

No. 721,060.

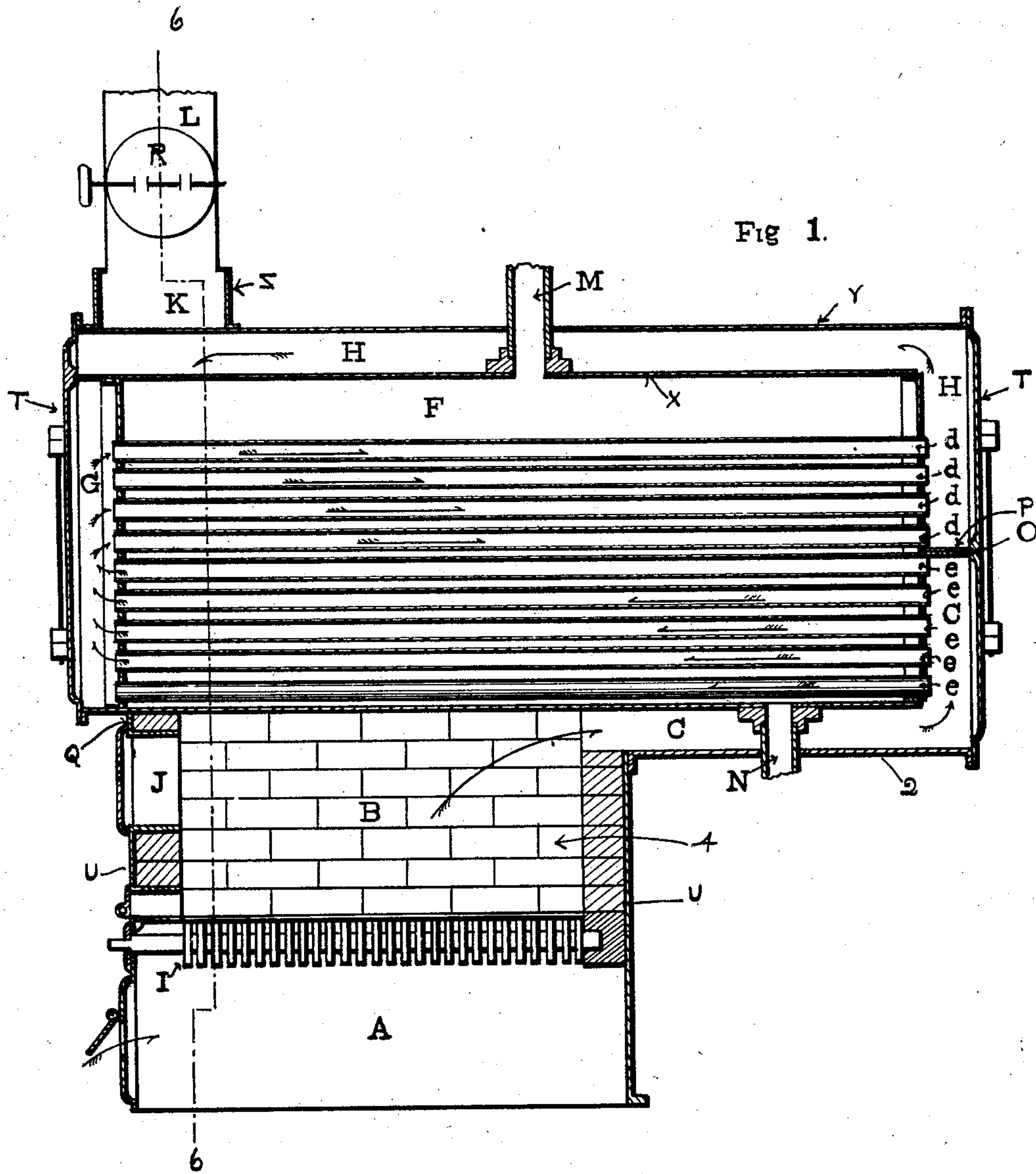
PATENTED FEB. 17, 1903.

W. L. MINOR.
BOILER SETTING.

APPLICATION FILED FEB. 8, 1901.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses.

John W. McArthur
John W. McArthur

Inventor

Wesley L. Minor

No. 721,060.

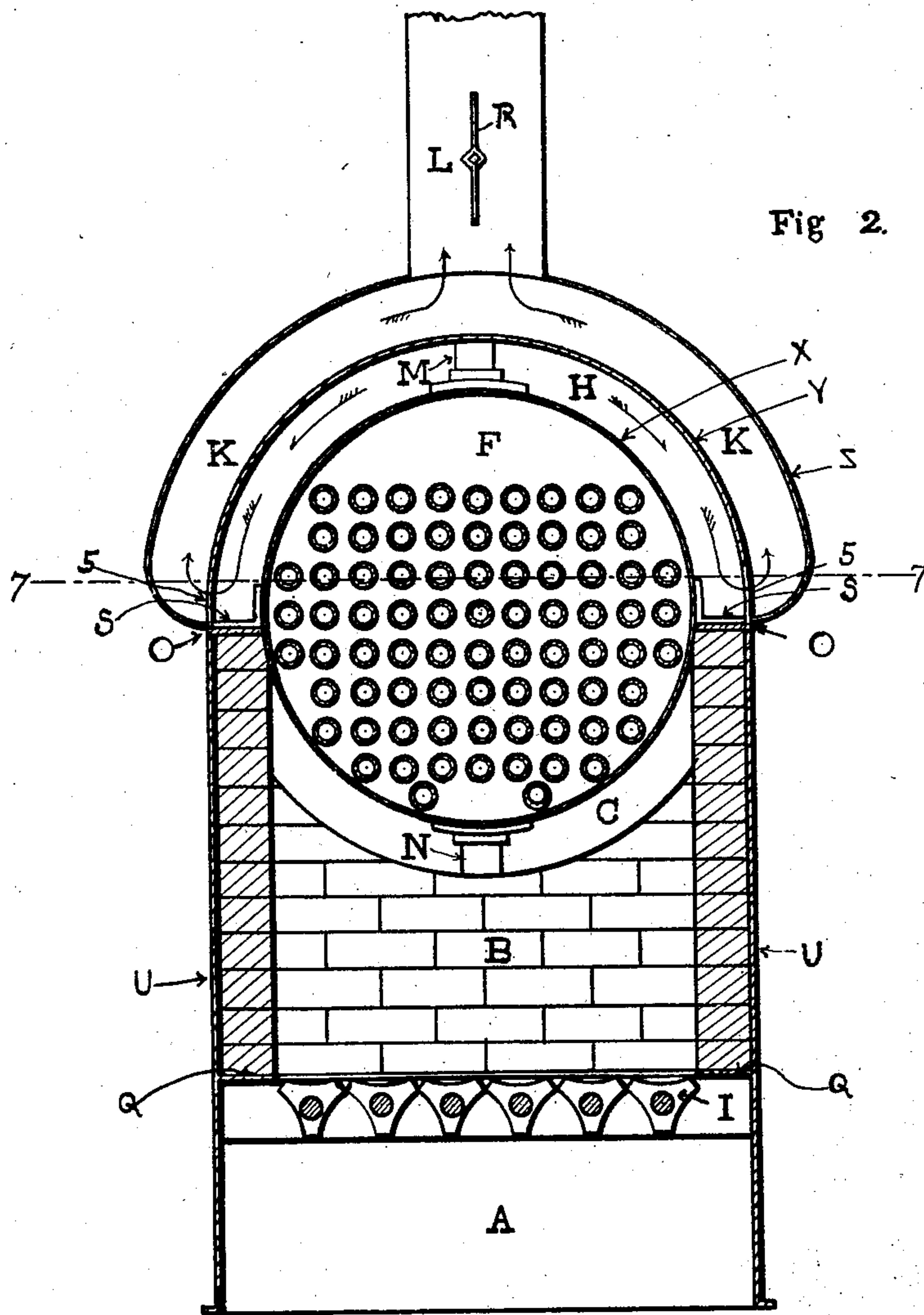
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NO MODEL.

4 SHEETS—SHEET 2.



Witnesses

Joseph M. Mott
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No. 721,060.

PATENTED FEB. 17, 1903.

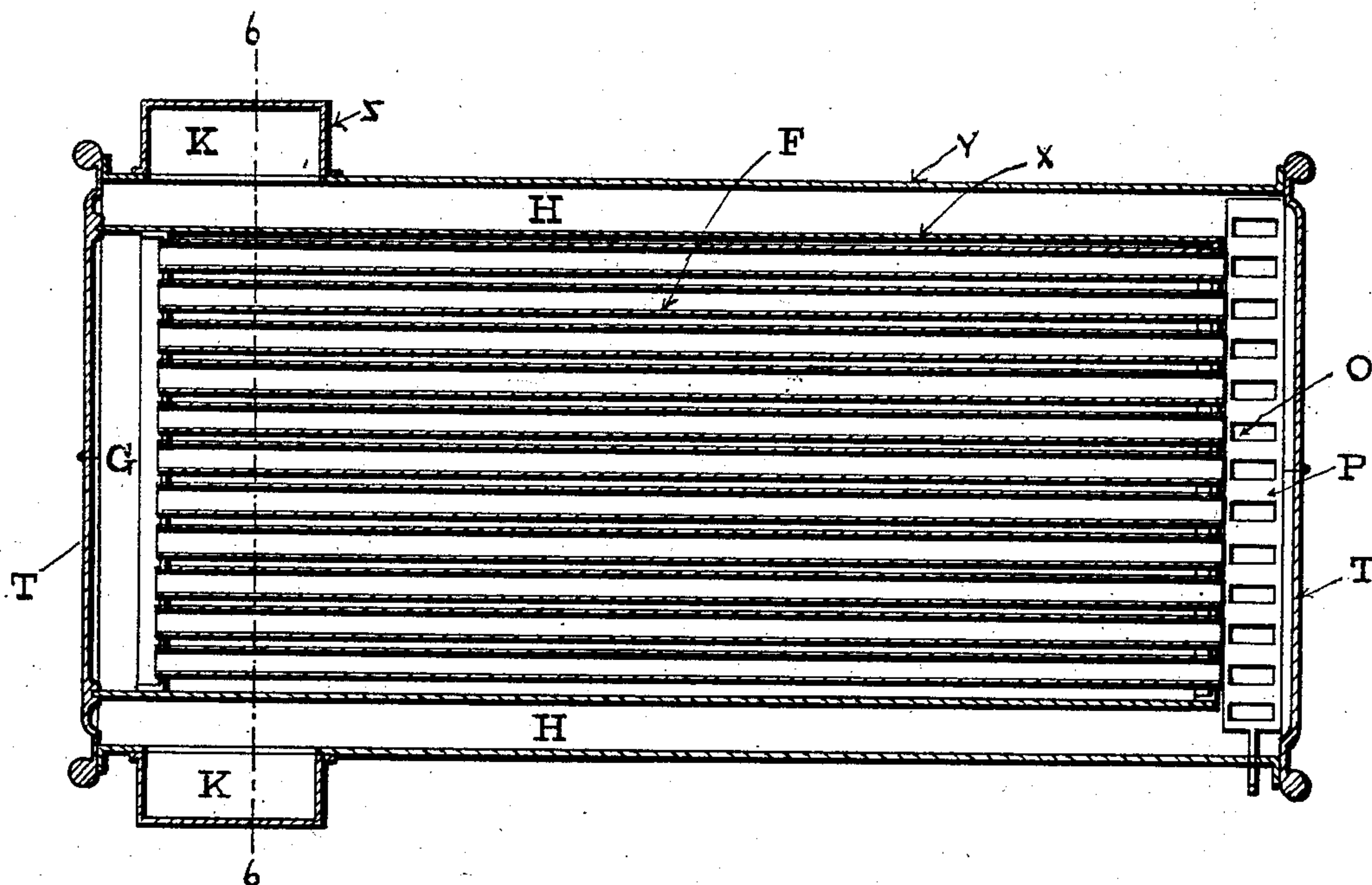
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APPLICATION FILED FEB. 8, 1901.

NO MODEL.

4 SHEETS—SHEET 3.

Fig 3.



Witnesses.

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APPLICATION FILED FEB. 8, 1901.

NO MODEL.

4 SHEETS—SHEET 4.

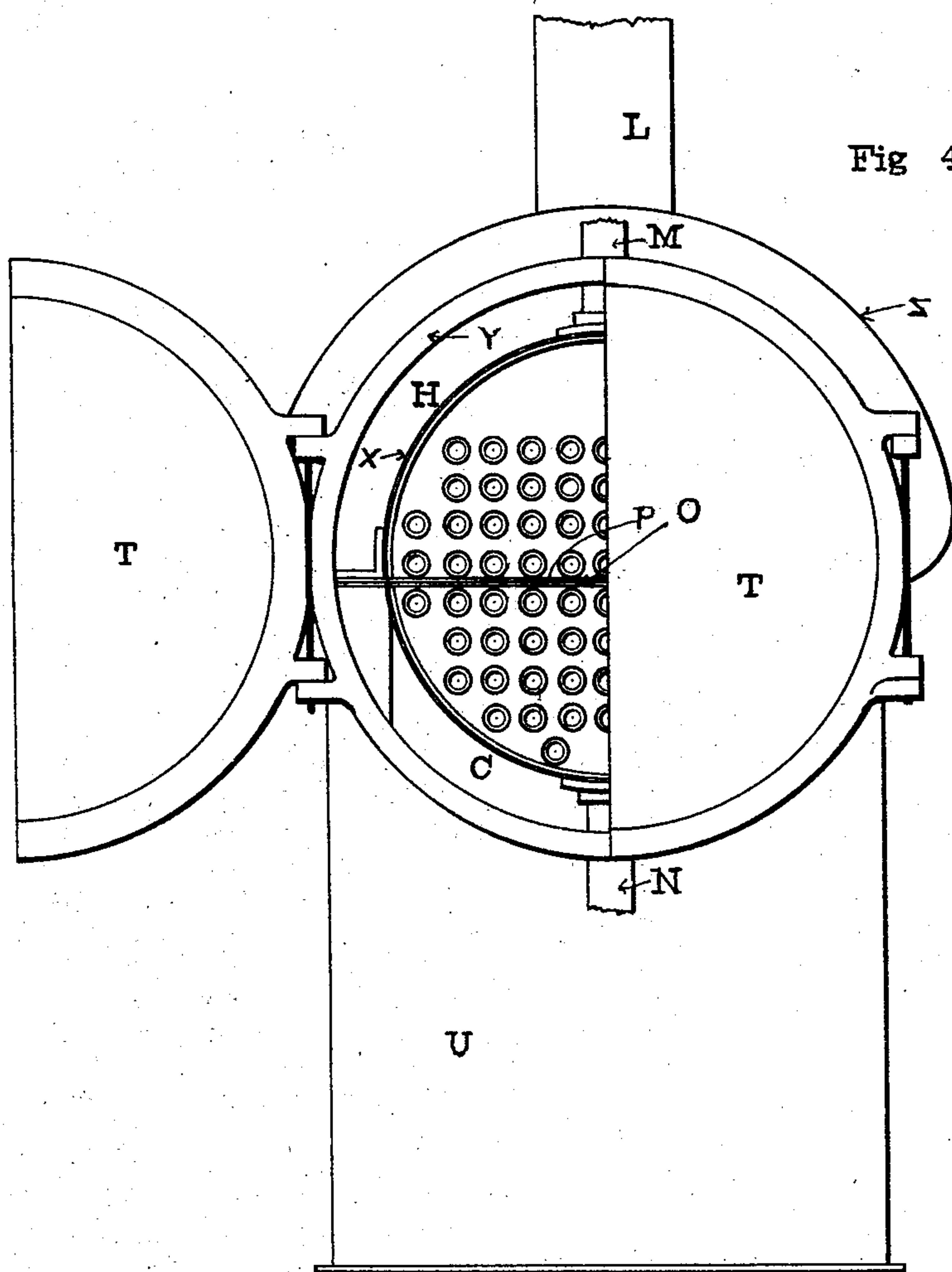


Fig 4.

Witnesses
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UNITED STATES PATENT OFFICE.

WESLEY L. MINOR, OF BROCKTON, MASSACHUSETTS.

BOILER-SETTING.

SPECIFICATION forming part of Letters Patent No. 721,060, dated February 17, 1903.

Application filed February 8, 1901. Serial No. 46,579. (No model.)

To all whom it may concern:

Be it known that I, WESLEY L. MINOR, a citizen of the United States, residing in Brockton, in the county of Plymouth and State of Massachusetts, have invented a new and useful Boiler-Setting, of which the following is a specification.

The present invention relates to apparatus for generating steam, and more particularly to such an apparatus comprising a tubular boiler.

Among the objects of my invention is to provide an apparatus of the character referred to in which the heated gases are brought into contact with the different portions of the boiler in such a manner that a larger amount of the heat is utilized in generating steam than has heretofore been possible in this class of apparatus.

A further object of my invention is to provide an apparatus of the character referred to in which the danger of the tubes of the boiler becoming filled up or clogged with particles of non-combustible material and unconsumed particles of fuel carried by the heated gases is obviated.

Further objects of my invention are to generally improve the construction and mode of operation of apparatus of this class.

With the above objects in view my invention consists in the devices and combinations of devices hereinafter described and claimed.

A preferred form of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of an apparatus embodying the same. Fig. 2 is a cross-sectional view of the apparatus shown in Fig. 1, taken on the line 6 6 of Figs. 1 and 3 and looking toward the rear. Fig. 3 is a sectional plan view on the line 7 7 of Fig. 2. Fig. 4 is a view in rear elevation, showing one of the doors of the casing which surrounds the boiler open.

Referring to the drawings, in which like characters of reference indicate like parts, F represents a tubular boiler supported in a horizontal position in a suitable casing, as will be described.

U represents the lower portion of the cas-

ing, in which the boiler is supported. This portion of the casing is provided with a fire-box 4, which has a fire-brick lining B. Below the fire-box is an ash-pit A and between the ash-pit and fire-box a suitable grate I. The front wall of the casing U is provided with an opening, through which the fuel is inserted into the fire-box, said opening being closed by means of a door Q. Secured to the rear wall of the portion U of the casing is a plate 2, which extends beyond the rear end of the boiler and is curved to surround the lower rear portion of the boiler. The boiler is supported by the portions U and 2 of the casing by means of horizontal plates or flanges O, upon which angle-plates S, secured to the shell X of the boiler, rest.

The upper part of the casing for the boiler is indicated at Y and extends at each end beyond the boiler and is curved to surround the boiler, the lower edges of the portion Y being secured in any suitable manner to the upper edges of the portions U and 2. The casing for the boiler is closed at each end by means of suitable doors T, and the shell X projects beyond the front end of the boiler into contact with the inner surface of the door T at this end of the casing, so that a closed compartment G is formed at the front end of the boiler. The plates O are extended across the rear end of the boiler, so that the plates O constitute a partition which divides the space between the casing and the boiler into upper and lower compartments H and C. The partition is provided with a series of openings, which can be closed by means of a sliding damper P.

The fire-box 4 opens into the compartment C, and suitable flues K lead from the compartment H to a smoke-stack L, in which is arranged a suitable damper R. The flues K lead from the lower portion of the compartment H, as is clearly shown in Fig. 3, so that the heated gases pass over the entire upper surface of the boiler before escaping through the flues, as is indicated by the arrows in Fig. 2.

An inlet-pipe N connects with the lower rear portion of the boiler and an outlet-pipe M leads from the upper portion of the boiler.

The manner in which the heated gases act upon the different portions of the boiler will be evident from an inspection of Fig. 1, in which the course of the gases around and through the boiler is indicated by arrows. Referring to this figure, it will be seen that the fire-box is situated directly beneath the boiler and that the heated gases will rise from the fire-box into contact with the lower portion of the boiler and then pass into the compartment C. From the compartment C the gases pass through the lower tubes *e* to the compartment G and from thence through the upper tubes *d* to the upper compartment H, from whence they escape through the flues K and smoke-stack L. It will thus be seen that the gases act first upon the outer lower surface of the boiler, then upon the lower set of tubes, then upon the upper set of tubes, and then upon the outer upper surface of the boiler, and that thus the greatest possible amount of the heat is utilized in converting the water in the boiler into steam and in heating the steam. When the fire is first started in the fire-box 4 or when additional fuel is inserted therein, a portion of the fuel and particles of incom-
 bustible substances are driven into the compartment C in the form of smoke. In order to prevent the smoke from passing through the tubes of the boiler and thereby filling up and clogging them, the damper P is shifted at this time to allow the smoke to pass directly from the compartment C to the compartment H and thence through the flues K to the smoke-stack without passing through the tubes of the boiler. When the heated gases become clear of smoke, the damper is shifted to close the opening in the partition O and the course of the gases is as indicated by the arrows and above described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. An apparatus for generating steam, having, in combination, a tubular boiler, a casing surrounding said boiler, a partition extending longitudinally of the boiler and across one end dividing the space between the boiler and casing into two compartments, a flue leading from one of said compartments, a fire-box connecting with the other compartment, and a closed compartment at the other end of the boiler, substantially as described.

2. An apparatus for generating steam, having, in combination, a horizontal, tubular boiler, a casing surrounding said boiler, a horizontal partition extending longitudinally of the boiler and across one end dividing the space between the boiler and casing into upper and lower compartments, a closed compartment at the other end of the boiler, a flue leading from the lower portion of said upper compartment and a fire-box located beneath the boiler and opening into said lower compartment, substantially as described.

3. An apparatus for generating steam, having, in combination, a tubular boiler, a casing surrounding said boiler, a partition dividing the space between the boiler and casing into two compartments, an opening in said partition, a damper for closing said opening, a flue leading from one of said compartments, a fire-box connecting with the other compartment, and a closed compartment at one end of the boiler, substantially as described.

WESLEY L. MINOR.

Witnesses:

JOSEPH MOLTON,
 JOHN MCCARTY.