

No. 732,892.

PATENTED JULY 7, 1903.

W. R. PRATT.
COMPRESSED AIR LOCOMOTIVE HEATER.

APPLICATION FILED OCT. 15, 1901.

NO MODEL.

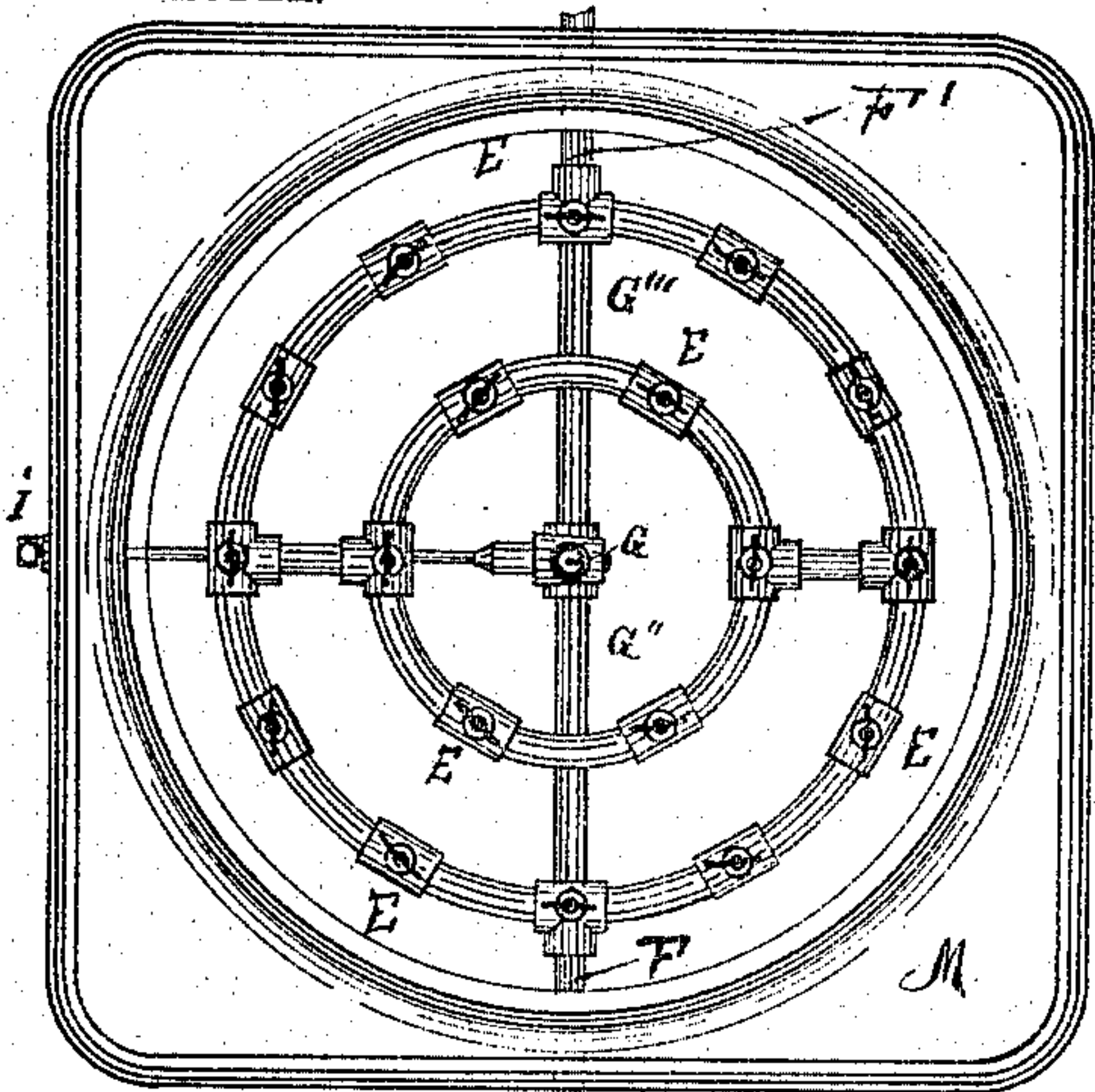


Fig. 3

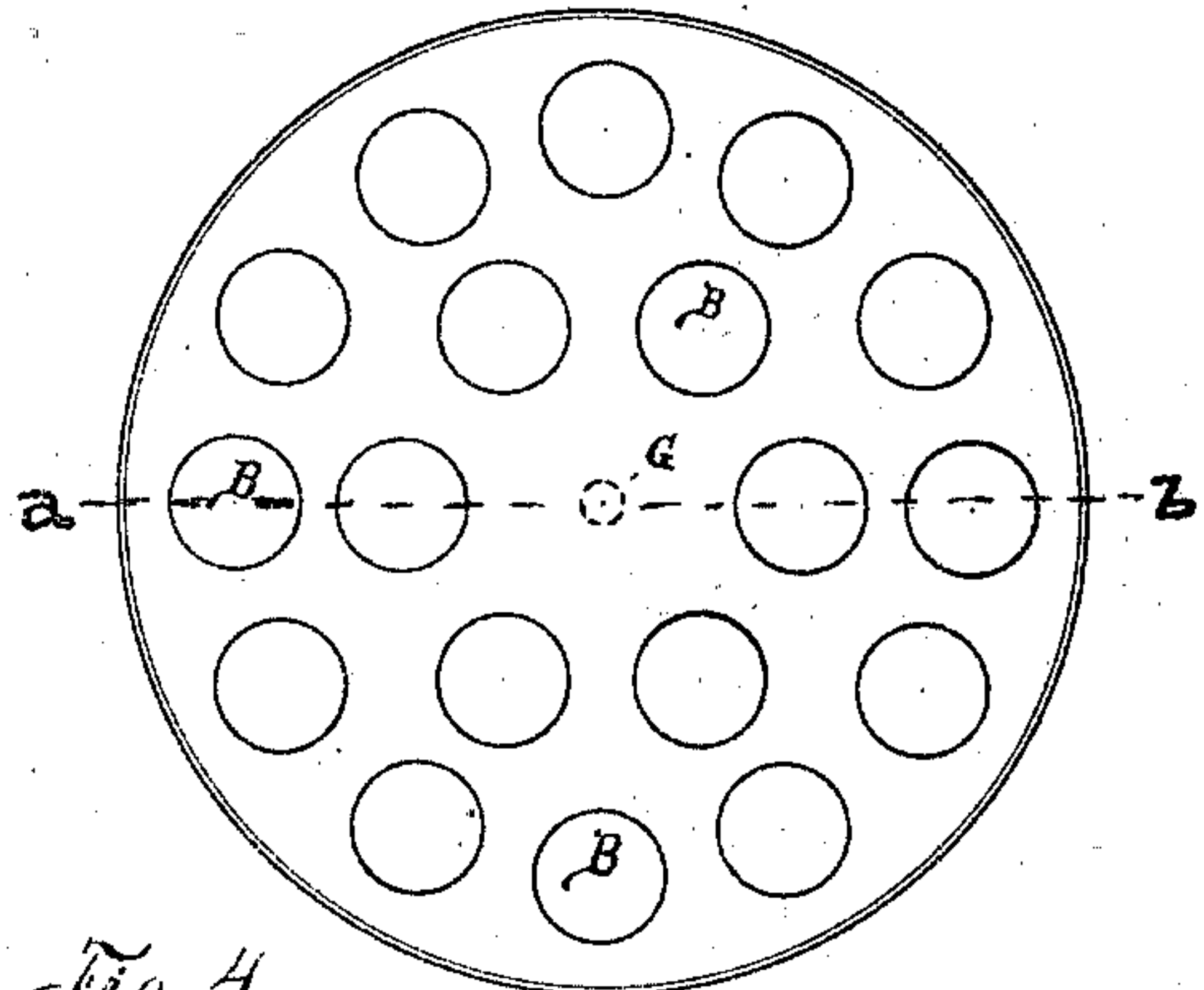


Fig. 4

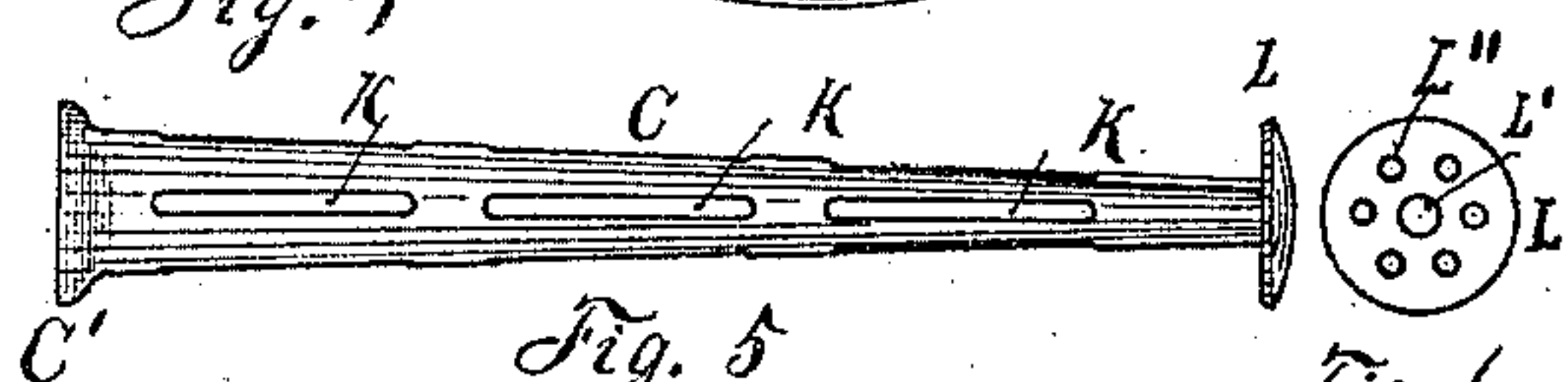


Fig. 5

Fig. 6

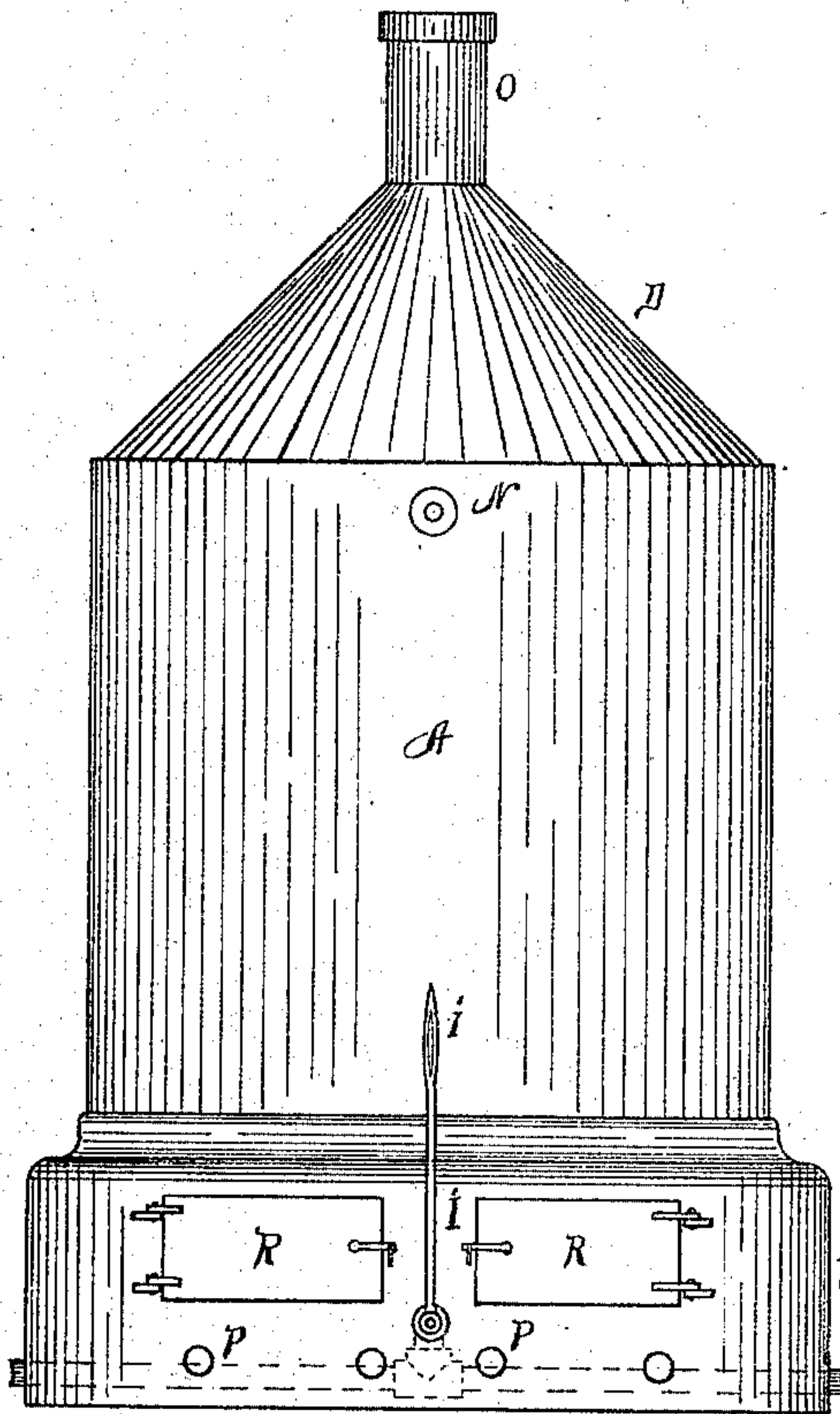


Fig. 1

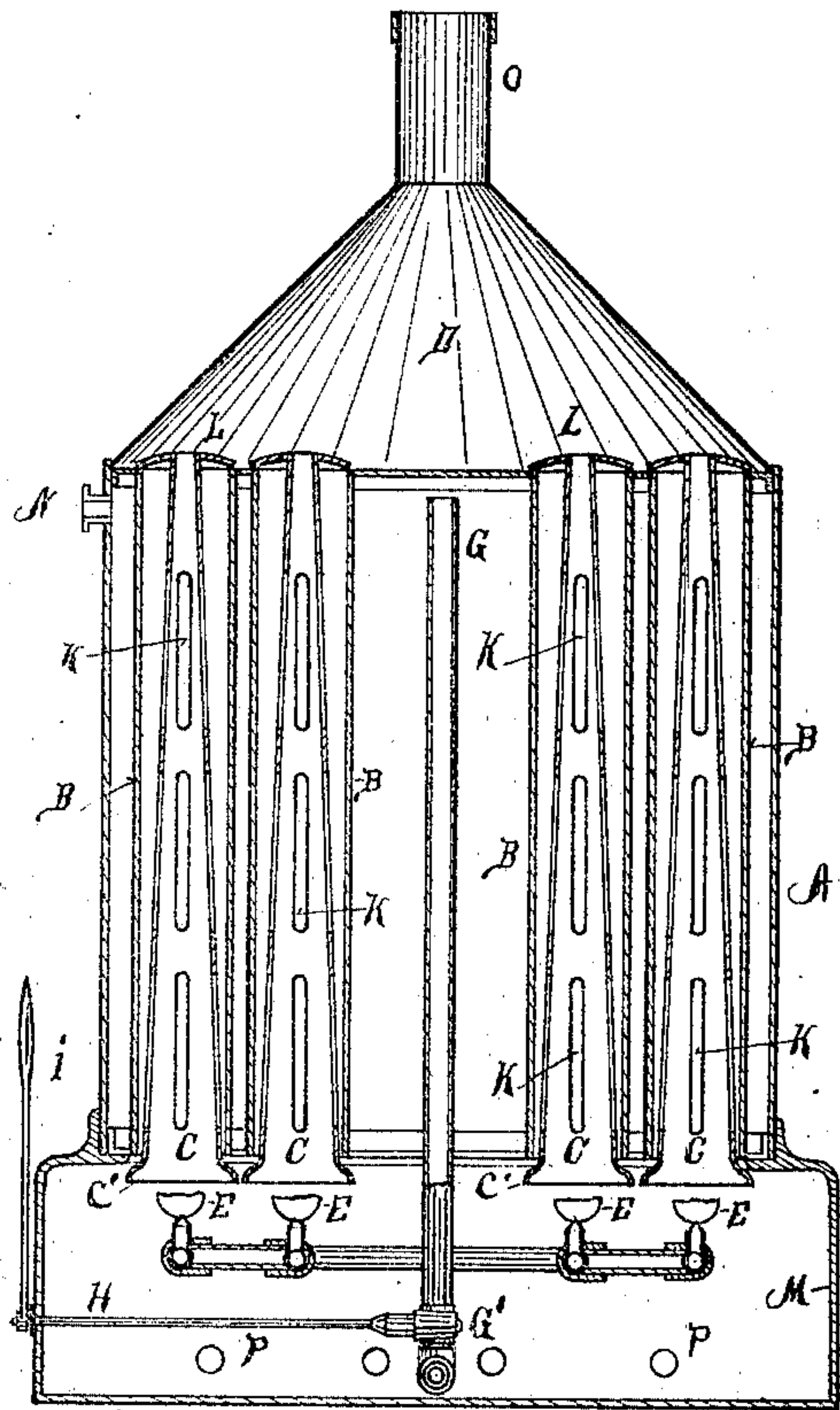


Fig. 2

Witnesses
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UNITED STATES PATENT OFFICE.

WILSON R. PRATT, OF TOPEKA, KANSAS.

COMPRESSED-AIR-LOCOMOTIVE HEATER.

SPECIFICATION forming part of Letters Patent No. 732,892, dated July 7, 1903.

Application filed October 15, 1901. Serial No. 78,743. (No model.)

To all whom it may concern:

Be it known that I, WILSON R. PRATT, a citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented certain new and useful Improvements in Compressed-Air-Locomotive Heaters; and I 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to heaters for compressed-air locomotives in which the air, previously compressed, is expanded and becomes in this form possessed of the energy used to drive the engine of the locomotive.

The object of my invention is to attain this result in such a manner that the intense heat applied shall act indirectly on the flues and other heating-surfaces of the heater proper, to the end that unequal expansion and contraction due to the sudden application of a hot flame to a cold surface is overcome by presenting a protecting-surface of metal that shall in no wise detract from the value of the application of the heat applied. I attain these objects by the mechanical devices illustrated in the accompanying drawings, in which—

Figure 1 is an exterior view. Fig. 2 is a vertical section taken through the line *ab* of Fig. 4, taking into consideration only such parts of the interior of such figure (which is for all purposes considered as a perfected plan view) as practically appear upon the line of intersection. Fig. 3 is a plan view of the base of the heater, illustrating the position of the burners as regards the flues. Fig. 4 is a top view with the cone and base removed, giving the approximate location and proportionate size of the flue. Fig. 5 is an exterior view of the flue-protector, and Fig. 6 is a top view giving details of the cap.

Similar letters refer to similar parts throughout the several views.

The body of the heater A is of steel and of the usual conformation and proportionate strengths. The flues B, however, are made considerably larger than they may receive the

flue-protectors C, which constitutes the basic idea of my invention. The said flue-protectors C approximate the hollow conical conformation shown in Fig. 2 and Fig. 5, the mouth of the cone being flared into the form of an ogee mold C', that the flame may only strike inside the said protectors. The slotted openings K may vary in size and in number as occasion and experience may dictate. I have preferably shown them as slots and evenly distributed throughout the circumference and length of the cone. On the upper and small end of the protecting-cone C is the cap L, which may be attached to the said cone by any suitable device. The said cap L forms the support of the cone, the outer circumference of the lower end of the said cones C leaving simple clearance in the lower end of the flues B. The cap L has several openings L' and L'' through its face to allow for proper draft. The top of the heater A is protected by the usual form of cone D with the stack O. Compressed air may be admitted to the heater A through the opening N or at any other convenient point. The base M of the heater A possesses no distinctive features of formation. It is preferably shown as of cast-iron, with doors R and special draft-holes P.

The plan of the burners is shown at E E, Fig. 3, and corresponds with the plan of the flues B of Fig. 4. Oil is taken in through the feed-pipes F F', said pipes being shown as forming the support of the burner-rings. The heated air is taken from the heater through the pipe G, the same being controlled by the indicated throttle-valve G', the heated air passing to the cylinders of the locomotive through the feed-pipes G'' G'''.

In operation, the oil or gasoline being turned on, the burners E are lighted, and the flames thereof enter the mouth C' of the protectors C. The tendency of the flame will be to crawl up the interior of the said cone C, seeking an outlet through the slots K, yet lacking sufficient force to come in direct contact with the flues B, the more especially as there will be a strong current of air surrounding the interior circumference of said flues, said current continually ascending and finding egress through the openings L' and L'' of the cap of the flue-protector C. As the

fire-box M will, in a sense, be full of flame and heat, all exposed parts of the heater will be subject to contact with the said heat without being exposed to the direct action of the flame.

5 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a compressed-air heater, the combination with a casing of inlet and outlet means for conducting air into and out of said casing, burners mounted in the casing, flues in said casing, hollow protecting-shields mounted in said flues, to receive the flame from the
10 burners of the heater, and apertured supporting means for the shield for holding the same above the burners, said means engaging the flues, substantially as described.

2. In a compressed-air heater, the combination of a casing, inlet and outlet means for the air, flues in said casing, protecting-shields within the flues, said shields being tapered inwardly and having flared mouths to receive the flame of the heater-burners, and
20 supporting means engaging the flues for holding the shields above the flame of the burners, substantially as described.

3. The combination with the casing, having an inlet and a plurality of flues arranged therein, apertured conical shields arranged in the said flues, apertured caps secured on the upper ends of the said shields, and an outlet-pipe projecting upwardly within the said casing, substantially as and for the purpose specified.

4. The combination of a compressed-air heater, flues therein, conical protecting-shields arranged in the said flues said shields being apertured and having their lower ends flared, and apertured caps on the upper ends of the
35 said flues, said caps engaging the upper ends of the said flues, substantially as and for the purpose specified.

In testimony whereof I affix my signature in the presence of two witnesses.

WILSON R. PRATT.

Witnesses:

F. O. BURKET,

W. S. MCCLINTOCK.