

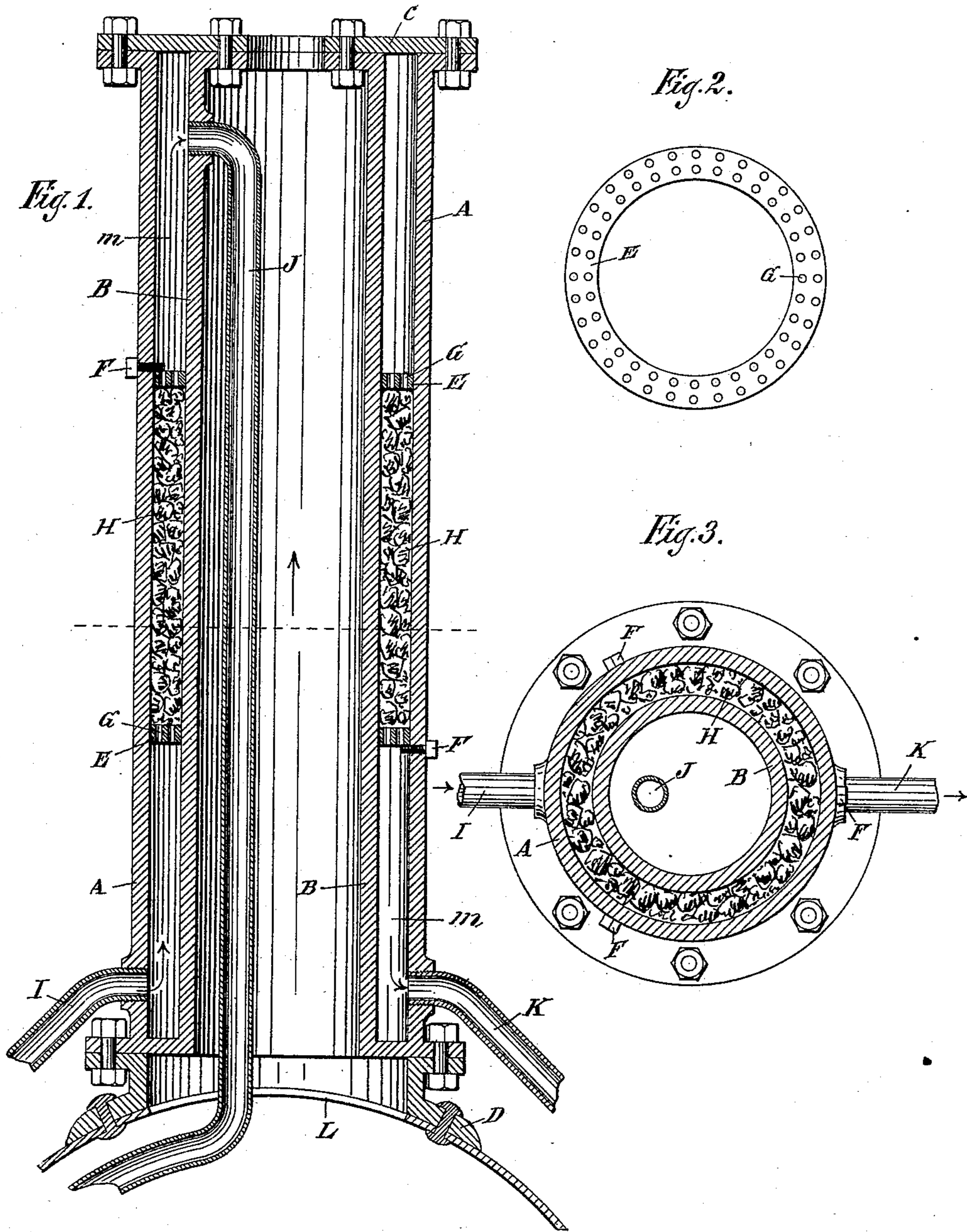
(No Model.)

J. W. BROWN.

COMBINED SMOKE STACK, FEED WATER HEATER, AND FILTER.

No. 423,983.

Patented Mar. 25, 1890.



WITNESSES:  
*Henry Grabau*  
*Percy D. Parks,*

INVENTOR  
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# UNITED STATES PATENT OFFICE.

JOHN W. BROWN, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-HALF  
TO WILLIAM W. SUTCLIFFE, OF SAME PLACE.

## COMBINED SMOKE-STACK, FEED-WATER HEATER, AND FILTER.

SPECIFICATION forming part of Letters Patent No. 423,983, dated March 25, 1890.

Application filed October 14, 1889. Serial No. 327,005. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WILLIAM BROWN, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Feed-Water Heaters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in a smoke-stack in which water and filter chambers placed between two shells and encircling the smoke-flue of smoke-stack are made to operate in conjunction with a feed-water pipe and an inlet-pipe placed within the flue of a smoke-stack; and the novelty will be fully understood from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a vertical sectional view of smoke-stack, showing smoke-flue, water and filter chambers, and pipes. Fig. 2 is a sectional view of perforated filtering-plates. Fig. 3 is a cross-sectional view.

Similar letters refer to similar parts throughout the several views.

In constructing my smoke-stack I use two cylindrical shells of different diameters, as shown in Fig. 1, A being the exterior shell and B the interior shell, the latter forming the flue of the smoke-stack, with an inlet-pipe J placed therein, and between said shells are water-chambers, as shown by M, said water-chambers being separated by filtering-plates E, which form a filtering-chamber. Said plates are perforated, as shown by G, and are held in position by means of bolts F. H is a filtering material.

D is the base attached to boiler L, and at the top of smoke-stack, as shown by C, I adjust a flange, which forms a cover for water-chambers.

I is a feed-water pipe by which water is fed

from a tender, tank, or reservoir by means of a pump, injector, or water-forcer, and to which there is attached a check-valve. (Not shown.)

K is a blow-off or waste pipe, which is also provided with a stop-cock. (Not shown.)

The mode of operation is as follows: The water from a tender-tank of a locomotive or reservoir is forced by a pump or any desired device through feed-water pipe I, and passes into the lower water-chamber, thence through filter-chamber, and enters the top or filtered-water chamber, the filtration being accelerated by the generation of heat from the smoke-flue, and the water is carried from the top chamber M into the boiler L through pipe J, said pipe being situated within the smoke-flue, and by means of hot gases escaping through said flue the water within pipe J is heated before entering the boiler.

Having described this invention, what I claim is—

The combination, with the smoke-stack and boiler of an engine, of a tubular shell surrounding said stack and closed from communication at their lower ends, the plate C, closing the stack and shell from communication at their upper ends, the two perforated rings G, surrounding the smoke-flue and arranged within the outer shell, so as to form a filtering-chamber between the bolts F, passing through the outer shell and securing the perforated rings in position, the blow-off pipe and feed-water pipe communicating with the filtering-chamber beneath the perforated ring, and the pipe J, leading from the filtering-chamber above the perforated ring and passing down through the smoke-flue into the boiler, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. BROWN.

Witnesses:

ARTHUR W. BERNE,  
PERCY D. PARKS.