

No. 719,854.

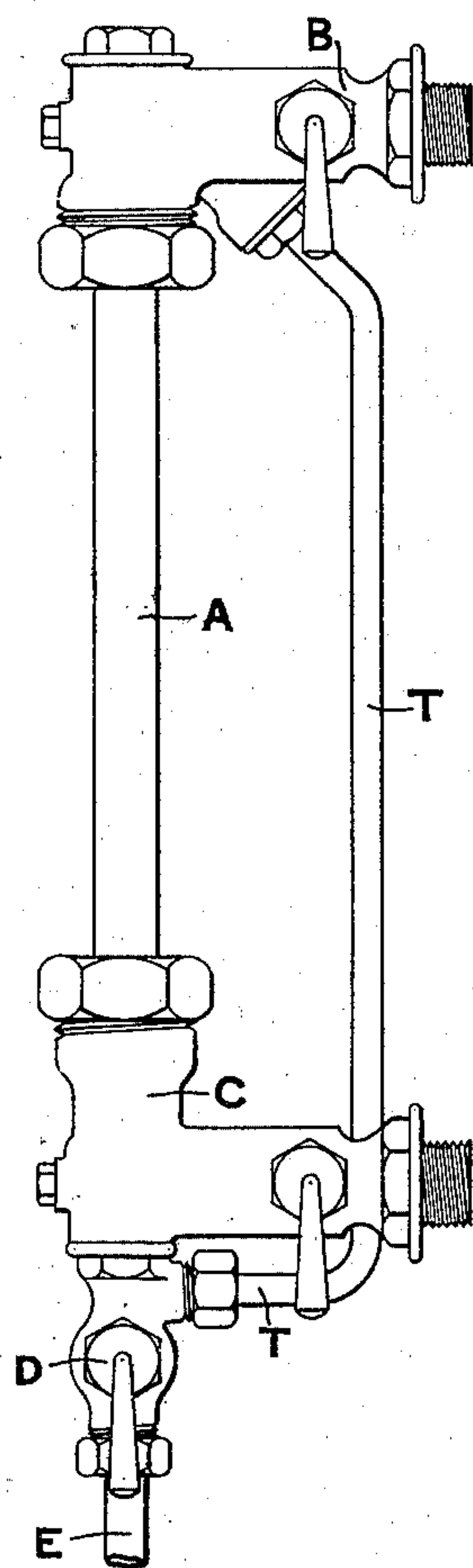
PATENTED FEB. 3, 1903.

L. PARKER.  
WATER GAGE.

APPLICATION FILED MAY 24, 1902.

NO MODEL.

FIG. 1.



Witnesses  
Charles Smith  
J. Staib

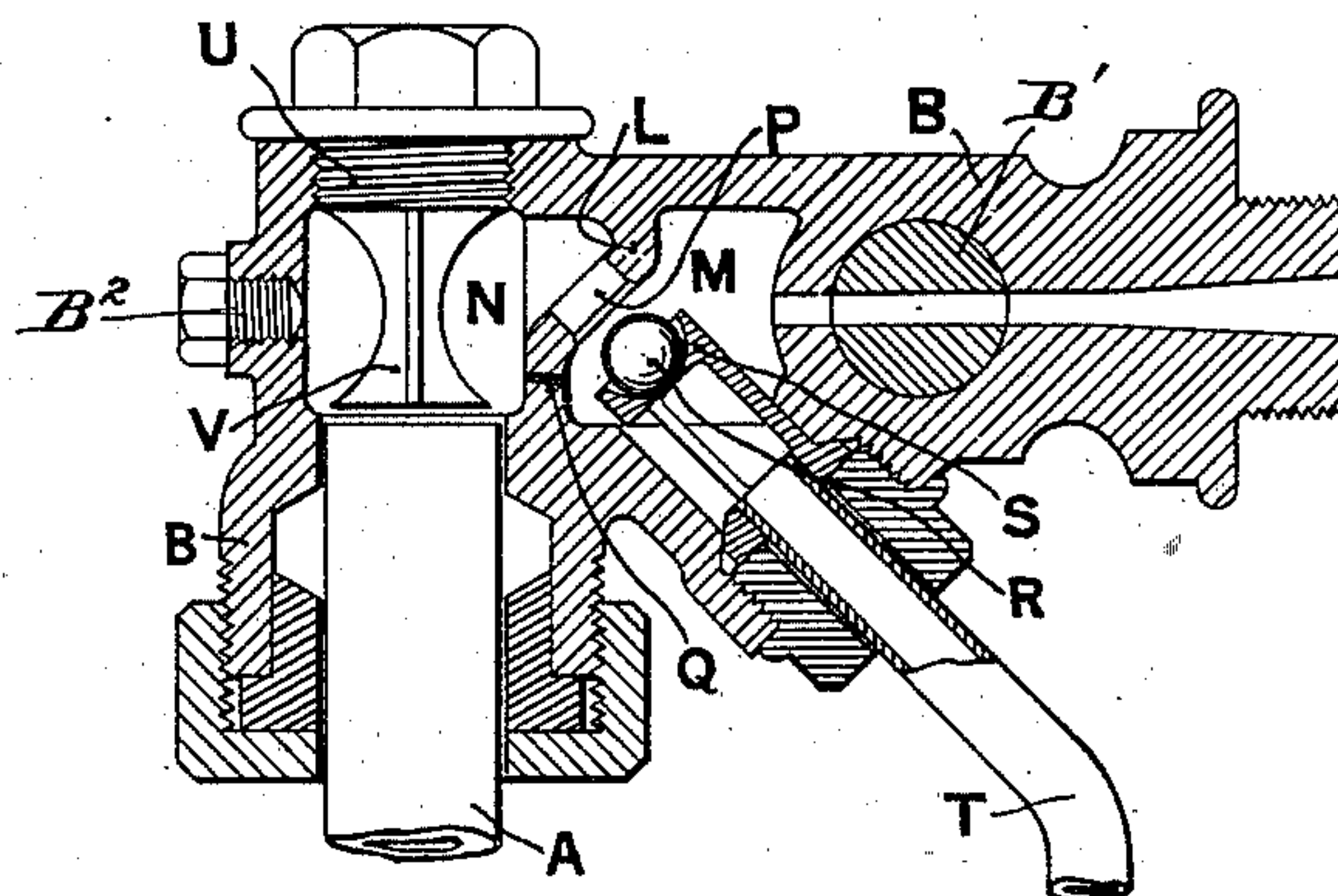
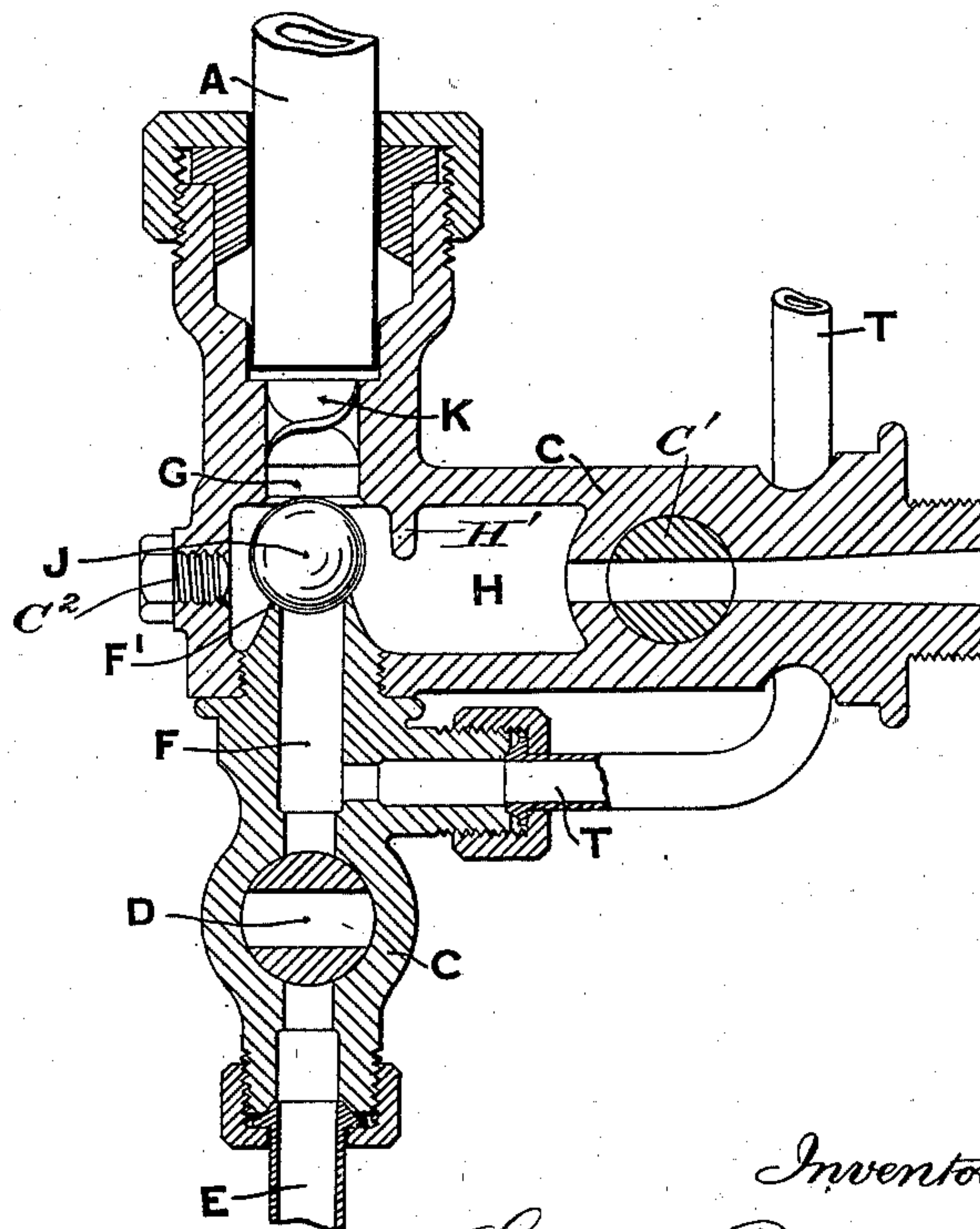


FIG. 2.



Inventor  
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attys



# UNITED STATES PATENT OFFICE.

LEMUEL PARKER, OF LEEDS, ENGLAND.

## WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 719,854, dated February 3, 1903.

Application filed May 24, 1902. Serial No. 108,775. (No model.)

*To all whom it may concern:*

Be it known that I, LEMUEL PARKER, a subject of the King of Great Britain and Ireland, residing at 1 Carlton Grove, Carlton Hill, Leeds, in the county of York, England, have invented certain new and useful Improvements in Water-Gages for Steam-Boilers, (for which I have made application for a patent in Great Britain, No. 23,109, bearing date November 15, 1901,) of which the following is a specification.

This invention relates to water-gages for steam-boilers and the like; and my object is to provide simple and efficient means in connection therewith whereby the glass tube may be internally cleansed at will, so as to render the height of the water clearly visible, and also to provide means whereby the water and steam may be automatically shut off in the event of the glass tube breaking.

According to my invention I connect the drain or blow-through cock with the upper or steam fitting of the gage, and in the passage leading up to the lower end of the glass tube I provide a curved or spiral guide in such a manner that on the drain-cock being opened water under pressure is forced swiftly upward through the glass tube, the spiral guide imparting a rotary motion to the water passing up through the tube, whereby the interior of the latter is thoroughly cleansed. The gage is also fitted with valves which close the water and steam inlets automatically in the event of the glass tube breaking.

In order that my invention may be clearly understood, I will describe the same with reference to the accompanying drawings, wherein—

Figure 1 is a side elevation, and Fig. 2 is an enlarged sectional side elevation, of a gage constructed in accordance with my invention.

A is the glass tube, which is carried by upper and lower fittings B and C, communicating with the steam and water, respectively, and the upper fitting B is provided with a stop-cock B' and a screw-plug B<sup>2</sup> and the lower fitting C with a stop-cock C' and a screw-plug C<sup>2</sup>. The blow-through cock D is situated in the lower fitting C in connection with a drain-pipe E and a passage F, and a passage G, leading up from a chamber H to

the glass tube A, is provided with a ball-valve J, which latter normally rests upon a seating F', formed on the upper edge of the passage F, a depending piece H' being employed in the chamber H to confine the movement of the said ball J, and in the said passage G, I provide a spiral guide K. The upper fitting B is provided with a division-wall L, so as to form two chambers M and N, and openings P and Q are formed through the said wall L, which connect the two chambers. A ball-valve R is employed in connection with the opening P, which valve normally rests upon a seating S within the chamber H, and a pipe T connects the chamber M of the upper fitting B to the passage F of the lower fitting C. The fitting B is also provided with a screw-plug U, having a stop-piece V projecting therefrom to within a short distance from the top of the glass tube A.

The area of the pipe T is made of such a size that when the blow-through cock D is open the normal pressure maintained in the chamber M and the corresponding pressure in the glass tube A cannot fall low enough, unless the glass tube breaks, to allow the total downward pressure acting on the upper halves of the valves J and R to become less than the total upward pressure acting on the lower halves of the said valves, so that the said valves remain normally upon their respective seats F' and S. The valves J and R will thus only rise when the glass tube A breaks, as the pressure acting on the upper portions of the valves would then fall to almost atmospheric pressure, while the upward force acting upon the under side of the valves would then be in excess of the downward force; but the valves will not rise on simply opening the blow-through cock D, as the pressure on the upper portions of the valves remains in excess of the upward force, as above stated.

When it is desired to cleanse the interior of the glass tube A, the blow-through cock D is turned so as to establish communication between the passage F and the drain-pipe E, when the pressure in the passage F and pipe T falls, allowing steam from the chamber M to escape down the said pipe T and the water to be forced upward through the glass tube A into the upper fitting B, where the steam



and water combine and pass down the pipe T to the drain-pipe E. As the water rushes upward through the spiral guide K the latter imparts a rotary motion to the water, which action materially assists in cleansing the interior of the glass tube A.

In the event of the glass tube A breaking the pressure acting upon the upper surfaces of the valves J and R is reduced, when the now greater pressure acting on the lower halves of the valves J and R forces the same upward off their seats F' and S, closing the passage G and opening P and automatically shutting off the water and steam.

Should the automatic valves J and R close their openings G and P at any time other than when the glass tube is broken, the steam passes by way of the small opening Q from the chamber M to the chamber N and accumulates in the glass tube A until the pressure becomes equalized, when the said valves J and R fall back into their normal positions.

The stop V, forming part of the screw-plug U, prevents the glass tube A rising during the cleaning-out process, as the rapid upward movement of the water would otherwise lift the said tube off its seat.

Although I have shown the automatic valves J and R as ball-valves, it will be understood that any other suitable valve may equally well be employed.

The automatic steam-shut-off valve R may in some instances be dispensed with without in any way interfering with the working of the automatic water-shut-off valve J.

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

1. In a water-gage, the combination with a glass tube provided with upper and lower fittings communicating respectively with the steam and water supply, of a drain or blow-through cock located in the lower fitting, a

pipe connecting the latter to the upper or steam fitting, and a curved or spiral guide situated at the bottom of the glass tube, so that on opening the drain-cock, steam escapes down the pipe and allows water under pressure to be forced swiftly upward past the spiral guide and through the glass tube, substantially as set forth.

2. In a water-gage, the combination with a glass tube provided with upper and lower fittings communicating respectively with the steam and water supply, of a drain or blow-through cock located in a passage formed in the lower fitting, a valve carried on a seating at the upper end of the said passage, a curved or spiral guide situated at the bottom of the glass tube and a pipe connecting the passage in the lower fitting to a steam-chamber formed in the upper fitting, substantially as set forth.

3. In a water-gage, the combination with a glass tube provided with upper and lower fittings communicating respectively with the steam and water supply, of a drain or blow-through cock located in a passage formed in the lower fitting, a valve carried on a seating at the upper end of the said passage, a curved or spiral guide situated at the bottom of the glass tube, a pipe connecting the passage in the lower fitting to a steam-chamber formed in the upper fitting, a valve carried on a seating at the upper end of the said pipe, a division-wall in the steam-chamber having openings formed therein, and a screw-plug having a stop-piece projecting to within a short distance from the top of the glass tube, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

LEMUEL PARKER.

Witnesses:

JOHN S. NICOL,  
WM. GEO. SWIFT.