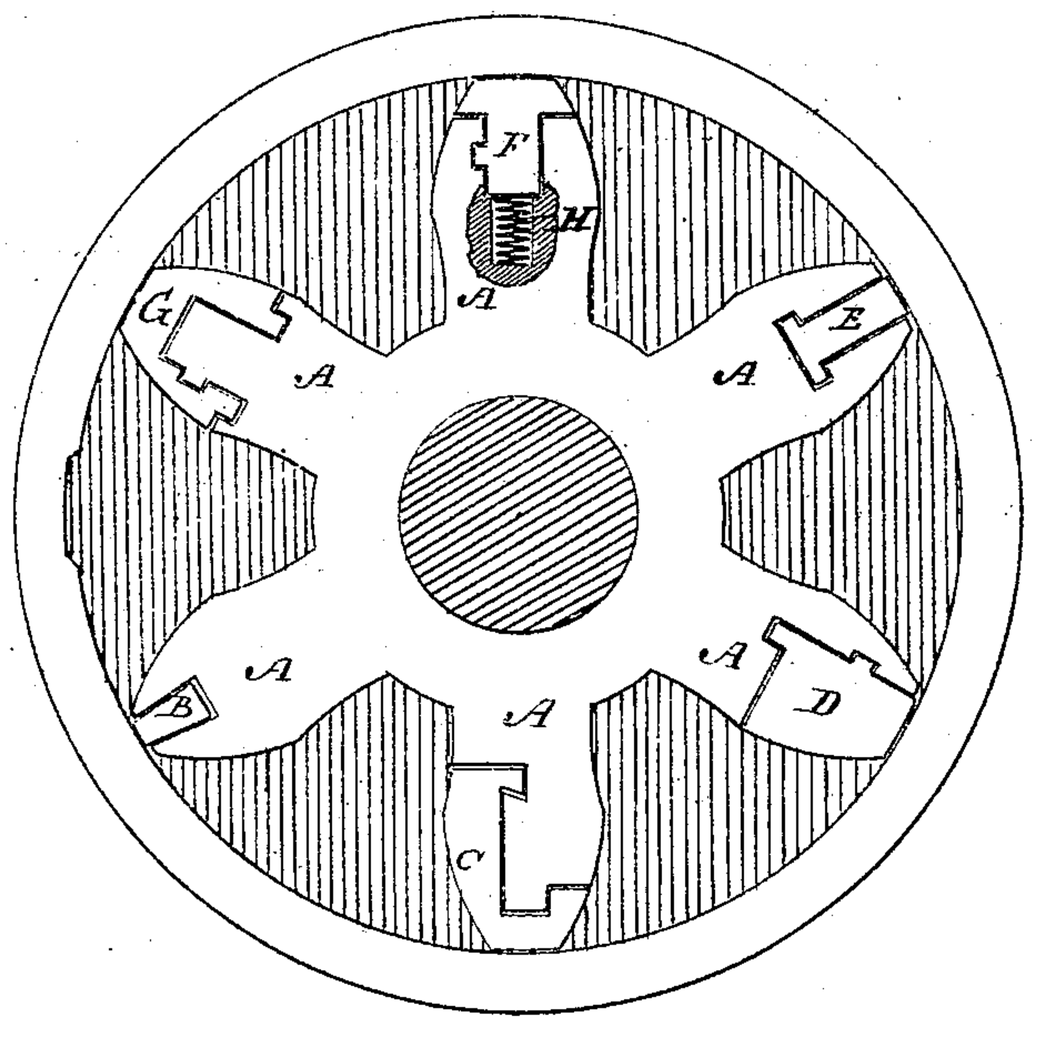
T. S. LA FRANCE.

Improvement in Rotary-Engines.

No. 133,159. Patented Nov. 19, 1872.



Witnesses:

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UNITED STATES PATENT OFFICE.

TRUCKSON S. LA FRANCE, OF ELMIRA, NEW YORK.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **133,159**, dated November 19, 1872.

To all whom it may concern:

Be it known that I, TRUCKSON S. LA FRANCE, of Elmira, in the county of Chemung and State of New York, have invented a new and useful Improvement in Rotary Engines, of which the following is a specification:

The invention relates to the packing-pieces which are affixed to the ends of cogs in rotary engines; and consists in a peculiar construction and application thereof, as hereinafter fully described and subsequently pointed out in the claim.

The drawing is a section of a single wheel and a cylinder adapted therefor, showing the manner of applying the packing-pieces according to my improvement, which is also adapted to engines having only one wheel.

A represents the arms of the wheel or rotary piston. B, C, D, E, F, and G represent the packing-pieces, all being alike in principle except B and E, and connected to the arms on the same general plan, which is by means of transverse under-cut or dovetail-shaped grooves on the one, and corresponding ribs or projections on the other, all being so that the pieces have to be entered at one side of the arms and shoved across; and the construction is such that the said packing-pieces have a slight to-and-fro movement in the radial direction of the arms to be caused to bear on the inside of the case or packing-plate with more or less force, according to the pressure of the steam, and behind each packing-piece is a coiled spring, H, in a socket in the arm, or in the piece itself, to keep it pressed out, so that the steam may enter the space at the inner end of the arm and press it outward. The essential object of this arrangement is to have the wheels capable of fitting the case; or, in other words, packing against the periphery at all times, while the said case expands and contracts under different degrees of heat. The pieces C and D act on the same principle, although constructed differently in the connecting parts, and give good results. The piece F is in the form of a T, with the head placed against the periphery of the case, and also has large surface for the steam to act on. The piece G has a large deep groove through the center of the base, and the end of the cog is formed like a tenon to fit into said groove. This piece forms the cog, or the outer sides thereof, for about half the length, and, like all the others constituting portions of the sides of the cogs, is shaped in accordance with the forms thereof required for having the cogs mesh with those of another wheel when two are used.

I am aware that pieces somewhat similar in appearance to those marked B and E are old; but the difference between them and mine is this: that the packing-piece E (for instance) is made to have a large surface on the bottom for steam to act against, while the sides of the packing-piece are made to fit steam-tight. This causes the steam to be confined under the enlarged head of the packing-piece and act as a piston to force it out against the sides of the cylinder. Before enlarging the piece at the bottom it became rusted and stuck fast, and of course the steam would pass by the packing-piece and escape with the exhaust. The enlargement of the pieces at the bottom allows force enough to be exerted to overcome friction by rust and make the packing-piece work perfectly, while without the enlarged bottom it is practically useless. This is a very important point gained in practice.

In the packing-pieces B the point I have made over a straight packing-piece is this: by making the piece wider at the bottom than at the top I obtain extra surface, against which the stream may act, thus insuring a positive movement. The piece being beveled is loose, movable, and cannot stick fast when the expansion takes place. While the cog-wheel is running in hot steam the packing-piece is pushed down into the groove, and when the wheel is contracted by cooling the springs push the pieces out against the case. Thus it is tight under all circumstances. This cannot be accomplished with a straight packing-piece.

I have found, in repairing rotary engines, that the straight pieces get fast in a short time and soon allow steam to leak out. By making the piece wide at the bottom and narrow at the top I have overcome this difficulty entirely.

This packing-piece is the most perfect, the most easily made, and the cheapest of all others.

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

A packing-piece, C, D, F, or G, constructed and applied to the ends of cogs in rotary engines, as and for the purpose described.

Witnesses: T. S. LA FRANCE.

NEWTON P. FASSETT,

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