

N° 17,927



A.D. 1903

Date of Application, 19th Aug., 1903

Complete Specification Left, 26th Apr., 1904—Accepted, 26th May, 1904

PROVISIONAL SPECIFICATION.

**Improvements in Means for Raising Steam in Locomotive Boilers
and the like.**

I, GEORGE HUGHES, of Overdale, Victoria Road, Horwich, in the County of Lancaster, Mechanical Engineer, do hereby declare the nature of this invention to be as follows:—

This invention is specially designed to overcome the well known difficulty of
5 producing sufficient draught through the firebox and tubes of locomotive boilers, in the initial stages of firing, while the engine is at rest in the shed or any other place. It is also applicable to other steam generators where it is difficult to induce a draught in the early stages of firing.

It consists essentially in applying a fan suitably arranged and driven by elec-
10 tricity or other motive power to the top of the locomotive chimney in the early stages of firing, from which it is afterwards removed when the steam pressure has risen sufficiently to maintain the draught by means of a jet.

In carrying out the invention a suitable casting or frame is constructed so as to fit closely over the top of the chimney, which frame carries a suitable fan
15 and a motor to drive the same. At present I prefer to use electricity to drive the motor as this is now available in most locomotive engine sheds. The frame or casting is also provided with a short auxiliary chimney to carry away the products of combustion.

I find that by means of this invention steam can be got up in about 35 or 40
20 minutes instead of in from 2 to 3 hours as previously.

When the invention is applied to other than locomotive boilers, the casting or frame to receive the fan is suitably modified according to circumstances.

Dated this 17th day of August 1903.

J. OWDEN O'BRIEN,

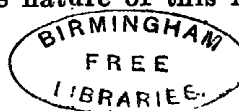
25 Successor to and late of W. P. Thompson & Co. of Manchester,
Patent Agents.

COMPLETE SPECIFICATION.

**Improvements in Means for Raising Steam in Locomotive Boilers
and the like.**

30 I, GEORGE HUGHES, of Overdale, Victoria Road, Horwich, in the County of Lancaster, Mechanical Engineer, do hereby declare the nature of this invention

[Price 8d.]



Improvements in Means for Raising Steam in Locomotive Boilers and the like.

and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention is designed to provide apparatus to assist in the drawing up of the fires and the generation of steam in locomotive boilers during the initial stages of firing and while the locomotive remains at rest in the engine shed or 5 other place.

The object of my invention is to overcome the difficulty of producing sufficient draught through the firebox and tubes of locomotive boilers, which difficulty is well known to exist during the initial stage of firing.

It consists essentially of a suitable casing or framework to fit on the top of the locomotive chimney, carrying a fan which is driven by an electric or other motor 10 by means of which a constant current or draught is maintained through the furnace, firebox and tubes of the boiler. Attached to the fan casing is an auxiliary chimney to receive the products of combustion.

The invention will be fully described with reference to the accompanying 15 drawings:—

Fig. 1. Side elevation of the apparatus partly in section.

Fig. 2. Side elevation of the electric motor A.

Fig. 3. Elevation of the casing L which fits the chimney of the locomotive.

Fig. 4. Plan partly in section of Fig. 1. 20

A casing or frame L is constructed of cast iron or otherwise, the lower part of which fits closely onto the top of the chimney M of the locomotive boiler, to which it is secured by brackets l or otherwise.

To the upper side of the casing or casting L is affixed a casing J enclosing a chamber B¹ in which a suction fan B is mounted to rotate. An outlet or auxi- 25 liary chimney K is fitted to the side of the casing J to carry away the products of combustion which are drawn into the chamber B¹ by the fan B.

Above the casing J and supported by it and the casing L is mounted an elec- tric motor A to the lower end C of the armature shaft of which the fan B is fixed.

At the other end D of the armature shaft there is a ball bearing device by which 30 the armature is suspended comprising two hardened steel discs E and F the disc E affixed to the armature and the disc F supported upon the framing with a ring of hardened steel balls G between them to reduce the friction to a minimum.

An intermediate bracket H is fitted to the casing J to provide extra bearing surface for the armature shaft and also to form a connection between the motor 35 frame and the fan casing J.

The lower side of the fan casing J is attached at J¹ to the casing or casting L which fits the top of the locomotive chimney M and to this casing are also fixed two arms N and N¹ to which the motor A is affixed by studs O screwed into the motor frame. 40

The magnetic field is insulated by brass washers P and brass bushes Q Q¹ on the studs O.

On the studs O are also two links R to which a third link or bow S is pivoted forming a shackle by which the whole appliance can be connected with the lifting chain of a crane or other hoisting apparatus so that the machine can be raised 45 and lifted onto and off the locomotive chimney top M.

The apparatus may be worked by the electric motor A or by any other suitable motor to which the fan B can be connected.

In operation as soon as the fire is lighted or about to be lighted in the furnace of a locomotive boiler the apparatus is lifted and placed on top of the chimney 50 and the motor A and fan B are set in motion. The fan induces a partial vacuum in the smoke box thereby drawing a free supply of air through the fire box and the products of combustion through the tubes into the chamber B¹ and discharg- ing the whole through the auxiliary chimney K attached thereto.

I find that by means of this invention steam can be got up in about 35 or 40 55 minutes instead of in from 2 to 3 hours as was previously the case.

Improvements in Means for Raising Steam in Locomotive Boilers and the like.

When the invention is applied to other than locomotive boilers, the casting or frame to receive the fan is suitably modified according to circumstances.

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

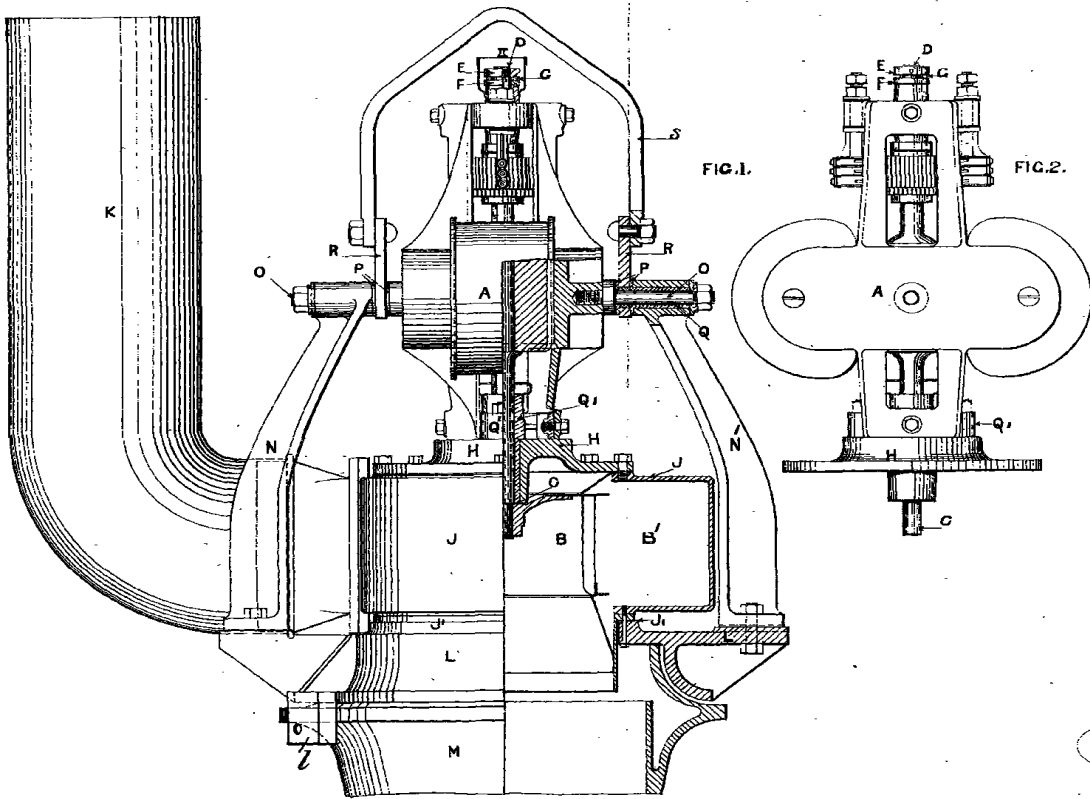
1. Apparatus for inducing draught in locomotive boilers during the initial stages of firing comprising a casing to fit the top of the chimney, a fan casing and auxiliary chimney attached thereto, a fan rotating in the casing to induce a draught through the fire box and tubes, and a motor electric or other to drive
10 the fan substantially as described.

2. Apparatus for inducing draught in locomotive or portable or similar boilers during the initial stages of firing having the several parts constructed and arranged in combination substantially as described and shown.

Dated this 21st day of April, 1904.

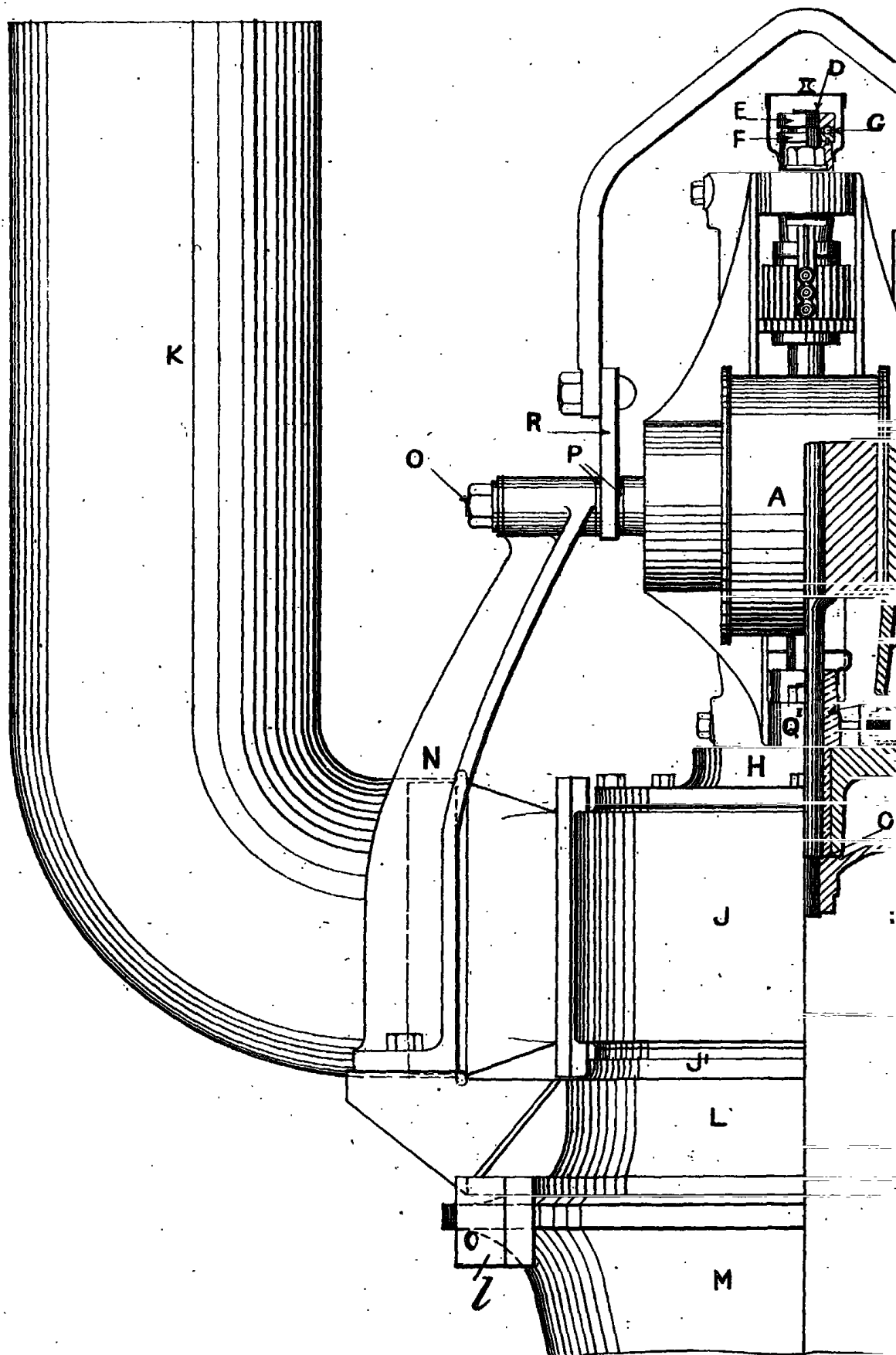
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J. OWDEN O'BRIEN,
Successor to and late of W. P. Thompson & Co. of Manchester,
Patent Agents.



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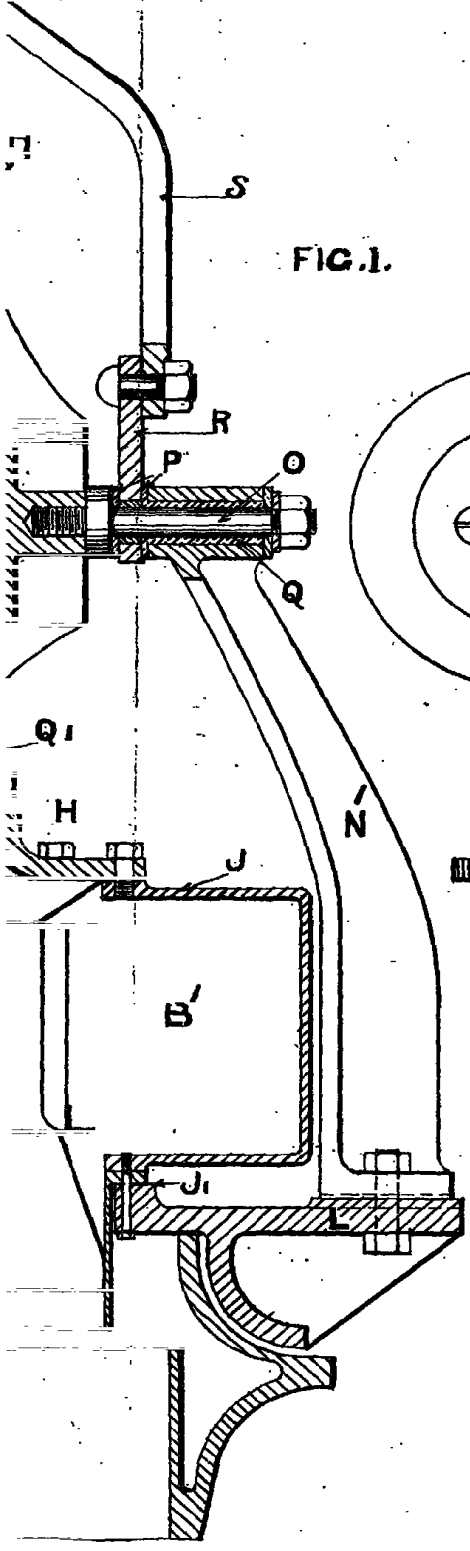


FIG. 1.

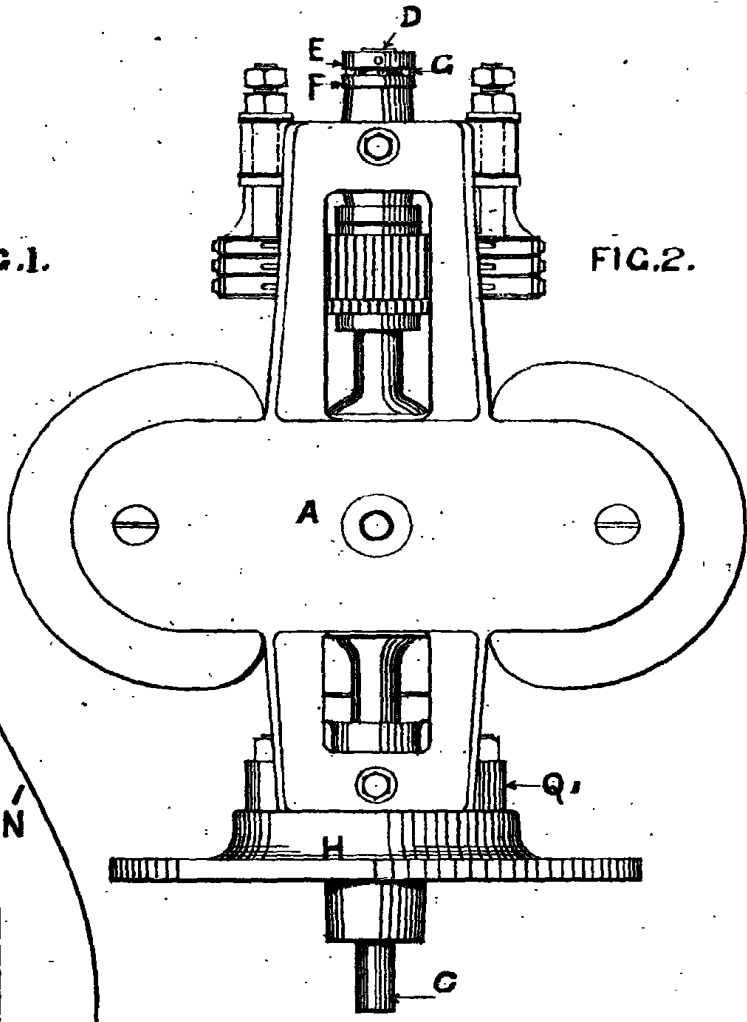
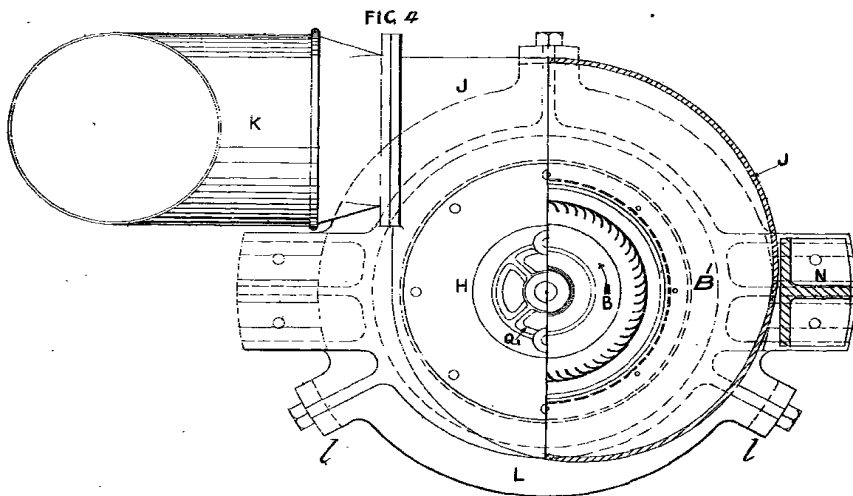
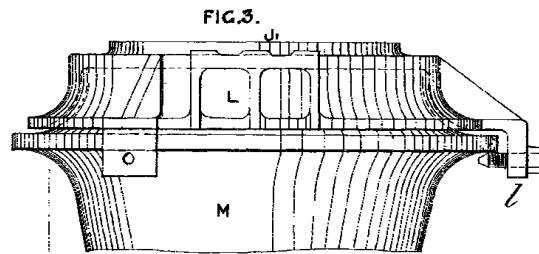


FIG. 2.

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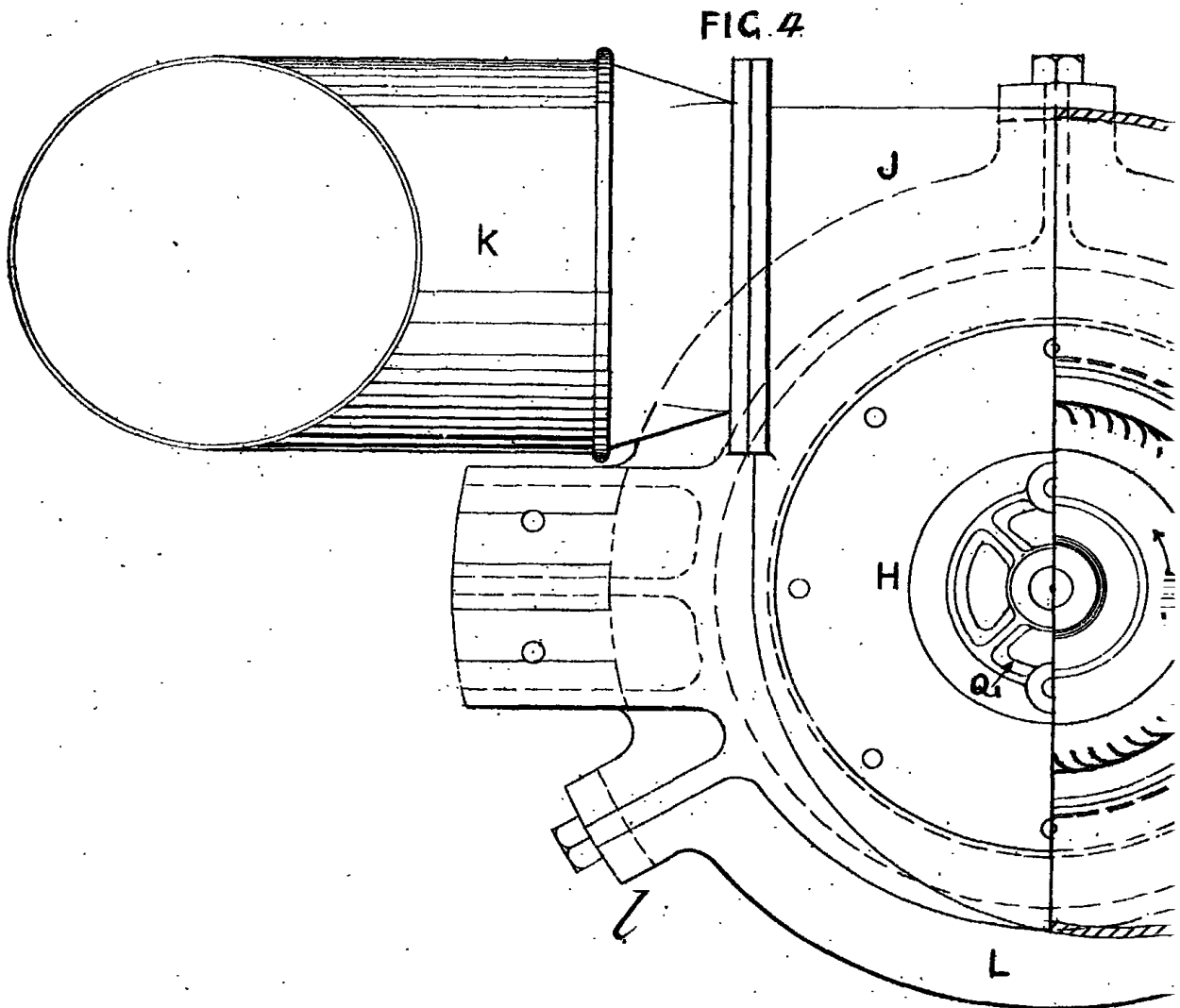
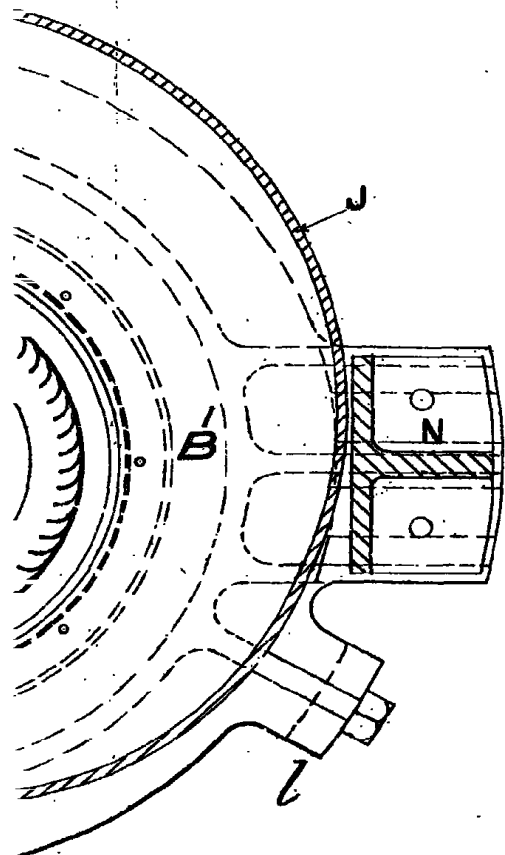
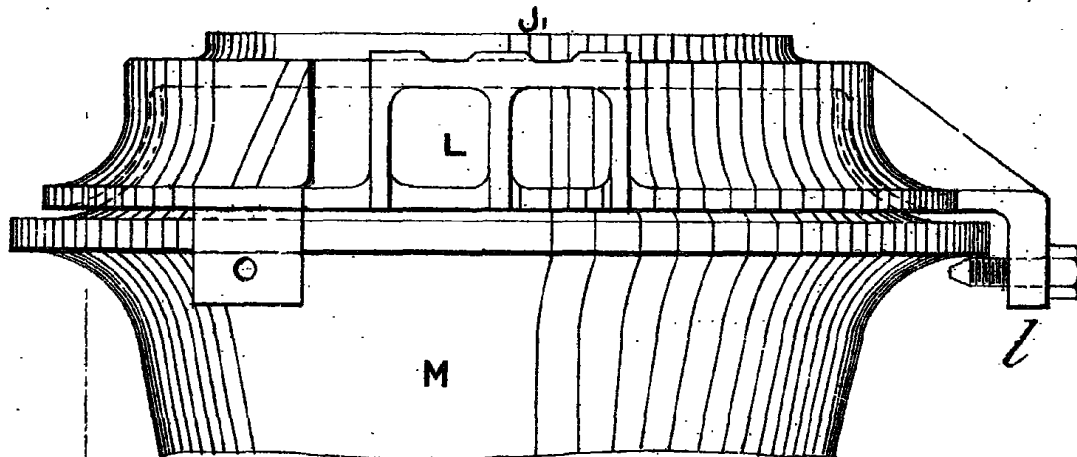


FIG. 3.



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