(No Model.)

E. H. LUNKEN.

STRAIGHTWAY VALVE.

No. 494,579. Patented Apr. 4, 1893.

Fig. 1.

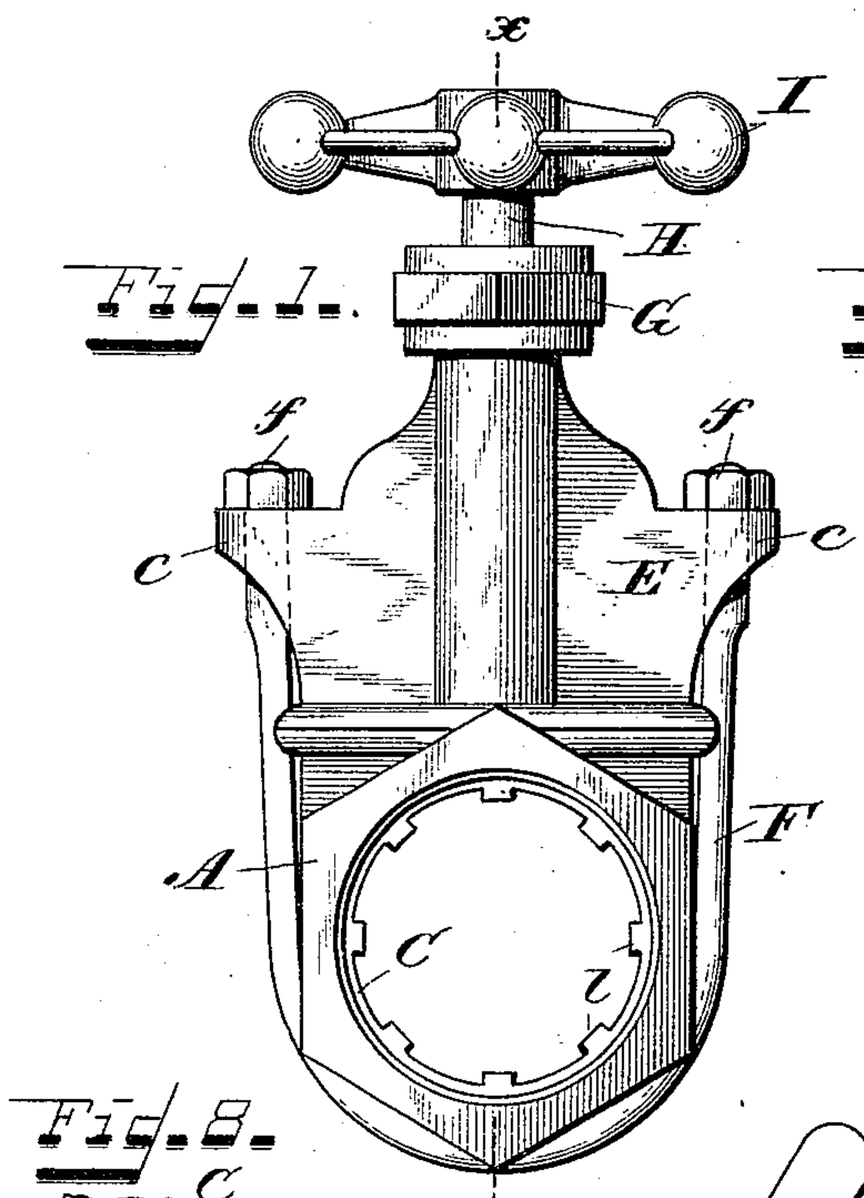


Fig. 2.

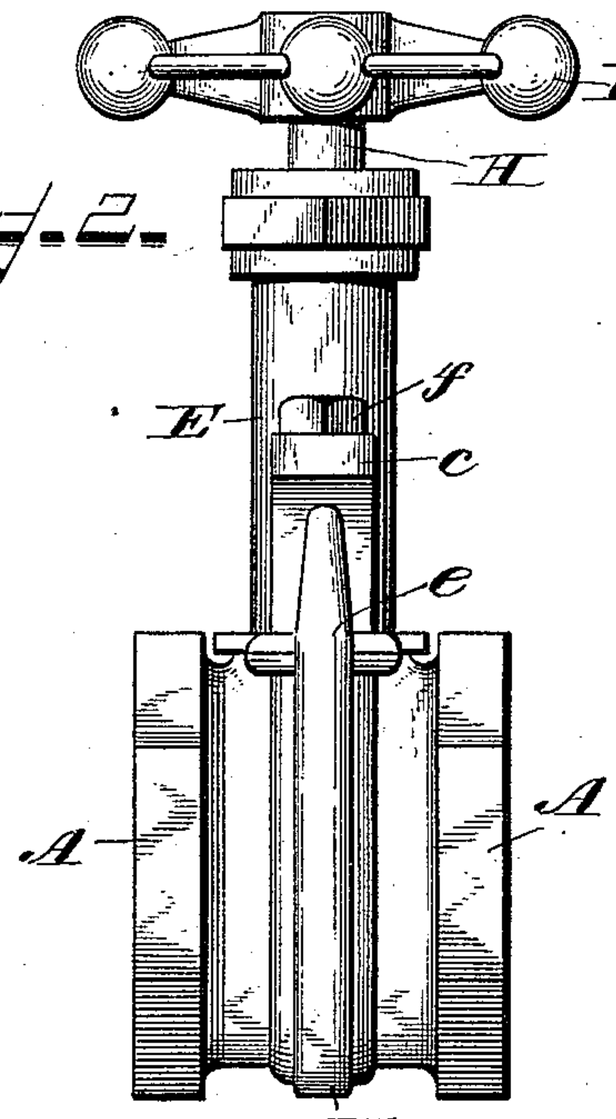


Fig. 8.

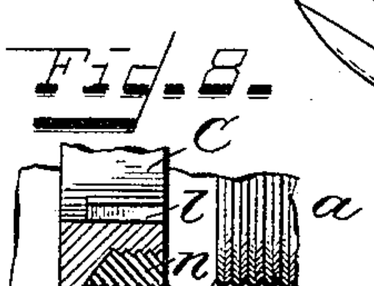


Fig. 4.

Fig. 5.

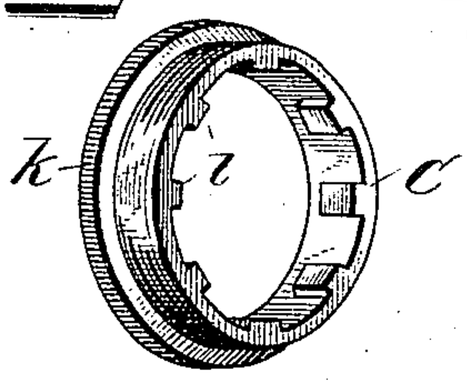


Fig. 6.

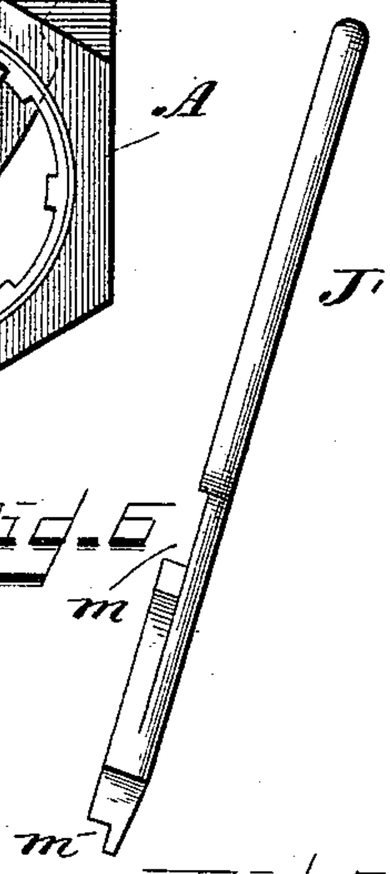


Fig. 7.

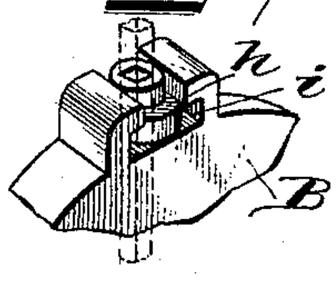
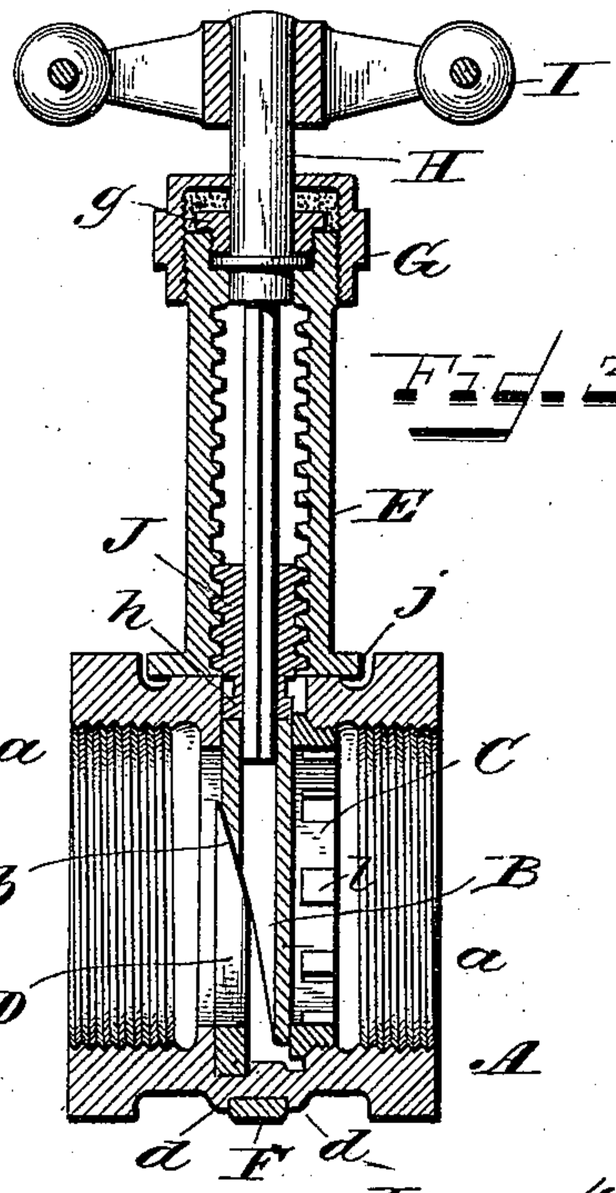


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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STRAIGHTWAY-VALVE.

SPECIFICATION forming part of Letters Patent No. 494,579, dated April 4, 1893.

Application filed October 26, 1892. Serial No. 450,047. (No model.)

To all whom it may concern:

Be it known that I, EDMUND H. LUNKEN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Straightway-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to all classes of straight way valves whether employing single or double disks and it has for its object the improved construction of the same and the production and application of a removable and renewable seat for the disk or disks.

The novelty of my invention will be hereinafter set forth and specifically pointed out in the claims.

In the accompanying drawings:—Figure 1 is a front elevation of the valve embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional side elevation on the dotted line *x*—*x* of Fig. 1. Fig. 4 is an end elevation of the body of the valve showing the application of the seat wrench. Fig. 5 is a perspective view of the removable seat. Fig. 6 is a side elevation of the seat wrench. Fig. 7 is a detail perspective showing the connection of the disk carrier and disk. Fig. 8 is a sectional detail showing the seat ring applied to iron bodies.

The same letters of reference are used to indicate identical parts in all the figures.

A is the body of the valve of the usual or any suitable construction, with threaded pipe connections, *a* in line with each other and with the valve opening. In this instance I have shown but a single valve disk B, Fig. 3 which when lowered is forced uniformly and tightly to its seat C, by a self adjusting wedging half ring D confined in a groove in the body of the valve and whose upper beveled ends engage inclined shoulders *b* on the disk B. Any other means, however, might be employed to force the disk to its seat when lowered.

E is the bonnet of the valve fitted upon the body with an intermediate packing and secured thereto by a single clip bolt F embracing the body and held between lugs *d* at its bottom, Fig. 3, and in recesses *e* in the flanges of the body and bonnet, while its upper threaded ends are passed through perforated lugs *c* projecting from the bonnet and have nuts *f* screwed upon their upper ends to lock the parts securely together. By this simple and secure manner of uniting the body and bonnet I am enabled to do away with the enlarged flanges heretofore used and through which bolts were passed to lock the parts, and I consequently save much metal and render the valve more compact, as will be readily understood. In addition to these advantages I obtain greater strength in the valve shell both to resist bursting strains from expansion and contraction and internal pressure and to resist the pressure requisite in forcing the disk tightly to its seat. The bonnet E is just of sufficient size to receive within it the valve disk, or disks, when entirely raised and to afford a sufficient extension at the top for a stuffing box whose cap nut G is screwed upon its exteriorly threaded end.

The stem H of the valve with a hand wheel I at its upper end passes down through the stuffing box and bonnet and engages the upper end of the valve disk in the usual or any suitable manner, though in this instance I have shown it with a collar *g* to prevent its rising or falling and with its lower squared end passing through a corresponding opening in a carrier J threaded exteriorly and engaging sectional or part-nut threads on opposite sides of the space occupied by the disk or disks when raised. The lower end of the carrier has a collar *h* Figs. 3 and 7 which is confined in a horizontal slot *i* in the upper end of the disk. By this construction of the stem and its attachment to the disk it does not rise or fall but by simply turning causes the carrier J to rise and fall and with it the disk or disks, as will be readily understood. This construction of the stem and its attachment to the disks is particularly useful in large valves where it would be undesirable to have the stem screw up and down. Instead of squaring the lower part of the valve stem it may be feathered in any other suitable way through the carrier.

The remaining and very important feature of my invention consists in the provision and application of a removable and renewable

seat for the disk or disks, which can, after taking off the bonnet, be applied through the disk opening of the body without disturbing the pipe connections. It is well known that in valves of this class the seats wear by use and often become untrue thereby rendering the whole valve useless and requiring it to be replaced by a new one. To remedy this and to prolong the life of the valve almost infinitely I form in the valve body a tapped seat bearing *j* Fig. 3 whose inner edge is slightly tapering and into this bearing is screwed the valve seat C Figs. 3 and 5, in the following manner. The valve seat C is an exteriorly threaded ring with an inner flange *k* whose inner face constitutes the seat and whose outer face is slightly beveled, as seen more particularly in Fig. 3. Upon the inner side of the ring are a number of equidistant projections or teeth *l* but slightly raised above the inner surface of the ring. The teeth or lugs *l* are shorter than the ring C constituting the valve seat so that their ends are set back from the seating or bearing surface of the valve seat. The periphery of the ring is milled or otherwise roughened to provide a gripping surface whereby the valve seat can be turned by a pointed instrument, as is desirable in first screwing or starting the valve seat in when getting it into place. The ring thus constructed is slipped through the seat opening of the body before the bonnet is applied and is screwed into the bearing *j* by means of a wrench J′, Figs. 4 and 6, which is simply a hand piece flattened at its lower end on one side of which are two engaging shoulders *m* which fit in between the teeth *l*, as seen in Fig. 4, to enable the wrench to become hooked to the ring and to turn the same to screw it home. By vibrating the wrench in the seat opening of the body the ring C can be screwed into place or be unscrewed when it is desired to replace the old seat with a new one, as will be readily understood. It is evident that the wrench might be made to engage notches in the outer edge of the flange *k* instead of the projections *l*, and said notches might be used to start the screwing in of the seat with the fingers before applying the wrench to the projections *l*. By tapering the outer face of the flange *k* a perfectly tight joint is effected with the seat opening.

In Fig. 8 I have shown the application of the seat ring to iron bodies. When iron bodies are used the seat ring would become rusted tight and could not be unscrewed if screwed directly into the iron body, so I provide a supplemental brass ring *n*, threaded exteriorly and interiorly, which is screwed into the valve body so as to become a permanent part thereof, and into this ring, which has its inner edge beveled as shown, the seat ring C is screwed as before described. When these seats become worn it is only necessary to remove the bonnet and take out the worn seat and replace it with a new seat whereupon the valve is rendered as good as new. As the disk or disks are likewise renewable when they wear and become untrue, the valve is practically indestructible.

Having thus fully described my invention, I claim—

1. The combination, in a straight way valve, of the body and its removable seat, the valve disk, the elongated narrow two-eared hood provided with means for operating the valve disk, and a tie-bolt surrounding the body with its ends projecting through the ears of the hood and secured by nuts, whereby a secure and compact connection between the body and hood, in close proximity to the removable valve seat, is effected, substantially as described.

2. The combination, in a straight way valve, of the body and its removable seat, the valve disk, the threaded disk carrier, the elongated narrow two-eared hood having part threads formed on its inner sides engaging the threads on the disk carrier, and a tie bolt surrounding the body and held from lateral movement by lugs, said tie-bolts having its ends projecting through the ears of the hood and secured by nuts, substantially as described.

3. In a straight way valve, the combination with the valve body provided with a narrow elongated opening in close proximity to the valve seat, of a removable valve seat consisting of a ring having threads on its outer periphery, a series of lugs set back from the valve seating surface on its inner periphery, and a double-faced flange projecting from the end of said ring and having its outer edge provided with a roughened or gripping surface, the whole being so constructed that the valve seat can be inserted through said opening or taken out through the same without injury to the bearing surfaces of the valve seat, substantially as described.

4. In a valve, the combination of the iron body, a brass ring secured therein and threaded interiorly to form a seat bearing, and a threaded ring seat having gripping surfaces and adapted to be inserted through the disk opening of the body and screwed into said brass ring, substantially as described.

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