(Model.)

E. MEDDEN.

Rotary Engine.

No. 238,603. Patented March 8, 1881.

Fig. 1.

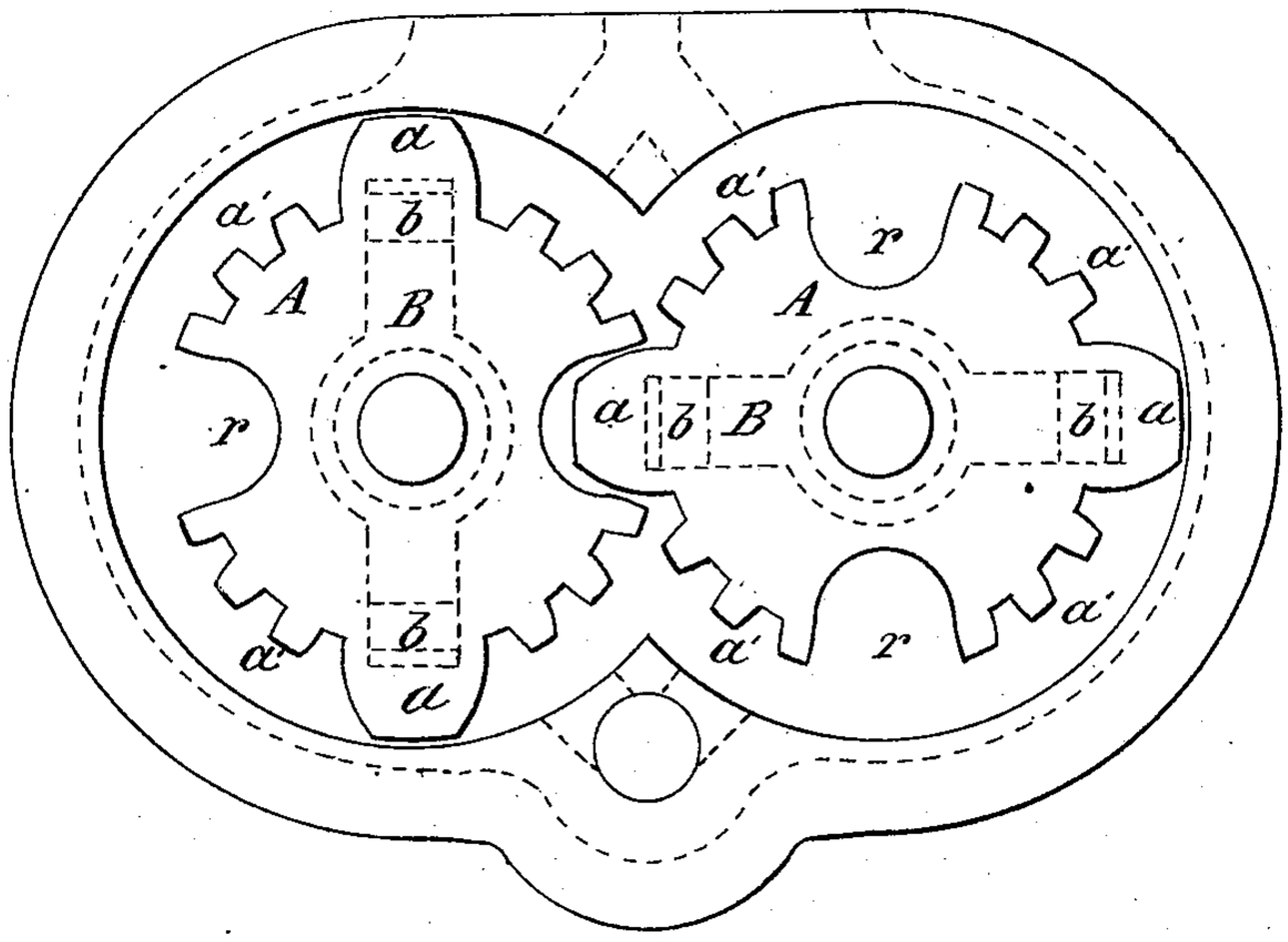


Fig. 2.

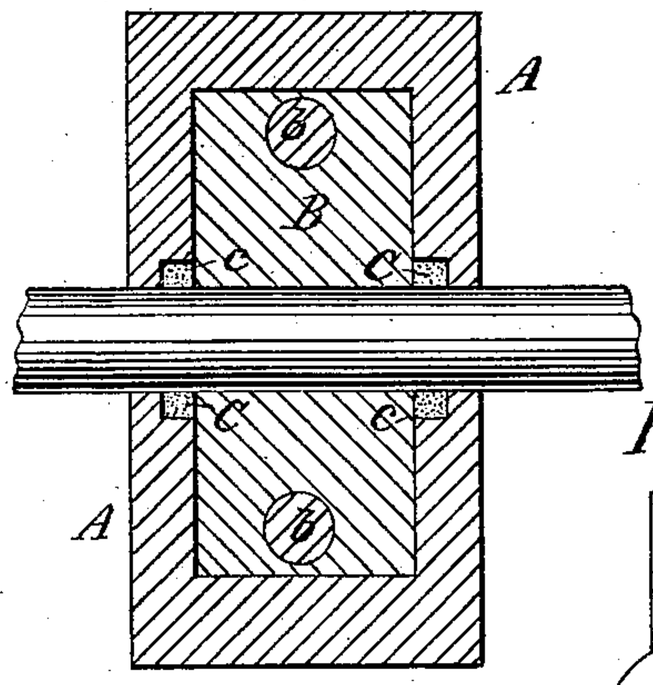


Fig. 3.

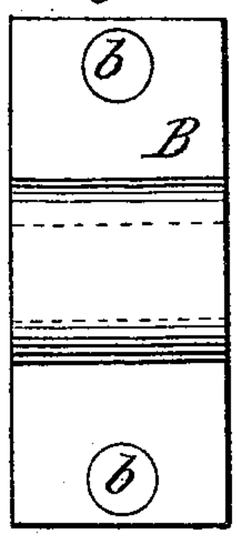
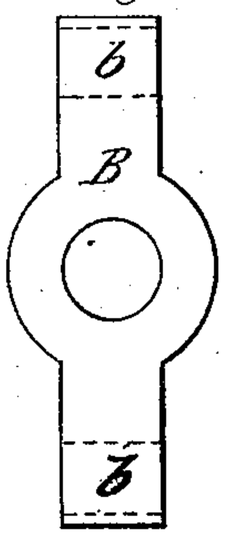


Fig. 4.



Witnesses
John A. Tauberschmidt
Harry E. Knight

Inventor
E. Medden
per Knight Bros
Attys

UNITED STATES PATENT OFFICE.

EDWIN MEDDEN, OF SENECA FALLS, NEW YORK, ASSIGNOR TO THE SILSBY MANUFACTURING COMPANY, OF SAME PLACE.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 238,603, dated March 8, 1881.

Application filed December 31, 1880. (Model.)

To all whom it may concern:

Be it known that I, EDWIN MEDDEN, a citizen of the United States, residing at Seneca Falls, in the county of Seneca and State of New York, have invented Improvements in Rotary Engines, of which the following is a specification.

The invention relates to double or two-shaft rotary engines having intermeshing rotary pistons or cams.

The invention consists in constructing the pistons or cams of such engines with cores of wrought-iron or other metal of great tensile strength, for the purpose of increasing the strength of the pistons or cams and the power of the engine, as hereinafter described.

The cams of rotary engines are usually, if not always, made of cast-iron, this metal being considered superior to any other, for the reasons that it is not so liable to abrade and cut, it keeps its wearing-surface in perfect order a greater length of time, it is easier to work, and it is less expensive.

In all double rotary engines of this class the pressure of steam is the same between the two shafts or on the inside of the cams (called "back-pressure") as it is between the shafts and the case, or on the outside of the cams, only the excess of leverage of the long teeth furnishing the power.

By using a core made in one or more pieces, of wrought-iron or other metal possessing great tensile strength, we are enabled to cut deeper in the cams or closer to the shafts, the recesses in which the long teeth work in their revolution allowing the cams to work closer to the relative centers and still preserving the requisite strength. It will be readily seen that the result of this is to throw the cams closer together, greatly reducing the back pressure that has to be overcome, and thus increasing the power of the engine. In addition to this advantage the pressure on the journals is considerably reduced.

In carrying out my invention I have found it especially desirable and important, in casting the improved rotary piston or cam, to surround the wrought-iron core with a thin core of sand at the necessary point, to prevent contact of the molten metal with the solid metal around the eye, thus avoiding the chilling of the cast-iron in such parts as have to be subsequently bored or faced.

In order that the mode of carrying my said invention into effect may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation with the face-plate removed, indicating the form and position of the wrought-iron core in dotted lines. Fig. 2 is a longitudinal section of one of the pistons or cams. Figs. 3 and 4 are, respectively, a side and an end elevation of the wrought-iron core alone.

A A represent cams or pistons of usual external form, each having two long teeth or wings, *a*, to receive the steam-pressure, and any necessary number of short intermediate teeth or cogs, *a' a'*, to cause the cams or pistons to rotate in unison, as required.

B represents a core, preferably of wrought-iron, but it may be of steel or any metal possessing the necessary tensile strength. On this core the cast-iron body A of the piston is cast, apertures being formed in the core at *b b* to allow the cast-iron to flow through, forming bonds to prevent the fracture of the cast-iron shell or its separation from the core.

The teeth or arms *a*, which receive the effective pressure of the steam, pass at the inner part of their orbit within recesses *r* in the side of the other cam or piston, and it will be apparent that the deeper these recesses can be practically made the more the surface of the tooth *a*, against which back pressure would be exerted, will be reduced. The wrought-iron core B supplies the strength that enables me to cut the recesses deeper for the long teeth than can be done with cams of solid cast-iron as they are now made, and still have necessary strength.

In casting the cast-iron case A on the core B, a thin dry-sand core, C, is used, to prevent the hot metal from coming in contact with the cold metal where it is necessary to bore or face the cam for the shaft to which it is attached. If the hot cast-iron A were allowed to come in contact with the cold wrought-iron or other metal of the core B, the former would harden or be chilled, so that it could not be faced or

bored with ordinary tools. This difficulty is overcome by means of the dry-sand core leaving a chamber at *c*.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

A cam or piston constructed with a shell or casing, A, of cast-iron, and a core, B, of metal possessing greater tensile strength, substantially as described.

EDWIN MEDDEN.

Witnesses:
R. DENNE,
CHAS. W. RIEGEL.