

(No Model.)

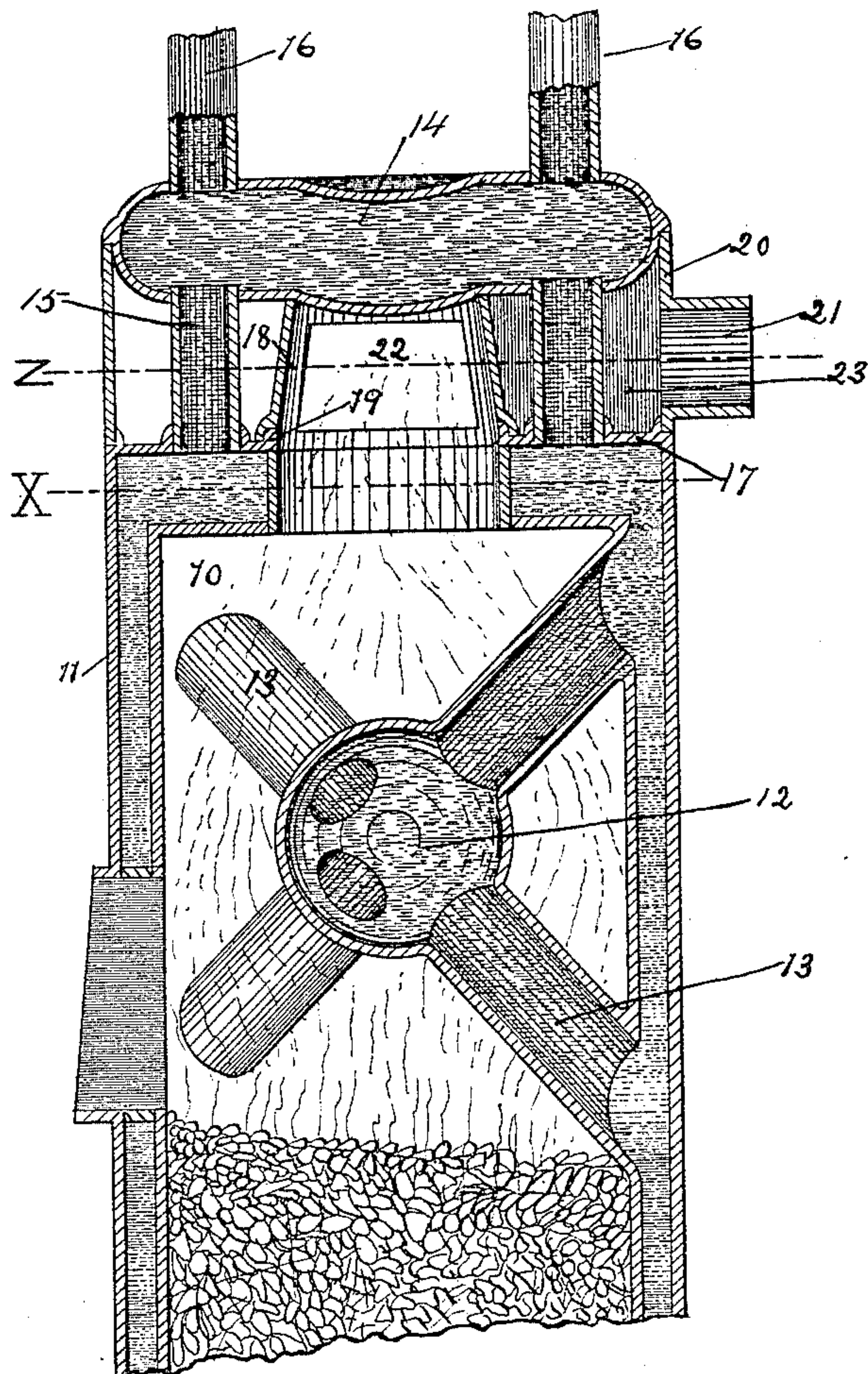
2 Sheets—Sheet 1.

W. C. HIGGINS.
STEAM AND HOT WATER GENERATOR.

No. 453,697.

Patented June 9, 1891.

Fig. 1.



Witnesses

Abraham M. Luther.
Allen Tenny.

Inventor

Walter C. Higgins.
By *his* Attorney
Frank H. Allen.

W. C. HIGGINS.
STEAM AND HOT WATER GENERATOR.

No. 453,697.

Patented June 9, 1891.

FIG. 2.

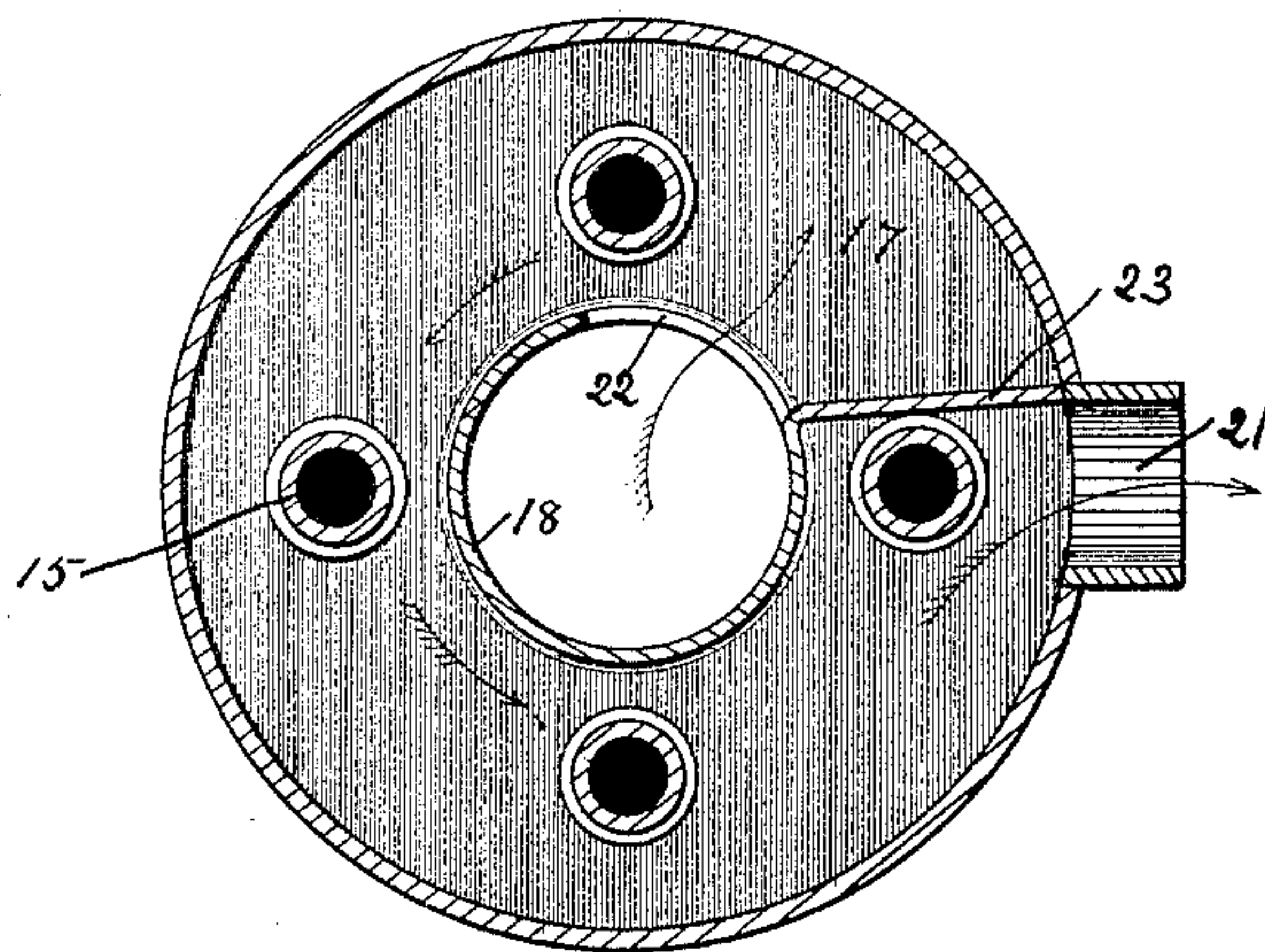
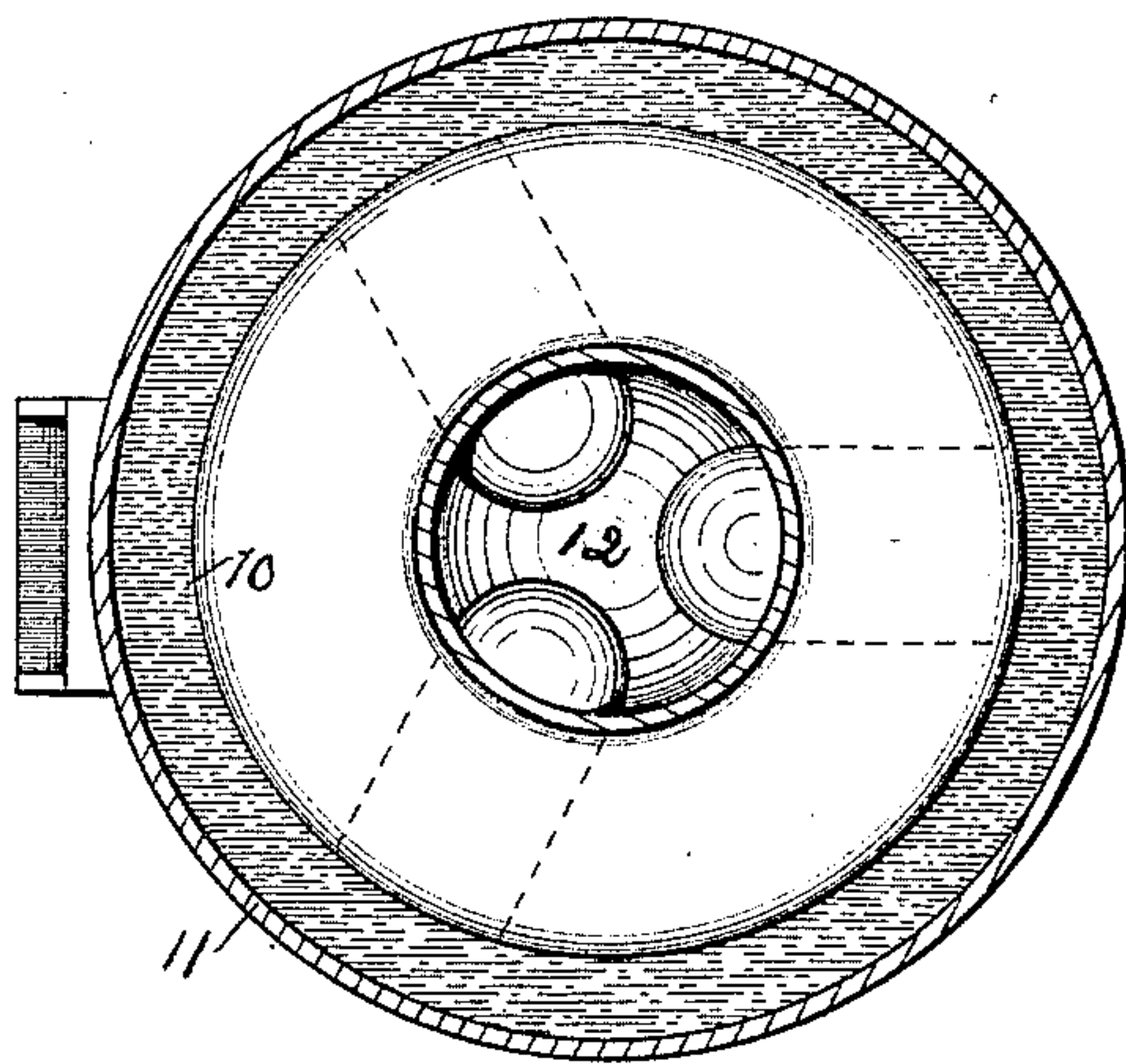


FIG. 3.



Witnesses

Alonso M. Luther.
Allan Terry.

Inventor

Walter C. Higgins.

By his Attorney

Frank H. Allen

UNITED STATES PATENT OFFICE.

WERTER C. HIGGINS, OF NORWICH, CONNECTICUT.

STEAM AND HOT-WATER GENERATOR.

SPECIFICATION forming part of Letters Patent No. 453,697, dated June 9, 1891.

Application filed March 23, 1891. Serial No. 386,011. (No model.)

To all whom it may concern:

Be it known that I, WERTER C. HIGGINS, a citizen of the United States, residing at Norwich, in the county of New London and State of Connecticut, have made certain new and useful Improvements in Steam and Hot-Water Generators, which improvements are fully set forth and described in the following specification, reference being had to the accompanying two sheets of drawings, in which—

Figure 1 is a central vertical sectional view of a generator of my improved form. Figs. 2 and 3 are respectively cross-sectional views of the same on lines *z* and *x*.

On the 26th day of August, 1890, Letters Patent No. 434,928 were issued to me for certain improvements in the class of generators to which my present invention relates, and I therefore refer to the said earlier patent for a detailed description of such generators.

I now seek by my present invention to simplify and cheapen somewhat the construction of this class of heaters without detracting in any degree from their practicability.

In my said earlier form of heater an outer shell was shown within and by means of which a jacket of hot air could be provided around the water-jacketed fire-pot. This outer shell I have now dispensed with, and have also made certain other valuable changes whereby an indirect draft is cheaply and effectively provided.

Referring to the drawings, 10 denotes the inner wall of the generator, within which is the fire-pot and combustion-chamber, and 11 denotes the outer shell, corresponding to the intermediate shell of the generator of my patent, No. 434,928, above referred to. Between walls 10 and 11 is a water-space, as shown, and suspended within the combustion-chamber is a globular water-section 12, having a series of radiating-pipes 13, connecting at their ends with the water-space between the walls 10 and 11, as in said earlier patent.

14 denotes a dome which may be used for steam or water, said dome being connected with the water-jacket surrounding the combustion-chamber by a series of pipes 15, of which four are here shown; but any desired number may be provided. Suitable outlet or delivery pipes 16 lead from dome 14. Be-

tween said dome and the upper plate 17 of wall 12 is a tubular section 18, whose lower end is formed with an annular interior rabbet that may fit over a corresponding rib 19 on the plate 17, as best illustrated in Fig. 1 of the drawings. The upper end of the tubular section 18 is held against displacement when the parts are assembled by the convex lower wall of dome 14, which enters and closes the otherwise open upper end of section 18. The lower end of said section is connected with the central draft-opening leading upward from the combustion-chamber. Surrounding the open space between dome 14 and the plate 17 is a jacket 20, made preferably of segments of a circle, one of which is formed with a collar 21 to receive a smoke-pipe.

Leading outward from one side of the tubular section 18 is an opening 22, through which smoke and other products of combustion may pass to the open space between dome 14 and plate 17, and finally outward through the smoke-pipe. Such products are, however, checked and prevented from passing directly outward by a vertical deflector-plate 23, which fits snugly between the plate 17 and the dome, as clearly shown in Figs. 1 and 3. Said deflector-plate is preferably located immediately at one side of the smoke-pipe collar 21, and reaches thence to one side of the opening 22 in the tubular section 18. When the smoke, &c., passes outward through opening 22, it is prevented from finding a direct exit to and through the smoke-pipe by reason of the intervening plate 23, and is caused to pass entirely around the section 18, as indicated by the arrows of Fig. 3, before it can reach said smoke-pipe, thus providing an indirect draft. This system of indirect draft used in connection with the globular water-chamber 12, suspended within the combustion-chamber, renders it possible to obtain in a simple manner the best caloric results from the burning gases of the said combustion-chamber.

The general form and arrangement of the several sections of which the generator is formed are such that it is comparatively easy and inexpensive to assemble said sections and to make water or steam tight joints.

Having described my invention, I claim—

1. In a generator of the class referred to, in

combination, an inner and outer shell providing a fire-pot and surrounding water-jacket, a superheating-chamber suspended within said fire-pot connected by hollow arms with the
5 surrounding water-jacket, a dome supported on water-legs above the generator proper, and a system of deflector-flues and plate, substantially as described, for producing an indirect draft.

10 2. In combination with the fire-pot shell having a draft-opening at its upper end, a superheating-chamber suspended within said fire-pot and provided with pipe connections, as set forth, an outer shell surrounding the

fire-pot, a dome supported on water-legs above 15 the generator proper, providing hot-air space between the dome and generator, a tubular section (with lateral opening) fitting between the dome and the draft-opening of the fire-pot, and a radial plate 23 between the said 20 tubular section and the outer wall, said plate being located at one side of the smoke-exit, as and for the purpose specified.

WERTER C. HIGGINS.

Witnesses:

A. HAMMETT,

FRANK H. ALLEN.