

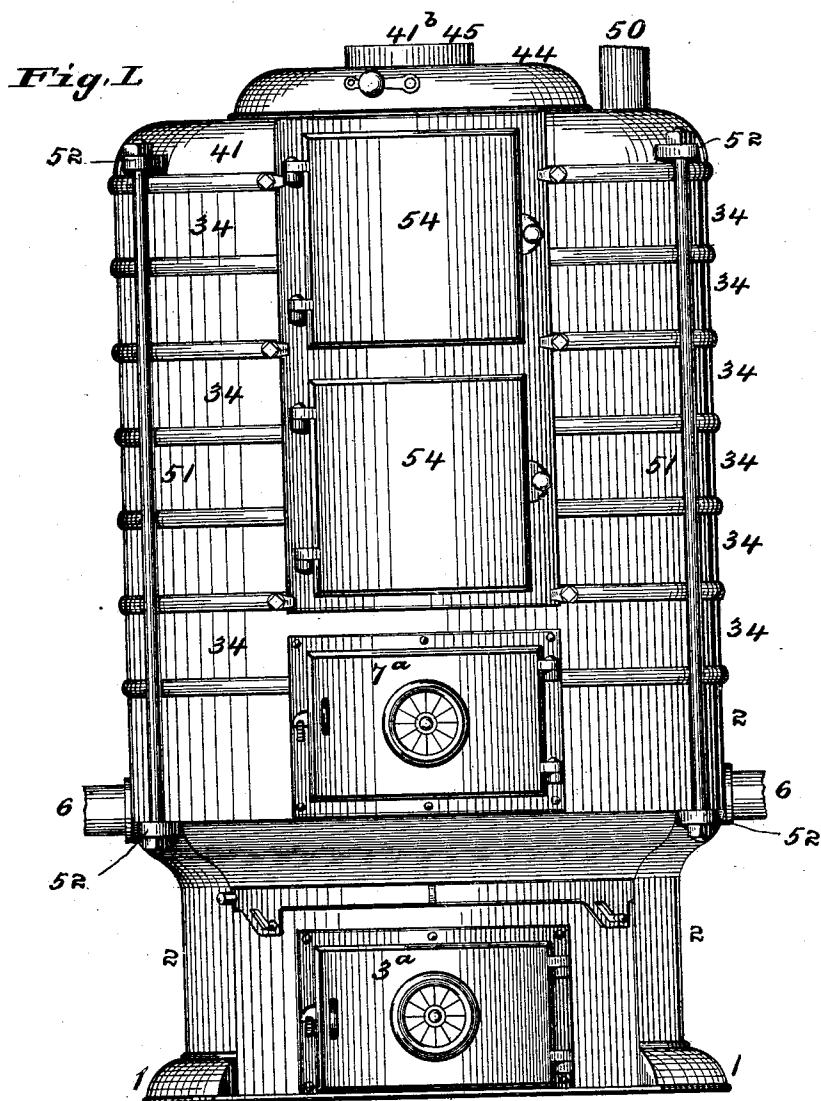
(No Model.)

5 Sheets—Sheet 1.

J. W. KELLEY.
WATER HEATER.

No. 484,322.

Patented Oct. 11, 1892.



Attest:

Harry D. Rohrer
Arthur O. Knight

Inventor:

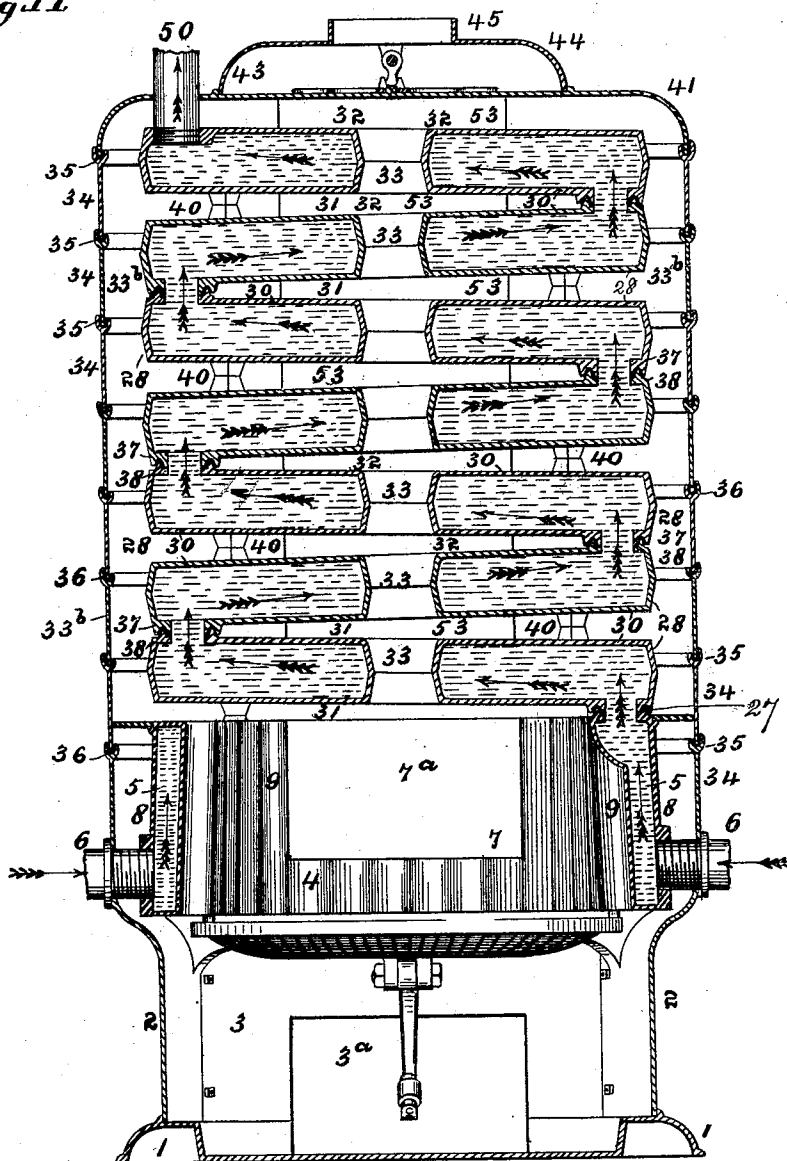
John W. Kelley
By Knight Bros.
Atty.

J. W. KELLEY.
WATER HEATER.

No. 484,322.

Patented Oct. 11, 1892.

Fig II



Attest:

Harry S. Rohrer
Arthur O. Knight.

Inventor:

John W. Kelley
By Knight Bros
attys.

(No Model.)

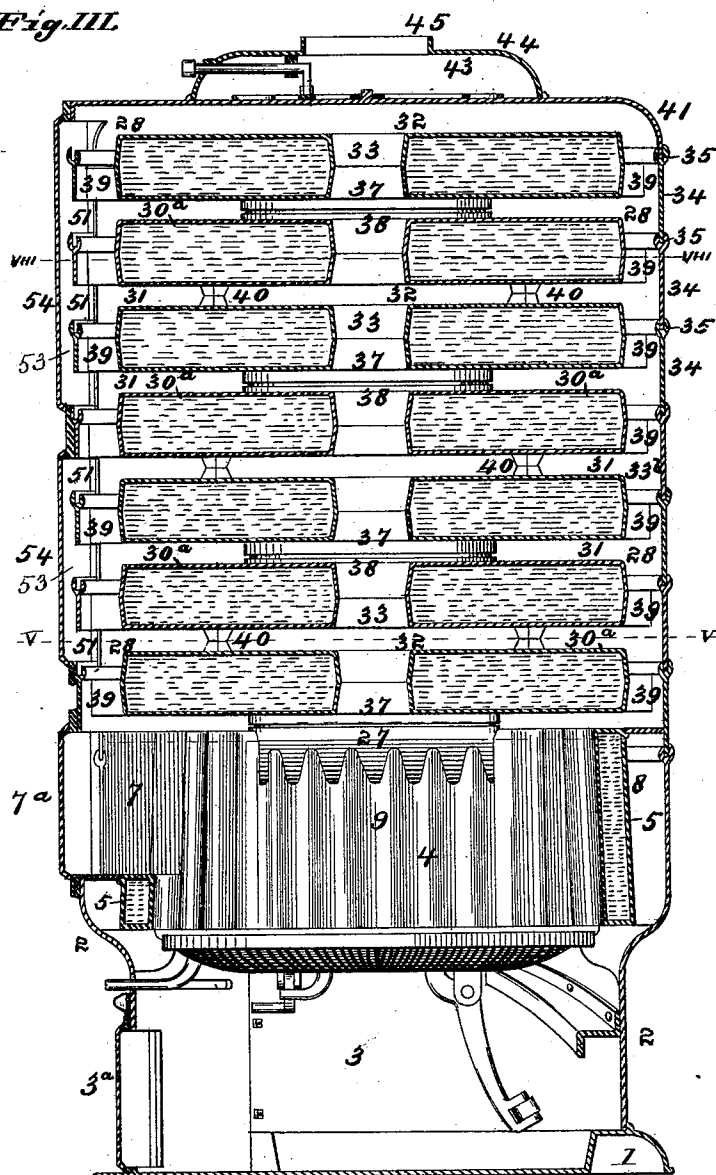
5 Sheets—Sheet 3.

J. W. KELLEY.
WATER HEATER.

No. 484,322.

Patented Oct. 11, 1892.

Fig. III



Attest:

Harry D. Robner
Arthur O. Knight

Inventor;

John W. Kelley.
By Knight Bros.
Attys.

(No Model.)

5 Sheets—Sheet 4.

J. W. KELLEY.
WATER HEATER.

No. 484,322.

Patented Oct. 11, 1892.

Fig. IV.

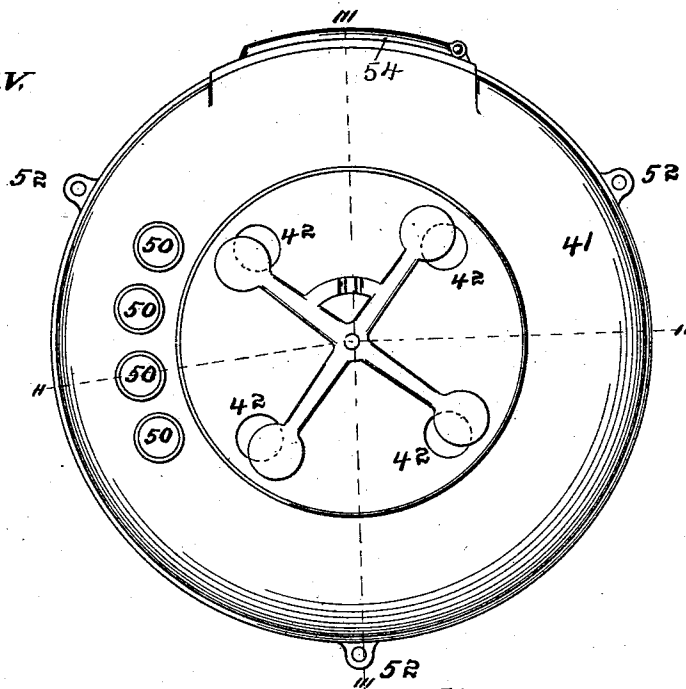
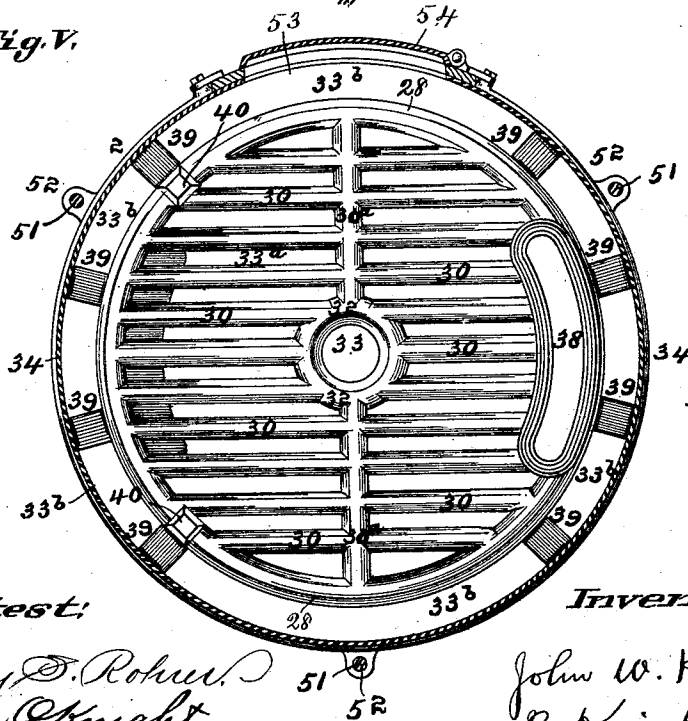


Fig. V.



Attest:

Harry D. Rohrer.
Arthur Knight

Inventor:

John W. Kelley.
By Knight Bros.
Attys.

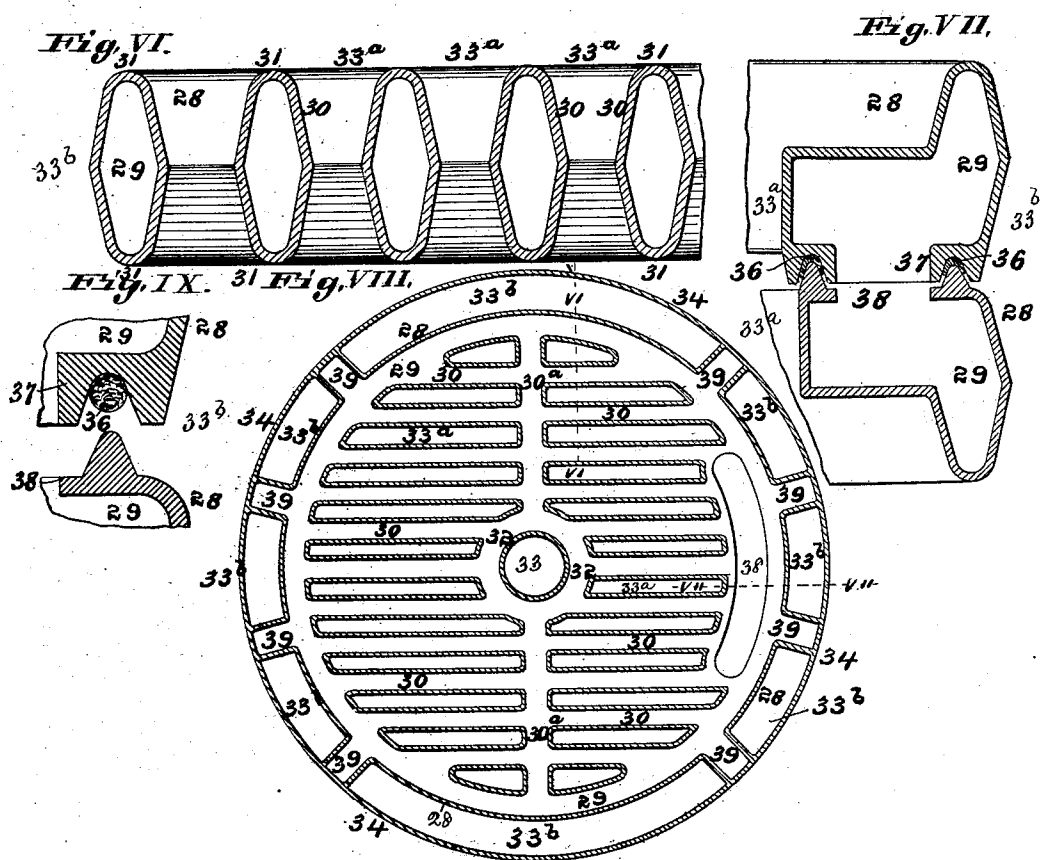
(No Model.)

5 Sheets—Sheet 5.

J. W. KELLEY.
WATER HEATER.

No. 484,322.

Patented Oct. 11, 1892.



Attest:

Harry Rogers
Arthur Knight

Inventor:

John W. Kelley
By Knight Bros.
Atty.

UNITED STATES PATENT OFFICE.

JOHN W. KELLEY, OF ST. LOUIS, MISSOURI.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 484,322, dated October 11, 1892.

Application filed July 8, 1891. Serial No. 398,790. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. KELLEY, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Water-Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention belongs to that class of heaters having similar cast-iron sections placed one upon another.

The novel features of the invention are set forth in the claims.

Figure I is a front elevation of the heater. Fig. II is a vertical section taken at II II, Fig. IV. Fig. III is a vertical section taken at III III, Fig. IV. Fig. IV is a top view of the heater with the smoke-box removed. Fig. V is a horizontal section taken at V V, Fig. III. Fig. VI is an enlarged detail vertical section taken at VI VI, Fig. VIII. Fig. VII is an enlarged detail vertical section taken at VII VII, Fig. VIII, showing the joint between the water-sections. Fig. VIII is a horizontal section through one of the water chambers or sections, taken at VIII VIII, Fig. III. Fig. IX is an enlarged detail vertical section, taken at VII VII, Fig. III, the parts being out of contact.

1 is the base. 2 is a circular case forming the wall of the ash-pit 3 and surrounding the fire-pot 4. The sides of the fire-pot are hollow, having an annular water-chamber 5, supplied with water by the pipes 6.

7 is the aperture in the fire-pot for the entrance of fuel, closed by a door 7^a.

3^a is the door of the ash-pit. The outer wall 8 of the fire-pot may be cylindrical, while the inner wall 9 may be corrugated, as shown in Figs. II and III.

The water escapes upward from the fire-pot chamber 5 through a neck 27 into the lower one of a series of water-sections piled one upon another in a vertical column. These sections are uniform in construction, so that a description of one applies to each of the others. The sections have a hollow annular part 28, containing a water-chamber 29 and connected by parallel hollow bars 30 and cross-bars 30^a. The form of parts 28 and 29 in vertical cross-section is the same, being wider at the mid-height and decreasing regularly up-

ward and downward to the rounded parts 31. (See Fig. VI.) The bars 30 and 30^a communicate at the middle part of the section, a hollow annular bar 32 surrounding a passage 33, through which the products of combustion ascend. The outer shell of the heater is formed in cylindrical sections 34, each section being cast integral with one of the water-sections. The annular shell-sections 34 have a groove 35 around their upper edges, in which fits the lower edge of the section above. The joint is made close with cement 36. I prefer to use asbestos cement, laid in the groove in the form of a rope. (See Fig. IX.) The groove 35 may be made in the lower edge of the shell-section in place of the upper edge. The water-sections are made with a little obliquity relatively to the shell-sections, so that while the latter are horizontal the former are inclined upward slightly from the side where they receive water to the side where the water is discharged. The under side of each section has a receiving-neck 37 near its lower edge, which in the lower section is connected to the neck 27, the neck 37 being grooved to receive the upper edge of the neck 27, or vice versa. The joint is made watertight by asbestos cement or other cement 36. On the upper side of each water-section at the higher edge is a water-discharge neck 38, that is fitted to the neck 37 of the section next above, the joint being made in the same manner as that between the necks 27 and 37. The described inclination of the water-sections causes the water as it is heated to flow upward from the receiving-point 37 to the discharge-point 38. The connection between the water-sections and the shell-sections 34 is made by means of hollow connections 39, open at the inner end to the water-chamber 29.

40 are distance projections cast upon the tops and bottoms of the water-sections for support of the sections.

41 is the top, whose edges may be connected to the upper section 34 in the same manner as these sections are connected together. The plate 41 has a number of flue-openings 42 for the escape of the products of combustion into the smoke-chamber 43 beneath the hood 44. 45 is the neck for connection with a chimney. The products of combustion from the fire pass up through the apertures 33 and 33^a of the

water-sections and passages 33^b between these sections and the case and through the flue-openings 42 into the smoke-chamber 43, and escape therefrom through the neck 45. The
5 water enters the fire-box chamber 5 through the pipes 6, and passes through necks 27 and 37 into the lower water-section and across this section, escaping through the necks 38 and 37 into the section above. In this way
10 the water passes from section to section and across each section in turn in opposite direction, and finally escapes from the upper water-section through a pipe or pipes 50, by which the hot water may be carried to points
15 at a distance, from which points it returns through the pipes 6. The course of the water through the heater is indicated by arrows in Fig. II. The parts are secured together by bolts 51, passing through lugs 52 in the lower
20 case 2 and the top 41. In order to give access to the space above, the fire-apertures are made at 53 in the shell-sections 34, and these apertures are covered by doors 54 at the front of the apparatus.

I claim as my invention—

1. A section for water-heaters, consisting of 25
a casing-section, outer annular part, arms by which the casing-section is connected with the outer annular part, so as to provide, in connection with the casing-section and the outer 30
annular part, passages for the products of combustion, inner annular part providing a central passage, parallel bars and cross-bars extending from the outer annular part to the inner annular part, and parallel bars extend- 35
ing from the outer annular part to the cross-bars, substantially as described.

2. A combined water-section and casing-section cast integral with arms 39, by which the water-section and casing-section are connected and forming therewith passages 33^b 40
for the products of combustion, substantially as described.

JOHN W. KELLEY.

Witnesses:

SAML. KNIGHT,
BENJN. A. KNIGHT.