

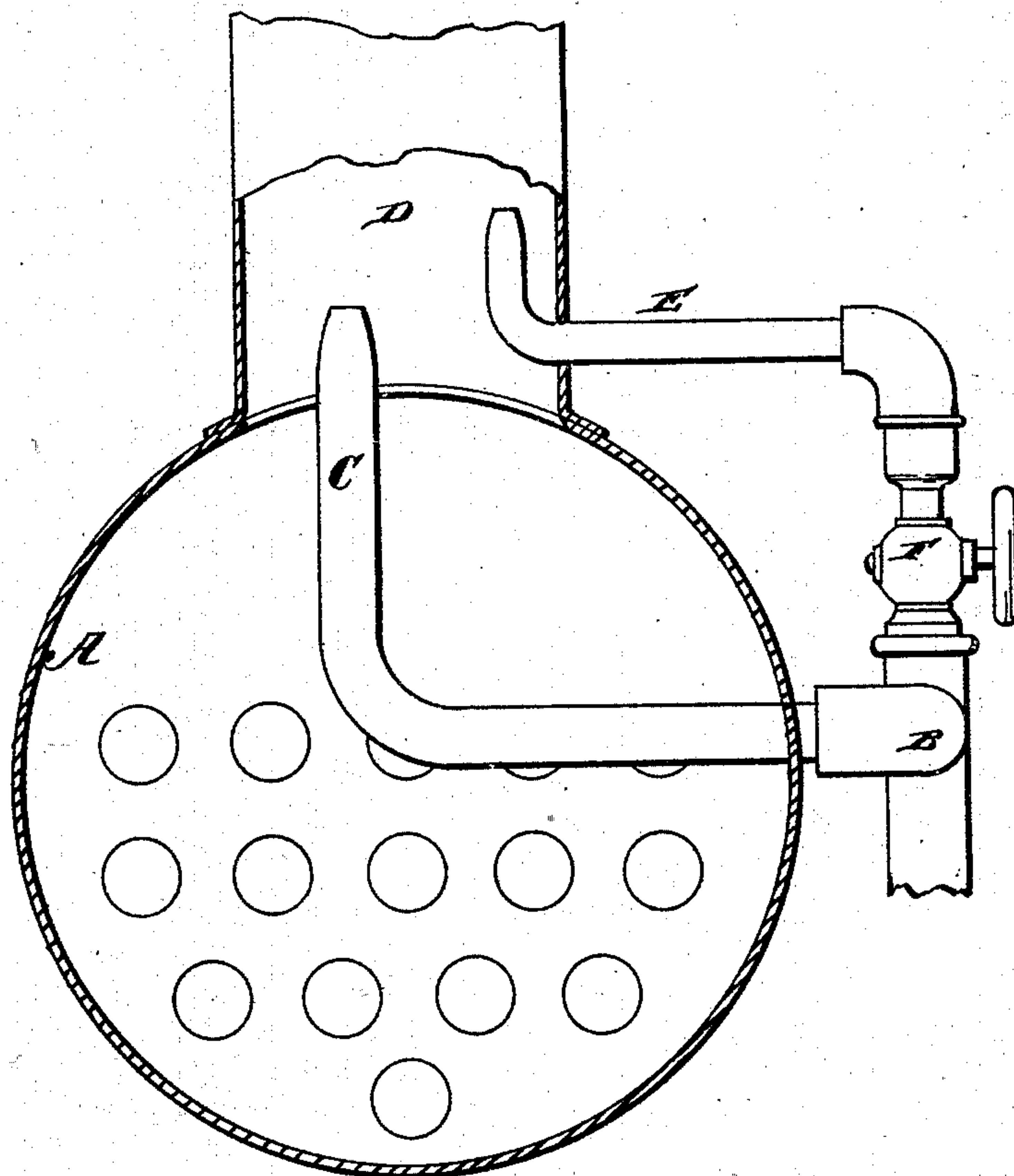
(No Model.)

J. C. TITUS.

VARIABLE RELIEF EXHAUST MECHANISM.

No. 249,421.

Patented Nov. 8, 1881.



WITNESSES

*Robert Everett*

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# UNITED STATES PATENT OFFICE.

JOHN C. TITUS, OF MARION, OHIO.

## VARIABLE RELIEF EXHAUST MECHANISM.

SPECIFICATION forming part of Letters Patent No. 249,421, dated November 8, 1881.

Application filed March 27, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, J. C. TITUS, of Marion, in the county of Marion and State of Ohio, have invented certain new and useful Improvements in Variable Relief Exhaust Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making a part of this specification, and to the letters and figures of reference marked thereon.

The figure of the drawing is a representation of a transverse section of my exhaust-pipes for steam-engines.

This invention relates to that class of engines in which an exhaust-nozzle arranged within the smoke-stack is relied on to produce the necessary draft for the fire.

The improvement consists in the combination, with such exhaust-nozzle, of a branch outlet opening into the stack, said branch outlet being provided with a stop cock or valve, whereby it may be closed, so as to allow the exhaust-steam from the engine-cylinder to escape with full force into the stack, thereby creating a greater draft; or it may be opened by opening the cock or valve, thus relieving the main exhaust-nozzle in a measure and reducing the back-pressure on the engine.

A designates the smoke-box or forward end of the boiler, and B represents the pipe which leads from the steam-cylinder to the same. The nozzle C, which extends up into the stack D, is contracted at the point of discharge in the stack or uptake to the minimum degree. The relief outlet-pipe E, which leads from pipe B to the stack, is provided with a stop-cock, F, or a globe-valve, whereby a greater or less quantity of the exhaust-steam is passed into the stack through said relief-pipe when the cock or valve is open, thus relieving the main exhaust-nozzle, and also relieving the back-pressure on the engine.

In using fuel that is poor a greater draft is necessary, and by closing the stop-cock or globe-valve in the relief outlet-pipe the whole

of the exhaust will be forced through the main exhaust-nozzle C, thus producing greater draft. In using good fuel, however, less draft is required, and by opening the stop-cock or globe-valve in the relief outlet-pipe a part of the exhaust-steam will pass through the relief-outlet, thereby relieving the main exhaust-nozzle and reducing the draft and also the back-pressure on the engine, and also lessening the throwing of sparks and cinders.

A perforated distributing-ring has been placed within the smoke-stack and supplied with wet steam from the exhaust to extinguish the sparks, and the exhaust has at the same time been employed to produce a draft. This, however, is not claimed herein.

It will be seen that the main pipe passes directly through the shell of the smoke-box, and is a branch of the main pipe leading from the exhaust of the steam-chest. It will also be seen that the relief-pipe or the supplementary outlet E is a branch of said main pipe, and leads directly through the stack D above the upper end of the pipe C. The valve F is arranged between the pipe B and the branch E, and is accessible from the outside of the smoke-box.

What I claim, and desire to secure by Letters Patent, is—

The combination of the main exhaust-nozzle C, leading through the smoke-box shell and entering the lower end of the stack, the direct relief outlet-pipe, smaller in diameter than nozzle C, and entering directly into the smoke-stack above the nozzle, and the valve F, located above the branch B and at the junction of the main and relief pipes, substantially as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN C. TITUS.

Witnesses:

GEO. H. KLING,  
JOHN H. WOLFORD.