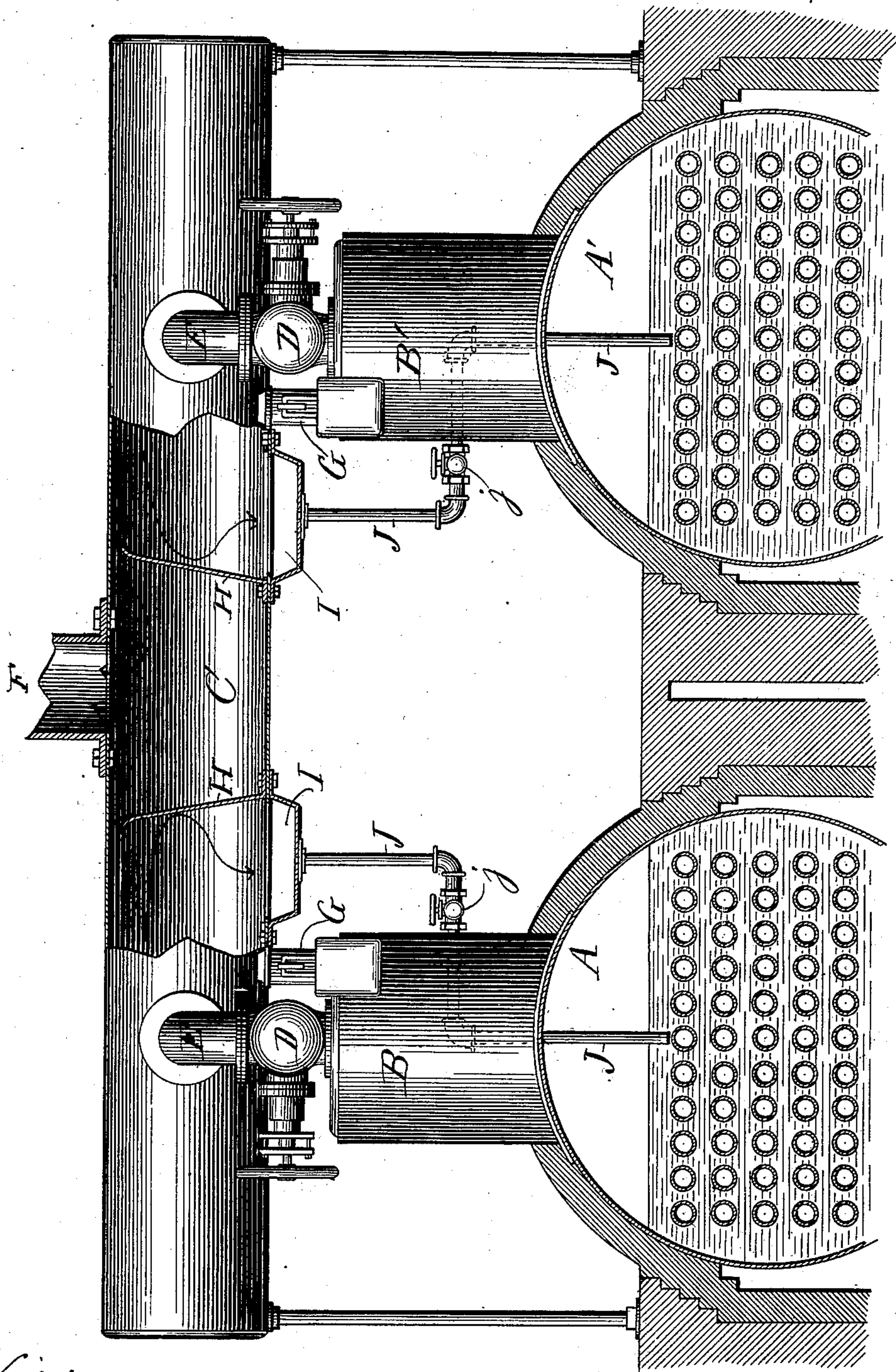


(No Model.)

W. IRVING.  
STEAM SEPARATOR.

No. 358,356.

Patented Feb. 22, 1887.



Witnesses.  
W. Rossiter.  
Otto Lubkert.

Inventor,  
William Irving  
By, Wm H. Lotz,  
Atty.



# UNITED STATES PATENT OFFICE.

WILLIAM IRVING, OF CHICAGO, ILLINOIS.

## STEAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 358,356, dated February 22, 1887.

Application filed December 1, 1886. Serial No. 220,401. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM IRVING, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steam-Separators for Boilers, of which the following is a specification, reference being had therein to the accompanying drawing.

It has been of frequent occurrence with steam-boilers that impurities in the water have caused its foaming, or that with a quick opening of the throttle-valve water will be rushed with the steam when in either case water did enter the cylinder of the engine, forming an impediment to the working of the same, of sometimes destructive consequences, and it is the object of my invention to provide simple means for separating such water from the steam and for arresting it and conducting it back into the boiler; and for that purpose my invention principally consists in placing within the steam-drum diaphragms or partitions that leave sufficient passages above such partitions for the dry steam, but form back holds for the water to collect in pockets provided in the bottom of the steam-drum, whence this water is returned into the water-space of the boiler through special pipes for that purpose, all as will be hereinafter more fully described and specifically claimed.

The accompanying drawing represents a sectional end elevation of two boilers connected by a steam-drum provided with my improvements, in which—

A and A' denote two tubular boilers; B and B', the domes of the same, each provided with a safety-valve, G; and C, the steam-drum, communicating with each dome through a globe-valve, D, and elbow-nozzle E; and F is the pipe leading from the steam-drum to the engine, the whole of which so far described is of the usual construction and arrangement.

Between each elbow-nozzle E and pipe F

the drum C is partitioned by a diaphragm, H, that extends upward sufficiently to leave just enough opening between its upper edge and the shell of the drum for the dry steam generated in the boiler to pass to pipe F. Each such diaphragm H is placed somewhat on an incline, with its curved upper edge leaning toward nozzle E, for the purpose that water carried by the steam, having a greater specific gravity, will be arrested by the diaphragm H, and by striking against the inclined surface of such diaphragm will be directed downward into a pocket, I, secured to the bottom of drum C, whence such water will be returned into the water-space of the boiler through a pipe, J, having a stop-valve, j, for closing communication with the steam-drum whenever the valve D is shut, as will be done when either boiler is not to be fired.

What I claim is—

1. The combination, with a horizontal steam-drum, of a diaphragm mounted therein between the inlet from the boiler and the steam-pipe, a collecting pocket or depression in the bottom of said drum, and a pipe leading from said pocket or depression to the boiler.

2. The combination of a horizontal steam-drum connecting two or more boilers with diaphragms H, located in said drum between the steam-inlets and the steam-pipe F, pockets I, secured on the under side of said drum in front of the diaphragms, and pipes J, connected to the bottom of said pockets and carried through the domes into the steam-boilers, all substantially as and for the purpose set forth.

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

WILLIAM <sup>his</sup> × IRVING.  
mark.

Witnesses:

WILLIAM H. LOTZ,  
OTTO LUBKERT.