

T. BARRETT.
STRAIGHTWAY VALVE.
APPLICATION FILED JAN. 30, 1909.

940,577.

Patented Nov. 16, 1909.
2 SHEETS—SHEET 1.

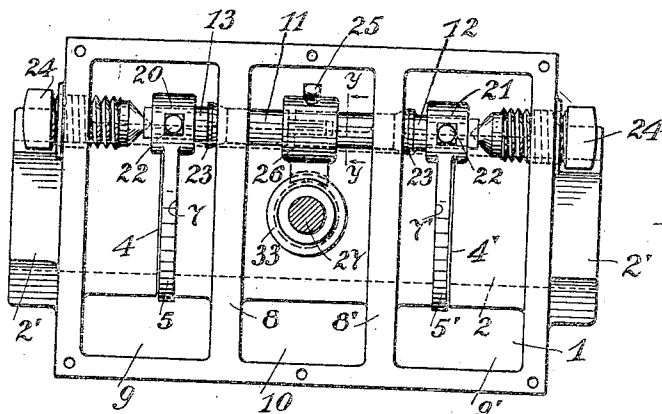


Fig. 2

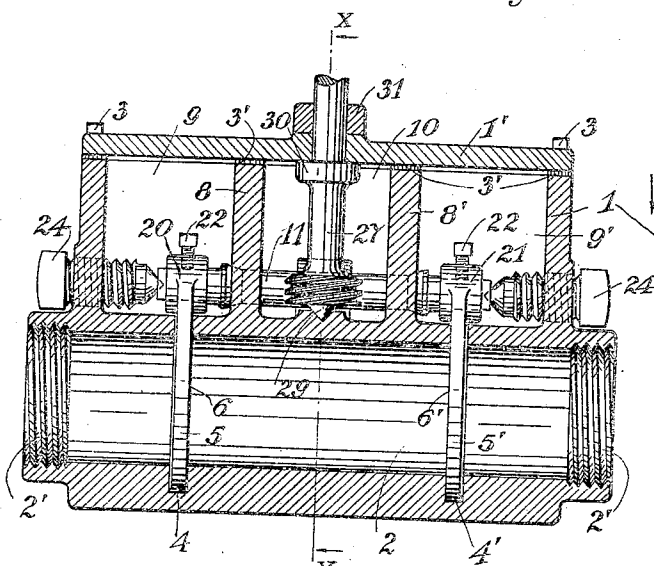


Fig. 1

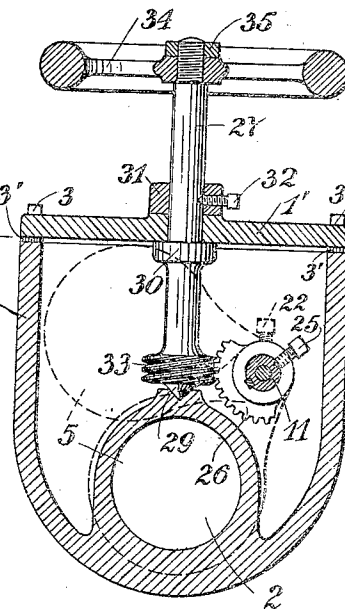


Fig. 3

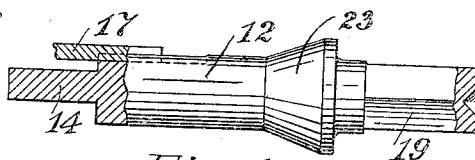
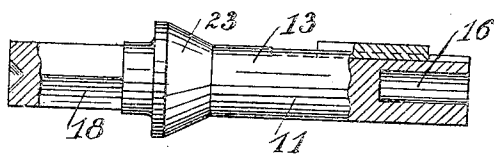
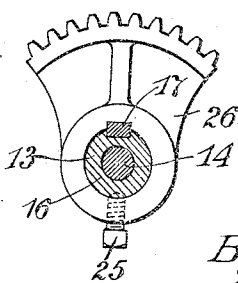


Fig. 4

Fig. 5



Witnesses:

A. J. Graefe
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Inventor:

Thomas Barrett
By Joshua R. H. Potts
His Attorney

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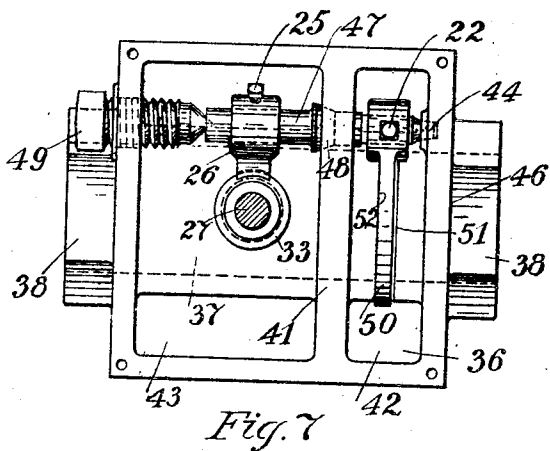


Fig. 7

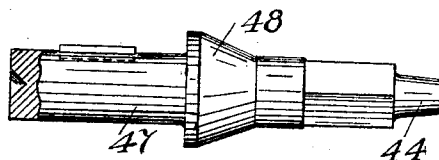


Fig. 9

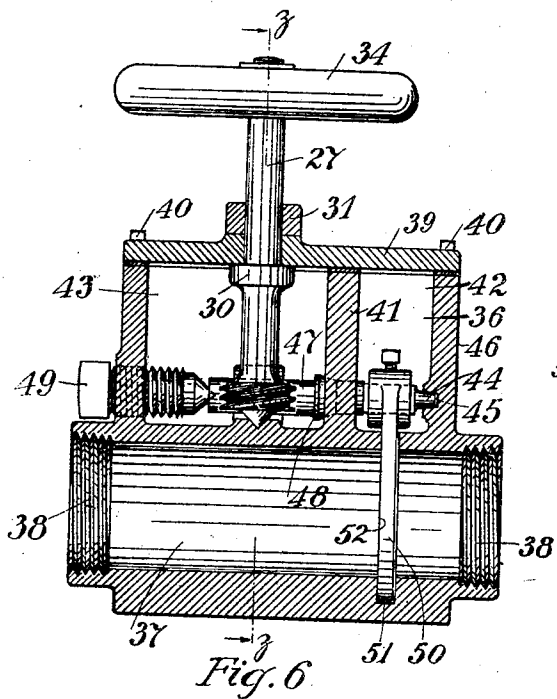


Fig. 6

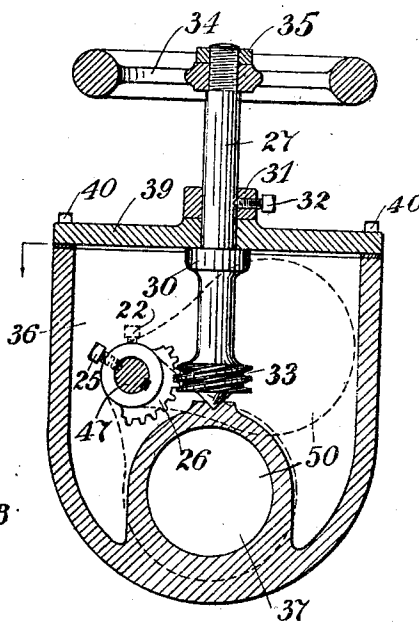


Fig. 8

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UNITED STATES PATENT OFFICE.

THOMAS BARRETT, OF MAYWOOD, ILLINOIS, ASSIGNOR OF ONE-HALF TO JAMES RICHARDS, OF MAYWOOD, ILLINOIS.

STRAIGHTWAY VALVE.

940,577.

Specification of Letters Patent. Patented Nov. 16, 1909.

Application filed January 30, 1909. Serial No. 475,240.

To all whom it may concern:

Be it known that I, THOMAS BARRETT, a citizen of the United States, residing at Maywood, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Straightway Valves, of which the following is a specification.

My invention relates to valves and more specifically to that class of the same known as straightway valves.

The object of my invention is to provide a valve through which a straight unobstructed passage will be provided when the valve shut-off means are in raised position, a further object being to provide a valve of the character mentioned the shut-off means in which may be raised to open the valve with a minimum expenditure of movement and therefore in a minimum space of time.

A still further object of my invention is to provide a valve of the nature stated, in connection with the operative parts of which, packing will not be necessary, such being only necessary in the connection of the valve casing and its cover plate.

A further object is to provide a valve which will be of great efficiency and which will be comparatively simple of construction, hence of low cost to manufacture.

Other objects will appear hereinafter.

With these objects in view my invention consists in a straightway valve characterized as above mentioned and in certain details of construction and arrangement of parts all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a vertical longitudinal section of the preferred form of my valve. Fig. 2 is a top plan view thereof with the valve casing cover plate removed. Fig. 3 is a vertical transverse section taken on the line $x-x$ of Fig. 1. Fig. 4 is an enlarged detail partly in elevation and partly in section illustrating the construction of the rock shaft upon which are mounted the valve disks or closures. Fig. 5 is a sectional detail taken substantially on the line $y-y$ of Fig. 2. Fig. 6 is a vertical longitudinal section of a modified form of my valve. Fig. 7 is a top plan view thereof with the valve casing cover plate removed and the valve actuating hand

wheel broken away. Fig. 8 is a vertical transverse section taken on the line $z-z$ of Fig. 6, and Fig. 9 is an enlarged detail partly in elevation and partly in section illustrating the construction of the rock shaft upon which is mounted the valve disk or closure of my modified valve form.

Referring now to the drawings particularly to Figs. from 1 to 5 inclusive, 1 indicates a substantially semi-cylindrically shaped valve casing or shell through the lower portion of which is formed a longitudinally extending straight and tubular or cylindrical passage 2. Secured, as by screws 3, to the upper edge of said casing is a cover plate 1', a packing 3' of any suitable material being interposed between said cover and the upper edge of said casing for obvious reasons. Said casing is formed, at the extremities of said passage 2, into threaded pipe ends 2'. The passage 2 is provided, preferably equally distant from the extremities thereof, with transversely extending seat-forming slots 4-4'. 5-5' indicate substantially circular similar disks or valves proper, the same being adapted to be snugly received in said slots 4-4', in which event the surfaces 6-6' thereof will be adapted to snugly engage the seats 7-7' formed by said slots, said disks being adapted, when in engagement with said seats, to entirely close the way through said passage 2. The interior of said casing 1 is divided by means of transverse partitions 8-8' into three chambers, 9-9' indicating the end chambers and 10 the central. Rockingly mounted in bearings formed in partitions 8-8' is a longitudinally extending two-part rock shaft 11. The contiguous end portions of the parts 12 and 13 of said shaft are connected in any suitable manner, but preferably the part 12 is formed with a cylindrical extension 14, and the part 15 with a corresponding bore or seat 16 adapted to slidably receive said extension 14. A key 17 resting in alining key slots formed in said shaft parts serves as a means of locking the latter together so as to effect simultaneous movement thereof. Mounted upon the preferably squared end portions 18 and 19 of said shaft are the correspondingly slotted shanks or stems 20 and 21 respectively of said disks 5-5', the same being secured thereto, preferably by means of set screws 22. Said shaft is formed with ground conical should-

ders 23, the same being adapted to be snugly and exactly received in ground conical seats provided for the reception of the same in the outward surfaces of the partitions 8—8', thereby forming a fluid-tight connection between said parts and obviating the possibility of fluid entering the central chamber 10 therethrough. In order that all wear upon the contacting surfaces of said cones and the seats therefor may be compensated for, set screws 24 provided in the end walls of the casing 1 in axial alinement with the rock shaft 11, the inner extremities of the same being in engagement with the extremities of said shaft, are provided. The tapped holes accommodating said screws 24 are of a diameter slightly greater than that of the conical shoulders 23 and the shaft parts 12 and 13, hence in assembling the valve, said shaft parts may be inserted through said holes into their bearings. Fixed to the central portion of the shaft 11, by means of the key 17, the same being locked against lateral movement thereon, preferably by means of a set screw 25, is a segmental gear 26. Centrally positioned and vertically extending in said casing 1 is an actuating stem 27, the upper end portion of which is rotatably mounted in bearings provided in the cover plate 1' of the casing 1, the lower pointed extremity thereof resting in a seat 29 provided for the reception of the same in the upper surface of the tubular passage-forming portion of the casing 1, as clearly shown in Figs. 1 and 3. An integral shoulder 30 formed upon said stem 27 and a detachable collar 31 fixed thereto as by means of a set screw 32, said shoulder and collar being in engagement with the top and bottom surface of said cover plate 1', obviously hold said shaft in operative position. Formed at the lower extremity of said stem is a worm 33, the same meshing with the segmental gear 26. By the rotation of a hand wheel 34 in threaded connection with the upper extremity of the stem 27, the same being locked against relative rotation thereon by means of a lock-nut 35, the actuation of the valve disks 5—5' is readily effected.

In Figs. from 6 to 9 inclusive is shown a slightly modified or simplified form of my valve, the form shown in said figures being substantially the same in construction as that of the preferred form of my valve except that only one shut-off disk or valve proper is employed whereas in the former construction two were employed in the construction. In said modified form, 36 indicates the valve casing or shell which is similar in form to the casing 1 minus its chamber 9, 37 indicating the cylindrical passage through said casing, the same being also, as in my preferred form, provided with threaded pipe ends 38. 39 is the cover plate secured as by screws 40 to the upper edge of the casing

36. In this form as stated only one valve disk is employed, hence only two chambers are necessary. 41 indicates the transverse partition, corresponding to the partition 8' of the first described form, which divides the interior of said casing 36 into chambers 42 and 43, corresponding respectively to the chambers 9' and 10 in said former form. Longitudinally extending through said casing, the central portion thereof being rockingly mounted in bearings provided in said partition 41, the extremity 44 thereof resting in a seat 45 provided for the reception of the same in the end wall 46 of said casing, is a rock shaft 47 corresponding to the shaft 11. Said shaft is also provided, as was the shaft 11, with a ground conical shoulder 48 which serves the same purpose as that of the shoulders 23 of the preferred form. Threaded in the end wall of the casing 36, the same being in axial alinement with the shaft 47 the extremity thereof being in engagement with the extremity of said shaft, is a set screw 49, the latter serving in the same capacity as the set screws 24. Mounted upon the shaft 47, in a manner similar to the mounting of the disk 5', the same being identical in construction with the latter is a disk 50, the seat-forming slot 51 and the slot 52 provided for which are identical with the slot 4' and seat 7' of my preferred form. The remainder of the valve is identical in construction with corresponding parts in my described preferred form, hence it is deemed unnecessary to again describe the same. For convenience such remaining undescribed parts of my modified form and corresponding parts in the described preferred form will be given like numerals of reference.

Either form of the valve is actuated by means of the hand wheel 34, it being evident that by rotating the latter in one direction causes the elevation of the valve disk or disks as the case may be, thereby effecting the opening of the valve passage. By rotating said hand wheel in the opposite direction the said disk or disks may be lowered, thereby closing said valve passage.

While I have shown what I deem to be the preferable forms of my device, I do not wish to be limited thereto, as there might be many changes made in the details of construction and arrangement of parts without departing from the spirit of my invention.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a straightway valve, the combination of a valve casing, a passage through said casing, a transverse partition in said casing dividing the same into a valve chamber and a valve operating mechanism chamber, a rock shaft extending longitudinally through said chambers, a valve fixed to said shaft and extending across said passage

adapted to close the way through the latter, a gear fixed to said shaft within the last said chamber, and exteriorly projecting rotatable means in mesh with said gear for actuating
5 said valve passage closing means, substantially as described.

2. In a straightway valve, the combination of a valve casing, a passage through said casing, transverse partitions formed in said casing, a longitudinally extending rock
10 shaft, means fixed to said shaft and extending across said valve passage adapted to close the way through the latter, a segmental gear fixed to said shaft, an exteriorly
15 projecting actuating stem rotatably mounted in said casing, and a worm fixed to said stem in mesh with said segmental gear, substantially as described.

3. In a straightway valve, the combination of a valve casing, a liquid passage through said casing, transverse partitions
20 formed in said casing, a two-part rock shaft rotatably mounted in bearings formed in said partitions, disk valves secured to the
25 extremities of said shaft adapted to rest in seat-forming slots transversely extending of said valve passage, and rotatable means in operative connection with said rock shaft for
30 actuating said disk valves, substantially as described.

4. In a straightway valve, the combination of a substantially semi-cylindrical formed valve casing, a longitudinally extending liquid passage through said casing,
35 transverse partitions formed in the interior of said casing dividing the latter into a plurality of chambers, a two-part rock shaft mounted in bearings provided in said partitions, the extremities of said shaft terminating
40 in the end chambers of said plurality of chambers, a ground joint connection between said shaft and said partitions, disk valves secured to the extremities of said shaft adapted to close the way through said pas-
45 sage, and rotatable means for actuating said rock shaft, substantially as described.

5. In a straightway valve, the combination of a substantially semi-cylindrically

formed valve casing, a longitudinally extending liquid passage formed through said
50 casing, a plurality of transverse compartments formed in the interior of said casing above said passage, a two-part shaft rockingly mounted in bearings provided in the
55 partitions forming said compartments, the extremities of said shaft terminating in the end compartments of said plurality thereof, a ground joint connection between said shaft and said partitions, adjusting set screws in
60 engagement with the extremities of said shaft, a transversely disposed valve disk secured to the extremity of said shaft adapted to close the way through said passage, and rotatable means for locking said shaft, sub-
65 stantially as described.

6. In a straightway valve, the combination of a substantially semi-cylindrically formed valve casing, a longitudinally extending liquid passage formed through said
70 casing, a plurality of transverse compartment-forming partitions formed in the interior of said casing above said passage, a two-part shaft rockingly mounted in bearings provided in said partitions, the ex-
75 tremities of said shaft terminating in the end compartments of those formed by said partitions, a ground joint connection between said shaft and said partitions, adjusting
80 set screws threaded in the end walls of said casing in engagement with the extremities of said shaft, valve disks adjustingly secured to the extremities of said shaft adapted to close the way through said passage, a
85 segmental gear fixed to the central portion of said shaft, a rotatably mounted vertically disposed actuating stem, and a worm formed thereon in mesh with said segmental gear, substantially as described.

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

THOMAS BARRETT.

Witnesses:

JOSHUA R. H. POTTS,
HELEN F. LILLIS.