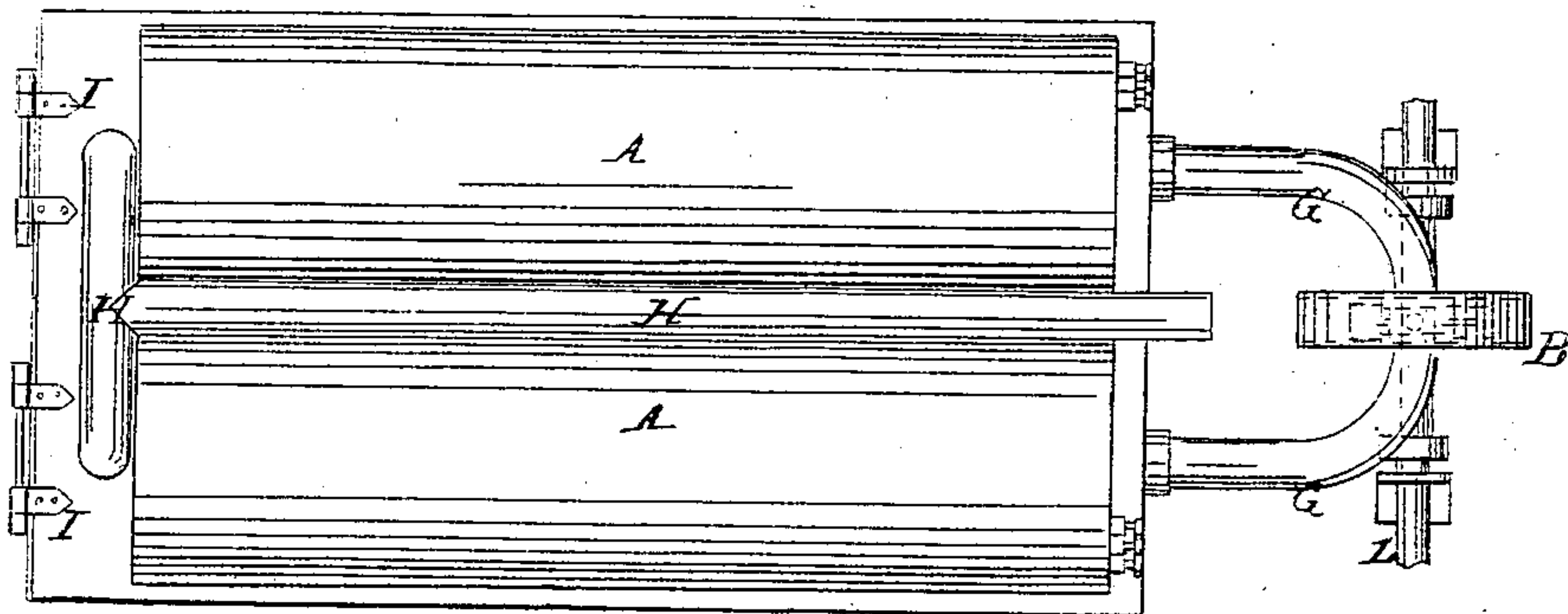


72886

W. H. Nobles.

Impt in Steam-Boilers and Spark and Smoke
Extinguisher.

Fig. 1.



PATENTED

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Fig. 2.

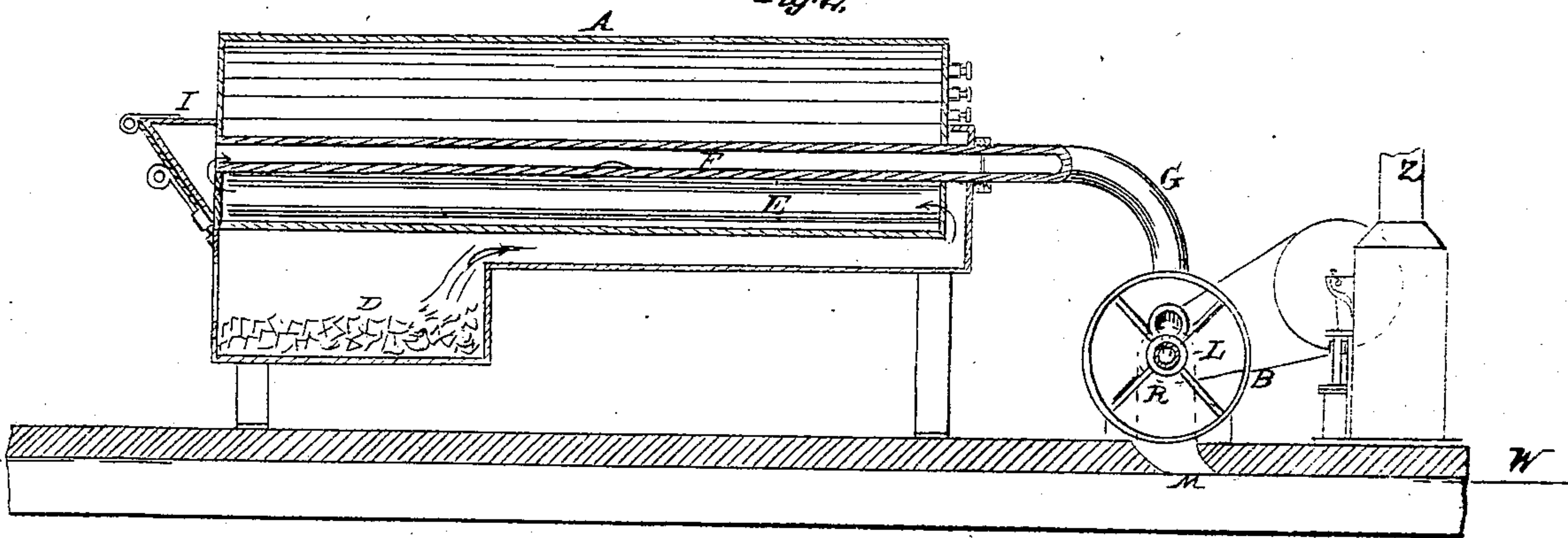


Fig. 3.

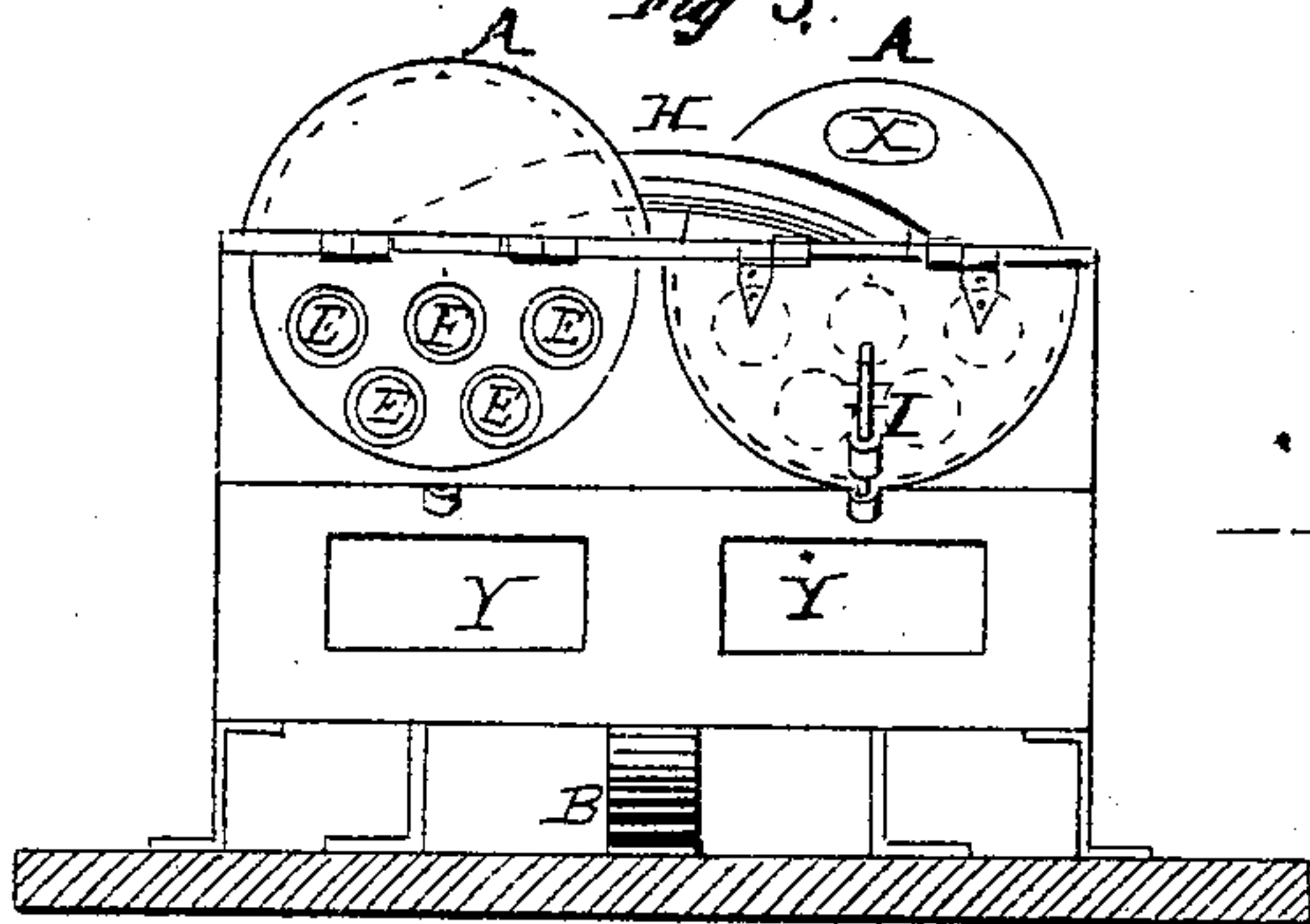


Fig. 4.

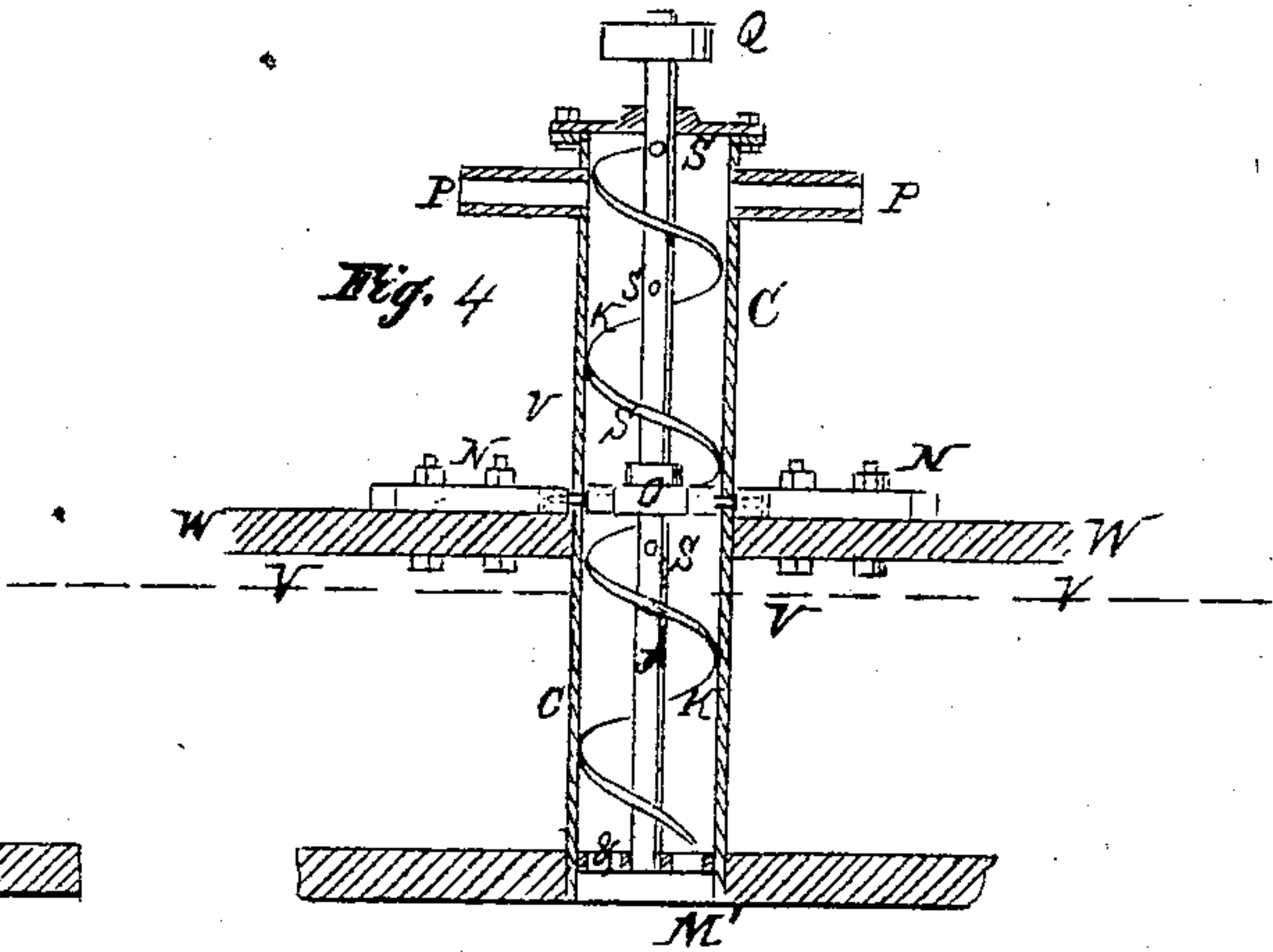


Fig. 5.



Witnesses

C. H. Mayhew
A. B. Reink

W. H. Nobles
Inventor:
By his Atty
J. F. Reigart

United States Patent Office.

WILLIAM H. NOBLES, OF ST. PAUL, MINNESOTA.

Letters Patent No. 72,886, dated December 31, 1867.

IMPROVEMENT IN SMOKE-EXTINGUISHERS FOR BOILERS.

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, WILLIAM H. NOBLES, of St. Paul, county of Ramsey, State of Minnesota, have invented an Improved Attachment to Steam-Boiler Flues, for the purpose of carrying off the smoke and sparks; and I do hereby declare the following to be an exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, as follows, to wit:

Figure 1 represents a top view of the boilers, flues, and fan.

Figure 2 is a longitudinal section of the same.

Figure 3 is a front view of the same.

Figure 4 represents a sectional view of a screw-shaped fan that may be adapted if deemed necessary.

Figure 5 represents a top view of fig. 4.

The nature of my invention is in the arrangement and combination of five flues, (more or less,) connected at the front of the boiler so as to carry off the flame, smoke, and cinders through one or two flues to the rear or front of the boiler, where a fan is attached and encased, so as to form a vacuum and draw the flame, smoke, and cinders through the fan-box and deposit them in a reservoir beneath, or below the bottom or sides of a vessel, at least such portion of the smoke, cinders, &c., that may likely pass through to the fan; but I believe that the greater portion that leaves the fire-box, by the action of the draught, is consumed in its passage through the main flue, before it reaches the fan, so that the flues are self-consuming heaters, and as the smoke and cinders that are left unburnt reach the fan, they are there wet and counteracted by sprays or jets of water that pass through the perforations of the hollow axle of the fan, and are consequently forced down through a tube or discharge-pipe beneath. I also intend to cover and enclose the tubes between the boiler and the fan, to prevent any injury to their surroundings.

The object is to dispense with the unwieldy smoke-stacks attached to engine-boilers of steam-vessels, locomotives, or stationary engines, that throw out their smoke and cinders, to the annoyance of passengers and destruction of surrounding buildings, and especially boats conveying cotton or combustible freight. Smoke-stacks on steamboats are frequently in the way of trees and bridges, and on the western rivers are the cause of numerous disasters.

I also, by my invention, utilize some of the heat in the flues that is usually passed off through the ordinary smoke-stacks, thereby saving fuel. Indifferent fuel can also be used, that could not be with a smoke-stack, as, by the use of the fan, the draught can be increased or diminished as the engineer may desire.

A represents the boilers. B is a revolving fan-wheel, made of metal, and is encased and enclosed in an air-tight metallic box, and revolves on a hollow perforated shaft, L. This fan is for the purpose of creating a vacuum and drawing the smoke and cinders with the increased draught through the flues to the fan-box. C is a screw-shaped fan that may be adapted to the same purpose, as shown at fig. 4. D is the fire-box in front, from which the flame, smoke, and sparks pass along and under the boilers A, as indicated by the arrows at fig. 2; thence through the flues E E at their rear ends to the front; thence from the front of the boilers through the centre and upper flue F; again to the rear and through the rear-flues G G, that are connected with the fan-box of fan B; or I may, if I think proper, carry the smoke and sparks any indefinite number of times back and forth through the boilers by means of connecting any number of flues zigzag, before the sparks or heat can reach the fan B. H is also a flue extending from the front between the boilers, and connected likewise in front with the inner flues F, so as to be connected with the fan-box B in the rear. The flues G and H in the rear are intended to be encased between the boilers and the fan to prevent any injury being done by their becoming heated. I represents the fastenings of the front lids or doors of the boilers; J, the hollow shaft of the screw-fan (as seen at fig. 4,) that is also perforated; K, the spiral flanges of the screw-fan. L is the hollow shaft of fan B, that is perforated for the purpose of receiving water to be forced through the perforations in a spray or jets, so as to wet the sparks or any cinders that may pass through the flues G G into the fan-box, and also condense the smoke and precipitate it with the cinders down through the discharge-spout M. Below N, are sliding blocks, (adjustable by screw-bolts working in slots,) on each side of the cylinder of screw-fan C, (at fig. 4,) so as to hold the journals upon which the step O rests, and upon which a collar of the perforated shaft J rests and supports the shaft. At the lower end of the shaft J is a circular perforated plate, that works closely in the cylinder or box C, of the fan, through which apertures or perforations the sparks are forced into the water below at M'. P P are

the flues to conduct the smoke and sparks into the box C. Q is a pulley by which the screw is operated. R shows the inside of the hollow shaft L, at figs. 2 and 5. S shows the perforations of the shaft J, of fig. 4; T T, the slots in blocks N. U U are the journals of the block N that pass through the cylinder C into the step O, and support the step. V, the water-line (at fig. 4) under the deck W of a vessel. X is the aperture, commonly called the "man-hole" for cleaning out the boiler; Y, the fire doors; Z, a small engine, intended to be used for driving the fan B, and temporarily to start the steam up in the main boilers. The perforated shaft L can be supplied by an elevated tank at the side.

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

The arrangement of the flues E F and G G, with the blower B, perforated shaft L, and discharge-opening M, whereby to carry off the smoke and sparks, and to dispense with a smoke-stack, substantially as herein set forth.

Witnesses:

J. FRANKLIN REIGART,
C. D. MAYHEW.

W. H. NOBLES.