

No. 778,152.

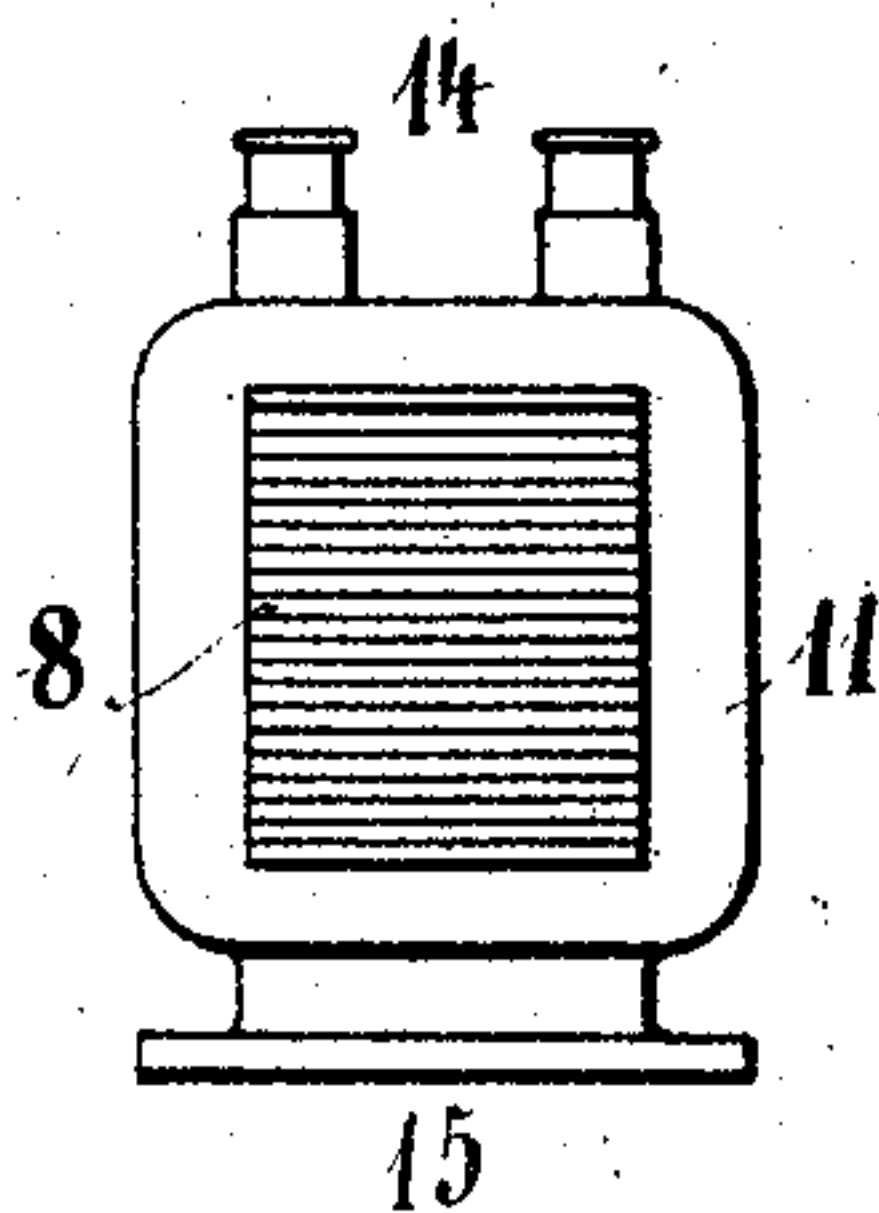
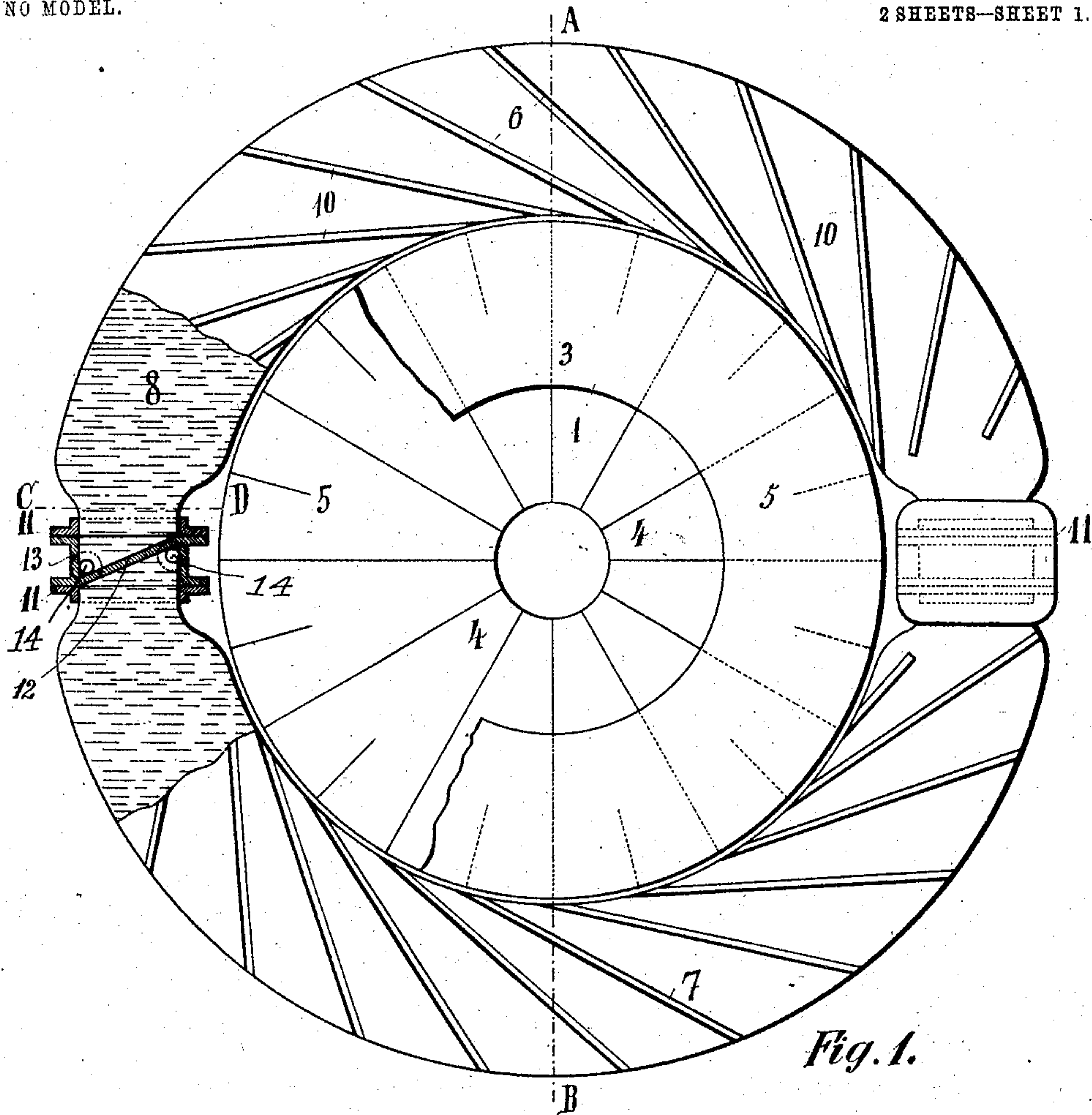
PATENTED DEC. 20, 1904.

E. SOLLER & F. HOTTINGER.
WATER COOLING APPARATUS.

APPLICATION FILED APR. 29, 1904.

NO MODEL.

2 SHEETS--SHEET 1.



Witnesses
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Thomas Kirkpatrick

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2 SHEETS—SHEET 2.

Fig. 2.

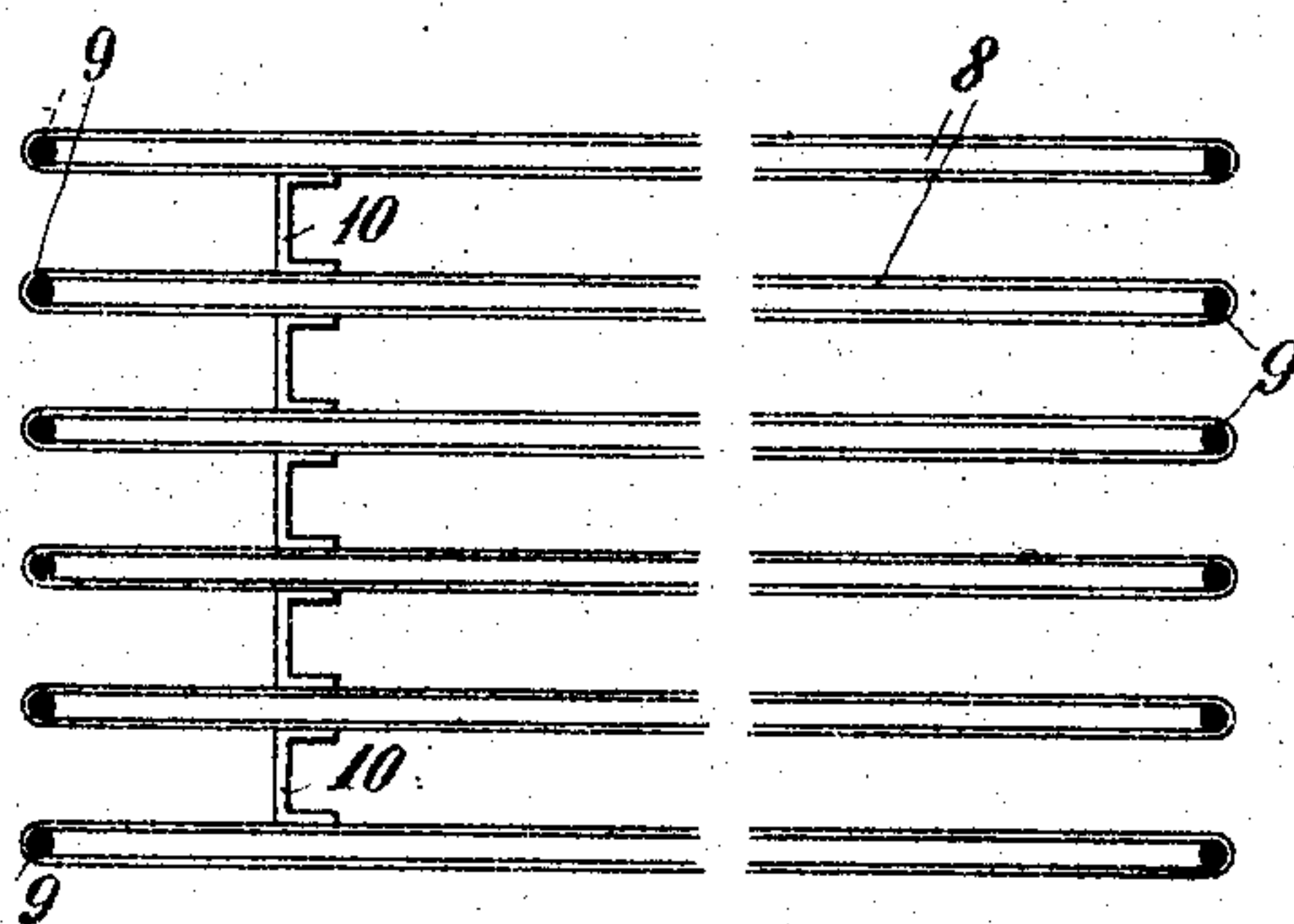
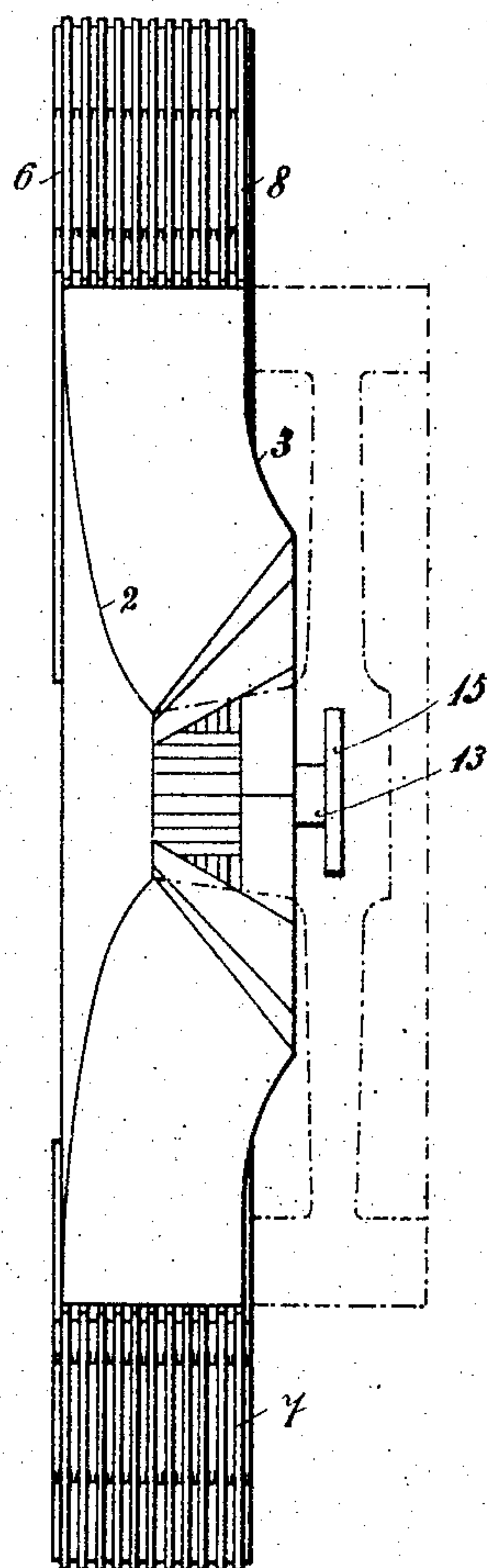


Fig. 3.

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UNITED STATES PATENT OFFICE.

EUGEN SOLLER AND FRIEDRICH HOTTINGER, OF BASLE, SWITZERLAND;
SAID HOTTINGER ASSIGNOR TO SAID SOLLER.

WATER-COOLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 778,152, dated December 20, 1904.

Application filed April 29, 1904. Serial No. 205,582.

To all whom it may concern:

Be it known that we, EUGEN SOLLER and FRIEDRICH HOTTINGER, citizens of the Republic of Switzerland, residing in Basle, in the canton of Basle, Republic of Switzerland, (post-office address Klara-Strasse 43, Basle,) have invented certain new and useful Improvements in Water-Cooling Apparatus; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

We have applied for patent in the following country: Switzerland on May 1, 1903.

This invention relates to a water-cooling apparatus which is suitable for automobile carriages.

The accompanying drawings illustrate one form of the invention.

Figure 1 is a front elevation with certain parts shown in section; Fig. 2, a section through A B in Fig. 1; Fig. 3, a radial section of a cooling device on a larger scale than is shown in Fig. 2; Fig. 4, a section through C D in Fig. 1.

1 represents a vane-wheel consisting of two side plates 2 and 3 and long and short radial vanes 4 and 5, this wheel being fixed by the one plate to a rotary part of the engine—for example, the rim of a fly-wheel. Coaxially with the vane-wheel two cooling bodies 6 and 7 are arranged, which are formed by a number of hollow bodies 8. Each of these hollow bodies, which consist of thin sheet metal, is of flat rectangular cross-section and stiffened at the narrower ends by means of a wire 9, Fig. 3. Each two adjoining hollow bodies are separated one from the other by U-shaped strips 10, the outsides of the two extreme hollow bodies being likewise furnished with similar strips. The latter are approximately tangential to the vane-wheel 1. The whole of the hollow bodies of one and the same cooling body are made water-tight at each end

by means of a flange 11. At the one junction end the two flanges 11 are connected by means of an intermediate piece 13, which is provided with a partition 12, a pipe junction 14 being arranged at each side of the partition, whereas in the case of the intermediate piece on the other junction end there is no such partition or pipe-junction. Each of the intermediate pieces is furnished with a side flange 15, by means of which the cooling bodies can be fixed together at a suitable spot—in the case of automobile carriages on the motor itself, for example, or on the carriage-frame.

In the working condition the vane-wheel is rapidly rotated, the air drawn up in the center of the same being driven outward and passing between the hollow bodies and the strips 10. At the same time the water to be cooled is conveyed, for example, through the left-hand junction-pipe 14, whereupon it passes through the different hollow bodies of both cooling devices and is again carried off through the right-hand junction-pipe 14. In flowing through the hollow bodies the water comes into contact with a very large surface which is constantly cooled by the continuous supply of air and gives off a portion of its heat to the hollow bodies—in other words, to the air which is flowing through.

It is clear that the hollow bodies may also only partially surround the vane-wheel and that the number of the adjacent hollow bodies may also be other than as shown. Moreover, the vane-wheel itself may be furnished with a driving-wheel. Each cooling body may also be formed by a single hollow body intended to receive the water and traversed by radially-running pipes, through which the air in motion is driven.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In combination with a vane-wheel, a cooling body arranged adjacent the periphery thereof, said cooling body having a plurality of hollow bodies 8 therein, and separating-

strips 10 between the hollow bodies, said separating-strips extending substantially tangential to the periphery of the vane-wheel, substantially as described.

- 5 2. In combination, with a vane-wheel, cooling bodies arranged around the periphery of the same and having flanges 11; connecting-pieces 13 between the said flanges, a partition in the said piece 13, water inlet and outlets
10 on opposite sides of the said partition, and means for supporting the cooling bodies ex-

tending from the intermediate pieces, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 11th day of 15 April, 1904.

EUGEN SOLLER.
FRIEDRICH HOTTINGER.

Witnesses:

GEORGE GIFFORD,
ALBERT GRAETER.