(No Model.)

D. DUDLEY.

ROTARY ENGINE.

No. 282,505. Patented Aug. 7, 1883.

Fig. 1.

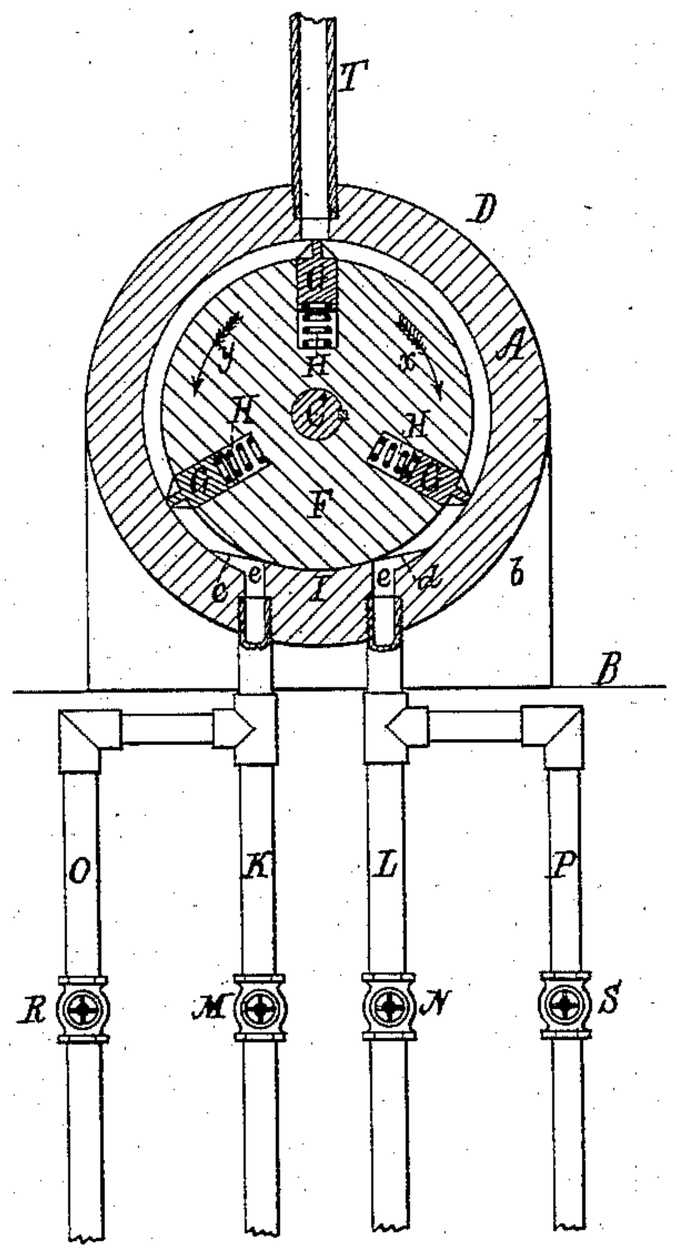


Fig. 2.

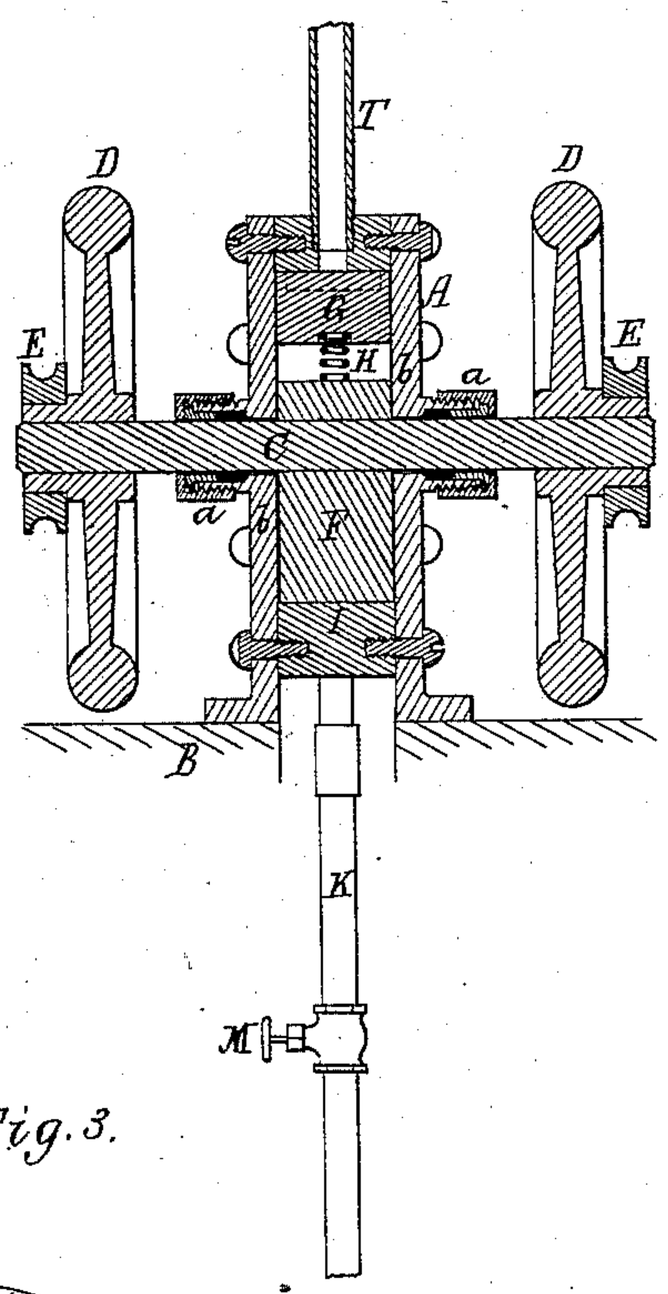
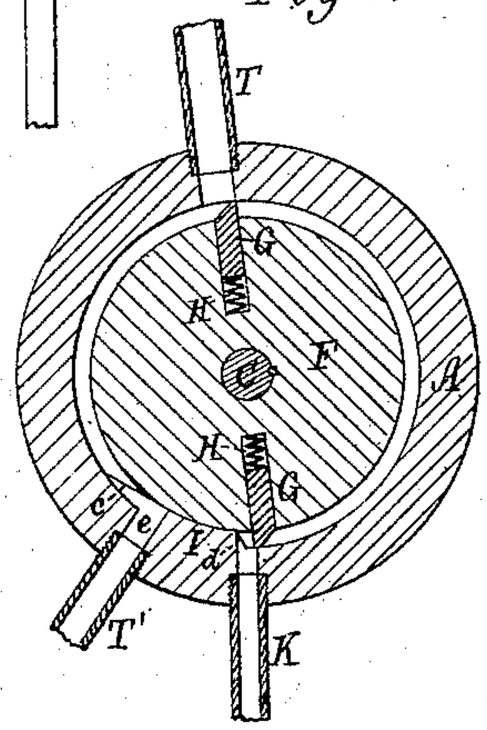


Fig. 3.



Witnesses
S. N. Piper
E. B. Pratt

Inventor.
Dana Dudley.
by R. H. Eddy atty

UNITED STATES PATENT OFFICE.

DANA DUDLEY, OF BOSTON, MASS., ASSIGNOR TO DAVID S. G. DOANE, OF COHASSET, MASS., AND D. A. PLECKER, OF MOUNT CRAWFORD, VA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 282,505, dated August 7, 1883.

Application filed January 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, DANA DUDLEY, of Boston, in the county of Suffolk, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Rotary Engines; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a longitudinal section, and Fig. 2 a transverse section, of an engine containing or provided with my invention, the nature of which is defined in the claims hereinafter presented. Fig. 3 is a section showing the rotary cylinder as having two pistons.

In the said drawings, A denotes a drum, which, when in use, is to be stationary or confined to a floor or support, B. Extending through stuffing-boxes *a a*, projecting from the heads *b b* of the said drum, is a shaft, C, provided with one or more fly-wheels, D D, and one or more driving-pulleys, E E, fixed to it, they being arranged on it in manner as represented in Fig. 2, the shaft being concentric with the drum. On and fastened to this shaft, and within the drum, is a cylinder, F, which has arranged and adapted to move radially in it three pistons, G, each of which is provided with a spring, H, to force it against the inner periphery of the drum, the end of each piston that bears against the drum being rounded or formed angular, as represented. The inner periphery of the drum, for a short distance, is in contact with the circumference of the cylinder, as shown at I, the projection I terminating in inclined planes *c d*, through which, as shown in Fig. 1, are openings *e e*, that communicate with two pipes, K L, each of such pipes being provided with one of two stop-cocks M N. The projection I fits to the periphery of the cylinder, and is or may be termed the "cylinder-bearing." Opening into each of the said pipes K L, between the drum and the stop-cock of said pipe, is one of two pipes O P, each of which is provided with a stop-cock, such cocks being shown at R and S. A pipe or educt, T, leads out of the upper part of the drum.

Fig. 3 represents the cylinder F as provided with but two of the pistons G, it having, besides the induction-pipe K and eduction-pipe T, an auxiliary educt, T′, the latter being arranged to open through the projection or cylinder-bearing I. This figure is to represent the main principle of my invention, which is also shown in Fig. 1, in which the engine is exhibited as constructed to admit of its cylinder being revolved either in one or in the opposite direction by steam. As made, as shown in Fig. 3, the cylinder can be revolved but one way by steam. This principle consists in having besides the main exhaust-educt an auxiliary educt for discharge of the steam, such auxiliary educt being to prevent the resistance due to compression of the steam between the part I and the main educt T after either piston may have passed the said educt and the other is propelling the cylinder by steam let into the space between it and the projection I. The steam enters the drum by the pipe K, and departs from it through the two educts T and T′. Generally speaking, when the cylinder F is rapidly revolving, the steam in advance of a piston does not have time to escape by the main educt, in which case the portion of steam remaining will become cushioned or compressed in the space in advance of the piston and between it and the projection I, and in so doing will offer resistance to the revolution of the cylinder. By having the auxiliary educt T′, this steam will readily escape. Without the auxiliary educt the engine, as shown in Fig. 3, is without novelty.

In regard to the engine represented in Figs. 1 and 2, the pipes K and L are to be supposed to communicate with the steam-boiler, and the pipes O and P to open into the atmosphere or a suitable reservoir or condenser of steam. Under such circumstances, should it be desirable to revolve the cylinder C in the direction indicated by the arrow *x*, we are to close the stop-cocks N and R and open the stop-cocks M and S, in which case the cylinder will be driven in the direction of the said arrow *x*, and will exhaust by the two educts T and P, the steam that may be in advance of such piston after its passage by the main educt T escaping by the other auxiliary educt, P. Should it be desirable to drive the cylinder in the opposite way—that is, in the direction of the arrow *y*—the

stop-cocks M and S are to be closed and the stop-cocks N and R are to be opened. On such being done the cylinder will turn in the direction of the said arrow *y*, the waste steam escaping by the educts T and O.

An engine constructed as described can have its cylinder very rapidly revolved with little or no resistance from steam compressed in advance of a piston and between such and the bearing I.

I claim—

1. The combination of the auxiliary exhaust-educt with the drum and its cylinder-bearing, the cylinder, and its pistons and their springs, and steam-induct and main exhaust-educt, all being adapted and to operate substantially as set forth.

2. The combination of the system of pipes O, K, L, and P, provided with stop-cocks M, N, R, and S, and adapted, as described, with the drum A, provided with the educt T and cylinder-bearing I, and with the rotary cylinder F, and its series of pistons G and their springs, all being arranged to operate substantially as set forth.

DANA DUDLEY.

Witnesses:
R. H. EDDY,
R. H. EADY.