

(Model.)

L. KACZANDER.
BOILER TESTER.

2 Sheets—Sheet 1.

No. 515,231.

Patented Feb. 20, 1894.

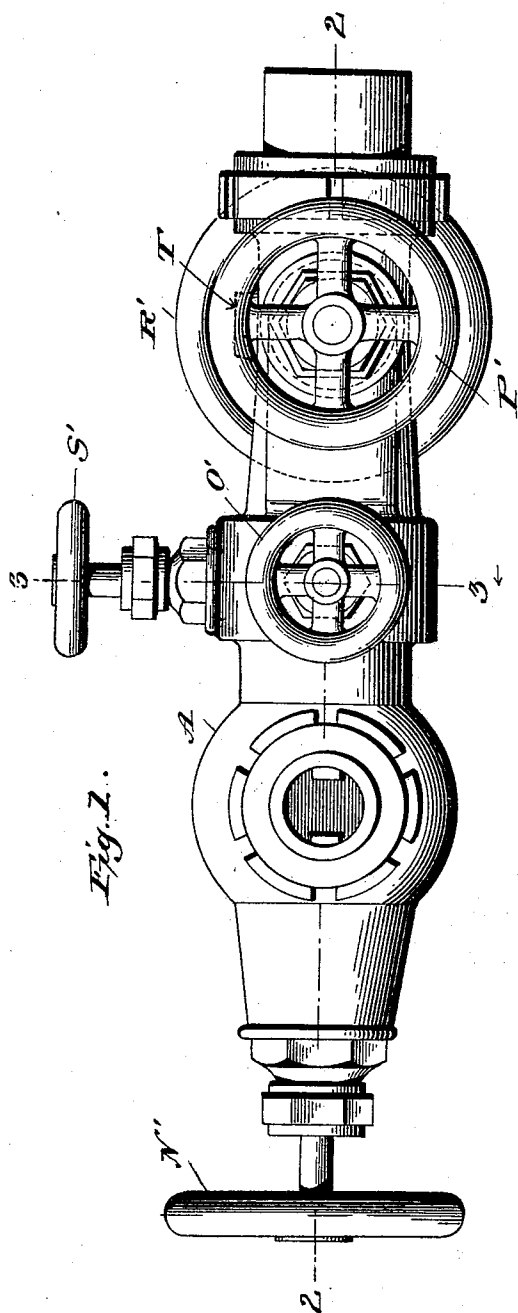


Fig. 2.

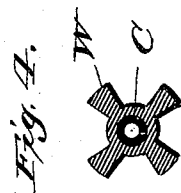


Fig. 4.

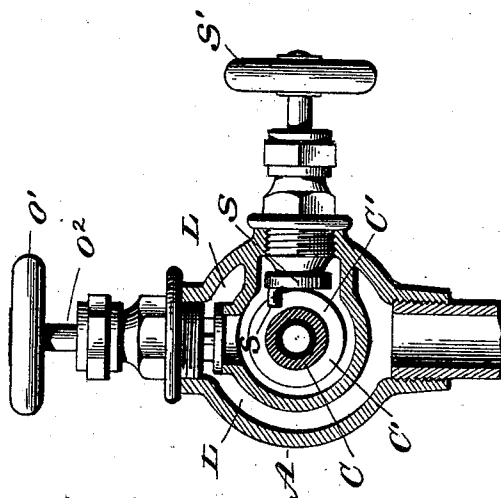


Fig. 3.

Witnesses:

L. C. Hills.
E. W. A. D. R.

Inventor
Leopold Kaczander
by Marshall Sailer
his Attorney

(Model.)

2 Sheets—Sheet 2.

L. KACZANDER.
BOILER TESTER.

No. 515,231.

Patented Feb. 20, 1894.

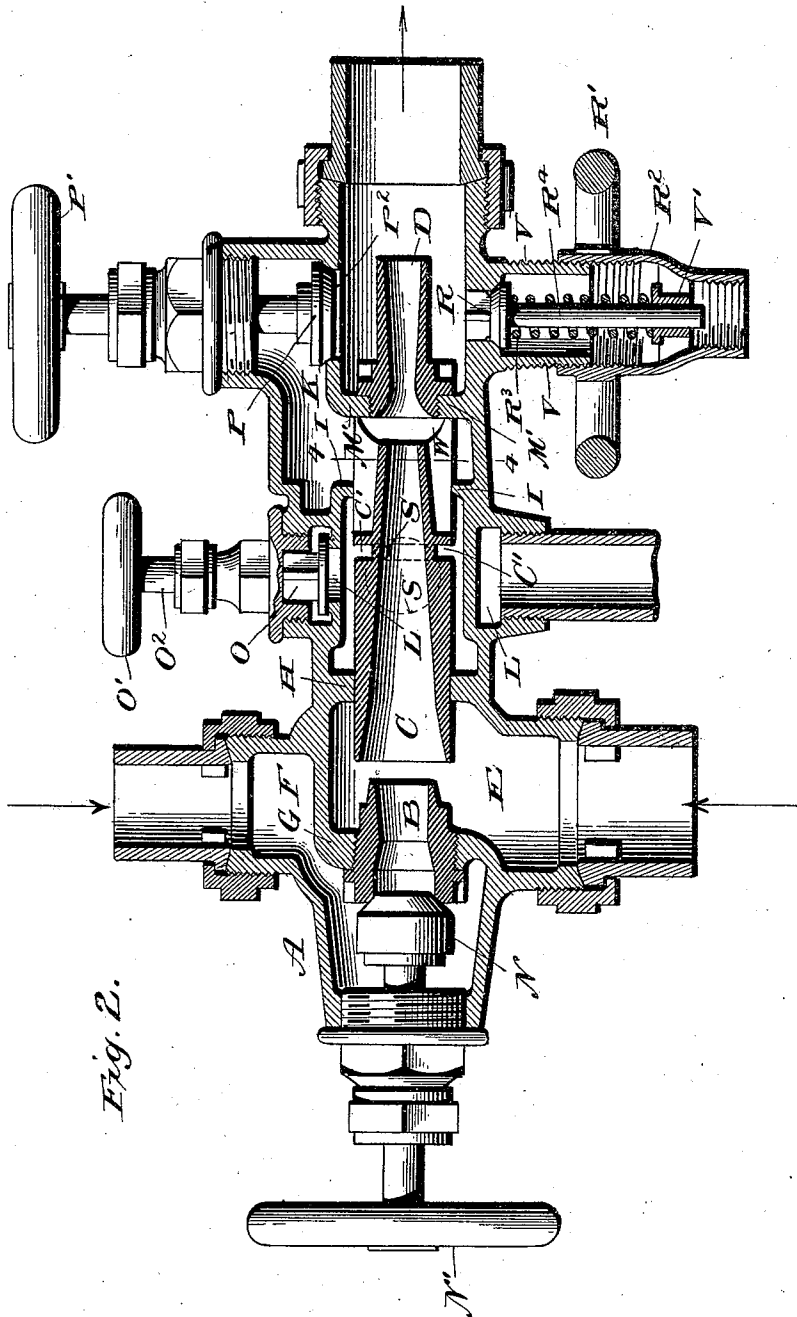


Fig. 2.

Witnesses:

L. C. Hills.
E. A. Adick

Inventor

Lepold Kaczander
by Marshall Taylor
his Attorney

UNITED STATES PATENT OFFICE.

LEOPOLD KACZANDER, OF NEW YORK, N. Y., ASSIGNOR TO THE NATHAN MANUFACTURING COMPANY, OF SAME PLACE.

BOILER-TESTER.

SPECIFICATION forming part of Letters Patent No. 515,231, dated February 20, 1894.

Application filed January 2, 1894. Serial No. 495,339. (Model.)

To all whom it may concern:

Be it known that I, LEOPOLD KACZANDER, of the city, county, and State of New York, have invented certain new and useful Improvements in Boiler-Testers, of which the following is a specification.

Boiler testers, as heretofore constructed, have contained, so far as I am informed, two distinct and separate sets of interior tubes or nozzles. One of these was used for the purpose of filling the boiler with water, forming what is technically known as an "ejector," an instrument capable of delivering a desired quantity of water into a boiler, when empty, but not capable of exerting any over-pressure. The second set of nozzles formed an "injector," an instrument which, when properly proportioned, is capable of exerting a considerable over-pressure over the initial pressure of the operating steam, and used for applying the testing pressure.

The object of my invention is to simplify the construction of such apparatus, reduce its cost of manufacture, and increase its efficiency.

To this end I have devised a boiler tester in which a single set of tubes serves the double purpose of filling the boiler and of applying the pressure. It is this feature which mainly characterizes my invention. And I believe myself to be the first to have devised any form of boiler tester in which one set of tubes serves the double purpose above stated.

In the accompanying drawings,—Figure 1 is a top view of the apparatus. Fig. 2 is a vertical longitudinal section on line 2—2, of Fig. 1. Fig. 3 is a vertical cross section on line 3—3, Fig. 1. Fig. 4 is a cross section of nozzle C, on line 4—4, Fig. 2.

A is the body of the apparatus, provided with the usual couplings, or connections, for the admission of steam and water, and for delivering the fluid into the boiler. The steam space F and the water chamber E are separated by partition G, into which is screwed a steam nozzle B, the admission of steam to this nozzle being controlled by valve N, operated by handle N'.

L is the overflow space of the instrument, communication between this space and the

atmosphere being controlled by the usual check valve O, which may be closed by screwing down spindle O², by means of handle O'.

C is a movable condensing nozzle, the movement of which is controlled by the eccentric or crank pin and disk S, and handle S',—the crank pin engaging an external peripheral groove C' formed in the nozzle C. Other means of moving this nozzle may be employed, without in any way altering the result intended to be accomplished. This nozzle C is guided in the partitions H and I, forming dividing lines between the water and overflow spaces, on one side, and overflow space and auxiliary delivery chamber K, on the other. The nozzle is provided with a circular groove C', to engage the crank pin S, and also with a suitable number of wings W, which guide the nozzle in the partition I, and the spaces between which afford an open communication between the overflow space L and the auxiliary chamber K.

M' is a partition, separating the pressure or delivery chamber M from the auxiliary delivery chamber K, and into this partition is screwed the delivery nozzle D.

The upper horizontal wall of chamber M is provided with an opening P², controlled by valve P, operated by handle P'. By means of this valve, communication between chambers M and K can be established or closed, in addition to the communication between these chambers, afforded by nozzle D. The outlet area of nozzle C being considerably larger than the receiving area of nozzle D, it will be readily seen that, with valve P open, the water passing through nozzle C can be discharged direct, through chamber K and opening P², into chamber M.

R is a valve in the lower horizontal wall of chamber M and is pressed to its seat, according to the pressure applied by pressing spring R³ more or less by means of the internally threaded valve chamber R², provided with a spoked wheel R'.

V' is a guide for the valve spindle R⁴, and V a threaded extension of the body A, upon which the valve chamber R² screws, and can move.

T is a boss on the side of the chamber M,

into which a pressure gage can be screwed, to indicate the pressure applied.

The operation of the apparatus is as follows:—To fill the boiler with water, overflow valve O is closed, valve P opened, and nozzle C moved down, until the wings W touch partition M', which the operator can feel distinctly. Water is then admitted, and steam valve N opened. The water will then be driven through nozzle C, chamber K, opening P², and part of it through nozzle D into chamber M, and thence to the boiler. When the boiler is filled, valve P is closed, and valve O opened. The water is then compelled to pass through the small delivery nozzle D only. Nozzle C is moved toward steam nozzle B, until the pressure gage on chamber M begins to indicate a rising pressure; then valve chamber R² is moved up the extension V, and spring R³ is compressed, until the pressure to be applied is reached. The boiler being full, the water driven through nozzle C will find its way through overflow L, and partly through outlet V², into the atmosphere.

Having described my invention I desire it to be understood that I do not restrict myself to the mechanical details hereinbefore set forth in illustration of my invention.

As hereinbefore stated, I believe myself to be the first to produce any form of boiler testing apparatus in which one set of tubes is adapted to serve the double purpose of filling the boiler and of applying the pressure.

What, therefore, is claimed as new, and desired to be secured by Letters Patent, is—

1. A boiler testing apparatus, in which a single set of nozzles and passages are constructed, combined and arranged substantially in the manner hereinbefore set forth to perform the double function of filling the boiler and applying the pressure.

2. In a boiler testing apparatus, with a single set of nozzles as above described, the combination with the delivery or pressure chamber of an auxiliary by-passage or chamber and a valve for opening or closing communication between this chamber and the delivery or pressure chamber.

3. In a boiler tester of the character described, a communication between the outlet orifice of the condensing nozzle and the delivery chamber, in addition to the one established through the delivery nozzle.

4. In a boiler tester of the character described, a communication between the outlet orifice of the condensing nozzle and the delivery chamber, in addition to the one established through the delivery nozzle, and means by which this communication can be closed or opened, at the will of the operator.

5. In a boiler tester of the character described, the combination, with steam, condensing and delivery nozzles, of the chamber M and auxiliary passages K and P², establishing an outlet from the condensing nozzle into chamber M, in addition to the outlet through the delivery nozzle.

6. In a boiler tester of the character described, the combination, with steam, condensing and delivery nozzles, of auxiliary passages establishing an outlet from the condensing nozzle into the pressure or delivery chamber, in addition to the outlet through the delivery nozzle, and a valve by which this outlet can be closed or opened, at will of the operator.

7. In a boiler tester of the character described, the combination, with steam, condensing and delivery nozzles, of auxiliary delivery passages K and P², a valve P to alternately close or open these passages, and a pressure valve R.

8. In a boiler tester of the character described, the combination, with steam, condensing and delivery nozzles, of auxiliary delivery passages K and P², a valve P to alternately close or open these passages, a pressure valve R, and an overflow valve O, to alternately open or close the communication with the atmosphere.

9. In a boiler tester of the character described, the combination, with steam, condensing and delivery nozzles, of auxiliary delivery passages K and P², a valve P, to alternately close or open these passages, a pressure valve R, an overflow valve O, and means by which the condensing nozzle can be moved in its bearings.

10. In a boiler tester, the combination with the delivery nozzle, and the condensing nozzle movable to and from the delivery nozzle, of a by-passage around the delivery nozzle and a valve for controlling said passage.

11. In a boiler tester, the combination, substantially as hereinbefore set forth, of an overflow chamber and a controlling valve therefor; a delivery nozzle and delivery chamber; a condensing nozzle movable to and from the delivery nozzle; a by-passage or communication from the outlet or orifice of the condensing nozzle to the delivery chamber around the delivery nozzle; and a valve for controlling said by-passage or communication.

In testimony whereof I have hereunto set my hand, before two subscribing witnesses, this 30th day of December, 1893.

LEOPOLD KACZANDER.

Witnesses:

CHARLES JUDGE,
WILLIAM MONTFORT.