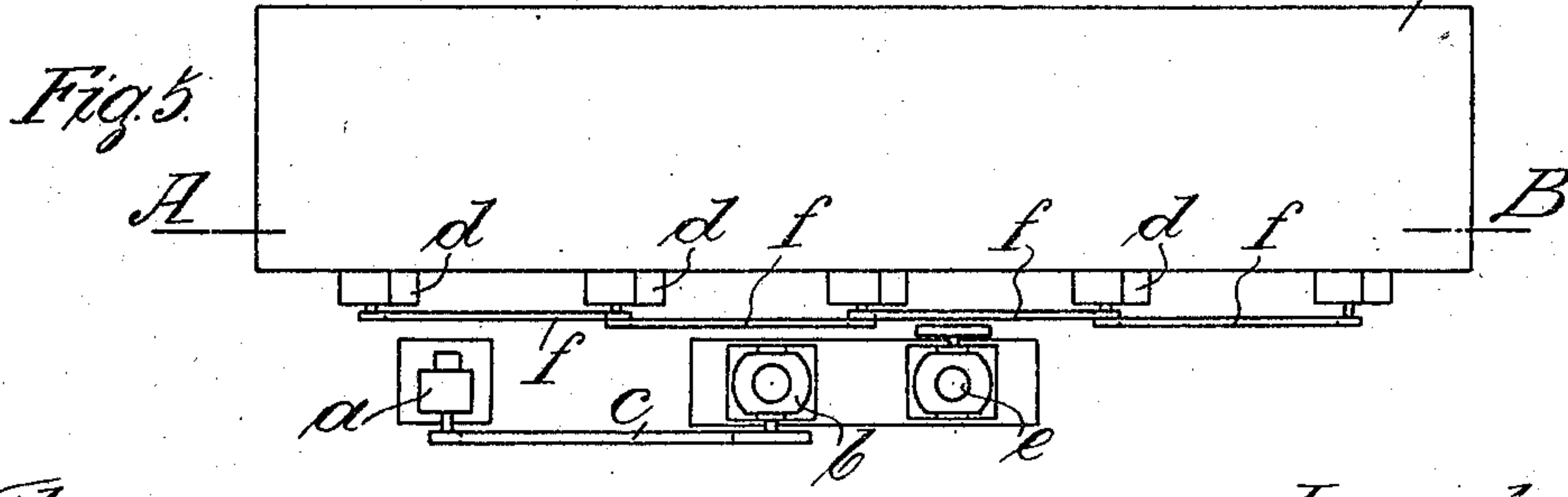
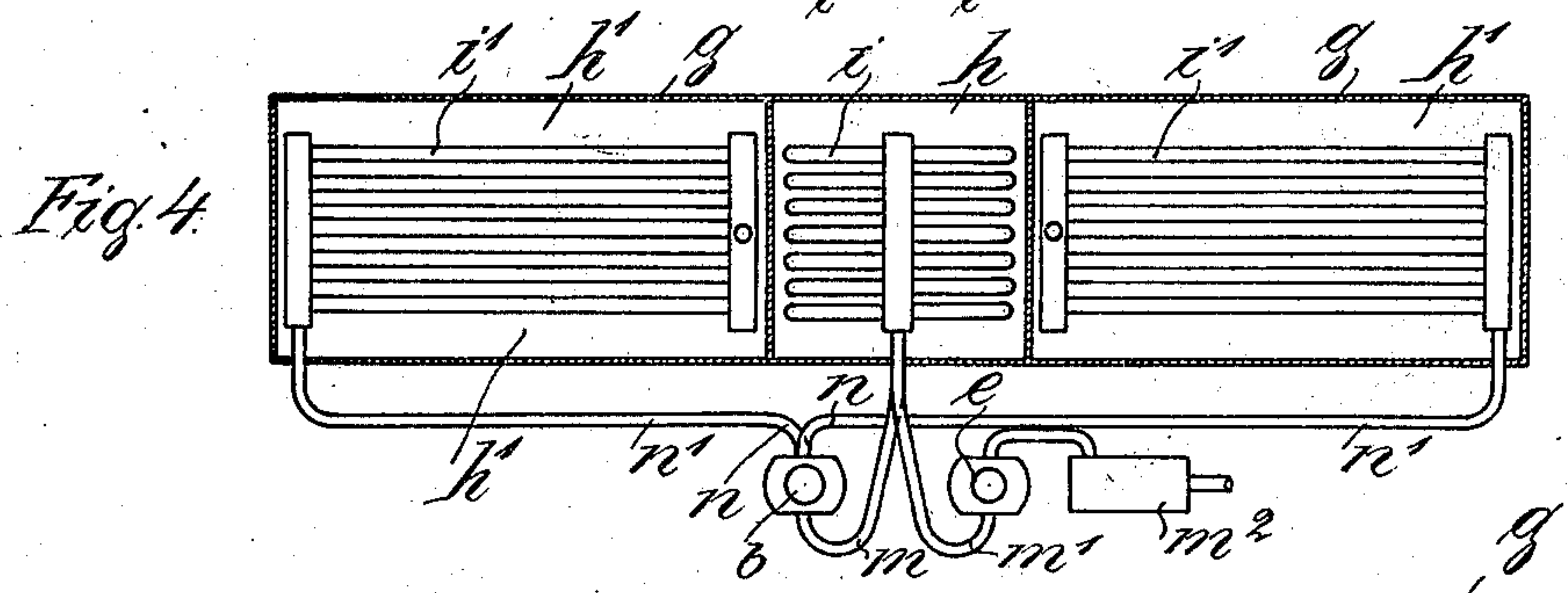
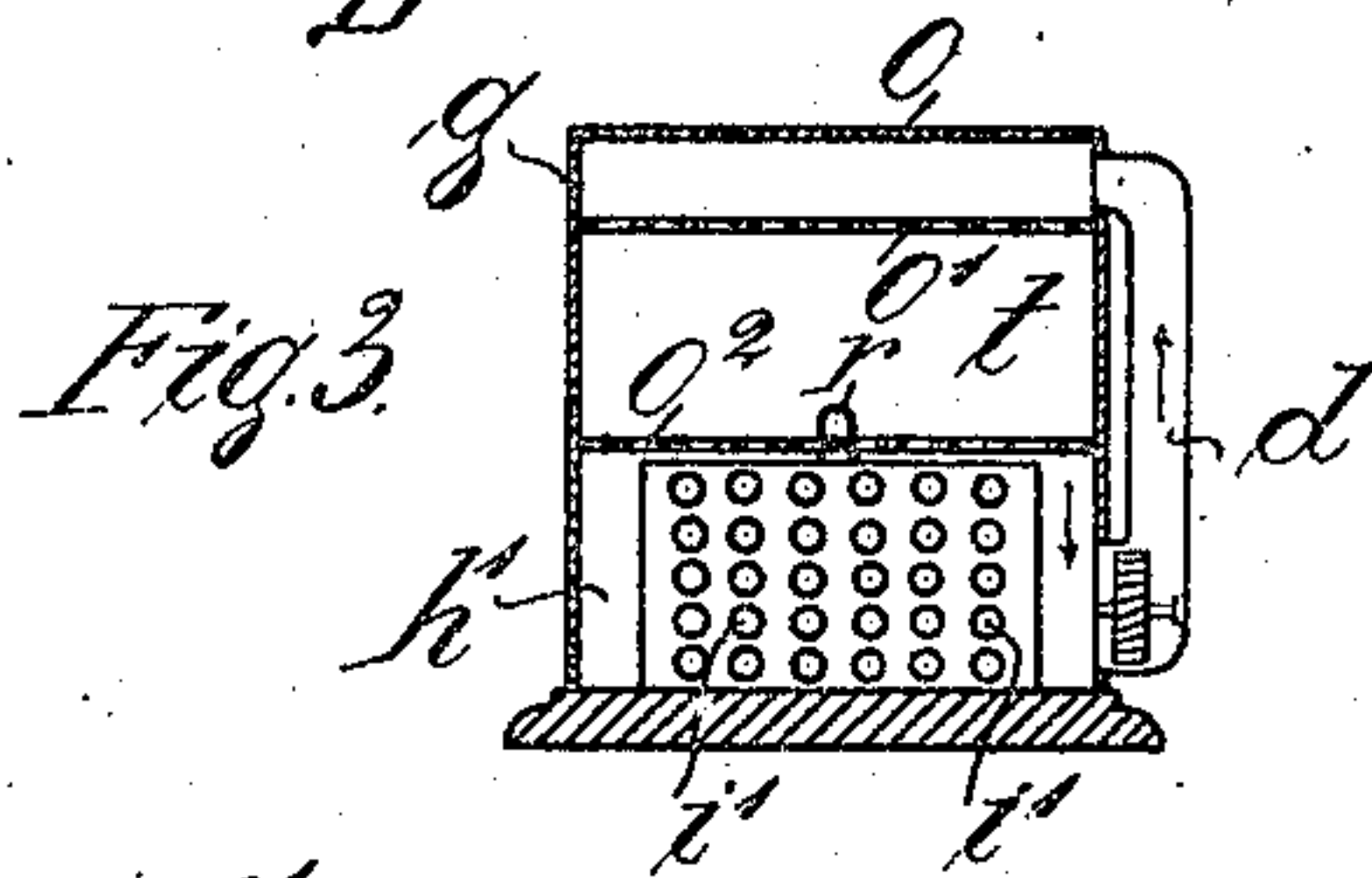
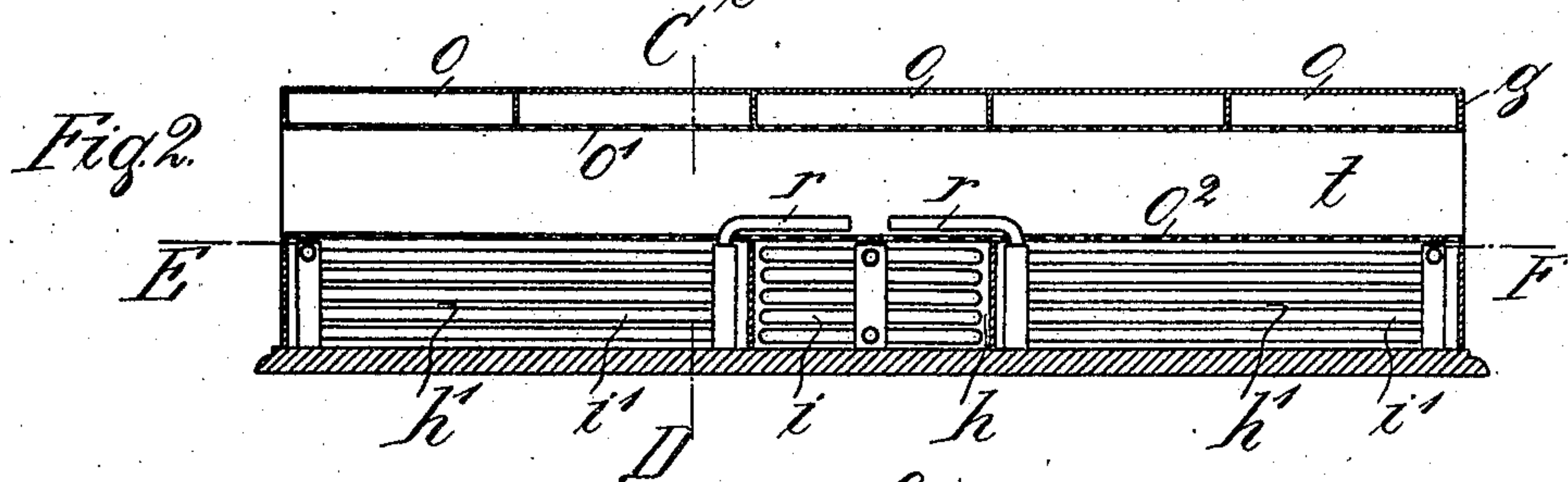
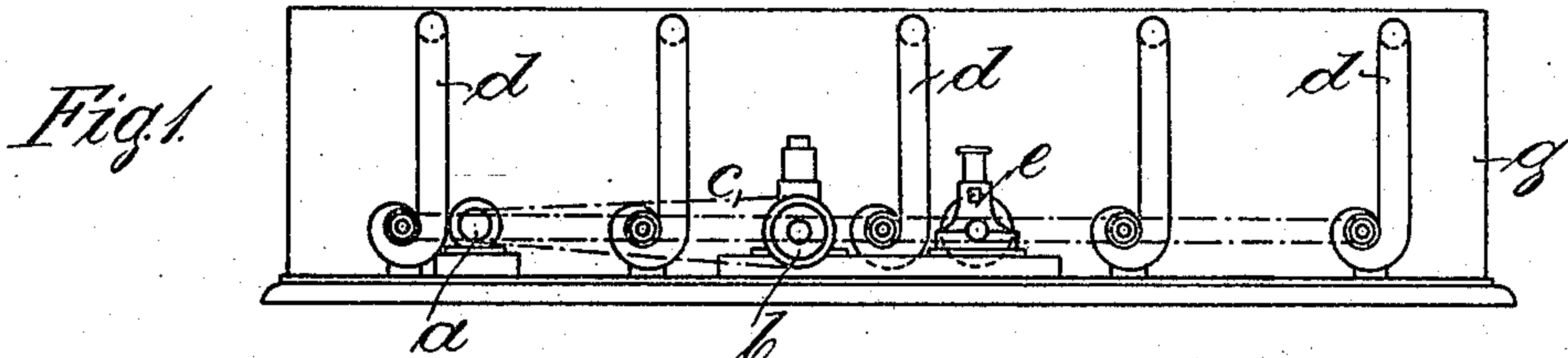


No. 847,694.

PATENTED MAR. 19, 1907.

K. REYSCHER.
 DRYING APPARATUS.
 APPLICATION FILED SEPT. 20, 1905.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

KARL REYSCHER, OF BIELEFELD, GERMANY.

DRYING APPARATUS.

Specification of Letters Patent.

Patented March 19, 1907.

No. 847,694.

Application filed September 20, 1905. Serial No. 279,331.

To all whom it may concern:

Be it known that I, KARL REYSCHER, a subject of the King of Prussia, German Emperor, and a resident of 22 Dornbergerstrasse, of Bielefeld, in the Province of Westphalia, German Empire, have invented certain new and useful Improvements in Drying Apparatus, of which the following is an exact specification.

My invention relates to drying apparatus for drying articles of different manner containing liquids easily evaporating—as alcohol, ether, water, and the like—in which a new industrial effect is obtained by the particular leading of the drying-air and utilizing of the heat contained therein.

In order to make my invention more clear, I refer to the accompanying drawing, in which—

Figure 1 is a side elevation of the new apparatus. Fig. 2 is a longitudinal section on line A B of Fig. 5. Fig. 3 is a cross-section on line C B of Fig. 2. Fig. 4 is a horizontal section on line E F of Fig. 2, in which single parts of the apparatus are moved. Fig. 5 is a plan view of my improved drying apparatus.

In the drawing, *a* designates the electro-motor for actuating the air-compressor *b*, connected with the electromotor by means of a belt.

c d are fans or ventilators operated by the air-motor *e* and driven by the latter by means of belts *f*. The air compressed in the air-compressor is conveyed to the air-motor in the manner as hereinafter described.

The drying apparatus proper consists of a case *g*, which may be altered as desired, according to the special circumstances under which the apparatus shall work. In this case three leading partitions are provided—the drying-chamber *t*, the primary heating-chamber *h*, and the secondary heating-chambers *h'*, lying at both sides of the primary heating-chamber *h*. In the primary heating-chamber *h* a primary heating-system, consisting of a plurality of heating-tubes *i*, is situated and connected with the forcing-tube of the air-compressor by means of a tube *m*. Furthermore, the heating-tubes *i* are jointed to the air-motor *e* by a tube *m'*, the latter being in communication with the receptacle or any suitable tube *m''*, the purpose of which is hereinafter described.

The secondary heating-chambers *h'* contain heating-tubes *i'*, being in connection with the drying-room *t* by means of tubes *r*, as to be seen in Fig. 2. At their other ends the tubes *i'* communicate with the sucking-off tubes *n n'* of the compressor by means of tubes *n' n'*. At the upper end of the apparatus partition-chambers *o o* are provided having perforated bottoms *o'*. The secondary heating-chambers *h'* are separated from the drying-chamber *t* by means of a perforated wall *o''*. The secondary heating-chambers *i'* and the partition-chambers *o* are in communication with the fans *b*, arranged sideward from the case *g*. The drying-chamber *t* is opened at both sides.

The foregoing-described drying apparatus is operated in the following manner: The articles to be dried are introduced into the drying-chamber *t* at one side and are passed through it in a suitable manner. The fans *d*, driven by the air-motor *e*, suck off the air at both ends of the open drying-chamber *t* and force the air from the heating-chambers *h'* in the direction upward to the partition-chambers *o*, from which the air can enter through the perforated walls *o'* into the drying-chamber *t*. In that way the drying-air is conveyed from one fan *d* to the following fan *d*, through the heating-chambers, around the drying-chamber and through it. At least the air comes in contact with the heating-tubes *i*, arranged in the primary heating-chambers *h*. On its way through the apparatus as before described by the heated air the liquids contained in the material to be dried are evaporated. In the midst of the apparatus this air flows through the tubes *r* into the heating-tubes *i'*, arranged in the secondary heating-chambers *h'*, from which the air is sucked off by the compressor and conveyed to it by means of the tubes *n' n'*. In the compressor the air is compressed and thereby heated and passes then through the tube *m* into the heating-tubes *i*, arranged in the primary heating-chambers *h*. From there the compressed air is conveyed, by means of the tube *m'*, to the air-motor *e*, from which the fans *d* are driven. In consequence of its expansion the air becomes cooler, so that the alcohol or the like vapors contained in the air are condensed, and after being conveyed into the tube *m''* the alcohol or the like vapors are collected

therein in a liquid state, while the air discharges into the atmosphere.

According to my invention I also obtain that the same means serving for driving the
5 air-motor is employed for heating the drying apparatus, so that finally the mechanical work generated by the electromotor is transformed into heat in consequence of the fact that the compressed and therefore heated
10 air is led through the primary heating system before being conveyed to the air-motor.

The secondary heating system is heated by the air coming from the primary heating-chamber *h* which has flown before through
15 the drying-chamber *t* and the secondary heating-chambers *h'*.

It may be noted that instead of an electromotor any other motor may be used—in example, a hydraulic or gas or steam motor.

20 A particular advantage of my improved apparatus consists therein that the liquid contained in the articles to be dried is regained in a liquid state.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is—

A drying apparatus comprising in combination a drying-chamber, primary heating-tubes, secondary heating-tubes in communication with said drying-chamber, a primary heating-chamber and secondary heating-chambers, fans in communication with said secondary heating-chambers, a compressor in connection with said secondary heating-tubes, and supplying said primary heating-tubes with compressed and therefore heated air, an air-motor in communication with the primary heating-tubes, and a motor for actuating said compressor, substantially as described and for the purpose set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

KARL REYSCHER.

Witnesses:

WILLIAM ESSENWEIN,
ERNEST RUDRÉ.