged portion 49 and this chamber is divided by partition 52 into front and rear portions, partition 52 having an opening 53 which is adapted to be opened or closed by means of a valve 54, the stem 55 of which extends forwardly through a bushing 56 secured in the front wall of the chamber. Secured in a threaded opening in the wall of the chamber 50 there is a nozzle 57 which extends forwardly to adjacent the partition 52 and serves to normally direct the flow of water from the passage 51 through the opening 53 into the forward portion of the chamber 50. A narrow opening 58 is provided between the forward end of the nozzle 57 and the edge of the opening 53 by which communication is established between the passageway through the nozzle 57 and opening 53 to a space 59 surrounding the nozzle 57. In the bottom of the forward portion of the chamber 50 forwardly of the partition 52 there is an opening 60 through which the water may flow into a swinging discharge spout 61. Extending upwardly from the fitting there is a nipple 62 to which a hose may be connected and this nipple communicates with the space 59 surrounding the nozzle 57. When the valve 54 is open the water is shot through the opening 53 by the nozzle 57 and flows out through the opening 60 and spout 61, the discharge passageway through the spout being sufficiently unobstructed to permit the water discharged from the nozzle 57 to flow through the spout without creating back pressure in the chamber. When the valve 54 is closed, the water is forced as it issues from the nozzle 57 into the space 59 surrounding the nozzle 57 and through the upwardly extending nipple 62. In Figs. 13 and 14 of the drawing the invention is shown

applied to a combined hot and cold water cock adapted to be attached to a wash bowl. The construction of the body and fitting is almost identical with that shown in Figs. 9 to 12 and the same parts are, therefore, designated by the same reference numerals. The only difference in the construction of the fixture is that the end nipples 63 extend downwardly from the connector for attachment to a horizontally disposed spout, such as provided for wash bowl cocks. The upwardly extending nipple 62 in the kitchen sink and wash bowl cocks may have a hose attached thereto with a spray nozzle at its outer end, such spray nozzles being commonly used in connection with kitchen sinks for spraying dishes and in connection with wash bowls in barber shops for shampooing.

Having thus described my invention, what I claim is:

1. A diverter comprising a chamber having an outlet opening in one wall, a nozzle within said chamber extending across the same toward said opening and in alignment therewith to provide a direct passageway through said chamber, there being a restricted opening at the discharge end of said nozzle between said direct passageway and the space within the chamber surrounding the nozzle, said chamber having a second outlet communicating with said space, means for admitting liquid under pressure to said nozzle, and means for preventing discharge of liquid through said first mentioned outlet whereby the liquid is diverted to the space surrounding the nozzle and delivered through the second outlet.

2. A diverter comprising a chamber having an outlet opening in one wall, a nozzle within said chamber extending across the same toward said opening and in alignment therewith to provide a direct passageway through said chamber, there being a restricted opening at the discharge end of said nozzle between said direct passageway and the space within the chamber surrounding the nozzle, said chamber having a second outlet communicating with said space, means for admitting liquid under pressure to said nozzle, and a valve for opening and closing the outlet opening toward which said nozzle is directed whereby the liquid is diverted through the restricted opening to the space surrounding the nozzle and delivered through the second outlet.

3. A diverter having a passageway adapted to be connected at opposite ends to hot and cold water pipes, a discharge nozzle extending laterally from said passageway, a chamber in which said nozzle is enclosed, said chamber having a discharge opening opposite the discharge end of said nozzle through which the water is normally discharged, a space surrounding said nozzle and a second outlet opening into said space, and means for



interrupting the flow through said opening whereby the flow of liquid is diverted to said second outlet.

4. A diverter having a passageway adapted to be connected at opposite ends to hot and cold water pipes, a discharge nozzle extending laterally from said passageway, a chamber in which said nozzle is enclosed, said chamber having a discharge opening opposite the discharge end of said nozzle, the end of said nozzle being closely adjacent said opening, a space surrounding said nozzle and a second outlet opening into said space, and a valve for opening and closing said outlet opening of the chamber opposite the discharge end of the nozzle.

5. A diverter having a longitudinal passageway therethrough and end portions adapted to be connected to hot and cold water pipes, said fitting having an enlarged central portion, a chamber within said central portion, said chamber having a nozzle therein communicating at one end with said passageway and extending across the chamber, said chamber having a wall closely adjacent the discharge end of the nozzle provided with an opening in alignment with the nozzle, said chamber providing a space surrounding the nozzle and having a second outlet from said space, and means for interrupting the flow through said opening to divert the flow through said space surrounding the nozzle to said second outlet.

6. A diverter having a longitudinal passageway therethrough and end portions adapted to be connected to hot and cold water pipes, said fitting having an enlarged central portion, a chamber within said central portion, said chamber having a nozzle therein communicating at one end with said passageway and extending across the chamber, said chamber having a wall closely adjacent the discharge end of the nozzle provided with an opening in alignment with the nozzle, said chamber providing a space surrounding the nozzle and having a second outlet from said space, and a valve for opening and closing the outlet opening opposite the discharge end of the nozzle.

7. The combination with valve controlled hot and cold water pipes of a diverter fitting connected at its opposite ends to said pipes, said diverter fitting having two lateral outlets, a nozzle in the fitting for directing the flow of water toward one of the outlets and past the other and a valve carried by the fitting for closing said first mentioned outlet to cause the water to be diverted to the other of said outlets.

In testimony whereof, I hereunto affix my signature.

ISADORE HERZBRUN.