

D. W. DRISCOLL & J. A. RENNIE.

POWER APPARATUS.

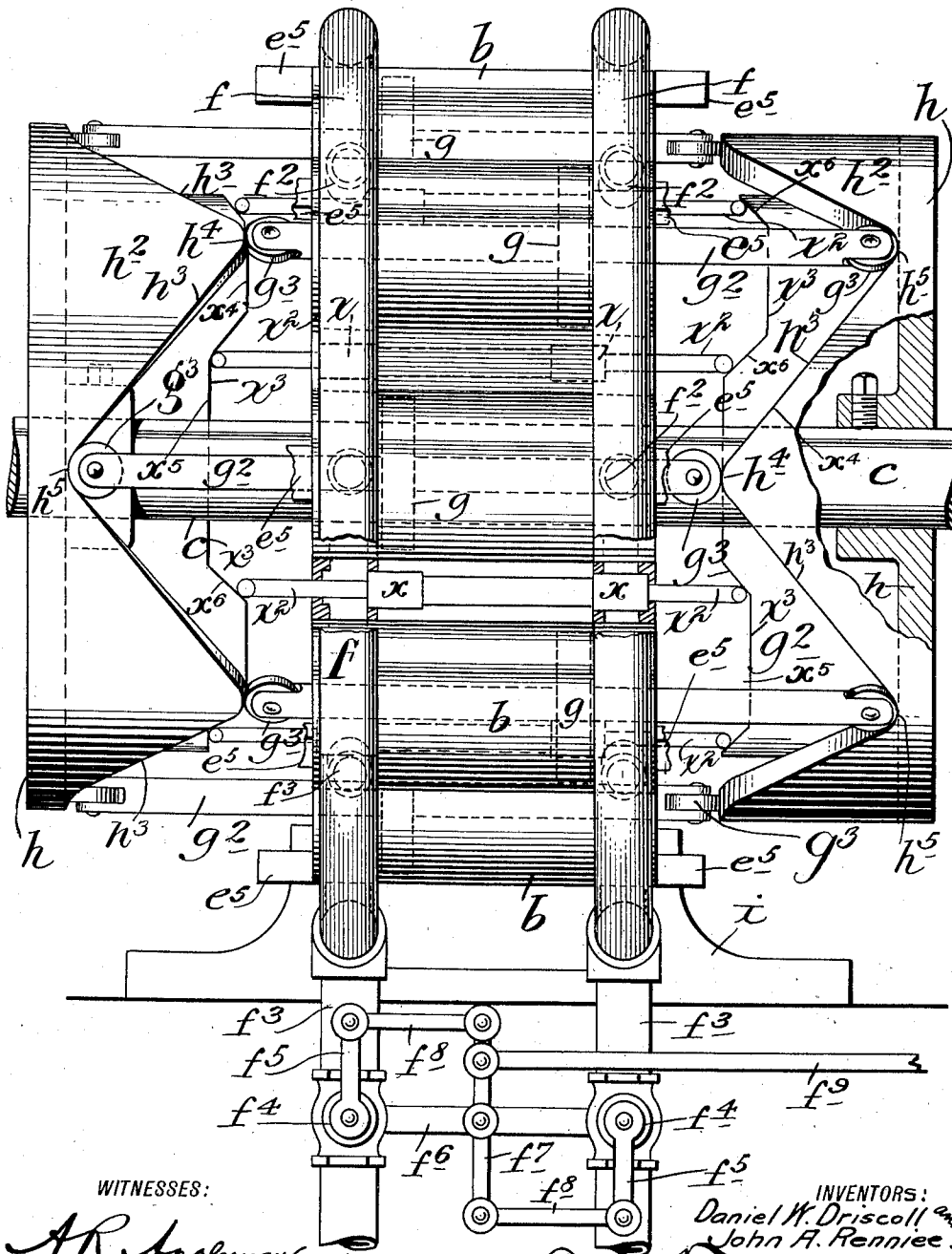
APPLICATION FILED AUG. 3, 1910.

1,003,440.

Patented Sept. 19, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

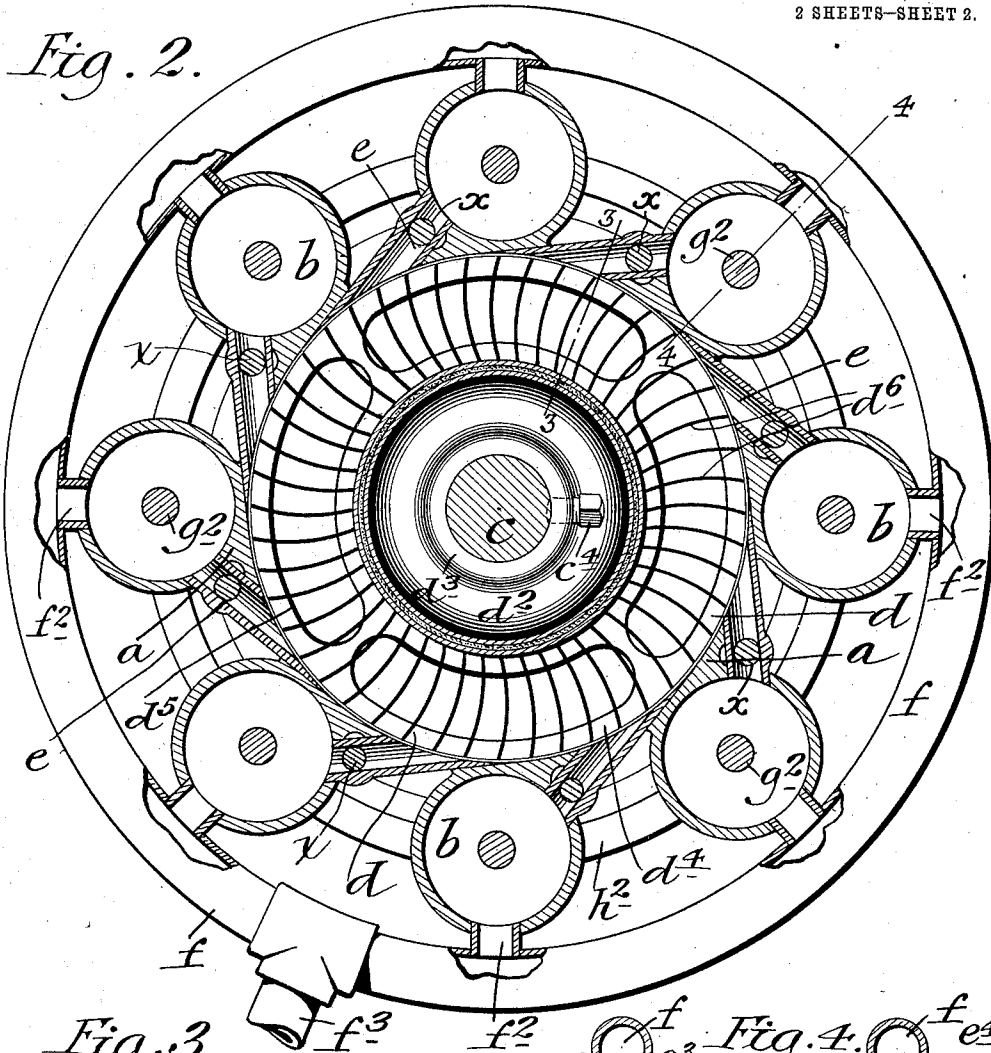
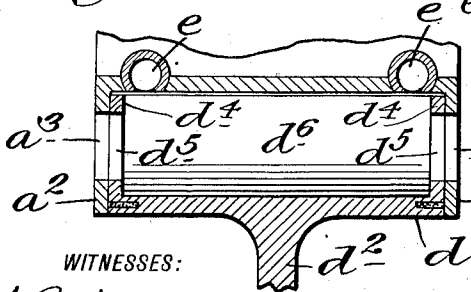


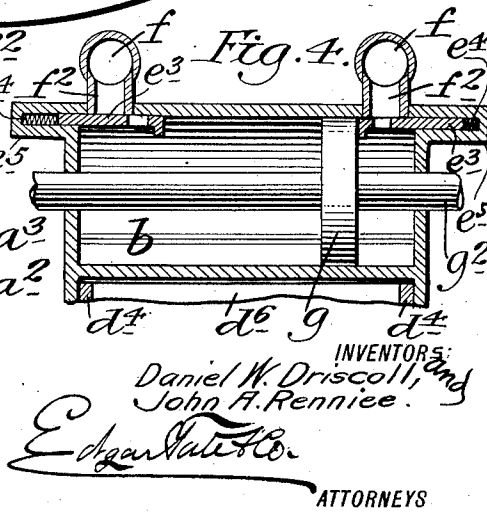
Fig. 3.



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UNITED STATES PATENT OFFICE.

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POWER APPARATUS.

1,003,440.

Specification of Letters Patent. Patented Sept. 19, 1911.

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To all whom it may concern:

Be it known that we, DANIEL W. DRISCOLL and JOHN A. RENNIE, citizens of the United States, and residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Power Apparatus, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to power apparatus or mechanism, and the object thereof is to provide an improved apparatus of this class which may be operated either by steam, air under pressure, gasolene, or water under pressure, and with this and other objects in view the invention consists in a power apparatus of the class specified, constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of our improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a side view of our improved power apparatus with part of the construction in section; Fig. 2 a partial section on the line 2—2 of Fig. 1; Fig. 3 a partial section on the line 3—3 of Fig. 2; and, Fig. 4 a partial section on the line 4—4 of Fig. 2.

In the practice of our invention, we provide a circular casing *a* with which is connected, or in connection with which is formed a plurality of equally spaced cylinders *b*, the axes of which are parallel with the axis of the casing *a*.

Passing centrally through the casing *a* is a shaft *c* with which is connected a turbine wheel *d*, which exactly fits within the casing *a* and is adapted to turn with the shaft within said casing. The wheel *d* may be constructed in any desired manner but, in the form of construction shown, said wheel is provided with a central web *d*² having a hub portion *d*³ and is secured to the shaft *c* by a screw *e*⁴, or in any desired manner. The wheel *d* is adapted to rotate in the casing *a* and is provided with side members *d*⁴, and the casing *a* is provided with side members *a*² which, in the form of construction shown, inclose the side members *d*⁴ of the wheel *d*, and said side members *a*² and *d*⁴ are provided with similar ports *a*³ and *d*⁵ which are adapted to register in the operation of

the apparatus. The wheel *d* is provided with bucket members or similar devices *d*⁶ which may be made in any desired manner, and forming a communication between the opposite end portions of the cylinders *b* and wheel *d* are pipes forming ports or passages *e*.

In closing the cylinders *b* are two circular tubes *f* which are placed in communication with the opposite end portions of the cylinders *b* by ports or passages *f*², and the tubes *f* are provided with supply pipes *f*³ having valves *f*⁴ provided with arms *f*⁵, and extending between the valves *f*⁴ is a transverse bar *f*⁶ to which is pivoted a cross bar *f*⁷ with which are connected link members *f*⁸, and connected with the cross bar *f*⁷ is a rod *f*⁹, and by manipulating the rod *f*⁹, the valves *f*⁴ may be open or closed at the same time as may be desired.

The cylinders *b* are provided with pistons *g* having rods *g*² which pass outwardly through both ends of said pistons, and which are provided at their ends with anti-friction rollers *g*³, and secured to the shaft *c* are circular heads, disks or members *h*, each of which is provided with inwardly directed V-shaped cam members *h*² which are equally spaced. The V-shaped cam members *h*² form continuous undulating tracks *h*³ having innermost points *h*⁴ and outermost points *h*⁵, and on which the anti-friction rollers *g*³ of the piston rods *g*² travel in the operation of the apparatus as hereinafter described, and the arrangements of the heads or members *h* on the shaft *c* is such that the innermost points *h*⁴ of the cam members *h*² on one of the parts *h* are directed midway between the cam members *h*² on the opposite part *h*, this arrangement being clearly shown in Fig. 1, and in the normal position of the pistons *g* in the cylinders *b*, said pistons are arranged in opposite end portions of the alternate cylinders as is also clearly indicated in Fig. 1. The ports or passages *f*² which form a communication between the tubes *f* and the opposite end portions of the cylinders *b* are provided with valves *e*³ to control the inlet of steam or other power medium into said cylinders from said tubes, and said valves are operated in one direction by springs *e*⁴ placed in housings *e*⁵ in which said valves are movable, and in the opposite direction by the pistons *g*.

The ports or passages *e* are controlled by valves *x* formed on or connected with valve

rods w^2 which are movable transversely through said ports or passages and which are operated by internal annular cam tracks w^3 located within the tracks h^3 and also connected with the circular disks or heads h and the cam tracks w^3 consist of innermost and outermost parallel surfaces w^4 and w^5 connected by inclined surfaces w^6 and by means of this construction the exhaust ports or passages e will be opened and closed alternately so as to correspond with the opening and closing of the ports or passages f^2 .

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement.

Suppose the apparatus to be operated by steam; the rod f which may be manipulated in any desired way, is so operated as to open the valves f^4 and steam rushes into the tubes f and this steam passes into the opposite end portions of the cylinder b alternately as will be readily understood, and by reason of the alternate position of the said pistons in said cylinders, the said pistons will be forced in opposite directions, and in this operation the piston rods g^2 also move in opposite directions, and the rollers g^3 bear on the cam surfaces or tracks h^3 and turn the shaft c as will be readily understood, and the power thus obtained may be utilized for any desired purpose. At the same time that the pistons g are operated, as described, there is an alternate exhaust from the opposite end portions of the cylinders b through the ports or passages e into the wheel d or the buckets thereof, and this also aids in the turning of the shaft c , and this last operation of the apparatus prevents the formation of a dead center, or the stoppage of the machine on a dead center.

When it is desired to operate our improved power apparatus by gasoline, the pipes f^3 are connected with a carbureter in the usual manner and suitable valve mechanism provided for operating the apparatus the same as in other machines of the combustion type.

The casing a may be supported on a base i , or in any desired manner, and various changes in and modifications of the various parts of the construction herein described

may be made, within the scope of the appended claims, without departing from the spirit of our invention or sacrificing its advantages.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a power apparatus of the class described, a circular casing provided with a plurality of equally spaced cylinders which are parallel with the axis of said casing, pistons mounted in said cylinders and provided with rods which operate through the opposite end portions thereof, a shaft mounted in the axis of said casing and provided with cam tracks or ways which face toward said cylinders and in connection with which the piston rods operate, a turbine wheel connected with said shaft and rotatable therewith within said casing, means for supplying a power medium to the opposite end portions of said cylinders and exhaust ports or passages connecting the opposite end portions of said cylinders with said turbine wheel.

2. In a power apparatus of the class described, a circular casing provided with a plurality of equally spaced cylinders which are parallel with the axis of said casing, pistons mounted in said cylinders and provided with rods which operate through the opposite end portions thereof, a shaft mounted in the axis of said casing, a turbine wheel connected with said shaft and rotatable therewith within said casing, exhaust ports or passages connecting the opposite end portions of said cylinders with said turbine wheel, means for supplying a power medium to the opposite end portions of said cylinders, means for operating said piston rods, and means for controlling said exhaust ports or passages.

In testimony that we claim the foregoing as our invention we have signed our names in presence of the subscribing witnesses this 1st day of August, 1910.

DANIEL W. DRISCOLL.
JOHN A. RENNIEE.

Witnesses:

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