E. MAYE.

REVOLVING INTERNAL COMBUSTION ENGINE.

APPLICATION FILED JAN. 31, 1914.

1,122,972.

Patented Dec. 29, 1914.

2 SHEETS-SHEET 1.

Fig. 1.

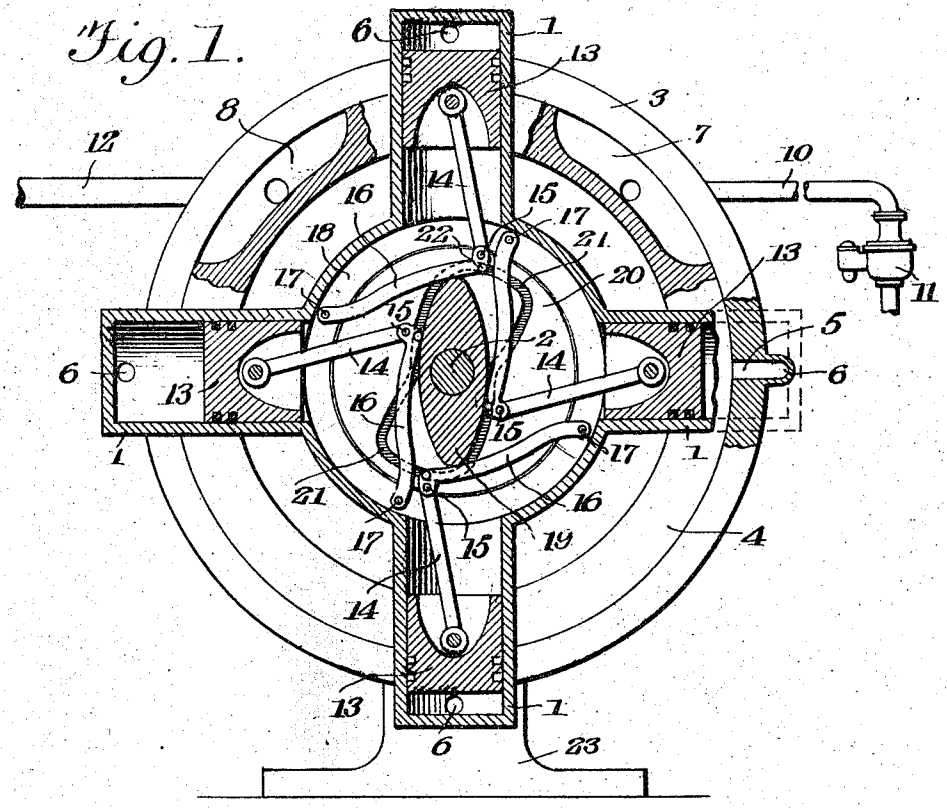
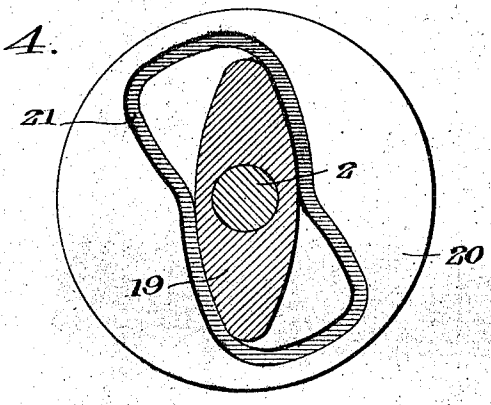


Fig. 4.



Witnesses

Hugh H. Ott.

P. M. Smith.

Inventor

Edward Maye

By Victor J. Evans

Attorney

E. MAYE.

REVOLVING INTERNAL COMBUSTION ENGINE.

APPLICATION FILED JAN. 31, 1914.

1,122,972.

Patented Dec. 29, 1914.

2 SHEETS—SHEET 2.

Fig. 2.

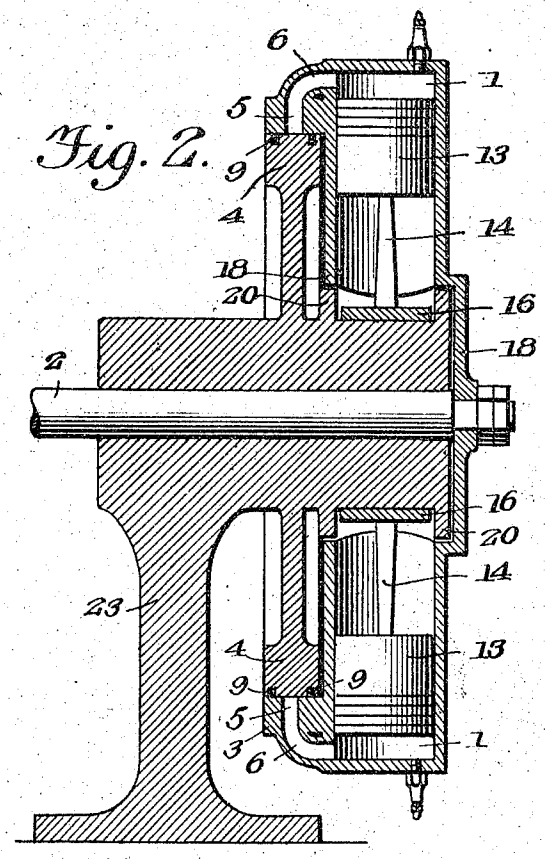


Fig. 3.

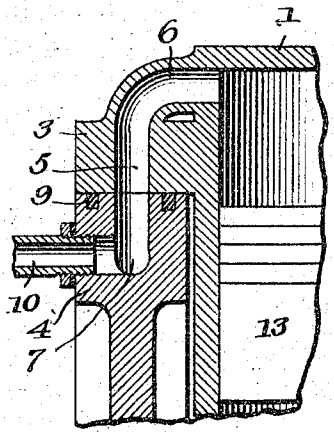
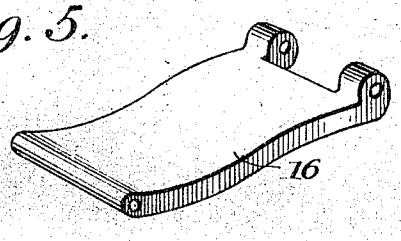


Fig. 5.



Witnesses

Hugh H. Utt.

P. M. Brick.

Inventor

Edward Maye

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

EDWARD MAYE, OF BARLING, ARKANSAS.

REVOLVING INTERNAL-COMBUSTION ENGINE.

1,122,972. Specification of Letters Patent. Patented Dec. 29, 1914.

Application filed January 31, 1914. Serial No. 815,787.

To all whom it may concern:

Be it known that I, EDWARD MAYE, a citizen of the United States, residing at Barling, in the county of Sebastian and State of Arkansas, have invented new and useful Improvements in Revolving Internal-Combustion Engines, of which the following is a specification.

This invention relates to internal combustion engines of the revolving or rotating type in which the cylinders of the engine are arranged in an annular series and rotatable around a common axis, the object of the invention being to produce a simple, reliable and economically manufactured engine of the class described which dispenses with the ordinary crank shaft and involves novel and durable means whereby the power derived from the pistons is imparted to the engine casing which revolves with and is carried by the cylinders.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement of parts, as will hereinafter be more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a longitudinal section through an engine embodying the present invention, taken at right angles to the engine shaft. Fig. 2 is a vertical transverse section through the same taken in line with the shaft. Fig. 3 is an enlarged detail section through the gas conducting rings. Fig. 4 is a detail face view of one of the stationary disks showing the cam groove therein. Fig. 5 is a detail perspective view of one of the slides or links.

Referring to the drawings 1 designates a series of revolving cylinders or, in other words, a circular series of cylinders arranged radially with respect to each other and revolving bodily around a common center in which the engine shaft 2 is located.

Connecting all the cylinders is a rotating ring 3 which revolves around a stationary ring 4, the ring 3 being formed with an annular gas channel 5 from which tubular connections 6 extend to the several cylinders 1, there being a connection 6 for each of said cylinders. The stationary ring 4 is likewise formed at two places with channels 7 and 8, the channel 7 forming, for example, an intake gas chamber and the channel 8 forming an exhaust chamber.

One of the rings, for example the ring 4, is provided in the face which contacts with the ring 3 with annular grooves 9 arranged at opposite sides of the channels 5 and 7 and in said grooves 9 are arranged packing rings or strips which form a gas-tight joint between the stationary ring and the rotating ring. 10 designates an intake pipe leading from a suitable carbureter 11, and 12 designates an exhaust pipe, the intake pipe 10 communicating with the intake chamber 7 and the exhaust pipe 12 communicating with the exhaust chamber 8.

Pistons 13 are mounted to reciprocate in the cylinders 1 and connecting rods 14 of said cylinders are pivotally attached at 15 to a corresponding number of runners 16, the said runners being pivotally connected at 17 to the oppositely located heads or casing plates 18 which partially inclose the cylinders and revolve therewith.

Arranged centrally of the motor is an elliptical cam or eccentric 19 which is stationary and around which the runners 16 travel in contact. At opposite sides of the eccentric 19 are stationary disks 20 each of which is provided with a cam groove 21 corresponding to the general shape of the eccentric 19. Each of the runners 16 is provided with studs 22 which work in the cam grooves 21 and serve to insure the runners following their proper path and working in sliding contact with the stationary eccentric 19, the runners 16 being preferably curved from end to end as shown in Fig. 4 so that they will follow the periphery of the eccentric 19.

By reference to Fig. 1 it will be observed that when an explosion takes place in a cylinder, the piston rod in traveling toward the center of the engine thrusts against the end of the runner to which it is pivotally attached at 15. This forces the runner partially around the eccentric 19 and thereupon drags the engine casing with it. As the explosions occur rapidly one after the other, continuous rotary motion is thus imparted to the series of cylinders, the casing which partly incloses said cylinders and the revolving ring 3. The intake and ex-

haust chambers of the stationary ring are so situated as to admit of explosive mixture successively to the cylinders as they pass the same and the exhaust from the same is successively and periodically released into the exhaust chamber 8 passing therefrom through the exhaust pipe 12. The shaft 2 passes through the eccentric 19 and also through a suitable supporting base 23 to which said eccentric is fastened and said shaft is also fastened to the casing of the engine so that the rotary movement of the casing is transmitted to said shaft.

The engine hereinabove described is of very simple construction, dispensing with the usual crank shaft at present in use in the Gnome engine and others of a similar type and also dispensing with the usual valves. This correspondingly reduces the liability of the engine getting out of order and particularly adapts it for aeronautical uses. The engine also dispenses with the necessity of using gear wheels of any kind and by reason of the construction shown and described, the engine may be easily taken down and reassembled in a comparatively short period of time. By using the eccentric 19 in place of the ordinary crank shaft, four complete piston strokes are obtained in each cycle of operation thereby obtaining an explosion and impulse in each cylinder for each complete rotation of the engine.

What I claim is:—

1. An internal combustion engine comprising a stationary supporting base, a circular series of cylinders all revolving around a common center and having their longitudinal axes radial to the engine shaft, a non-rotating eccentric located centrally of said series of cylinders, pistons movable radially to the engine shaft and mounted for reciprocatory movement in said cylinders, inwardly extending connecting rods for said pistons, and runners located between the inner ends of said cylinders and traveling around in sliding contact with said eccentric, each runner being pivotally connected at one point to one of said connecting rods and pivotally connected at another point with said series of cylinders.

2. An internal combustion engine comprising a stationary supporting base, a circular series of cylinders all revolving around a common center and having their longitudinal axes radial to the engine shaft, a central casing revolving with said cylinders, a non-rotating eccentric located centrally of said series of cylinders, pistons movable radially to the engine shaft and mounted for reciprocatory movement in said cylinders, inwardly extending connecting rods for said pistons, and runners located between the inner ends of said cylinders and traveling around in sliding contact with said eccentric, each runner being pivotally connected at one point to one of said connecting rods and pivotally connected at another point to said casing.

3. An internal combustion engine comprising a stationary supporting base, a circular series of cylinders all revolving around a common center and having their longitudinal axes radial to the engine shaft, a non-rotating eccentric located centrally of said series of cylinders, pistons movable radially to the engine shaft and mounted for reciprocatory movement in said cylinders, inwardly extending connecting rods for said pistons, runners located between the inner ends of said cylinders and traveling around in sliding contact with said eccentric, each runner being pivotally connected at one point to one of said connecting rods and pivotally connected at another point with said series of cylinders, and an annular gas conduit consisting of two concentric sections one of which is carried by said cylinders and the other stationary, both of said sections having channeled meeting faces, the revolving section communicating with the cylinders and the stationary section embodying intake and exhaust chambers.

4. An internal combustion engine comprising a stationary supporting base, a circular series of cylinders all revolving around a common center and having their longitudinal axes radial to the engine shaft, a non-rotating eccentric located centrally of said series of cylinders, pistons movable radially to the engine shaft and mounted for reciprocatory movement in said cylinders, inwardly extending connecting rods for said pistons, runners located between the inner ends of said cylinders and traveling around in sliding contact with said eccentric, each runner being pivotally connected at one point to one of said connecting rods and pivotally connected at another point with said series of cylinders, an annular gas conduit consisting of two concentric sections one of which is carried by said cylinders and the other stationary, both of said sections having channeled meeting faces, the revolving section communicating with the cylinders and the stationary section embodying intake and exhaust chambers, and packing strips interposed between said meeting faces.

5. An internal combustion engine comprising a stationary supporting base, a circular series of cylinders all revolving around a common center and having their longitudinal axes radial to the engine shaft, a non-rotating eccentric located centrally of said series of cylinders, pistons movable radially to the engine shaft and mounted for reciprocatory movement in said cylinders, inwardly extending connecting rods for said

pistons, runners located between the inner ends of said cylinders and traveling around in sliding contact with said eccentric, each runner being pivotally connected at one point to one of said connecting rods and pivotally connected at another point with said series of cylinders, oppositely arranged stationary disks formed with eccentric grooves, and studs on said runners working in said grooves.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD MAYE.

Witnesses:
J. H. GRIFFITH,
DONA V. HACKLER.