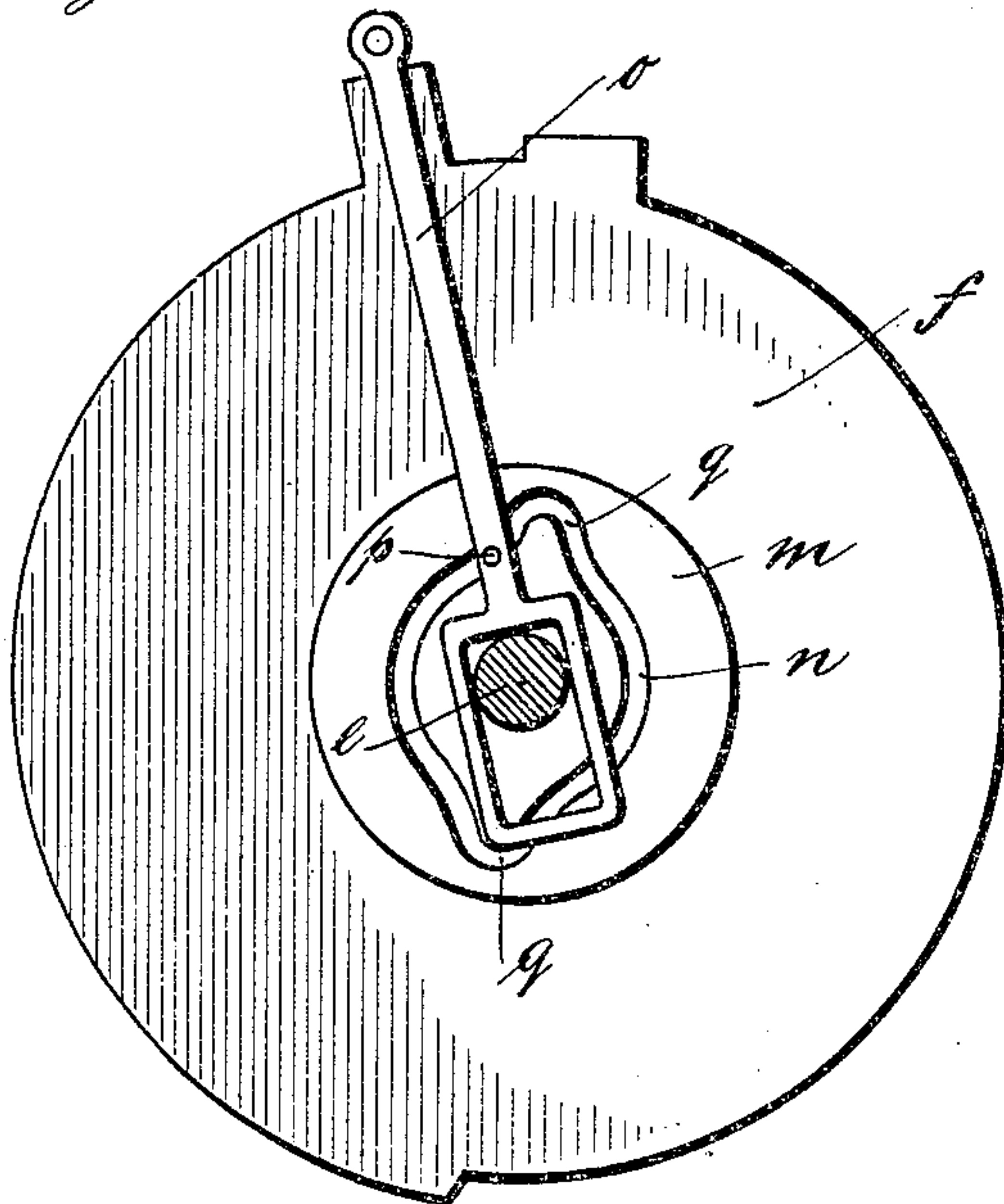


No. 792,413.

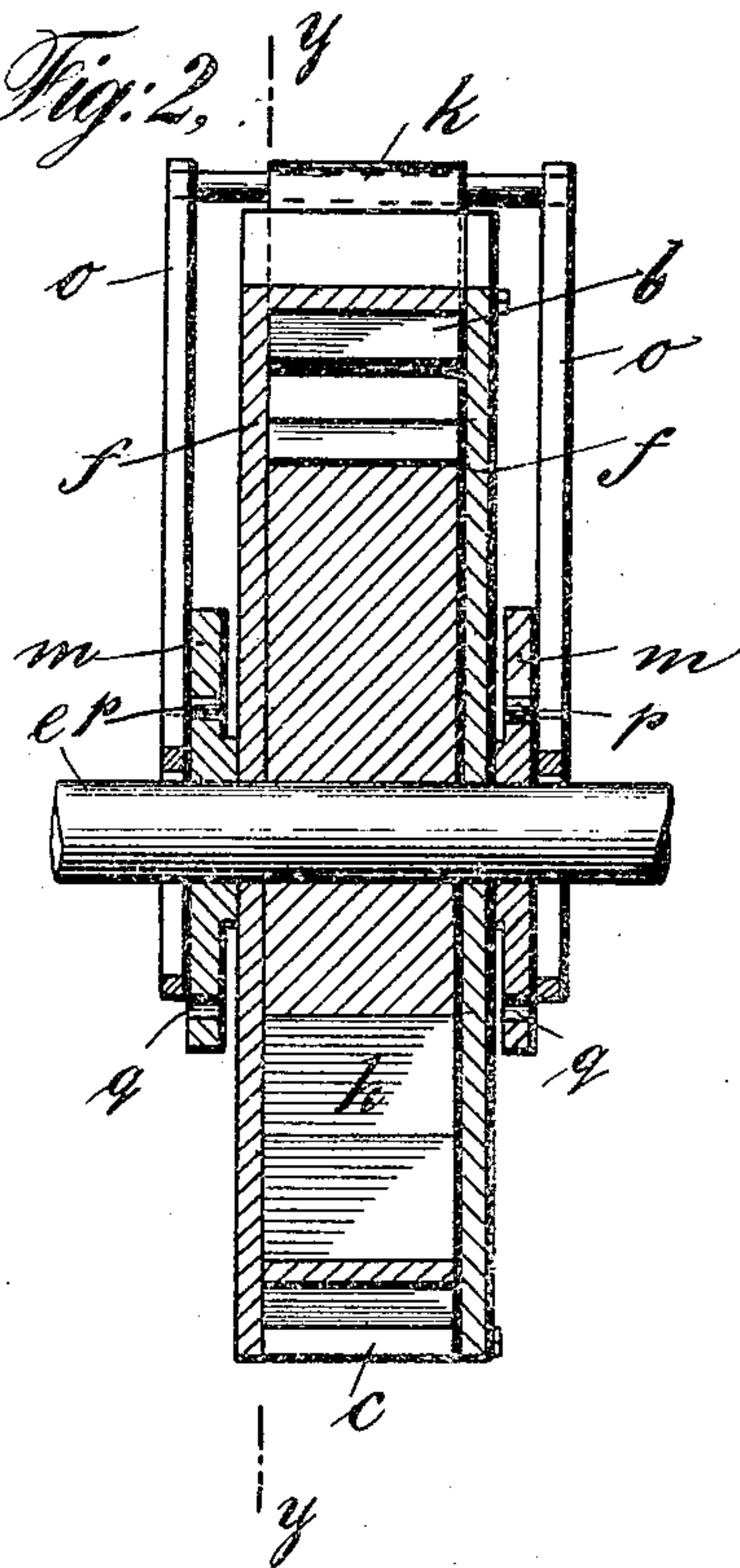
PATENTED JUNE 13, 1905.

E. GRUBERT.  
 ROTARY ENGINE.  
 APPLICATION FILED APR. 11, 1906.

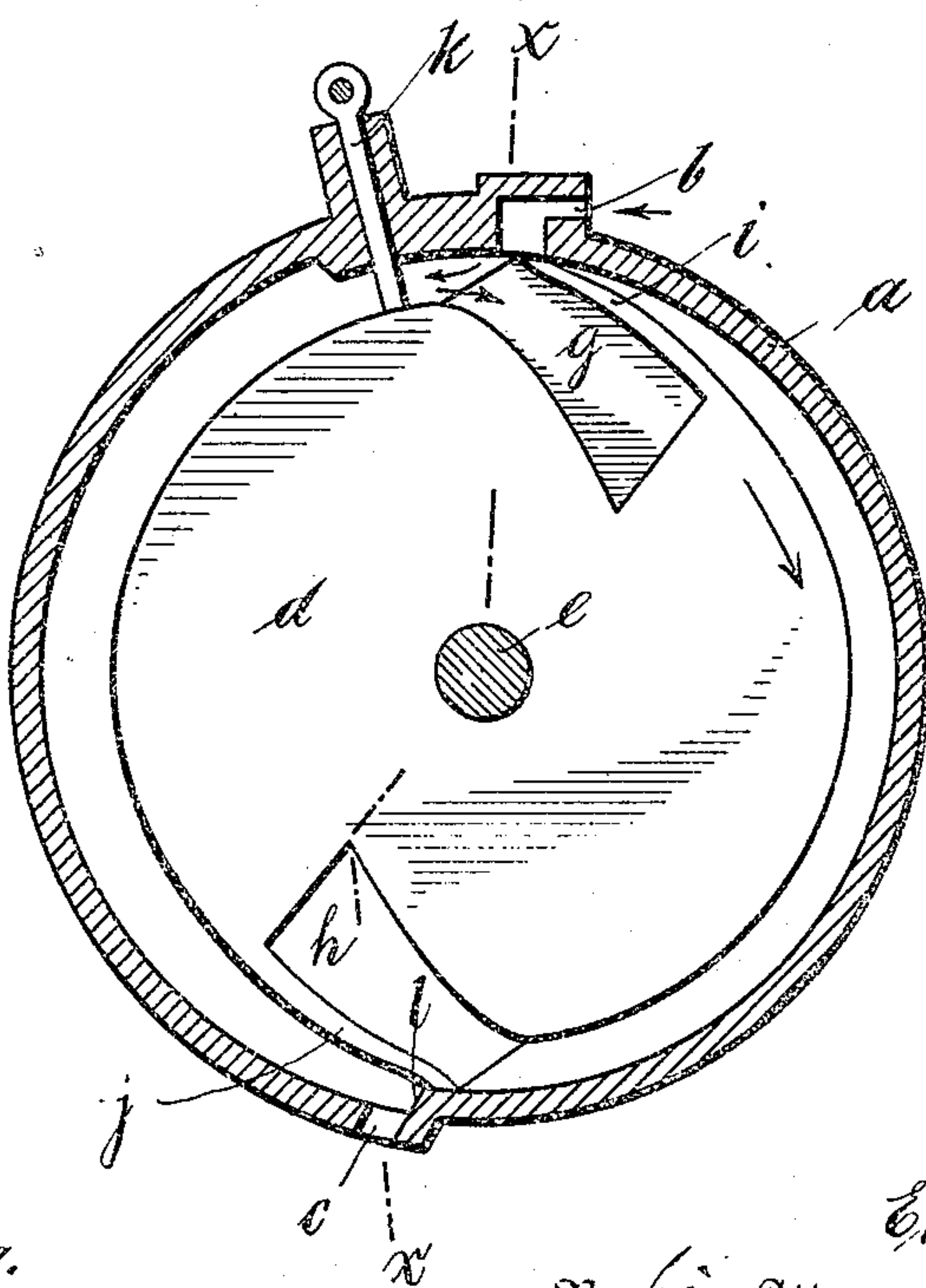
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses  
*Max B. A. Doring.*  
*Estelle B. Wake.*

Inventor  
*Emil Grubert.*  
 By *his* Attorney *Max B. Ordman.*



# UNITED STATES PATENT OFFICE.

EMIL GRUBERT, OF LESUEUR, MINNESOTA.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 792,413, dated June 13, 1905.

Application filed April 11, 1905. Serial No. 254,976.

*To all whom it may concern:*

Be it known that I, EMIL GRUBERT, a subject of the Emperor of Germany, and a resident of Lesueur, in the county of Lesueur and State of Minnesota, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

My present invention relates to rotary engines, particularly rotary steam-engines, and is illustrated in the accompanying drawings, in which similar letters denote corresponding parts, and in which—

Figure 1 shows an elevational side view of the engine; Fig. 2, a vertical section through *xx* of Fig. 3, and Fig. 3 a cross-section through line *yy* of Fig. 2.

With reference to the drawings, *a* denotes the steam-cylinder, having an inlet *b* and an outlet *c* at diametrically-opposed places. Inside the cylinder a roller or a rotary piston *d* is mounted upon a shaft *e*, extending longitudinally of and projecting through the side walls or covers *f f* of the cylinder. The circumference of said piston *d* is smaller than the inner diameter of the cylinder, so that a free space is formed all around the roller between the latter and the inner surfaces of the cylinder. At diametrically-opposed places the roller or piston *d* is provided with excavations *g* and *h*, forming pockets, extending longitudinally throughout the entire length thereof.

On one side the cylinder is provided with an excavation upon its inner surface or is made of a larger diameter than on the other side, so that a larger space is formed between the piston and the wall of the cylinder. The outer walls *i j* of the pockets project beyond the surface of the piston and their free edges are adapted to closely and tightly fit upon the inner surface of the cylinder at one side only. At the opposite side, however, where the excavation is made in the cylinder or where the latter has a larger diameter, the said free edges will not touch the surface of the cylinder.

At a suitable place near and at the rear of the inlet *b* a slide-valve *k* is arranged, which extends throughout the entire length of the piston between the two side walls or covers

*f f* of the cylinder and projects through the wall of the cylinder into the latter, so as normally to rest upon the piston *d* and form a tight closure thereupon. By this slide two compartments are formed in the cylinder, one, the working compartment, extending at one side of the slide in the narrower space of the cylinder, and the other at the opposite side thereof in the wider space of the cylinder, which serves as a discharge-compartment.

The outlet *c* is arranged just behind the shoulder formed by the excavation or enlarged diameter of the cylinder. The air entering the inlet *b* will fill the space between the slide *k* and also the pocket *g*, which at that moment lies underneath the outlet, and will cause the piston to revolve. Before the piston makes half a revolution and the upper edge of the wall *i* leaves the shoulder *l* the opposite pocket *h* passes underneath the slide-valve *k* into the narrow space of the cylinder to receive fresh steam through the inlet *b*. As the piston continues to revolve the free edge of the pocket leaves the shoulder *l* and the pocket *g* is open at the outlet, so that the used and partly-condensed steam will be allowed to exit through the outlet and to pass into the wider space.

The slide-valve is controlled by means of the following mechanism: Keyed upon the shaft *e* outside of the steam-cylinder on both sides of the latter are disks *m m*, each having on its outside cam-grooves *n*. Rods *o*, connected with the slide *k*, are provided at their lower ends with pins suitably guided in said cam-grooves *n n*. As the shaft and the piston are revolving the pins will slide in the cam-grooves *n n* and cause the rods to rise at the moment when the outwardly-projecting edge of the pocket *g* or *h* is approaching the slide-valve *k*. It is evident that any other suitable mechanism can be adopted to control the up-and-down movement of the slide.

What I claim, and desire to secure by Letters Patent, is—

A rotary engine for steam or the like comprising a cylinder having an inlet and outlet arranged diametrically to each other, an excavation at one side of the cylinder, a roller

or rotary piston smaller in diameter than the  
inside of the cylinder, a slide-valve projecting  
through the wall of the cylinder and adapted  
normally to tightly rest upon the body of the  
5 piston, said valve dividing the cylinder in  
two compartments, a working and a discharge  
compartment, pockets in the piston diamet-  
rically opposed to each other, the outer walls  
of said pockets projecting toward the inner  
10 wall of the cylinder and adapted to fit tightly  
upon the inner surface of the cylinder of the

working compartment and means for auto-  
matically operating the slide-valve, substan-  
tially and for the purpose as specified.

Signed at Lesueur, in the county of Lesueur 15  
and State of Minnesota, this 6th day of April,  
A. D. 1905.

EMIL GRUBERT.

Witnesses:

THOS. HESSIAN,

ALBERT GUTZMEN.