3 Sheets—Sheet 1.

M. NORDMANN, Jr.

ROTARY-ENGINE.

No. 191,250. Patented May 29, 1877.

Fig 1.

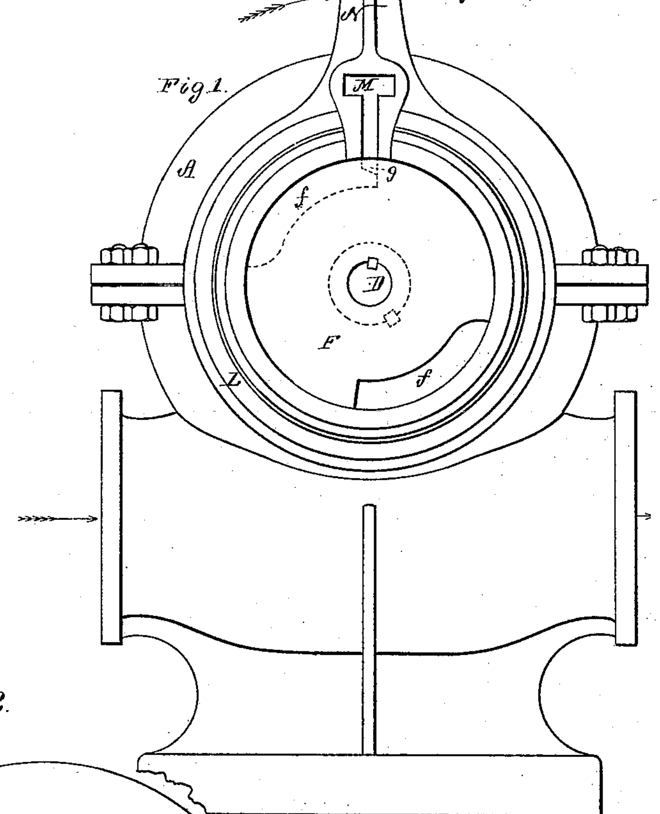
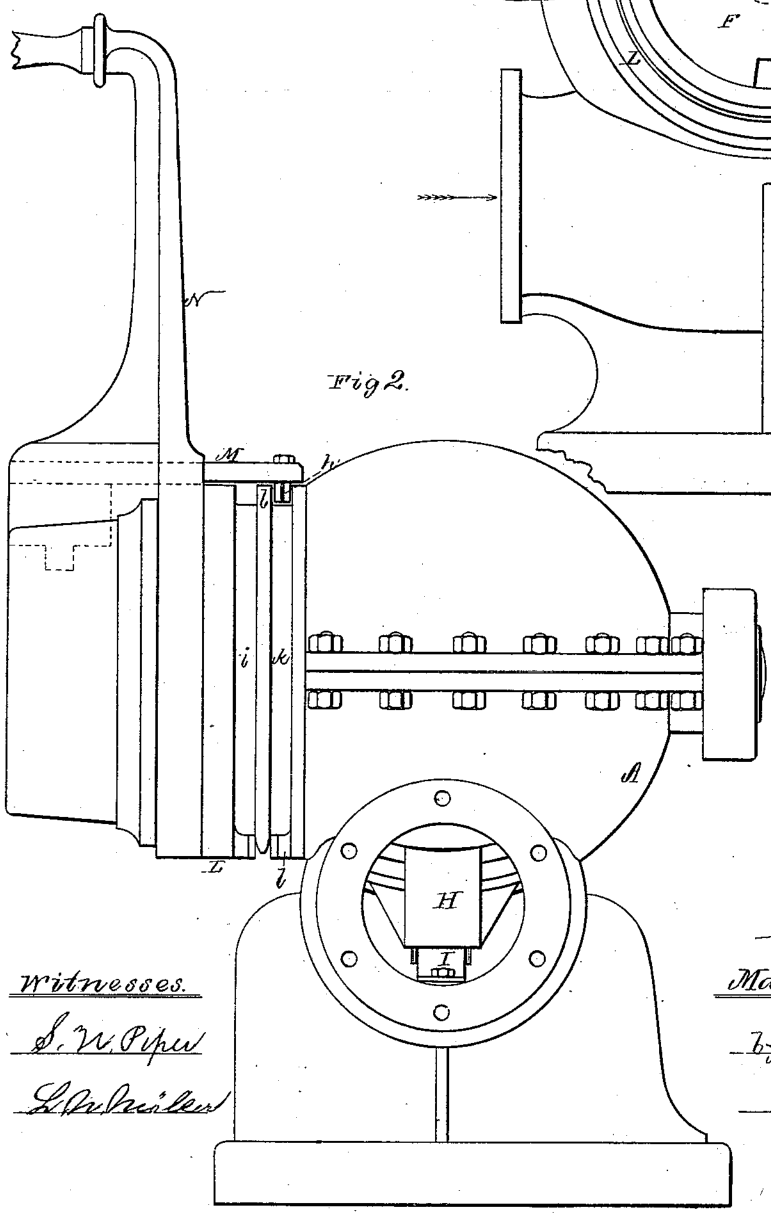


Fig 2.



Witnesses.
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L. N. Miller

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R. H. Eddy.

3 Sheets—Sheet 2.

M. NORDMANN, Jr.

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Fig 3.

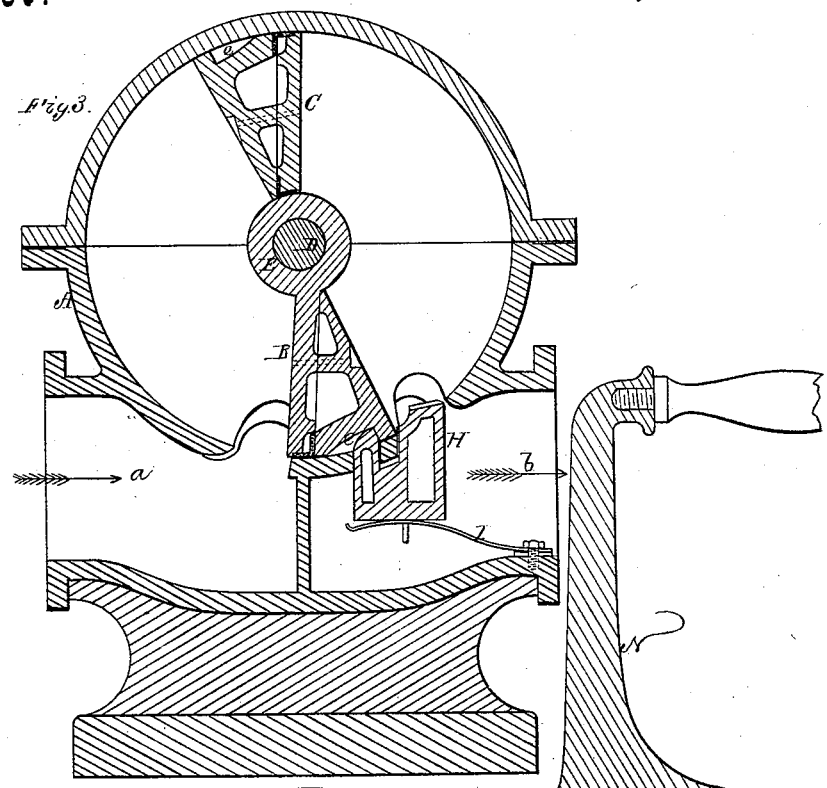
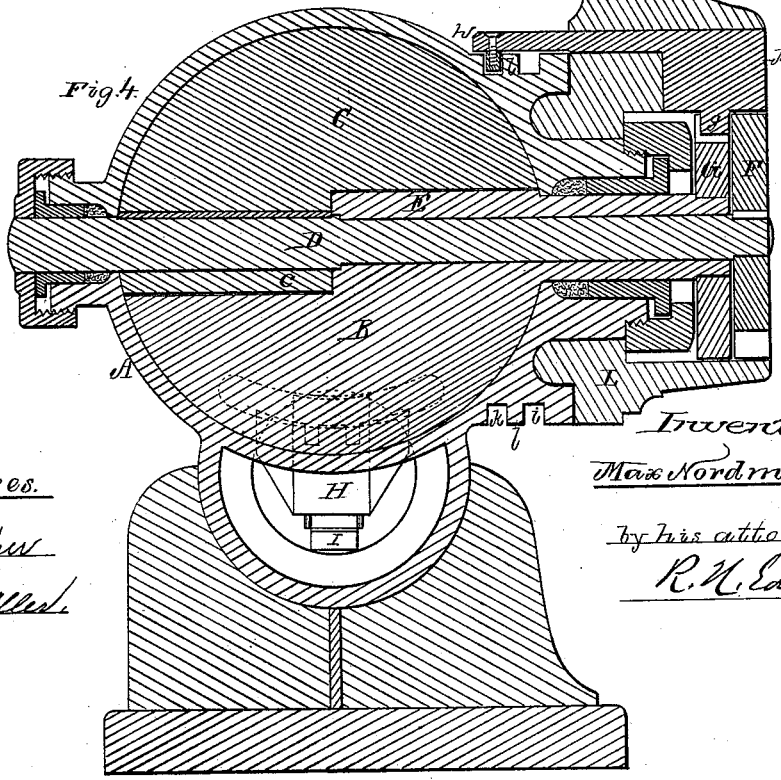


Fig 4.



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3 Sheets—Sheet 3.

M. NORDMANN, Jr.

ROTARY-ENGINE.

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Fig. 5.

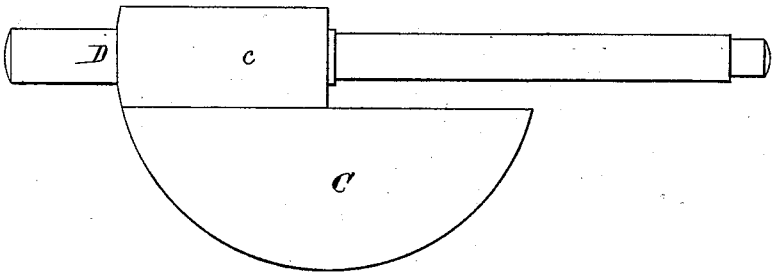


Fig 6.

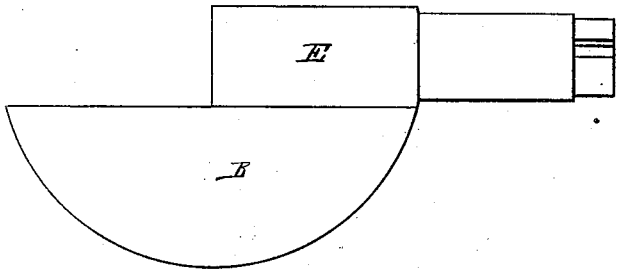


Fig 7.

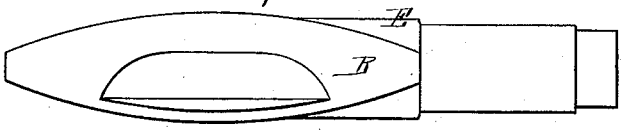
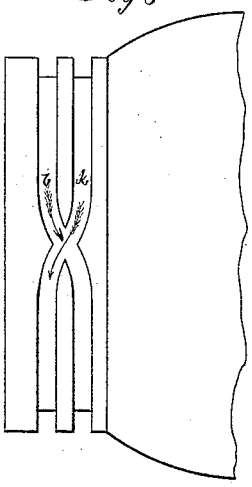


Fig 8



Witnesses.

S. N. Piper

L. C. Miller

Inventor.

Max Nordmann jr.

by his attorney.

R. M. Eddy

UNITED STATES PATENT OFFICE

MAX NORDMANN, JR., OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **191,250**, dated May 29, 1877; application filed April 11, 1877.

To all whom it may concern:

Be it known that I, MAX NORDMANN, Jr., of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful or Improved Rotative Engine; and do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is an end view, Fig. 2 a side elevation, Fig. 3 a transverse section, and Fig. 4 a longitudinal section, of it.

As shown in the drawings, this engine is composed in part of a globular case, A, provided with an induct, *a*, and an educt, *b*, arranged with and opening out of it, in manner as shown.

Within the said case are two pistons, B C, whose curved peripheries fit to the inner surface of the case. The piston C has its hub *c* concentric with and fastened to a solid shaft, D, arranged diametrically in the case A, and projecting therefrom, in manner as shown in Fig. 4. The other piston projects from a tubular shaft, E, encompassing the shaft D from the center of the case outward, and supported in a suitable stuffing-box. Each piston has a notch, *e*, in its outer edge. One of the pistons—viz., that marked B—projects from its shaft E over and against the cylindrical hub *c* of the other, while the piston C extends from such hub in a similar manner over and against the shaft E—that is, the piston B laps on the hub *c* throughout its length, and the piston C in like manner laps on that part of the shaft E which is within the case A.

Fig. 5 is a side view of the piston C, and Fig. 6 is a side view of the piston B and its shaft E. Fig. 7 is an outer edge view of one of such pistons.

On the external ends of the shafts D and E are fixed two notched disks, F G, each being notched, as shown at *f* in Fig. 1.

Within the educt *b* is a movable stop, H, resting on a spring, I, which serves to force the stop up into the case A. This stop is to slide vertically in or upon suitable guides, it being formed in transverse section in manner as represented in Fig. 3. Each piston, on completing a revolution, will be caught and arrested by the stop H, and it will be released from the stop and moved forward a short distance by the other piston in course of its rotary movement, as this latter piston, in passing against the stop, will depress it out of engagement with the fellow piston, and will advance until caught by the stop. While passing over the stop a piston not only forces the stop out of engagement with the fellow piston, but impels the latter forward until the stop may be thrown upward by its spring into the notch of the said impelling-piston. On this latter piston being arrested in its motion it becomes an abutment for the induction steam to act against in order to move the released piston. The steam entering between the two pistons will move the released one an entire revolution within the case, the steam that may be in the case and been employed to move the stopped piston being forced into and through the educt *b*.

The neck of the case and the two notched disks F G are encompassed by a rotative head, collar, or annulus, L, from which a crank, N, is projected. This annulus is to revolve on the neck, and it has extending through it transversely a slide-bolt, M, provided with a stud or projection, *g*, to take into the notch of either disk. The slide-bolt extends back of the annulus or sleeve L, and has pivoted to it a pointed slide, *h*, which enters one of two parallel grooves, *i k*, made in and around an auxiliary cylindrical neck, *l*, projecting from the case A, and arranged as shown. These grooves cross each other in the lower part of the said neck, as represented in Fig 8, which is an under-side view of the neck.

By means of the notched disks F G and the bolt M the rotary head L will be caused to revolve with, and will be revolved by, each piston, while each piston may be in revolution, the crossed grooves *i k* and the pointed slide or tripper *h* serving at the proper times to disengage the bolt-stud *g* from one notched disk and engage it with the other, in order that the head or sleeve L may be revolved by the piston to be moved by the steam or liquid.

The globular form of the case and correspondingly arcal form of the pistons I prefer to a cylindrical case and rectangular or square pistons, as they expose less surface of pistons to wear or to keep packed.

I claim—

1. A rotative engine, substantially as described, composed of the case A, with its induct *a* and educt *b*, the two notched pistons B C, their concentric shafts D E, and the stop H, and the spring I, all constructed and arranged essentially in manner and to operate as set forth.

2. The combination of the notched disks F G, rotary head or sleeve L, slide-bolt M, tripper *h*, and the crossed grooves *i k* with the rotative engine, substantially as described, composed of the case A, with its induct *a* and educt *b*, the two notched pistons B C, their concentric shafts D E, and the stop H and spring I, all being constructed, arranged, and applied substantially in manner shown and described.

MAX NORDMANN, JR.

Witnesses:
R. H. EDDY,
J. R. SNOW.