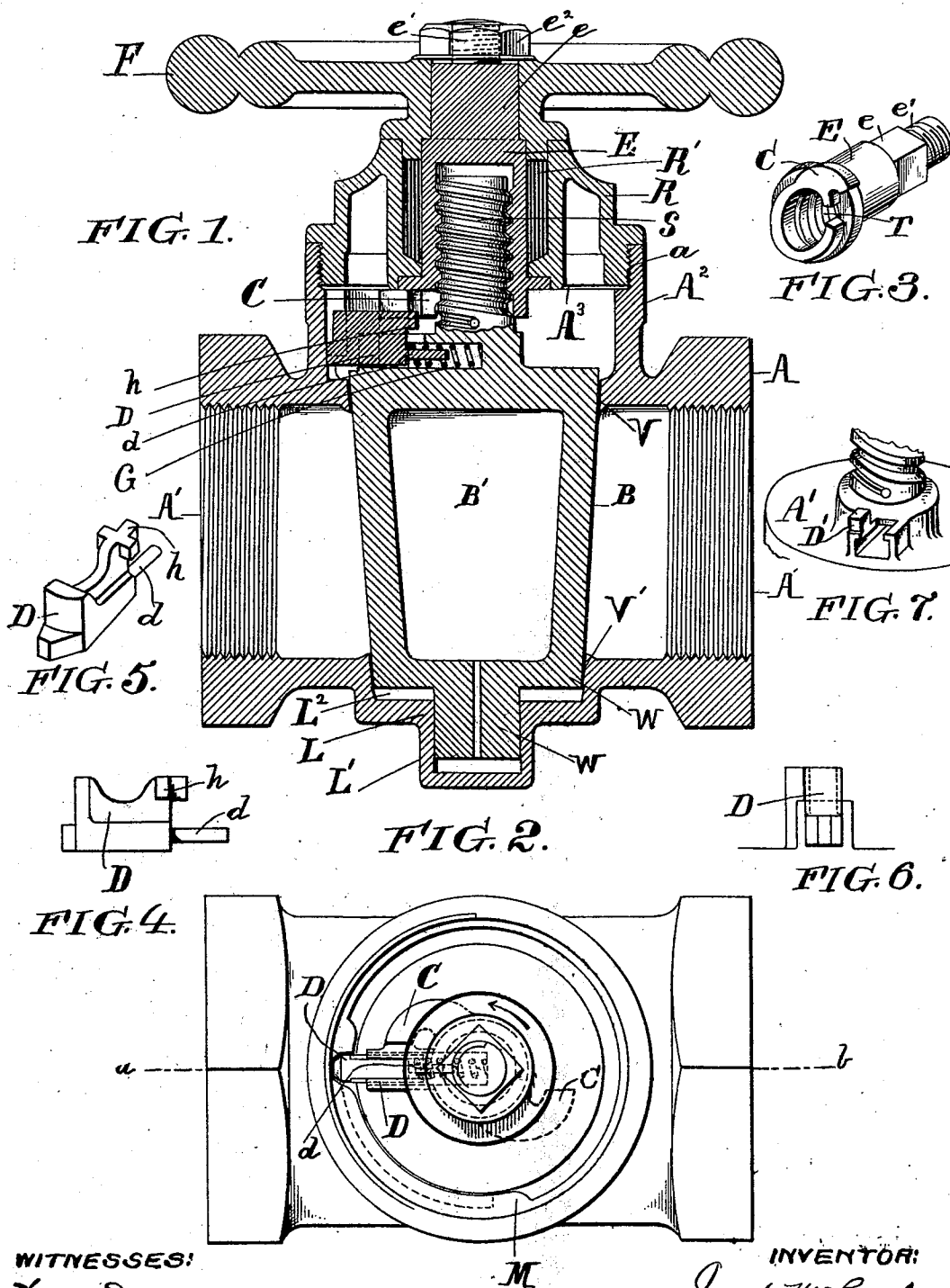


(No Model.)

J. M. COALE.
STRAIGHTWAY VALVE.

No. 514,180.

Patented Feb. 6, 1894.



WITNESSES:

Henry D. ...
Chas. Beck

INVENTOR:

Joseph M. Coale
By his atty. H. Benton

UNITED STATES PATENT OFFICE.

JOSEPH M. COALE, OF BALTIMORE, MARYLAND.

STRAIGHTWAY-VALVE.

SPECIFICATION forming part of Letters Patent No. 514,180, dated February 6, 1894.

Application filed January 13, 1893. Serial No. 458,198. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. COALE, a citizen of the United States, residing in the city of Baltimore, State of Maryland, 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 straight-way valves, constructed on the principle described in my application for patent filed December 20, 1892, Serial No. 455,755, and consists of novel features in the construction of the several parts, and of the combination and arrangement of them, as hereinafter particularly described and pointed out in the claims.

In the accompanying drawings illustrating my present invention, Figure 1 is a vertical sectional view, through the line *a-b* of Fig. 2, showing the valve tight on its seat. Fig. 2 is a plan view with the wheel and journal box removed, showing by the full lines the position of some of the parts when the valve is raised from its seat; and also showing by the dotted lines the position of the parts when the valve is tight on its seat as in Fig. 1. Fig. 3 is a perspective view of the sleeve and its projecting cam; and Figs. 4, 5, and 6 are side, perspective and end views respectively, of the retaining device operating in conjunction with the sleeve and clutch; and Fig. 7 is a perspective view of a section of the lower end of the valve spindle and top of valve.

The object of my present improvements is, primarily, to combine in a single device or mechanism, the two separate mechanisms employed in my previous invention to perform the two functions of, first, holding the valve without rotation while it is being raised by the loose sleeve, and second, by a subsequent but continuous rotation of the sleeve to clutch the valve stem to the sleeve and thus rotate the valve. Also, the further object of combining in a single device, the cam ring or cap with the journal forming the stuffing box; and my invention consists of devices so constructed and operating, and of the combination and arrangement of these several parts with the spring locking pin that holds the valve from rotation on the initial movement of the valve stem.

By reference to the description of my previous invention above referred to, the present improvements herein described will be more readily understood.

The casing or shell A is provided, as before, with the usual inlet and outlet openings A' A', and top and bottom central openings V V', the latter having preferably a closed bottom L L', of the general shape shown in the drawings, to afford a guide-bearing for the lower extended end W of the valve B, the latter being preferably conical shape as before, and having a by-pass opening B'.

The casing A is provided with an annular extension A², surrounding the upper central opening V; which extension is interiorly screw-threaded on its upper extremity. This extension supports the journal box R and also forms a chamber A³ within which the clutch C of the sleeve E and the retaining device D, the spring-controlled pin *d*, and the cam lug *h*, are located and operated, and also in which the head of the valve B and its spindle E may rise when the valve is operated.

The valve B is provided with a spindle S screw-threaded on its upper end to register with screw-threads on the interior of a loose sleeve E which is provided with a square portion *e* (see Fig. 3) and a screw-threaded end *e'*. The operating wheel F is centrally recessed, and keyed on the square part *e* of the sleeve E, while the screw-threaded end *e'* thereof passes through said recess in the wheel and is secured thereon by the nut *e*².

Between the annular extension A² of the casing and the lower surface of the wheel hub, is fitted the journal box R which is arranged relatively to the periphery of the sleeve E as to form a stuffing box R' between them. The advantage of this construction is that the stuffing box is in close proximity to the top of the structure so that by simply unscrewing the nut *e*² the wheel is readily removed, and the stuffing box can be readily re-packed without disturbing any part of the valve proper or its operating mechanism, thus rendering the whole device very much more simple and efficient.

In my former device above referred to, the valve was held from rotating on the initial movement of the sleeve and spindle, by means of a spring-controlled rod in the base of the

valve, operating in cam recesses in the valve and lower part of the casing. I now substitute therefor a spring-controlled pin *d* held in a lateral recess G in the lower extremity of the spindle of the valve. Said pin is held and guided in and by the part D to which it is affixed. Located on the part D above said pin is formed a cam lug *h*. The pin *d* is thus controlled in its movements by the spring encircling it. The construction is more clearly shown in Figs. 4 and 5, the former being a side view and the latter a perspective view of the part D, its lug *h*, and the sliding pin *d*. The valve is held from rotation on the initial movement of the spindle by means of the lug *h* on the part D contacting against the clutch on the end of the sleeve E. A cam groove M is formed on the inner wall of the annular extension A² of the shell of the valve, the pin *d* being held in said groove by the pressure of its encircling spring. On the further movement of the spindle, the clutch C on the sleeve E contacts with the lug *h* on the part D which is moved in an arc of a circle and against the pressure of the spring, and when it reaches the curved edges of the grooves, the pin is forced back and the lug *h* enters the slot T in the clutch.

In my former device, the clutching of the wheel with the spindle, after the valve had been raised by the initial rotation of its spindle, is accomplished by a spring-controlled rod and projection in the hub of the wheel, actuated by a cam-ring surrounding the sleeve, but in my present device I substitute for these parts, as before described, a cam clutch C T on the end of the sleeve E (shown in detail in Fig. 3), which, acting against the lug *h* of the part D (see Figs. 3 and 1) will, on the continued rotation of the sleeve, allow the said lug *h* to enter the recess T of the cam clutch, and so permit the spindle to be rotated.

In a pending application, Serial No. 455,775, filed prior hereto, I have claimed broadly in claims 1 and 2 thereof, mechanism involving the principle of first raising the valve from its seat without rotation, and then rotating the same by a continued operation of the spindle and its actuating devices. Hence the

same is not claimed herein generically, the present application being confined to the several combinations of mechanism shown and described herein and forming the subject matter of the following claims.

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

1. In combination, forming a straight way valve, the casing with its annular grooved extension A², the valve and its screw-threaded spindle S laterally recessed at G, the sleeve E, with its clutch device C T, and the retaining mechanism consisting of the part D, its lug *h*, and spring-controlled pin *d*; said parts being constructed and combined substantially as and for the purpose described.

2. In combination, the shell or casing A, having a central bottom recess L L', and an annular extension A² at top, a valve B with a by-pass opening B' registering with those of the casing, and carrying a screw-threaded spindle S at its top and having a lower extended end W adapted to be guided in the recess L L' of the casing, a sleeve E screw-threaded on its interior and with clutch mechanism between the sleeve and spindle said parts operating to first raise and then rotate the spindle, and a journal box R mounted in said extension A² of the casing and inclosing the sleeve and its devices which actuate the spindle substantially as described.

3. In combination with the casing provided with an annular extension A² grooved on its interior at M, the valve and its screw-threaded spindle S recessed at G, of a loose sleeve E screw-threaded on its upper interior to register with those on the spindle and provided with a clutch C slotted at T, and retaining mechanism consisting of the parts D, *d*, *h*, adapted to operate in the manner and for the purpose set forth.

In testimony whereof I have hereunto affixed my signature this 9th day of January, A. D. 1893.

JOSEPH M. COALE.

Witnesses:

GEO. M. DAVIS,
JOS. G. COALE.