

No. 720,899.

PATENTED FEB. 17, 1903.

J. B. & E. C. DOOLITTLE.
STEAM BOILER.

APPLICATION FILED OCT. 6, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

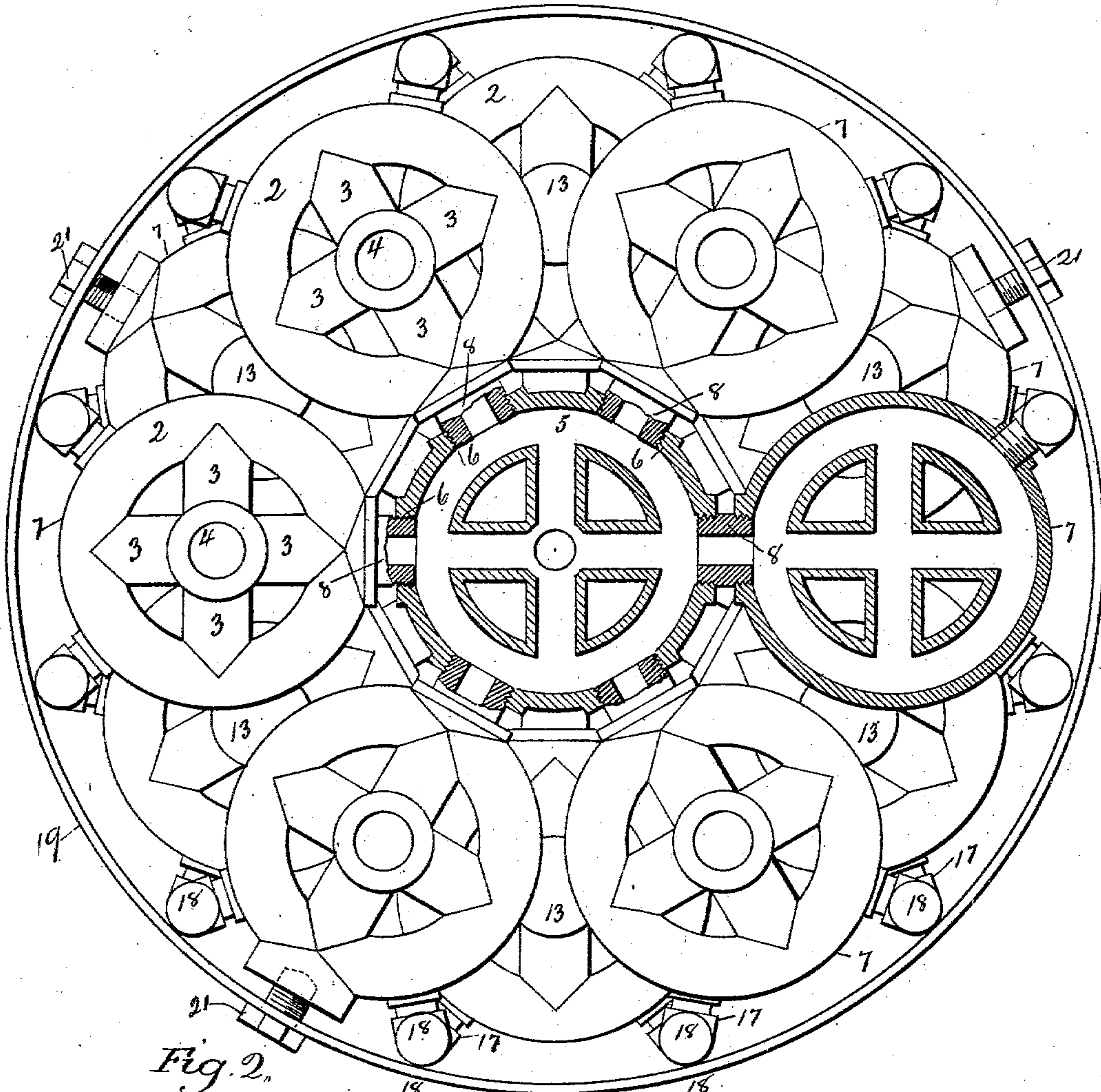
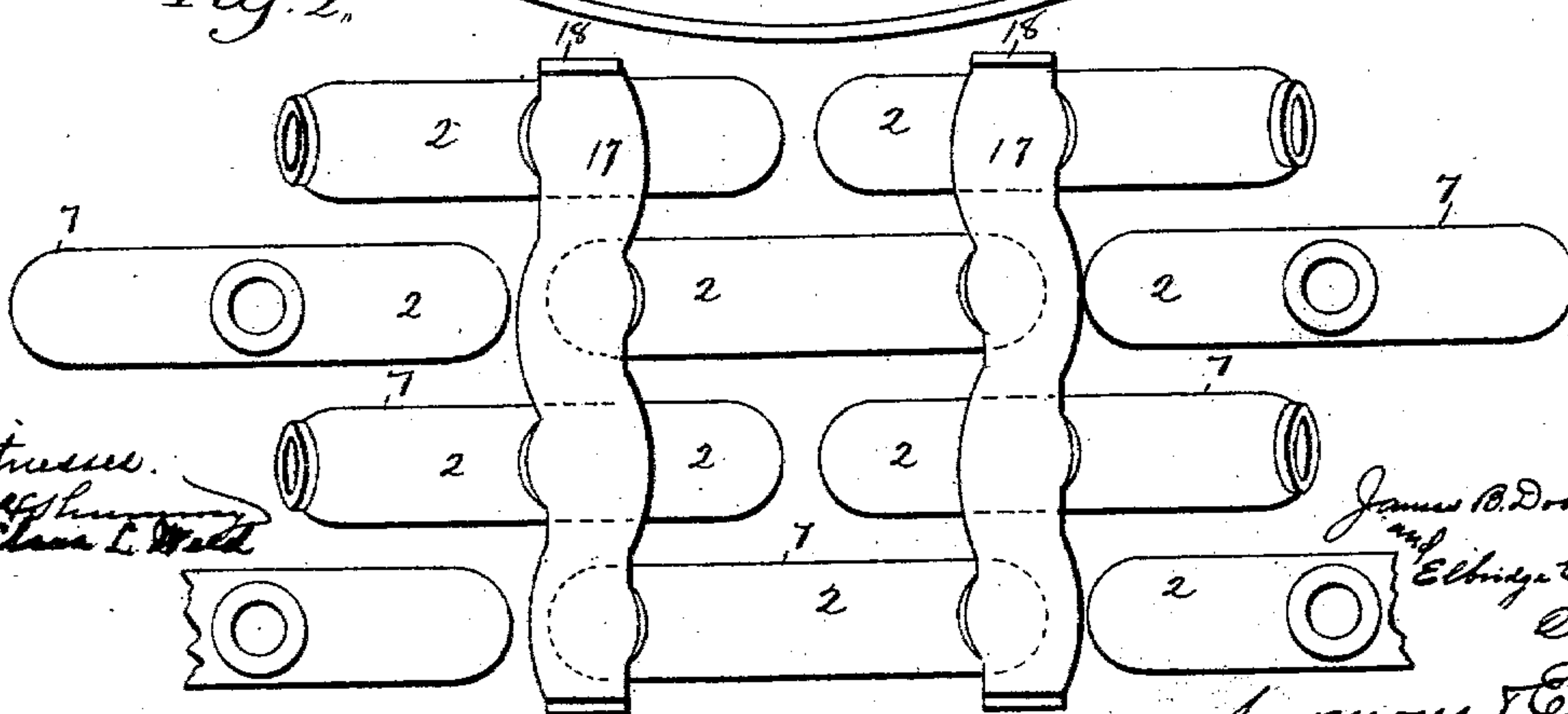


Fig. 2.



Witness.
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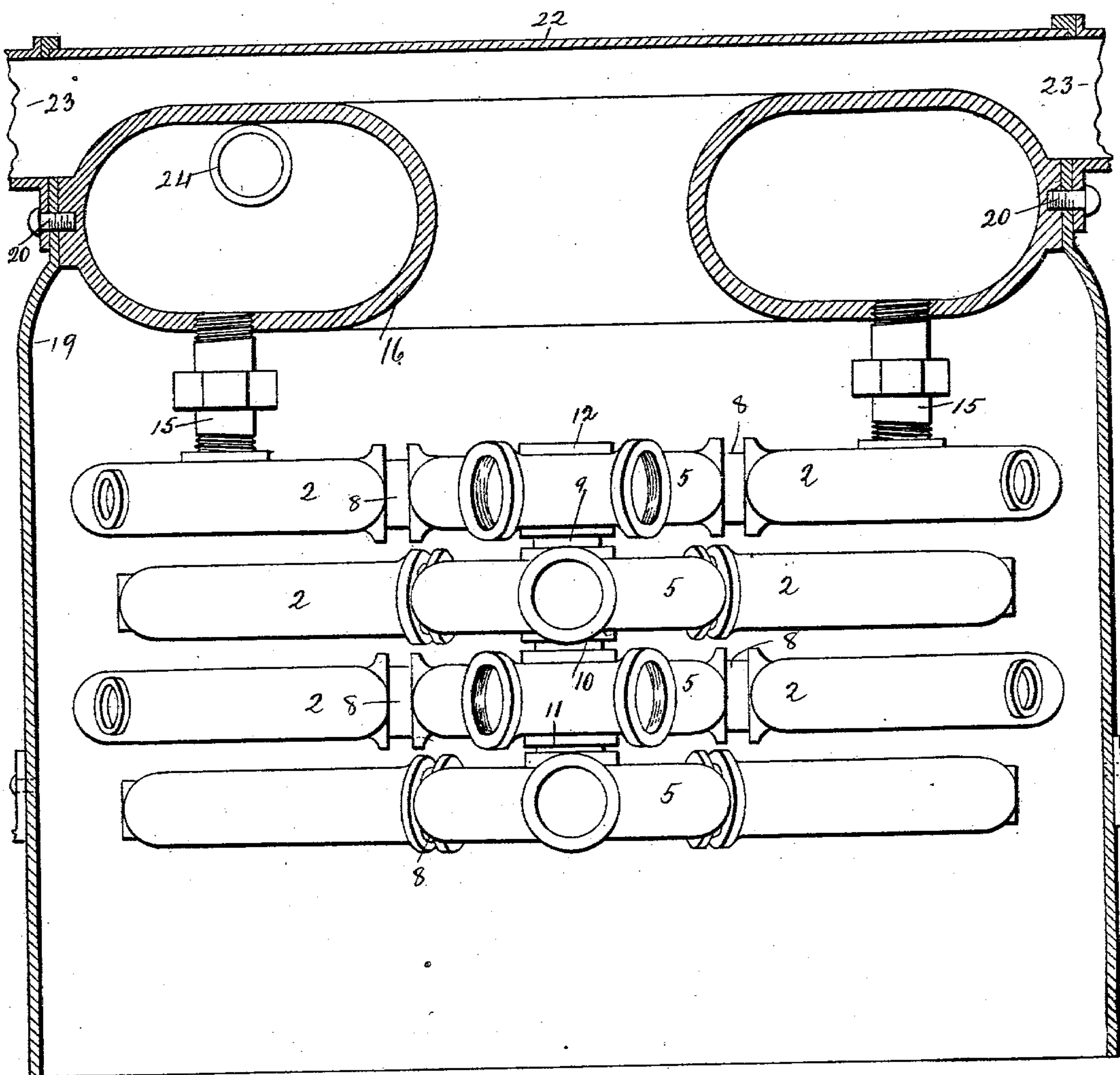
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2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES B. DOOLITTLE AND ELBRIDGE C. DOOLITTLE, OF WALLINGFORD, CONNECTICUT.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 720,899, dated February 17, 1903.

Application filed October 6, 1902. Serial No. 126,015. (No model.)

To all whom it may concern:

Be it known that we, JAMES B. DOOLITTLE and ELBRIDGE C. DOOLITTLE, of Wallingford, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Steam-Boilers; and we do hereby declare the following, when taken in connection with the accompanying drawings and the numerals of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a top view, partially in section, showing the arrangement of the several sections of our improved boiler; Fig. 2, a partial side view of the same, showing the arrangement of the vertically-arranged connecting-pipes; and Fig. 3, a side view, partially in section and with a number of the sections and the vertical pipes removed.

This invention relates to an improvement in steam-boilers and is particularly adapted for producing steam for motor and other vehicles in which economy of space and rapidity of action are essential, the object of the invention being the construction of a boiler in sections, which may be readily cast, readily replaced when necessary, and which have a great amount of firing-surface in proportion to their capacity; and the invention consists in the construction as hereinafter described, and particularly recited in the claims.

The boiler proper is built up in layers or series composed of small sections. As herein shown we employ seven sections in each layer or series; but the exact number is immaterial. As herein shown the sections are in the form of rings 2, with four arms 3 united at the center with a central opening 4. The central section 5 is formed with openings 6, through which it is connected with the outer ring-like sections 7 by nipples 8, the six outer sections being duplicates of each other. The central sections are united by nipples 9, 10, and 11, so that the four sections communicate with each other, the center of the upper section being closed by a plug 12. The centers of the outer sections are closed by plugs 13, except that those of the top layer are connected through their centers by nipples 15 with a

ring-like steam-chamber 16. Preferably and as herein shown the outer sections will be connected by vertical pipes 17, which not only provide for circulation between the outer sections, but also unite and support the several series, these vertical pipes being closed at their opposite ends by plugs 18. The several series and the steam-chamber are inclosed and supported by a circular jacket 19, which is connected at the upper end by screws 20 with the steam-chamber 16 and at various points with the sections 7 by screws 21, as shown in Fig. 1. The top of this jacket is closed by a plate 22, below which and on opposite sides are openings 23 for the escape of the products of combustion.

As is usual with steam-boilers, a suitable water-gage, safety-valve, and draw-off cock will be provided, the application of such devices being so well known as not to require illustration or description.

From the steam-chamber 16 a port 24 opens into the engine. Within the jacket 19 and below the sections of the boiler provision will be made for the burner. Preferably, and as herein shown, the sections of the several series will be staggered, so that the heat from the burner below the sections will have an even effect upon all the several sections. The water circulates through the several sections and vertical pipes and from them into the central sections, while the steam generated passes from the outer sections of the top series into the steam-chamber 16, the products of combustion passing upward through the several sections through the ring-like steam-chamber 16 and escaping through the openings 23.

The sections of this boiler may be cast, and thereby obtain the well-known advantage of a cast-metal boiler over a wrought-metal boiler. In case of accident any one of the several sections may be readily removed, and if inconvenient to replace it by another section the openings into the adjacent sections may be plugged without materially decreasing the efficiency of the boiler.

By arranging the steam-chamber above the sections and in ring-like form we obtain a large area for the circulation of dry steam.

While we have shown four series, it will be understood that for small engines one or two series may be employed, or for large engines the number of series may be increased indefinitely.

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

1. A steam-boiler comprising two or more series, each series composed of a central section and outer sections, the outer sections of the lower series connected with the central sections, the central sections connected together, a ring-like steam-chamber above the sections and connected with the outer sec-

tions of the top series, substantially as described.

2. A steam-boiler comprising two or more series, each series consisting of a central ring-like section and outer ring-like sections, the outer sections connected with the central sections, substantially as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

JAMES B. DOOLITTLE.

ELBRIDGE C. DOOLITTLE.

Witnesses:

FREDERIC C. EARLE,
CLARA L. WEED.