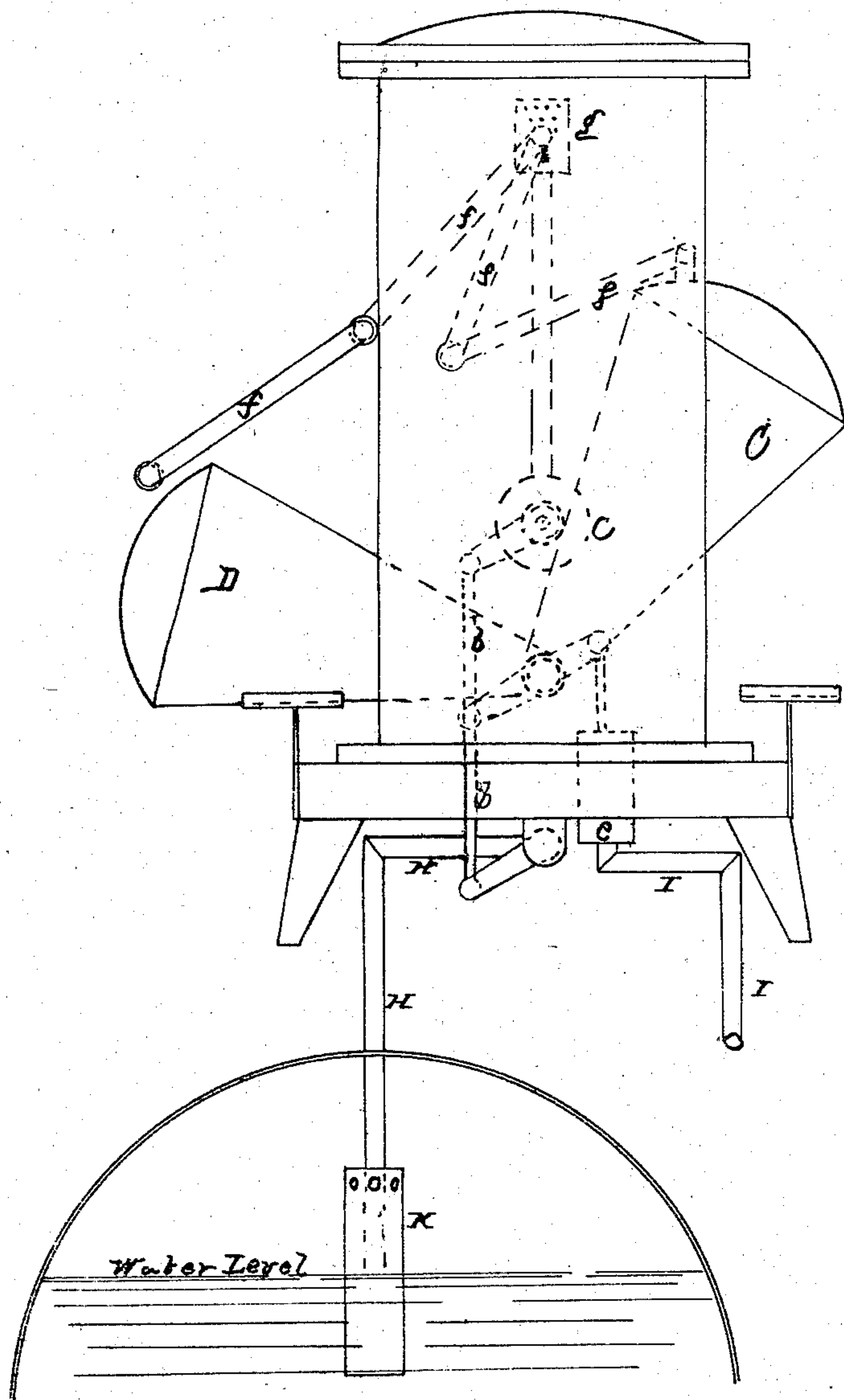


No. 74,659.

PATENTED FEB. 18, 1868.

E. BROCKWAY.
BOILER FEEDER.

3 SHEETS—SHEET 1.



Witnesses
W. V. Dodd
J. L. Crane

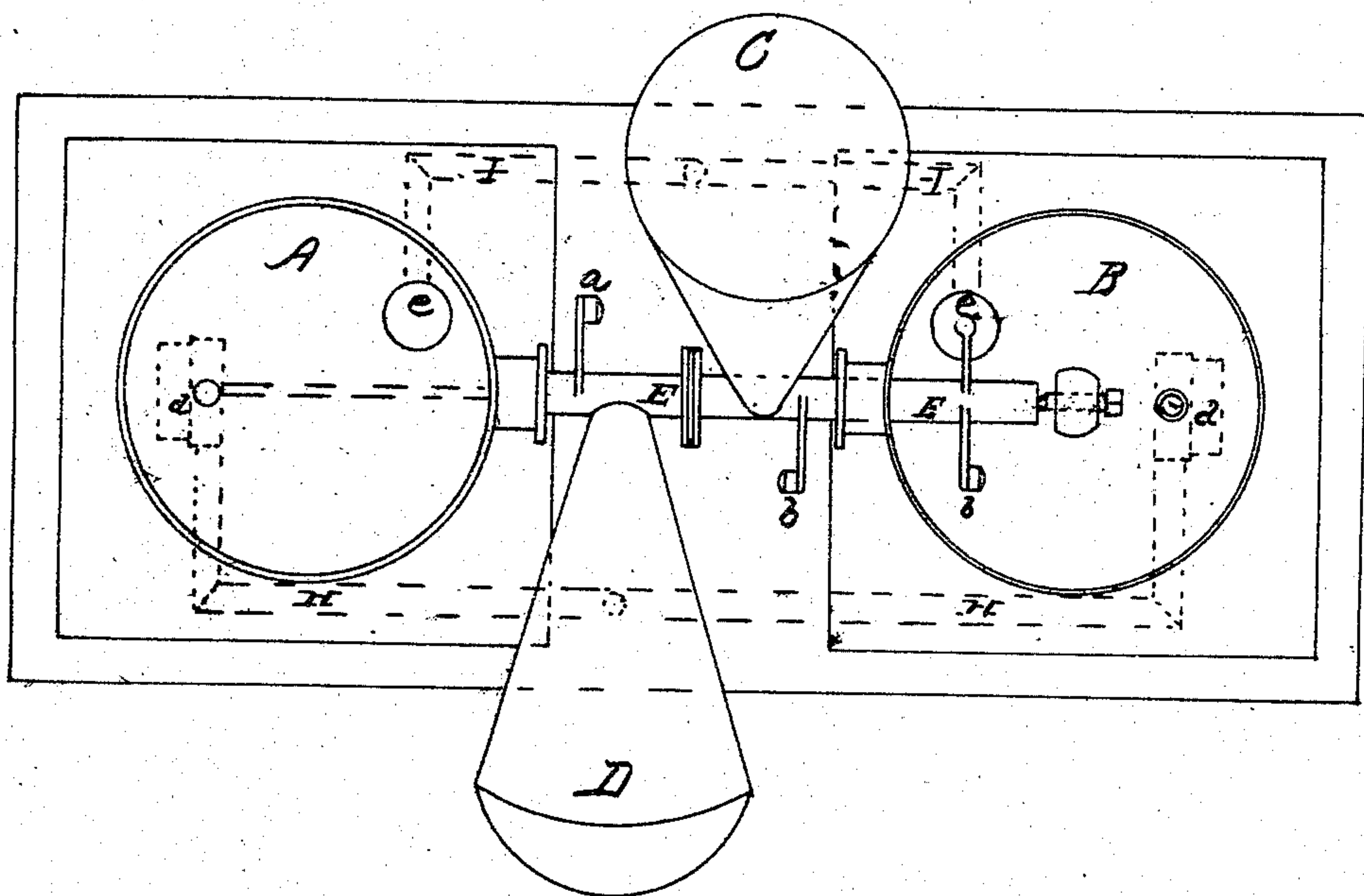
Inven for
Edmund Proskury

No. 74,659.

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E. BROCKWAY.
BOILER FEEDER.

3 SHEETS—SHEET 2.



Witnesses
Wm. Brad
J. S. Crane

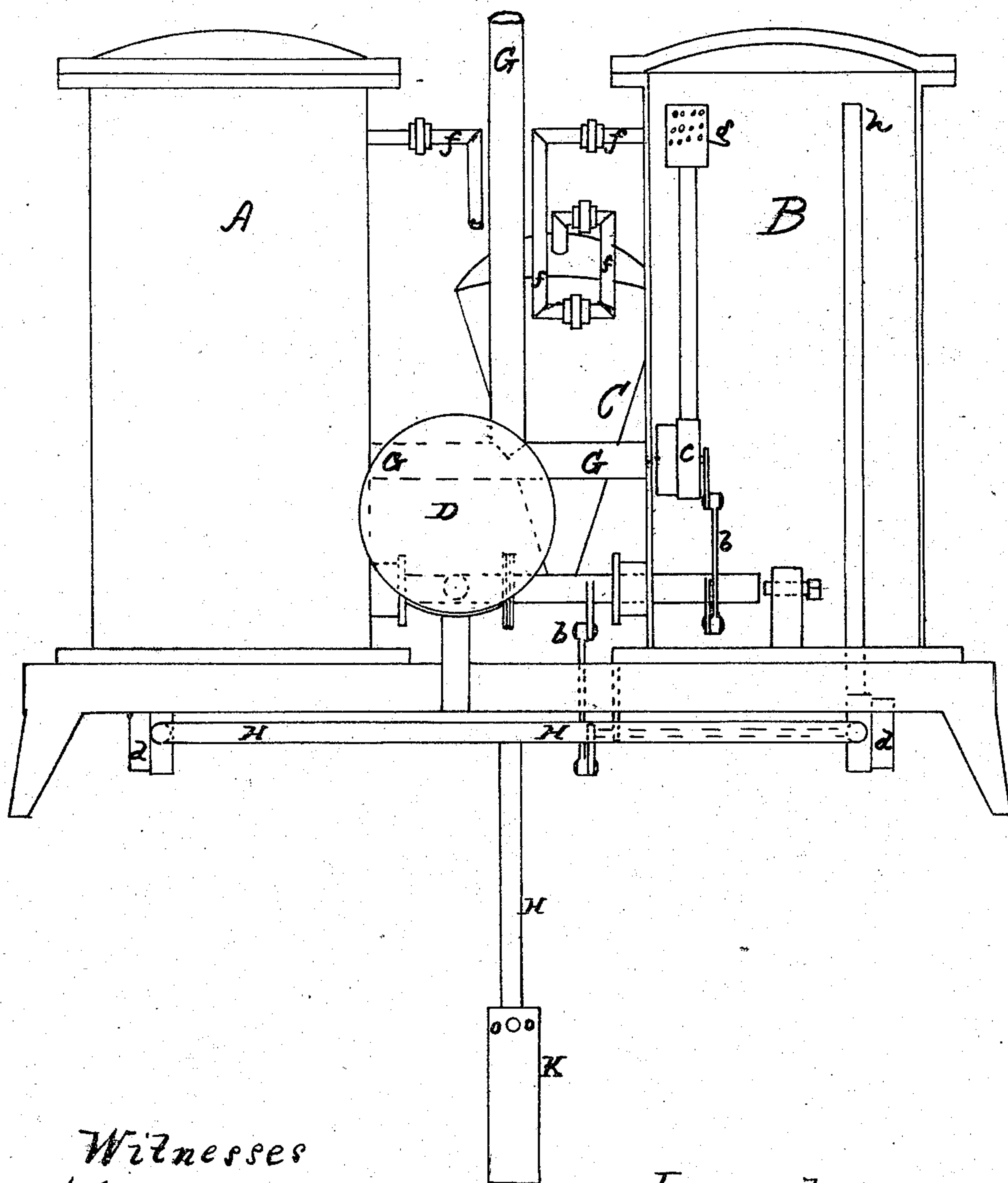
Inventor
Edmund Brockway

No. 74,659.

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E. BROCKWAY.
BOILER FEEDER.

3 SHEETS—SHEET 3.



Witnesses
W. H. Bond
J. S. Crane

Inventor.
Edmund Brockway

United States Patent Office.

EDWIN BROCKWAY, OF HAVERSTRAW, NEW YORK.

Letters Patent No. 74,659, dated February 18, 1868.

IMPROVEMENT IN BOILER-FEEDERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EDWIN BROCKWAY, of Haverstraw, Rockland county, New York, have invented a new and useful Boiler-Feeder; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

This boiler-feeder is of the class that consists of a chamber or chambers that are alternately filled with water at atmospheric or other pressure, and then emptied of their contents into the boiler by establishing a connection with the same, and allowing the water to flow thither of its own gravity, independently of the pressure of steam. In this machine no valves are operated by the pressure of steam or column of water, but by the vibrations of a rock-shaft, to which two water-vessels are attached in such positions that the alternate filling and emptying of these vessels (which are in water-connection at the bottom with two water-chambers employed to feed the boiler) rocks the shaft to and fro, operating in conjunction the cold-water inlet-pipe of one water-chamber, also its steam-inlet pipe and the hot-water outlet-pipe of the other chamber, thereby discharging the contents of one chamber through the hot-water outlet-pipe into the boiler, while the other chamber receives a supply of fresh water (that is, feed-water) from the cold-water inlet-pipe, the entrance of said cold water being hastened by meeting the steam from the steam-inlet pipe, and condensing the steam, and rushing into the vacuum formed by said condensation in the feeding-chamber. This vacuum enables the boiler-feeder to draw its own supply of water to some elevation from a cistern or well. The proper movements of the inlet and outlet-valves are made by the above-mentioned rock-shaft, and will be understood by reference to the drawings. The water-vessels attached to the rock-shaft owe their motions to their alternate differences in weight, which are due to the fact that one is connected to one water-chamber and the other to the other water-chamber. Now, of these two chambers, one is always full or filling, while the other is always empty or emptying, and as the rocking water-vessels share in the filling and emptying of these chambers, (being connected at their lower ends to the chambers by the rock-shaft which is hollow, but has a diaphragm at its middle, to prevent connection between the two chambers, and at their upper ends by the jointed connections *d d*, shown in the drawing,) each of them becomes alternately heavier than the other, and reverses the position of all the valves, thus connecting one chamber at a time with the boiler to discharge its contents, while the other is receiving feed-water.

It will be observed that all the steam used to operate this machine imparts its heat directly to the water, which is immediately returned to the boiler, thereby losing none of the effect of the fuel employed to heat the water in the boiler any more than if the water could run directly into the boiler from its reservoir. Below is a description of the drawings.

A B are the water-chambers; C D are the water-vessels on rock-shaft; E is the rock-shaft, connected at *a b* to levers and rods for operating the valves of the chambers; G is cold-water pipe, branching off to each chamber A B; H is steam-pipe from boiler, branching in similar manner; I is the hot-water pipe, which carries the feed-water and condensed steam from each chamber alternately to the boiler; *c c* are the cold-water inlet-valves; *d d* are the steam-inlet valves; *e e* are the hot-water outlet-valves; *f f* are connections from the tops of the vessels C D to the chambers, to facilitate circulation of water or steam in them; *g g* are rose-jets, to throw the cold water entering the chambers into better contact with the steam; *h h* are the steam-pipes, carried up to near the tops of the chambers; K is a device at the end of the steam-pipe H, where it penetrates the boiler, designed both to keep steam from entering the pipe when the water in the boiler is high enough, and also to keep scum, &c., from passing through the pipe to the boiler-feeder, when the same is in operation, receiving steam from the boiler. The steam-pipe H terminates at the proper level of water in the boiler. Whenever, therefore, the feeder-supply raises the water in the boiler to that level, the mouth of pipe H is covered with water, and the boiler-feeder stops acting at once, because the presence of steam to fill each of the rocking-vessels alternately, to make it lighter than the opposite vessel, is necessary to maintain the action of the valves. To keep the scum on the surface of the water from entering the pipe H, a guard, K, surrounds it, penetrating the water a few inches, when at its proper level, and perforated with holes for the admission of steam at some distance above the surface of the water, thereby avoiding the rush of scum to the open pipe, and securing the stoppage of the flow of steam when the water rises to its proper level.

Having thus described the construction and operation of this boiler-feed, what I claim, and desire to secure by Letters Patent, is—

1. The arrangement of the connecting-devices *a, b*, and E, as shown and described.
2. The guard K, as shown and described on pipe H, to keep scum from entering steam-pipe.

Witnesses:

W. H. Dodd,

EDWIN BROCKWAY.