(No Model.)

C., A. & W. MIESSNER.

ROTARY STEAM ENGINE.

No. 453,935. Patented June 9, 1891.

FIG. 1.

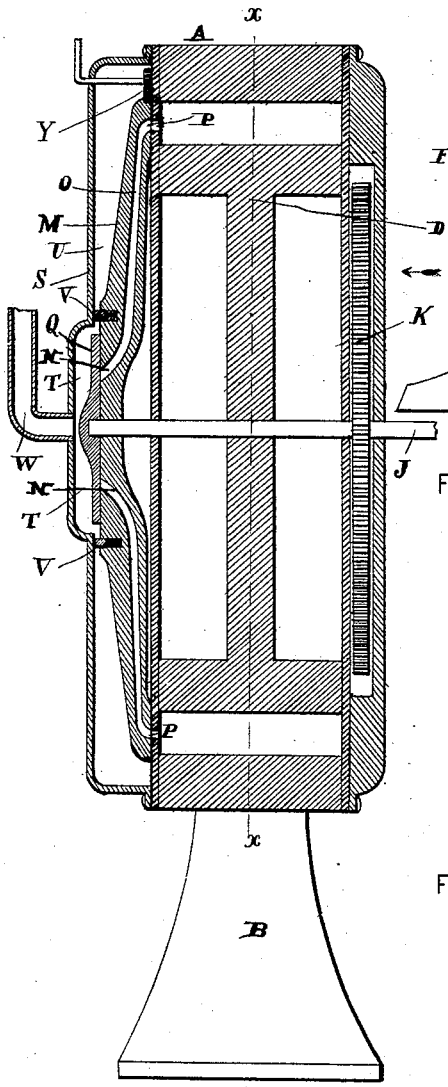


FIG. 2.

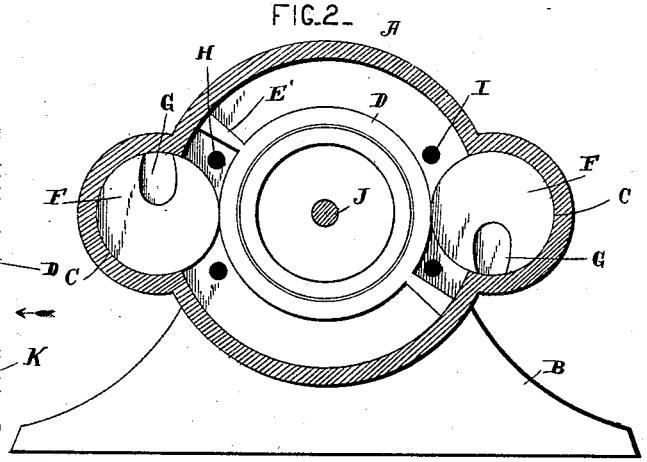


FIG. 3.

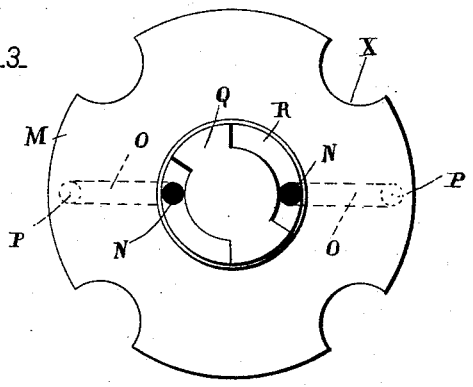
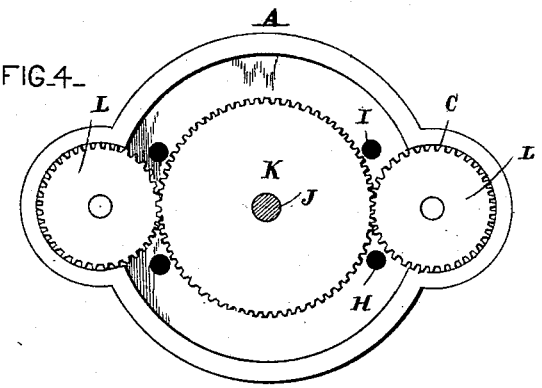


FIG. 4.



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UNITED STATES PATENT OFFICE.

CHARLES MIESSNER, AUGUST MIESSNER, AND WILLIAM MIESSNER, OF HUNTINGBURG, INDIANA.

ROTARY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 453,935, dated June 9, 1891.

Application filed April 11, 1891. Serial No. 388,521. (No model.)

To all whom it may concern:

Be it known that we, CHARLES MIESSNER, AUGUST MIESSNER and WILLIAM MIESSNER, of Huntingburg, in the county of Dubois and State of Indiana, have invented certain new and useful Improvements in Rotary Steam-Engines; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to an improved rotary steam-engine; and it consists in the particular constructions and arrangements of parts which will be fully described hereinafter.

The object of our invention is to produce a simple, cheap, effective, and durable rotary engine, which is so constructed that it can be reversed and made to run in either direction and to receive steam on both wings at the same time expansively. On the end of the driving-shaft is attached a cut-off valve, by means of which any desired quantity of steam can be admitted into the cylinder, according to the size of the openings in the valve.

Figure 1 is a vertical section of a rotary engine which embodies our invention complete. Fig. 2 is a vertical section through the cylinder on the dotted line X X of Fig. 1. Fig. 3 is a detached view of the reversing-valve and the cut-off valve. Fig. 4 is an end view looking in the direction indicated by the arrow of Fig. 1.

A represents a cylinder supported upon a suitable base B, and which cylinder has at each side thereof the semicircular recesses C. Concentrically journaled within the cylinder A is a revolving wheel D, which has secured to its periphery the two wings E, which are provided with suitable packing to make them steam-tight. Suitably journaled within the semicircular recesses C are the two abutments F, each of which is provided with the recesses or cut-away portions G, for the purpose hereinafter described.

Made through the outer face of the cylinder A are the four openings H H and I I, which act as inlet and exhaust ports in the manner hereinafter described.

Secured to the one end of the shaft J of the rotary wheel D is a cog-wheel K, which engages with the cog-wheels L, placed upon the adjacent ends of the journals or shafts of the abutments F. As the wheel D is made to revolve by steam-pressure within the cylinder, it, through the medium of the cog-wheels K L, revolves the abutments, and these abutments are placed in such a relative position to the wings upon the wheel D as to bring the openings G of the abutments opposite the wings E. Loosely placed upon one end of the driving-shaft J is a reverse valve M, which is provided with the openings N in its outer face, and near its centers the channels O, and the openings P upon its inner face and near its periphery. Secured to the extremity of the driving-shaft J is the cut-off valve Q, which is provided with inlet-openings R. Surrounding the reverse and cut-off valves is a shell S, which forms the inlet-chamber T, secured with packing, and the outlet or exhaust chamber U. These chambers are separated from each other by means of a spring or other suitable packing V, which is secured to the outer face of the reverse valve M, as shown. Connected with the inlet-chamber T is the steam-inlet pipe W, which is connected at its opposite end to the boiler, which is to be provided with a throttle-valve and governor to regulate the quantity of steam allowed to pass into the inlet-chamber T.

The reverse valve M is provided with four cut-away portions X, as shown, so that when the two openings P register with one of the openings I and one of the openings H two of these cut-away portions will register with the other two openings H I. A toothed wheel Y is connected with the reverse valve M in any suitable manner, provided with a lever by which the valve is given a partial revolution, so as to cause the openings P to register with either two of the openings H I, as may be desired, and thereby admit steam to either side of the two wings E, which will cause the wheel D to revolve in any direction resolved by the engineer at a moment's notice.

A great difficulty existing in most rotary engines is that the steam is admitted continuously to the cylinder, and they cannot therefore use the expansion of the steam, as in the

ordinary reciprocating piston-engines where a cut-off valve is used, as shown by us.

Steam can be admitted from the boiler, only a portion of the revolution of the wheel allowing the expansion of the steam to revolve it the remaining portion of its revolution. The amount of steam admitted to the cylinder is regulated by the size of the opening R in the cut-off valve Q. The opposite end of the driving-shaft J is supported upon a pedestal, and secured to this shaft J between the cylinder and the pedestal is a driving-pulley, through the medium of which the power of the engine is conveyed to any desired point.

Having thus described our invention, we claim—

1. In a rotary steam-engine, a cylinder, a rotary wheel having wings, the revolving abutments having openings for the wings, inlet and exhaust ports in the side of the cylinder, a reverse valve having openings which register with the exhaust-ports and channels which have their inner ends register with the inlet-ports, and a rotary cut-off valve secured to the rotary-wheel shaft and having openings which register with the outer ends of the channels, the parts combined substantially as shown.

2. In a rotary steam-engine, a cylinder, a rotary wheel in the cylinder, having wings, revolving abutments having openings for the wings, a casing at one side of the cylinder and separated therefrom, the casing having an inlet-chamber near its center and an outlet or exhaust chamber outside of the inlet-chamber, a reverse valve having openings for the exhaust-ports and channels which have one end open into the inlet-chamber and their opposite ends registering with inlet-ports, the cylinder having exhaust and inlet ports which register, respectively, with the reverse-valve-exhaust openings and the inner ends of the said channels, and a cut-off valve secured to the rotary-wheel shaft within the said inlet-chamber, and having openings which register with the outer and central ends of the said channels, the parts combined to operate substantially as shown.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES MIESSNER.
AUGUST MIESSNER.
WILLIAM MIESSNER.

Witnesses:
JONAS KILIAN,
JACOB G. CATE.