

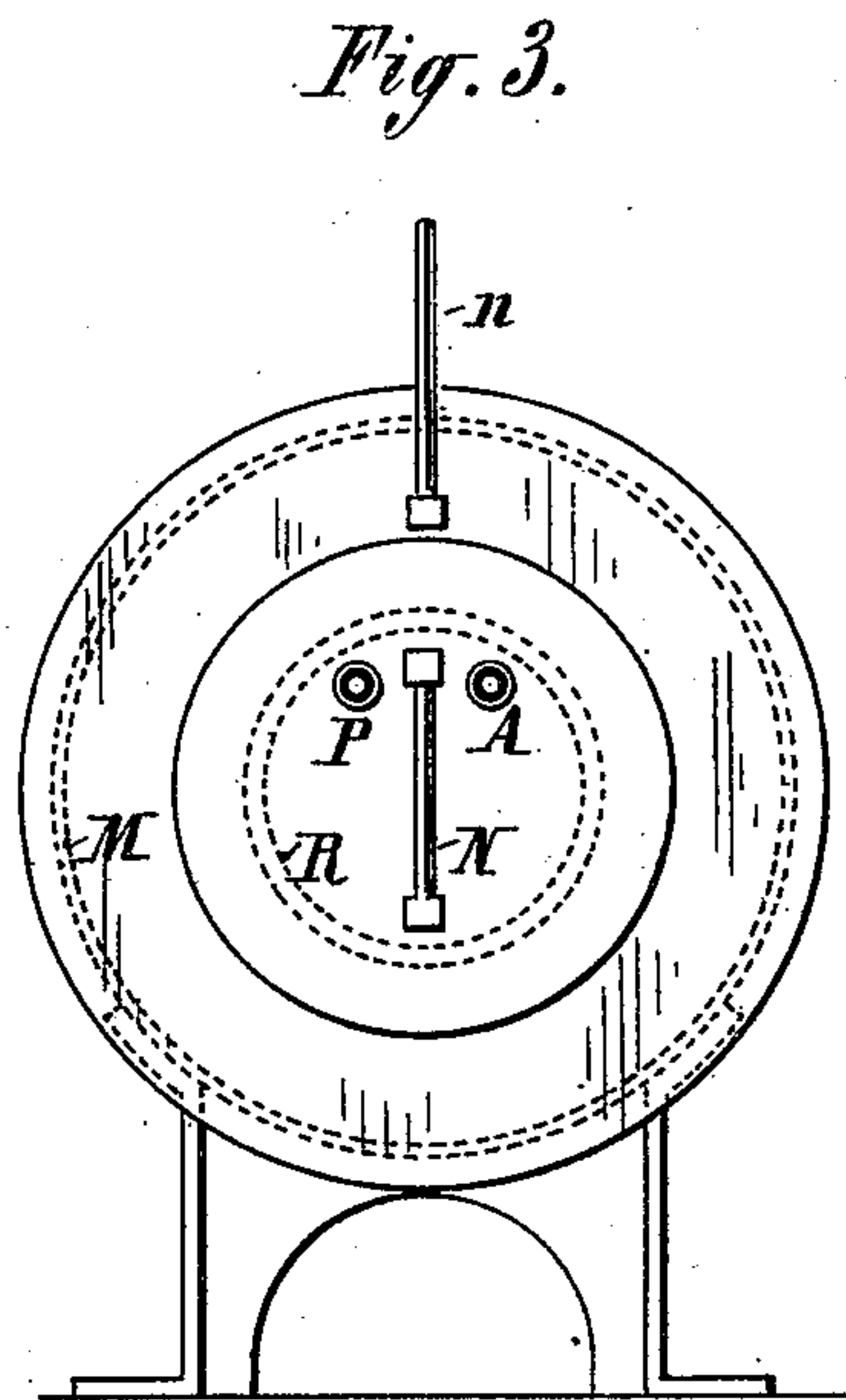
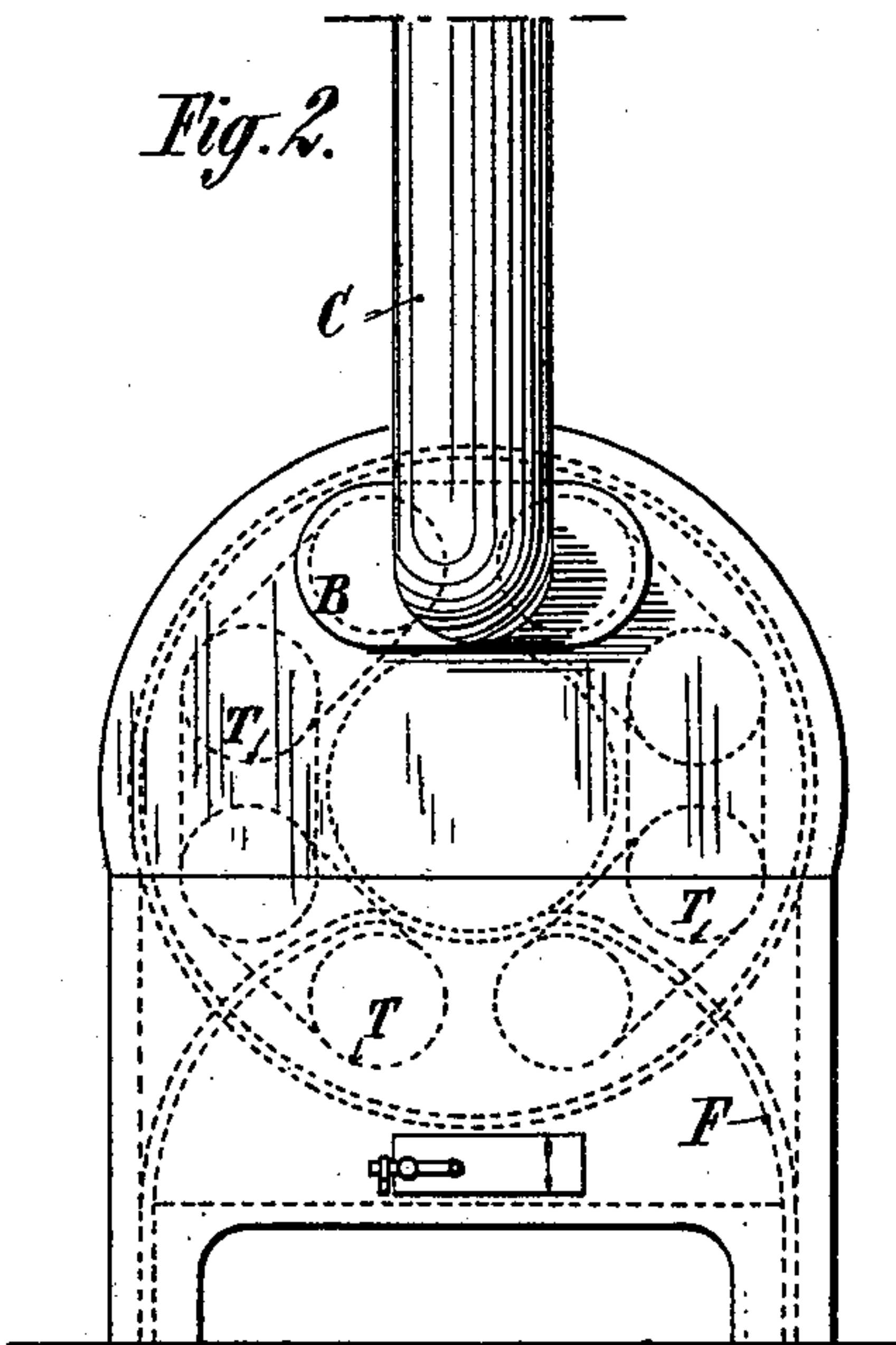
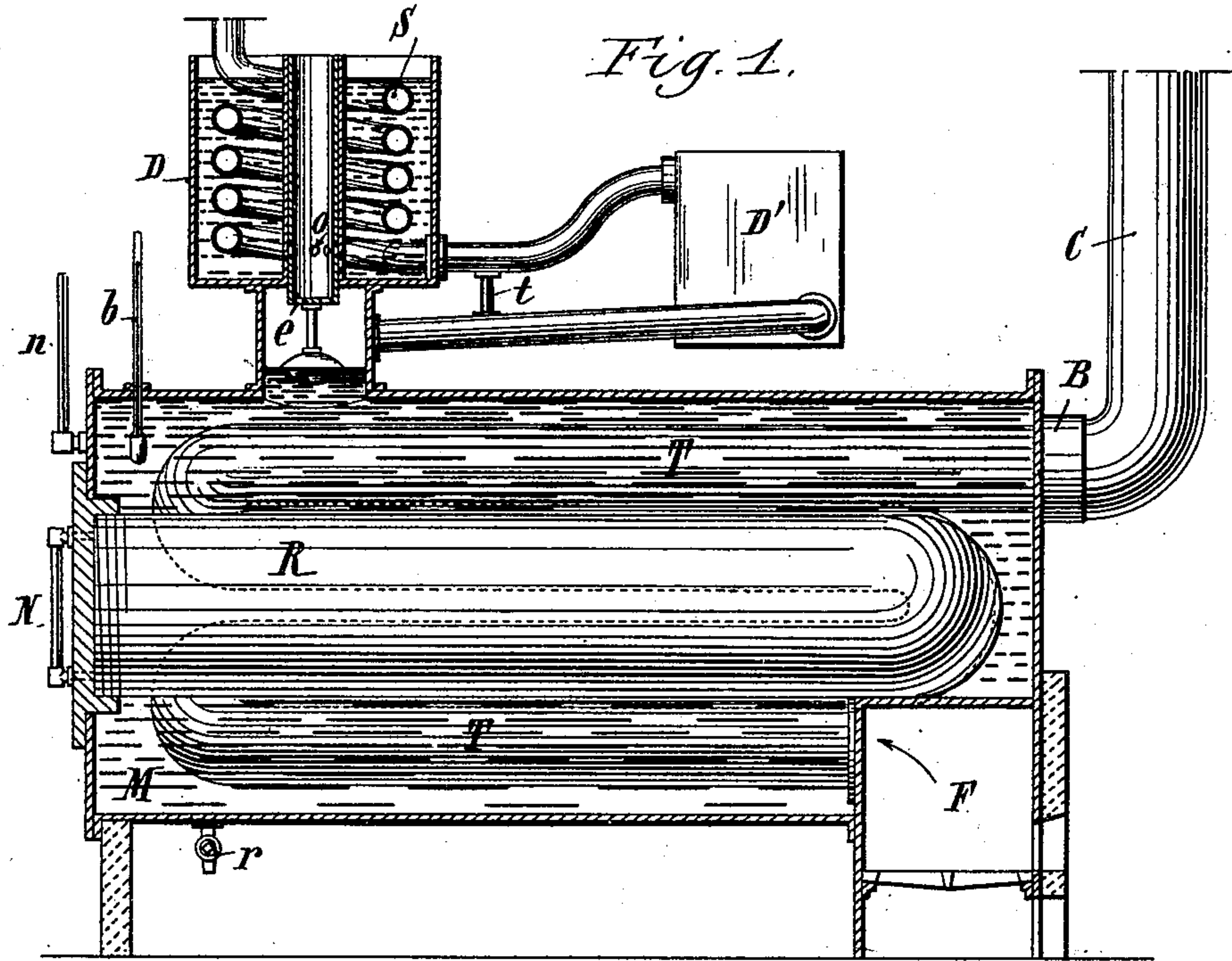
No. 647,999.

Patented Apr. 24, 1900.

A. THIEBLE & A. DUMEZ.  
MOTIVE POWER GENERATOR.

(Application filed Dec. 28, 1898.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ALFRED THIEBLE AND ALEXANDRE DUMEZ, OF PARIS, FRANCE.

## MOTIVE-POWER GENERATOR.

SPECIFICATION forming part of Letters Patent No. 647,999, dated April 24, 1900.

Application filed December 23, 1898. Serial No. 700,150. (No model.)

*To all whom it may concern:*

Be it known that we, ALFRED THIEBLE and ALEXANDRE DUMEZ, citizens of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in Apparatus for the Generation of Motive Power, (for which we have obtained Letters Patent in France under No. 278,256, dated May 24, 1898,) of which the following is a full, clear, and exact description.

This invention relates to apparatus for the generation of motive power, and is characterized by the use of a kind of "water-bath" enabling two suitable fluids to be used, one subject to atmospheric pressure and the other contained in a closed air-tight strong reservoir. The result of this arrangement is that as soon as the first fluid is submitted to the action of a source of heat, thereby raising its temperature, the maximum of which is the boiling-point, said first fluid communicates this temperature to the second, and consequently communicates to it a certain pressure, also having a maximum limit. This maximum is practically constant, as the boiling-point of the first fluid varies only according to its purity and the atmospheric pressure.

The invention is illustrated, by way of example, in the accompanying drawings, in which—

Figure 1 is a longitudinal section, and Fig. 2 a front elevation. Fig. 3 is a rear elevation of a generator constructed in accordance with this invention.

The generator chiefly comprises an inner closed air-tight and strong reservoir R, through which may pass tubes, or which itself may be multitubular, destined to contain the motive or driving product or medium. The reservoir R is provided with a gage N and an opening P for taking off steam and another closable orifice A for the charging of the driving medium and its reintroduction after it has been condensed, after being used once, by cooling or by pressure, if required, for condensing it. It follows, therefore, that said driving medium works in a continuous cycle. A double system of tubes T T surround the reservoir R and are destined to transmit heat from the furnace or heater F. These tubes present a considerable heating-surface and terminate in a smoke-box B to enable a draft

and discharge of combustion-gases to take place through the chimney C. An outer reservoir M surrounds the tubes and is provided with a pressure-gage *n*, thermometer *b*, and drain-cock *r* and contains the fluid to be heated at the atmospheric pressure and is surmounted by a cylindrical part in which the level of the liquid must be always maintained, an upper reservoir D containing the same fluid as the reservoir M and comprising a coil S, in which the steam or vapor from the reservoir M is condensed after it has heated the steam-jacket of the driving-cylinder D', the condensed product returning to the reservoir M through the tube *t*. In case the condensation should be incomplete, which would lead to a slight loss of the fluid, an automatic feed with constant level is effected by means of a float establishing communication when the level sinks between the orifices *o o*, whereby the fluid can flow into the reservoir M through the openings *e*. Finally a heater or furnace F, designed to burn any suitable fuel.

In order to make the invention more clearly understood, two examples will be given.

In the first example, which we will call a "general" one, owing to the nature of the products used, we use liquid sulfurous acid as the driving medium, the other fluid being methyl alcohol. Liquid sulfurous acid has at the boiling temperature of methyl alcohol (66.78° at a pressure of seven hundred and sixty millimeters) a pressure or tension of vapors of about thirteen atmospheres. As the tension of sulfurous acid at 18° is three atmospheres, the useful effect in employing a water circulation at this temperature will be ten atmospheres. The case is especially suitable for cold countries.

The second example is more suitable for temperate regions. The driving medium is ethyl chlorid and the other medium is water. Chlorid of ethyl at 100° (the boiling-point of pure water at seven hundred and sixty millimeters) has a pressure of 11.48 atmospheres. Presuming that the condensation of the driving medium takes place at 25°, which corresponds to a tension of 1.45 atmospheres, the useful effect would be more than ten atmospheres.

Without going into calculation we simply



suggest for the sake of comparison with an ordinary steam-generator that the total heat required for vaporizing ethyl chlorid at 100° and water at 181° (corresponding to ten atmospheres pressure) should be compared and also the latent heat in each case and the quantities of driving medium to be evaporated, and it will be seen that the economy of fuel with a generator according to this invention is eighty per cent. and the volume thirty times less.

The new generator offers, therefore, in this case the following advantages: a generator one-thirtieth the size of a steam-boiler of the same power; a saving of more than eighty per cent. of fuel; the fluids employed being used in small quantities pressure can be got up very quickly and economically; the driving-cylinder being maintained at the same temperature as the whole system there is no condensation and consequently an absence of shocks due to the pressure of water; a considerable reduction of temperature in the furnace-room, and less necessity for supervision, the maximum pressure being known beforehand.

We claim—

1. A motive-power generator comprising a centrally-arranged closed receiver adapted to

contain a fluid as described, tubes arranged around said receiver and adapted to be heated, means whereby the vapor of the fluid in the central receiver may be conducted therefrom for use and be reintroduced into the receiver when such vapors have been condensed, and an outer reservoir containing the receiver and heating-tubes and adapted to contain a fluid such as described.

2. A motive-power generator comprising a centrally-arranged closed receiver adapted to contain a fluid as described, tubes arranged around said receiver and adapted to be heated, an outer reservoir M containing the receiver and heating-tubes and adapted to contain a fluid as described, a reservoir D communicating with the said outer reservoir M, a coil in reservoir D in communication with the steam-jacket of a driving-cylinder and with the reservoir M.

In testimony whereof we have hereto set our hands in the presence of the two subscribing witnesses.

ALFRED THIEBLE.  
ALEXANDRE DUMEZ.

Witnesses:

LOUIS SULLIGER,  
EDWARD P. MACLEAN.