

No. 755,981.

PATENTED MAR. 29, 1904.

L. & I. WISMER.
FEED WATER HEATER.

APPLICATION FILED APR. 15, 1903.

NO MODEL.

Fig. 1.

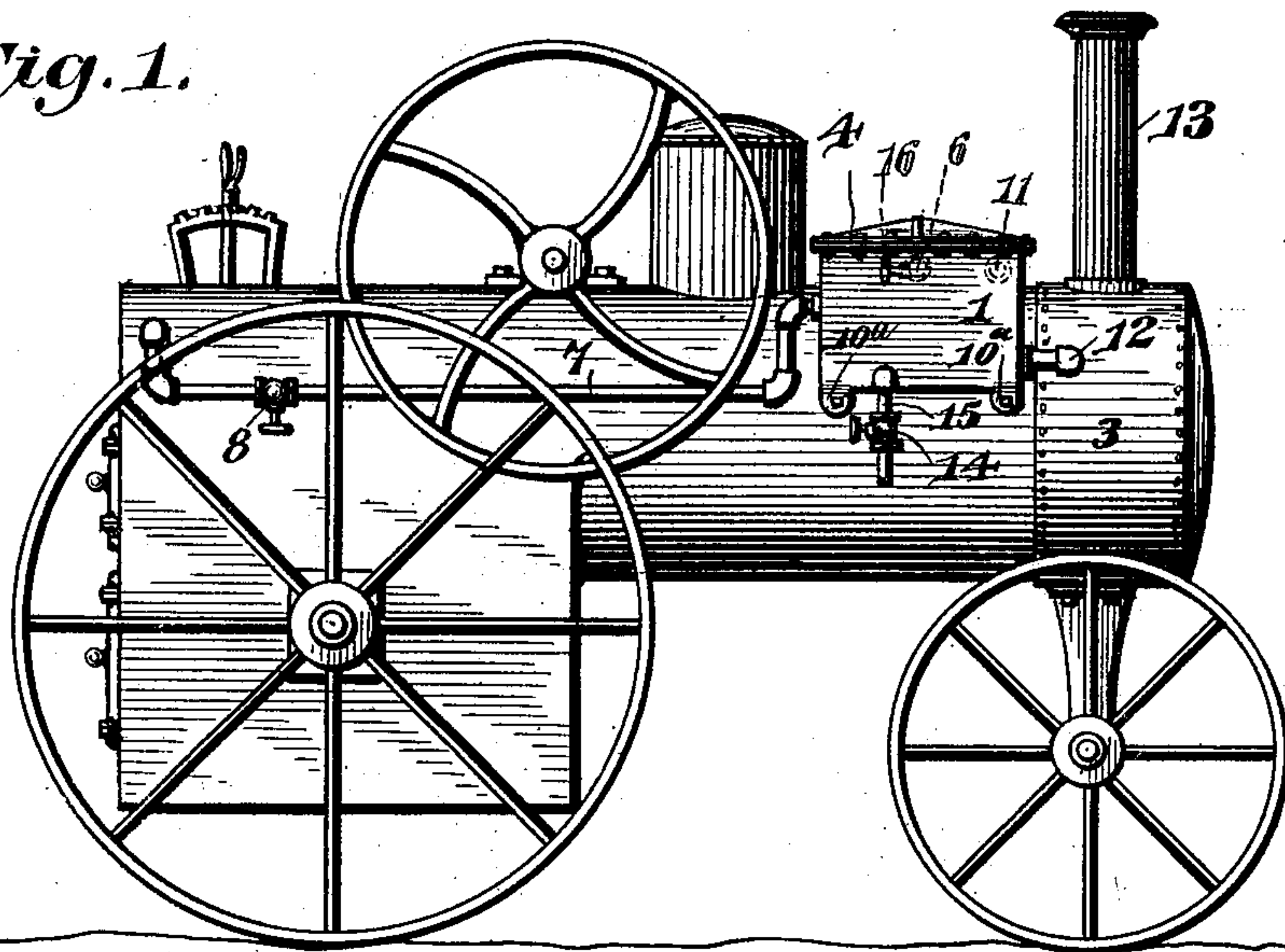


Fig. 2.

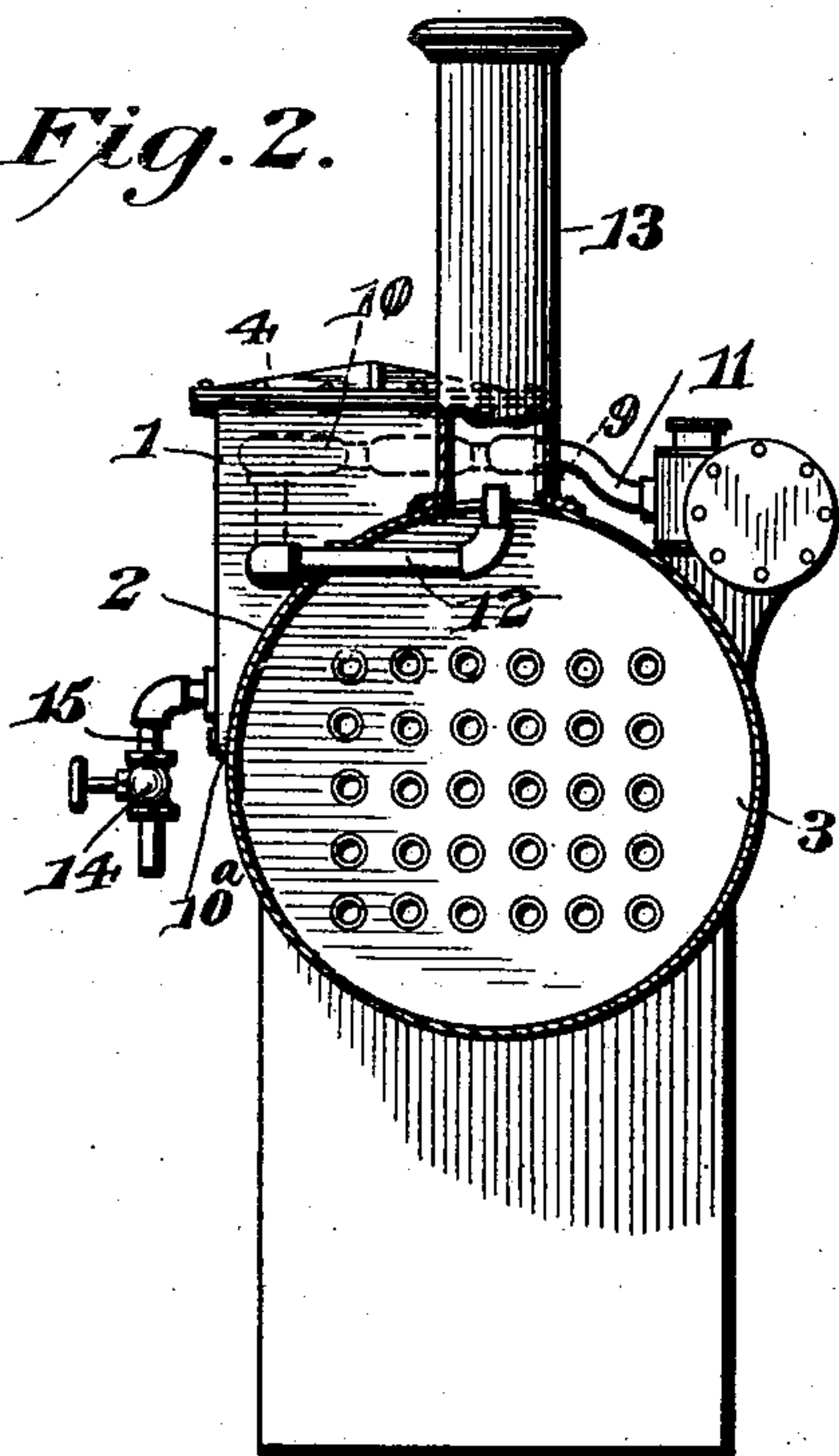
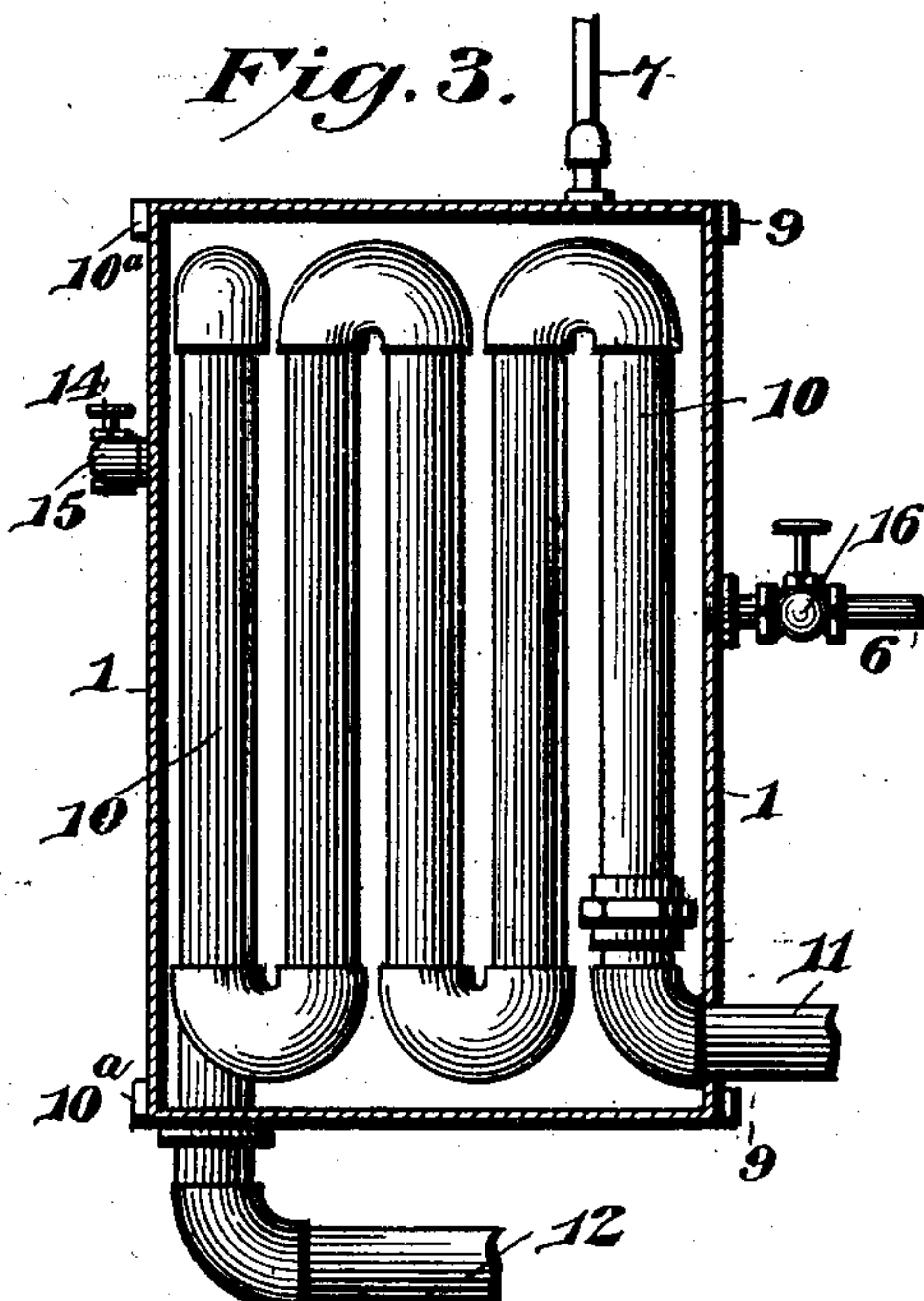


Fig. 3.



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UNITED STATES PATENT OFFICE.

LEVI WISMER AND ISAIAH WISMER, OF REDMAN, MICHIGAN.

FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 755,981, dated March 29, 1904.

Application filed April 15, 1903. Serial No. 152,766. (No model.)

To all whom it may concern:

Be it known that we, LEVI WISMER and ISAIAH WISMER, citizens of the United States, residing at Redman, in the county of Huron and State of Michigan, have invented a new and useful Feed-Water Heater, of which the following is a specification.

The invention relates to a feed-water heater for preventing organic matter and other impurities contained in water from entering a boiler.

The object of the present invention is to provide a simple, inexpensive, and efficient device adapted to be readily applied to a boiler and capable of enabling organic matter and other impurities of feed-water to be collected and prevented from entering a boiler.

A further object of the invention is to provide a device of this character in which the water within it will be prevented from circulating to any great extent and in which both the exhaust-steam and the heat of the boiler will be utilized for maintaining the water at approximately the temperature of the water within the boiler.

Another object of the invention is to enable the impurities to be blown off when desired and to permit the feed-water heater to be readily cleaned when necessary.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claim hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claim may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation of a feed-water heater constructed in accordance with this invention and shown applied to a traction-engine. Fig. 2 is an end elevation, partly in section. Fig. 3 is a horizontal sectional view.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a tank or casing provided with a curved bottom 2, presenting a concave lower face and conforming to the configuration of and fitting directly against a boiler 3, as clearly shown in Fig. 2 of the accompanying drawings, whereby the heat of the boiler will operate to assist in maintaining the water within the tank or casing at approximately the same temperature as the water within the boiler. The tank or casing is approximately rectangular in plan view, as shown in Fig. 3, and it is provided with a removable top 4, bolted or otherwise secured to the body portion of the tank or casing. The body portion of the tank or casing is provided with an outwardly-extending flange, which is perforated for the reception of the bolts or other fastening devices for securing the removable top in place. The removable top affords ready access to the interior of the tank or casing and will permit the same to be readily cleaned when desired. The lower portion of the tank forms a narrow tapering pocket or trap for collecting scale matter and other impurities contained in the water, which enters the casing or tank near the top at the inner side thereof through a supply-pipe 6 and which is delivered to the boiler through an outlet-pipe 7, leading from the rear end of the tank or casing at a point above the center thereof, so that only the upper portion of the contents of the tank will be disturbed when water is fed to the boiler, whereby circulation and agitation of the contents of the lower portion of the tank or casing are prevented. The outlet-pipe 7 is provided with a check-valve 8 for preventing back pressure, so that water will not be forced back from the boiler into the tank or casing. An ordinary globe-valve may be employed for this purpose or an automatically-operating check-valve may be provided.

The tank or casing extends beyond the center of the boiler, as indicated in Fig. 2, and it is provided with upper and lower perforated ears 9 and 10^a for the reception of suitable fastening devices for mounting it upon the boiler. In practice a suitable jacket or covering of non-heat-conducting material will be employed for preventing the exterior atmos-

phere from affecting the temperature of the contents of the tank or casing.

Within the tank or casing is arranged a coil 10, connected at one end with a steam-inlet pipe 11 and at the other end with a steam outlet or exhaust pipe 12, designed to extend to the stack 13 of the traction-engine, as indicated in Fig. 2 of the drawings. The exhaust-steam from the traction-engine passes through the pipe-coil 10 and in conjunction with the heat of the boiler maintains the temperature of the contents of the stack or casing at substantially the temperature of the water within the boiler. The impurities contained within the water settle to the bottom of the depending trap or pocket of the feed-water heater. A blow-off valve 14 is connected with the lower portion of the tank or casing and is adapted to permit the impurities to be blown off. The valve 14, which is preferably a globe-valve, is mounted on a short tube or pipe 15, piercing the outer wall of the tank or casing at the bottom of the pocket. When it is desired to blow off the impurities of the tank or casing, the valve 8 is closed and the valve 14 opened. The pressure at the water-supply pipe 6, which is provided with a valve 16, is sufficient to force the impurities through the pipe 15. The supply-pipe is designed to be connected with a pump (not shown) for forcing water into the tank or casing.

The feed-water heater does not materially increase the weight of the traction-engine, and it is arranged out of the way and does not interfere with the transportation of the engine. The long narrow depending pocket formed by the tapered portion of the tank or casing serves to catch the impurities, and the water is fed into and drawn from the tank or casing at the upper portion thereof, so that the water within the tank or casing does not circulate and agitate the contents of the said pocket or trap.

The coil 10 extends across the top of the tank or casing, as shown in Fig. 3; but it may be arranged in any other desired manner. Sufficient space is provided between the coils to enable an instrument to be introduced into the pocket or trap for entirely removing the accumulation when the top of the tank or casing is detached for cleaning the feed-water heater.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In a device of the class described, the combination with a boiler, of an approximately rectangular tank or casing arranged at one side of the boiler, and having a concaved bottom conforming to the configuration of and fitted directly against the boiler, the bottom and the outer walls of the tank or casing being extended downward to provide an exteriorly arranged, narrow scale-catching trap or pocket, inlet and outlet pipes connected with the tank or casing at the upper portion thereof, whereby water may be supplied to and withdrawn from the tank or casing without disturbing or agitating the contents of the pocket or trap, a blow-off cock arranged at the bottom of the pocket for discharging the contents thereof, a heating-coil arranged within the upper portion of the tank or casing, and steam inlet and outlet pipes connected with the coil, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

LEVI WISMER.
ISAIAH WISMER.

Witnesses:

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CHAS. F. ENGLE.