

(No Model.)

4 Sheets—Sheet 1.

G. A. RITSON.
ROTARY ENGINE.

No. 496,900.

Patented May 9, 1893.

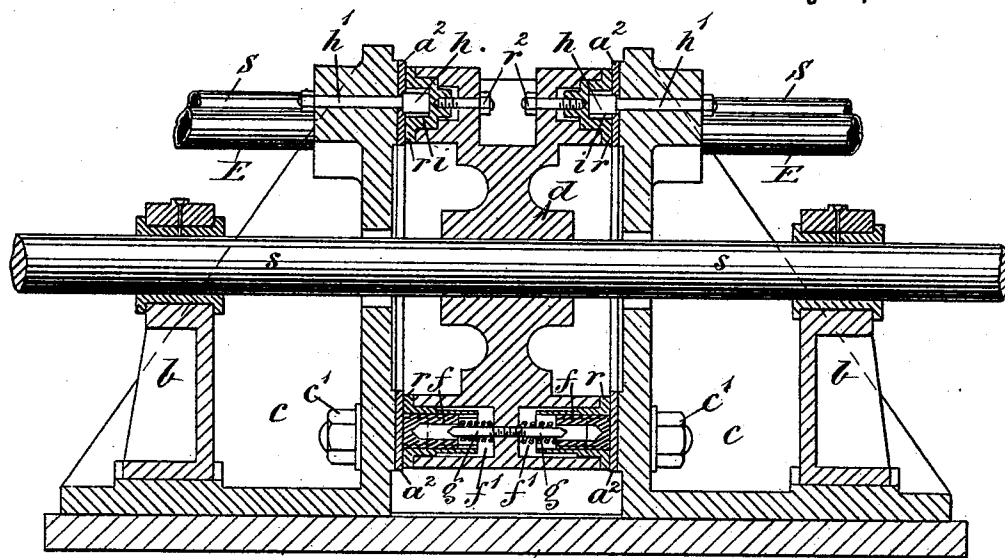


Fig 1 a

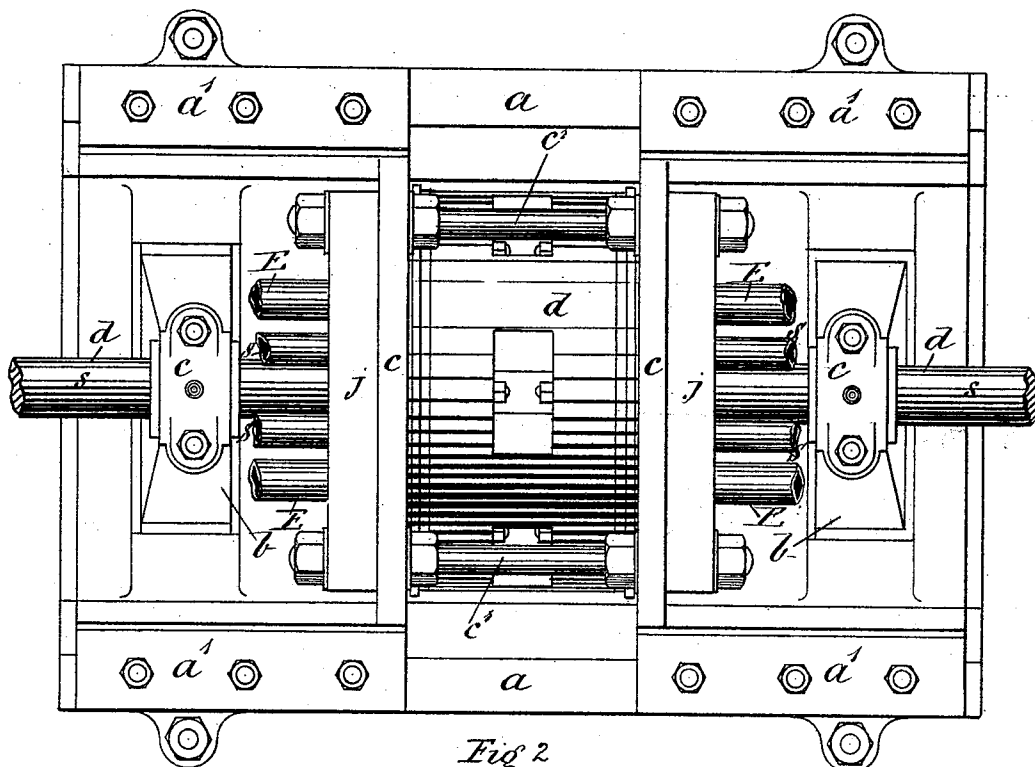


Fig 2

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Henry Hughes junr
W. G. Hughes.

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George Albert Ritson
per Henry Hughes
attorney

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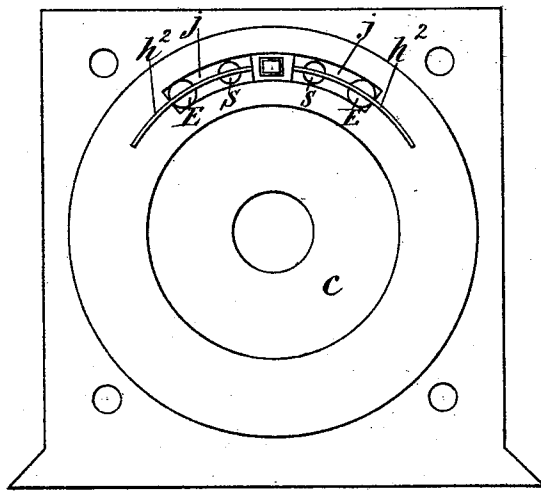


Fig 3

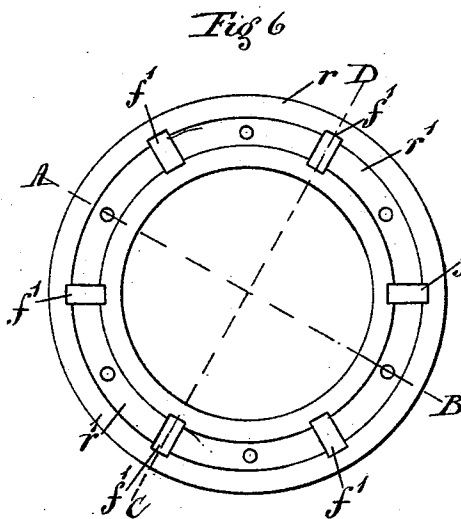
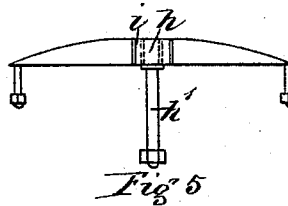
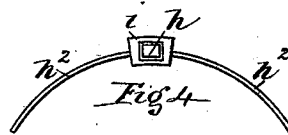


Fig 6

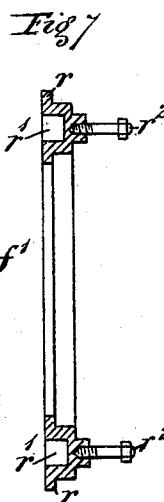


Fig 7

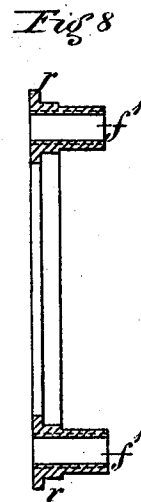


Fig 8

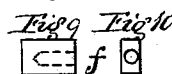


Fig 9 Fig 10

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(No Model.)

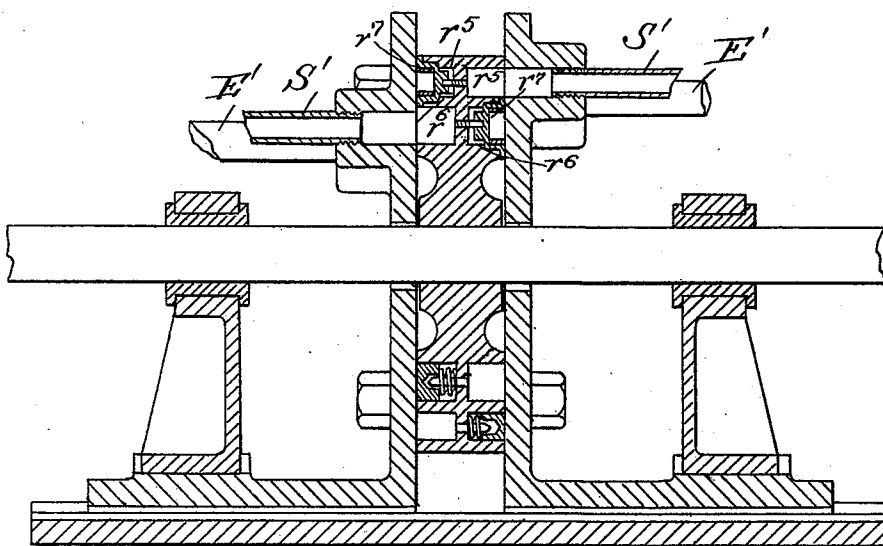
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Fig. 11



Witnesses.

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Per Parsonsley

Inventor

George Albert Ritson
By his attorney
Henry Hughes

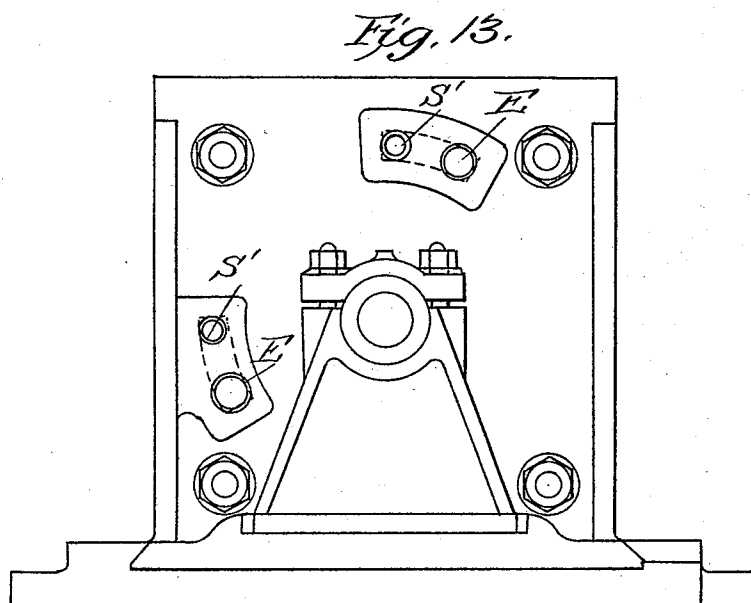
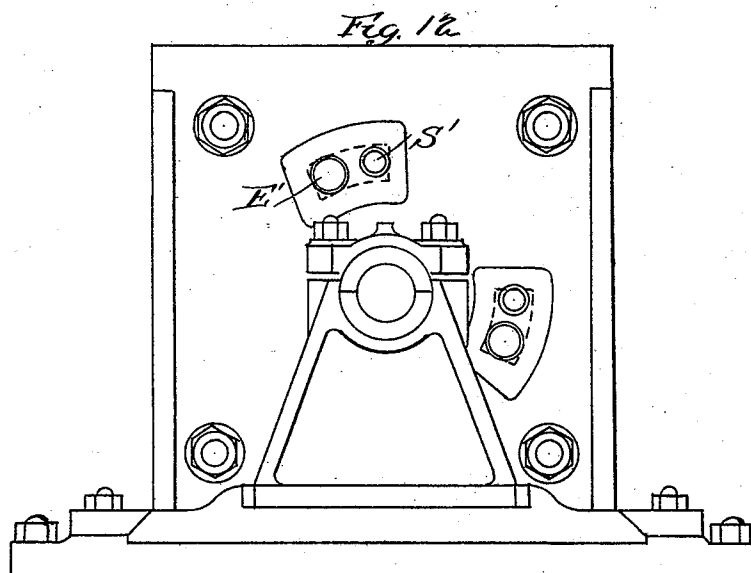
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ROTARY ENGINE.

No. 496,900.

Patented May 9, 1893.



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Henry H. Hughes

UNITED STATES PATENT OFFICE.

GEORGE ALBERT RITSON, OF WELLINGTON, NEW ZEALAND.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 496,900, dated May 9, 1893.

Application filed April 23, 1891. Serial No. 390,136. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ALBERT RITSON, a British subject, residing at the city of Wellington, in the Colony of New Zealand, have
5 invented new and useful Improvements in Rotary Engines, of which the following is a specification.

My invention relates to improvements in rotary engines which can be applied to give
10 motive power to other machines and be driven by steam, water, or other suitable fluids, and the objects of my invention are to produce a rotary engine or machine in which the several parts are simple and inexpensive, the wear
15 and friction upon the working parts small; at the same time that the machine can be easily taken to pieces and the several parts readily repaired or renewed. I attain these objects by the mechanism illustrated in the accompanying drawings in which—

Figure 1, is a vertical section of the entire engine or machine. Fig. 2 is a top view of the same. Fig. 3, is a side view of either of the upright brackets. Fig. 4, is a side view
25 of the cam for actuating the valves. Fig. 5, is a plan of the same. Fig. 6 is a plan of the packing ring for the revolving disk. Fig. 7, is a section of the same through A. B. Fig. 8, is a section of the same through C. D. Fig.
30 9, is an end view of one of the slides or valves. Fig. 10, is a side view of the same. Fig. 11 is a sectional view similar to Fig. 1 showing a modified form of engine in which concentric grooves are used; each having its steam supply and exhaust connections. Fig. 12 is a side
35 view looking from the right of Fig. 11, and Fig. 13 is a similar view looking from the left of said figure.

Similar letters refer to similar parts throughout the several views, and in the following description "steam" means steam, water, or other suitable fluid for giving motive power to the engine.

a, is the foundation plate on which the several parts are carried and which is fitted (by preference) with guides *a' a'*.

b b, are bearings for carrying the driving shaft *s*.

c c, are brackets fitted accurately in the
50 guides *a'*, and having faces *a² a²*, truly turned and fitted so that they may be exactly parallel with one another; these brackets are held together accurately at the correct distance by bolts and nuts *c' c'*.

d, is a disk wheel keyed firmly to the shaft
55 *s*, and fitted with adjustable facing rings *r r*; in each of these facing rings is formed a groove *r'*, (see Figs. 6, 7 and 8) which receives the steam and forms the working groove or cylinder of the machine.

f f, &c., are slides or valves fitting into recesses *f'*, formed in the rings *r*, and dividing the same into segments. These slides are capable of being pushed back into recesses, *f'*,
60 so as to leave the groove *r'*, free when desired; they are held up against the face *a²*, by the springs *g*.

h h, are blocks having attached to them bolts *h'*, by means of which they are firmly bolted to the brackets *c c*, and at their inner
70 end fitting the groove *r'*, so as to completely fill it but at the same time allowing the disk *d*, and its groove *r'*, to revolve freely. These blocks *h*, are by preference fitted with removable faces or shields *i*, which can be easily
75 removed and renewed; moreover if these shields are left with a little play on the top and bottom of the block *h*, the shaft *s*, with disk *d*, may slightly fall without making the groove *r'*, bear too heavily on the said block.
80

S, are the steam pipes to supply the groove *r'*, with steam.

E, are the exhaust pipes for removal of the steam.

j, is a space in the bracket *c*, forming a small
85 steam and exhaust chest on either side of the stationary block *h*.

h² h², are wings or cams forming inclined planes leading up to the block *h*, for a purpose to be hereinafter described.
90

The action of the machine is as follows:—The disk wheel *d*, with its axle or shaft *s*, revolves freely and truly in the bearings *b*, between the brackets *c c*, the steam being admitted by the pipes *S S*, equally and on opposite sides into the groove *r'*, the disk *d*, is
95 in equilibrium and thus the pressure and wear against the faces *a²*, are reduced to a minimum. The stationary block *h*, divides the steam entrance from the exhaust exit so that when live
100 steam is entering on one side of the said block exhaust steam is leaving by the other side of

the same, the steam having entered between the stationary block h , and the slide or valve f , the pressure against the valve f , causes the disk with its shaft s , to revolve by the pressure of the steam on the surface of the valve f , exposed to the steam in the groove r' ; when the said valve reaches the wings or cams h^2 the valve f , is slid back into the recess f' , by means of the said wings or cams thus leaving the steam between the two valves f , free to pass out of the exhaust E , while a fresh charge of steam is pressing against the slide in front of the steam pipe S , and thus every division of the groove r' , of the disk d , formed by the valves is alternately filled and emptied causing the disk d , and shaft s , to revolve and give motive power.

Several slides or valves are shown on the drawings but it is evident that so long as the part of the groove exposed to the exhaust is separated from that exposed to the steam the number of slides is immaterial; but the more slides there are the less liability to leakage and waste of steam.

It will be seen from the drawings that there is an exhaust pipe and steam pipe situated on either side of the stationary block h , by which the engine can be worked in either direction; if the exhaust pipe on the right and the steam pipe on the left are closed the machine will revolve to the right and vice versa if the exhaust pipe on the left and the steam pipe on the right are closed the machine will revolve to the left; and thus a simple reversing gear is obtained. If, however, the engine is not required to be reversible one steam pipe and one exhaust pipe only need be provided on either side of the block h , and thus simplify the machine. It will also be understood that instead of one groove r' , two or even a series of concentric grooves with their sliding valves and blocks may be made use of to actuate the machine thus giving increased power, or in the case of two concentric grooves one may be made to actuate the machine in one direc-

tion and the other to reverse it giving another form of reversible engine.

In Fig. 11 I show concentric grooves r^5 r^6 with facing rings r^7 similar to those before described. Each groove has its independent steam supply and exhaust connections as shown in Figs. 11, 12 and 13 at S' , E' .

I am aware that prior to my invention rotary engines have been operated in various ways; I do not therefore claim such a machine broadly but

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

1. In combination, the shaft S , the rotary disk thereon, the brackets C , C , through which the shaft passes, said brackets, being adjustable longitudinally of the shaft toward and from the disk the grooves in the disk's lateral faces, the valves arranged in the grooves and arranged to move toward and from the stationary brackets, the blocks h projecting into each of said grooves and supported on the adjustable brackets, the cam wings extending concentrically of the grooves on each side of the blocks and the steam supply and exhaust pipes extending through both of the brackets to act on both sides of the disk simultaneously, substantially as described.

2. In combination, the shaft, the disk thereon, having a groove in its lateral face, the bracket secured to the frame and fitting against the grooved face of the disk, the facing ring secured adjustably in the said groove and having a groove r' in its face and recesses f' , the spring valves working laterally in the said recesses, the block h secured to the bracket and projecting into the groove of the facing ring, the wings on each side of the block and the steam supply and exhaust pipes, substantially as described.

GEORGE ALBERT RITSON.

Witnesses:

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HENRY HUGHES, Jr.