

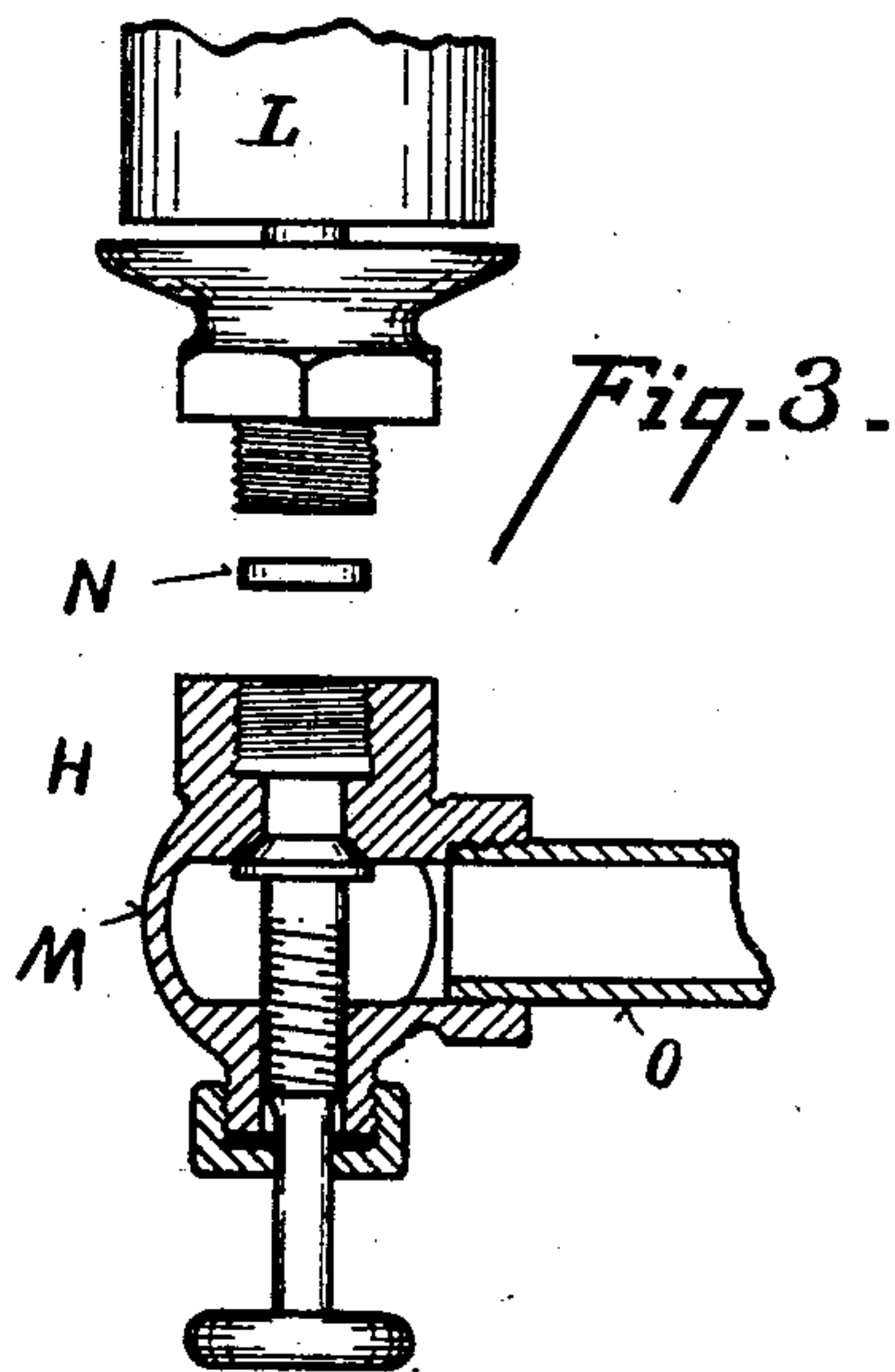
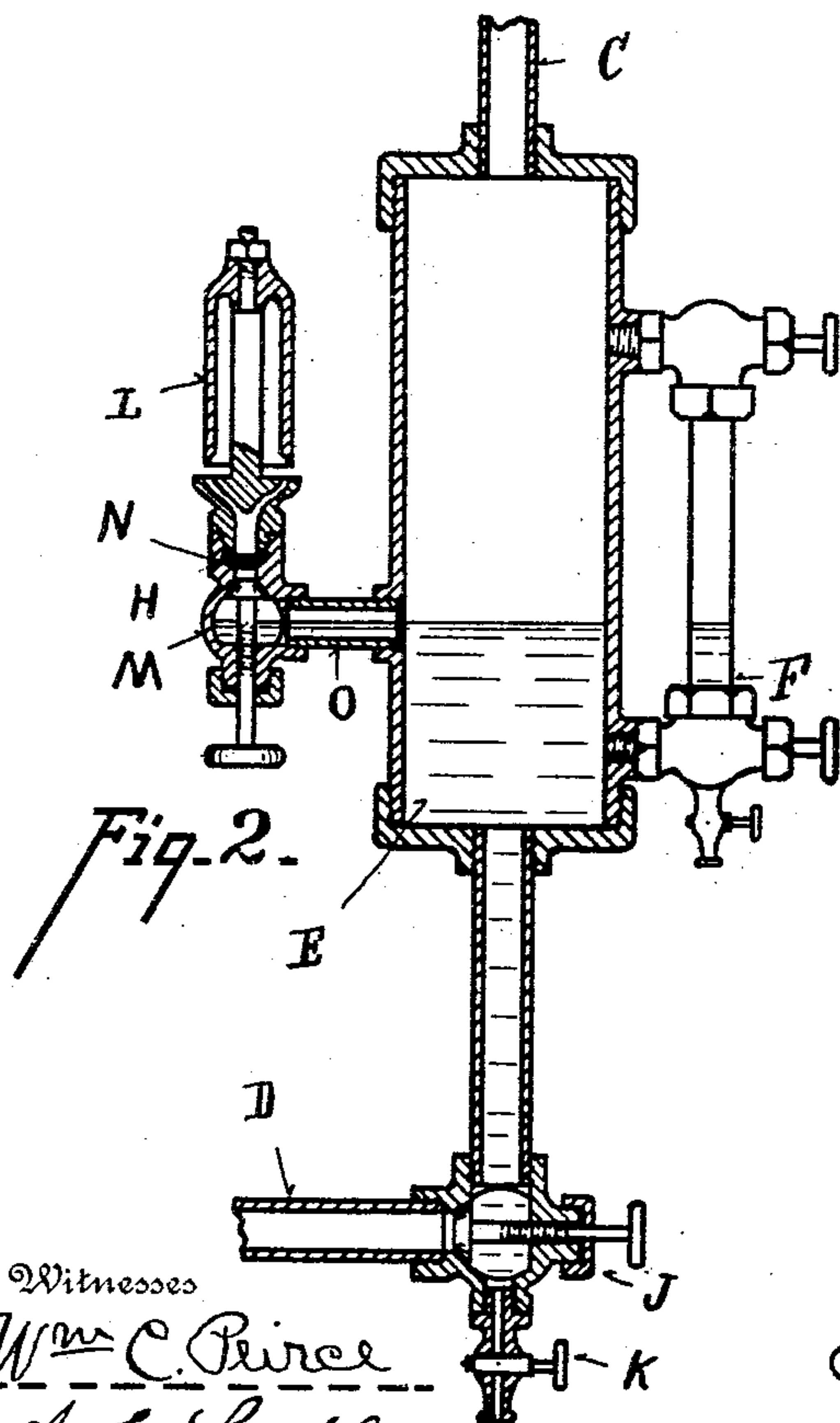
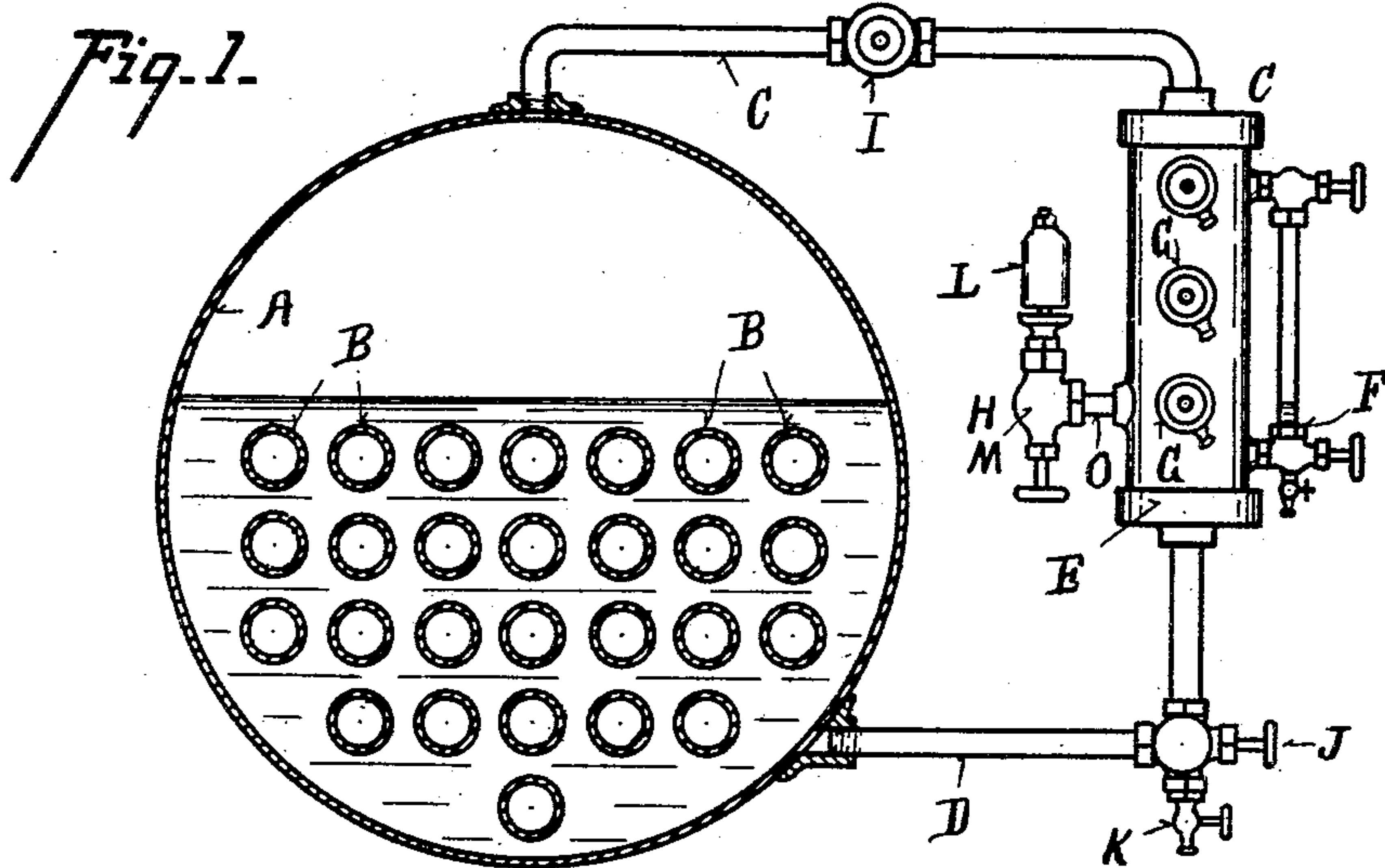
No. 713,553.

Patented Nov. 11, 1902.

J. A. BROCKHUIS.
LOW WATER ALARM.

(Application filed Oct. 26, 1900.)

(No Model.)



Inventor

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UNITED STATES PATENT OFFICE.

JOHN A. BROCKHUIS, OF CINCINNATI, OHIO.

LOW-WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 713,553, dated November 11, 1902.

Application filed October 26, 1900. Serial No. 34,409. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. BROCKHUIS, 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 Low-Water Alarms, of which the following is a specification.

My invention relates to low-water alarms for steam-boilers. Its object is to provide a simple reliable alarm mechanism which is readily accessible to be tested and to be reset without interfering with the operation of the boiler and without drawing off any considerable quantity of water therefrom.

It also consists in certain details of form and combination, all of which will be more fully set forth in the description of the accompanying drawings, in which—

Figure 1 is a cross-sectional diagram of a boiler with my improvements attached thereto. Fig. 2 is a central vertical section through the water-column and low-water alarm. Fig. 3 is a detail view of the separated parts of the alarm, partly in section.

A represents the steam-boiler, B the boiler-flues, and C D pipes leading, respectively, from the upper and lower portions of the boiler to a water-column E, to which the water-gage F is preferably attached.

G represents test-cocks attached one above the other to the water-column, and H the low-water alarm, also connected to the water-column at a point above the upper row of boiler-flues.

I J represent valves located, respectively, in the pipes C D, by means of which the connection between the boiler and the water-column can be closed.

K represents a drain-cock for draining the water-column.

The low-water alarm, as shown, is composed of a steam-whistle L, of ordinary construction, which is screwed into the outlet end of the valve M, with a fusible plug or washer N interposed between the whistle and valve, so as to normally cut off all connection between the parts. The valve M is connected by the nipple O with the water-column at the point vertically at which it is desired to sound the low-water alarm, which is preferably a short distance above the top of the upper row of flues.

While I have shown a steam-whistle as the simplest form of alarm mechanism, other steam-actuated alarm mechanism might be employed in place thereof, if desired, and I do not wish to limit myself to the particular form of alarm mechanism.

The operation is as follows: Water is placed in the boiler to the required height and heat applied to generate steam. The valves I J are opened, admitting steam and water into the column E, in which the water rises to the same height as in the boiler, and submerging the mouth of the nipple O and the valve M opened. The height of the water is indicated on the gage F and in case of damage to the gage can be ascertained approximately by means of the test-cocks G. As long as the water in the column remains above the mouth of the nipple O the plug N is not heated above its fusing-point, and therefore remains in a solid state, closing the passage to the alarm, and prevents the escape of the water thereto. As soon, however, as the height of the water is lowered, so as to admit the entrance of steam into the nipple O, the steam, which is of a higher temperature than that of the water, fuses the plug N, and the steam escapes to the alarm and attracts the attention of the engineer, who feeds more water into the boiler, closes the valve M, and unscrews the alarm and puts a new plug in place.

It is often desirable to test the alarm to ascertain that it is in working order, which can be readily done by closing the valve J and opening the drain-cock K, when the water from the column will escape and permit the steam to enter the nipple O and sound the alarm, which can then be reset and the valve J opened to let the water from the boiler into the column. In the devices heretofore in use it has been necessary in order to test the alarm to draw the water from the boiler until it reached a point at which the alarm would sound.

One advantage of my device is that it can be attached while the boiler is in operation by simply connecting it to the opening for the lower gage-cock or tapping the water-column a short distance above the flue-level. By attaching it to the water-column it is more accessible and convenient than otherwise. This construction also avoids obstructing the inte-

rior of the boiler and water-column and dis-
penses with any special connection for testing
according to law. It is also absolutely reliable
and can be tested by simply blowing the water
5 out of the water-column long enough to per-
mit the steam to melt the fusible plug, which
usually requires only about a minute.

My attachment constructed as above de-
scribed is extremely simple and cheap to
10 manufacture and apply, durable in use, and
certain in action.

Having described my invention, what I
claim is—

1. In a low-water alarm, a water-column
15 having near its top a steam connection with
the boiler and near its bottom a water con-
nection with the boiler, a single horizontal
passage for steam and water leading directly
from the side of the water-column below the

normal water-line thereof to the alarm having 20
a fusible plug interposed in said passage to
normally close the same and be opened by
the admission of steam, substantially as set
forth.

2. In a low-water alarm, a water-column 25
having near its top a steam connection with
the boiler and near its bottom a water con-
nection with the boiler, a single passage for
steam and water leading directly from the
water-column below the normal water-line 30
and on the outside of said water-column, and
a valve in the bottom of said alarm, substan-
tially as set forth.

JOHN A. BROCKHUIS.

Witnesses:

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