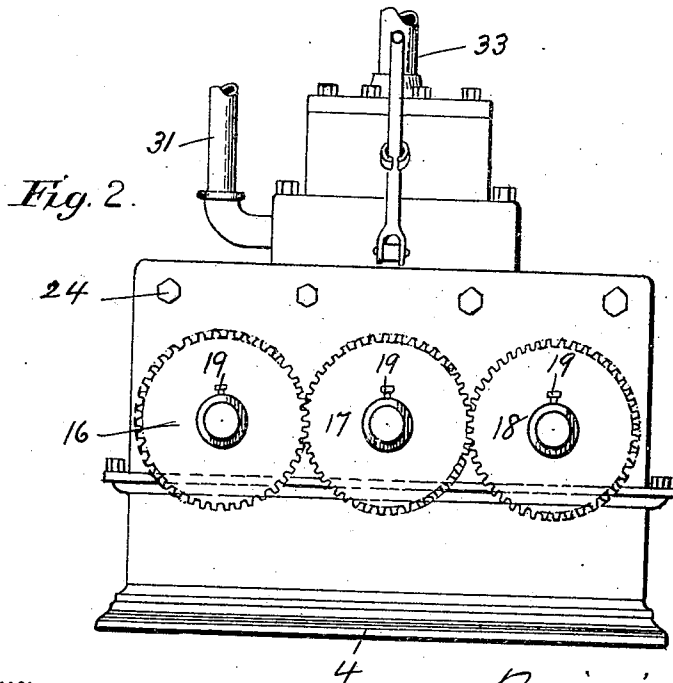
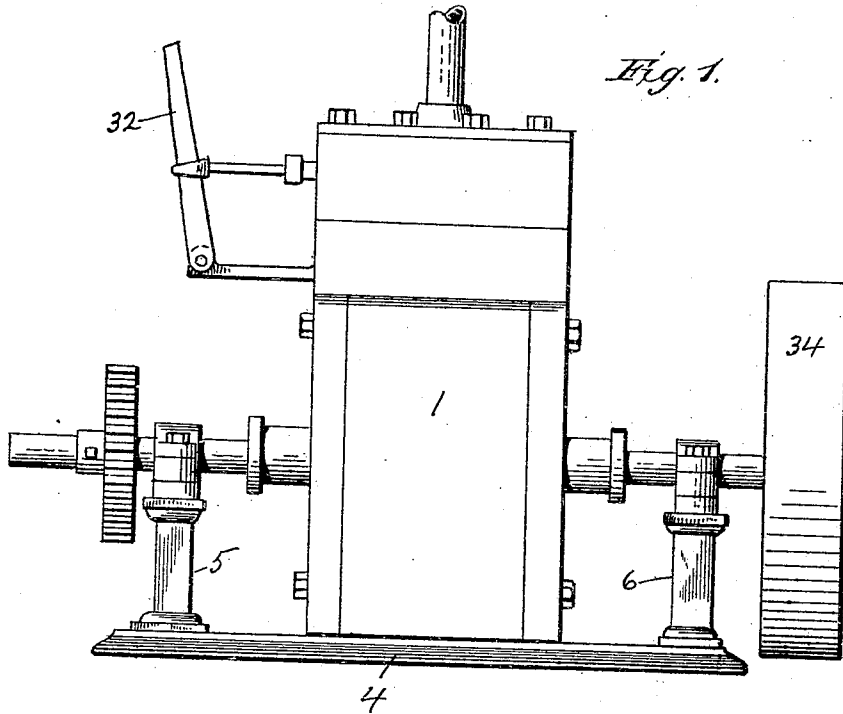


B. F. WICKERSHAM.
 ROTARY ENGINE.
 APPLICATION FILED MAY 18, 1909.

958,571.

Patented May 17, 1910.

4 SHEETS—SHEET 1.



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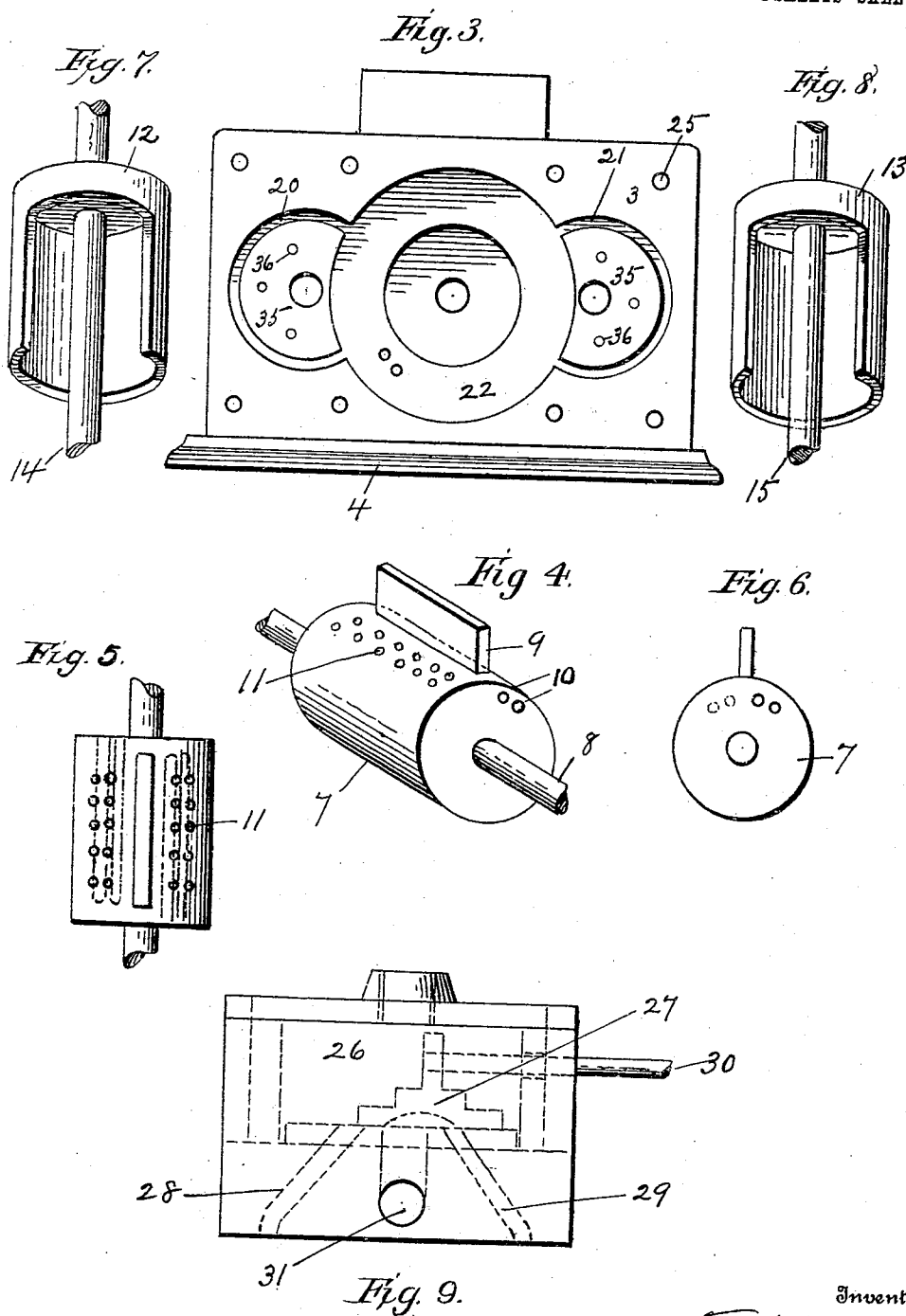
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Fig. 10.

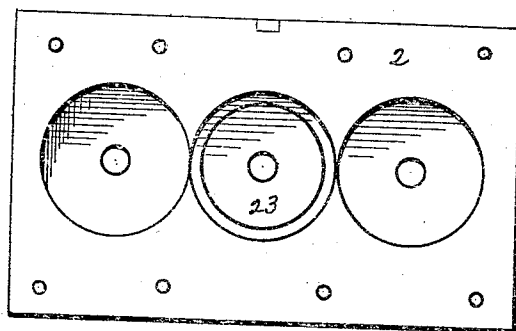
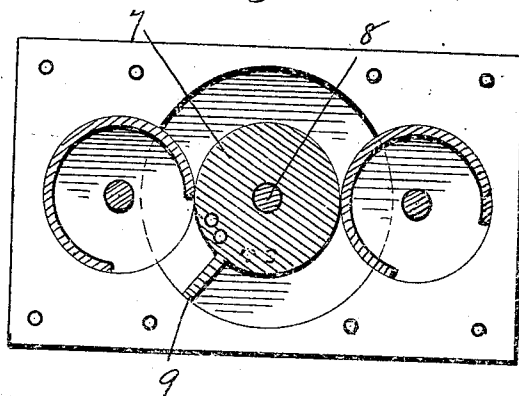


Fig. 11.

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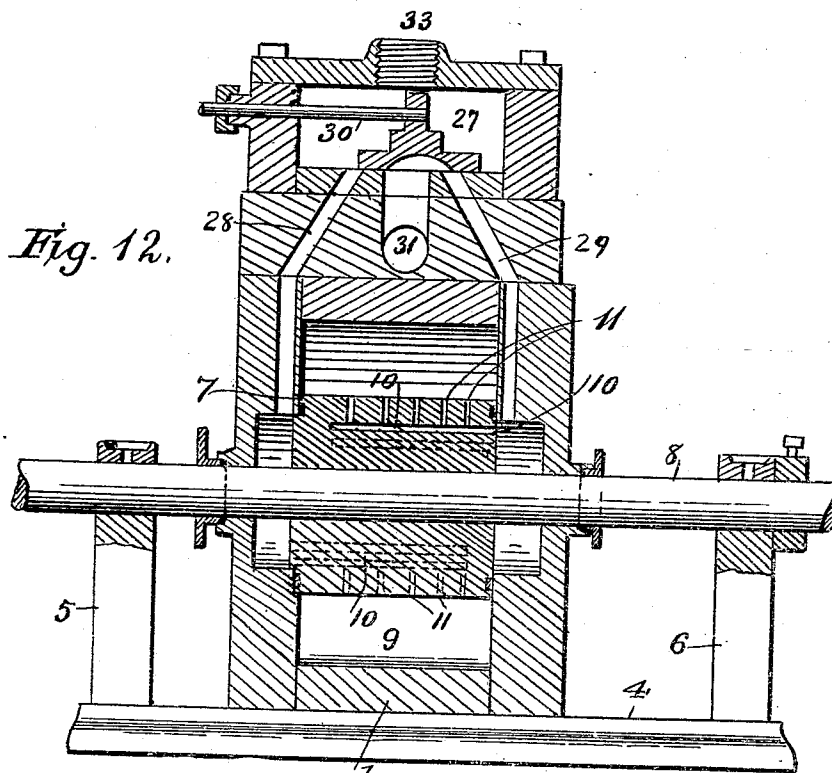


Fig. 12.

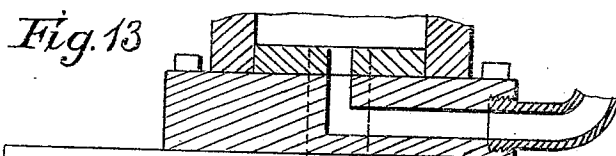


Fig. 13

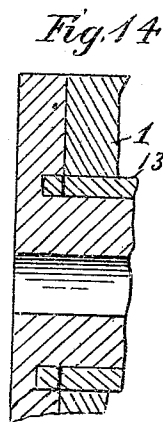
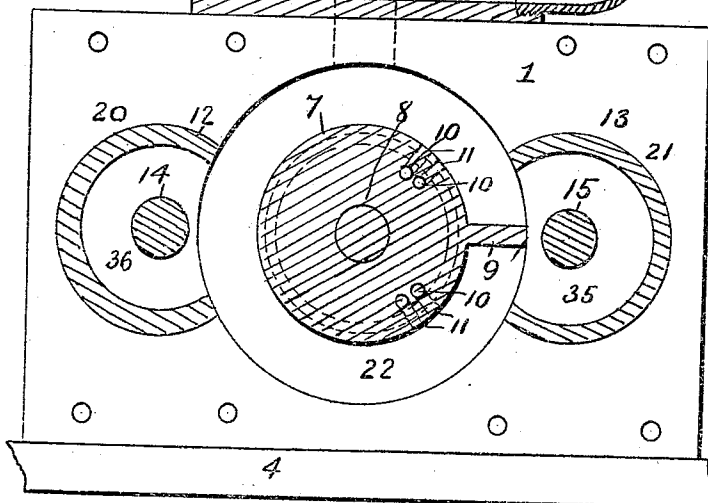


Fig. 14



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UNITED STATES PATENT OFFICE.

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TO THOMAS B. WALKER AND ONE-THIRD TO JOHN PUGH.

ROTARY ENGINE.

958,571.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed May 18, 1909. Serial No. 496,834.

To all whom it may concern:

Be it known that I, BENJAMIN FRANKLIN WICKERSHAM, a citizen of the United States, residing at Patoka, in the county of Marion and State of Illinois, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

My invention relates to rotary engines; and has for its object to so construct the device that it will have but few parts, may be easily assembled and disassembled, will be direct and positive in operation, and may be economically manufactured.

In the drawings forming a part of this specification, and in which like symbols of reference represent corresponding parts in the several views:—Figure 1 is a side elevation of the device; Fig. 2 a view taken at right-angles to Fig. 1; Fig. 3 a view of one of the side plates, showing the abutment guides; Fig. 4 a perspective of the propeller; Fig. 5 a top view of the propeller; Fig. 6 an end view of the propeller; Figs. 7 and 8 views of the two abutments; Fig. 9 a view of the steam chest and reverse; Fig. 10 is a transverse section through the propeller and abutments; Fig. 11 is a view of the front plate; Fig. 12, a longitudinal section through the main casing; Fig. 13 a transverse section through the casing; and, Fig. 14, a detail section through one of the rotary abutments.

1 denotes the steam cylinder; 2 and 3 side-plates of the same; 4 a base-plate; 5 and 6 supporting pedestals or pillars; and 7 the propeller.

8 is the shaft of the propeller journaled in bearings in pedestals 5 and 6; 9 a wing on the propeller; 10 steam inlets; and 11 steam outlets formed in the propeller, the outlets being at the opposite ends of the same.

12 and 13 are the abutments or steam cut-offs, the same having shafts 14 and 15.

16, 17 and 18 are gears on ends of shafts 8, 14 and 15, for the purpose of causing an interaction between the propeller and abutments. These gears are held in place by set-screws 19.

20 and 21 are annular grooves formed in the back plate of casing by cylindrical guides 35, fastened by screws 36, the same to act as guides for abutments 12 and 13.

22 and 23 represent spaces at the end of main propeller; 24 are bolts which hold the

device together; and 25 perforations to receive the bolts 24.

26 is the steam chest; 27 slide valve, controlling steam inlet ports 28 and 29; and 30 reverse stem.

31 is the exhaust pipe; 32 the lever to operate slide valve to reverse engine; 33 the steam inlet; and 34 the drive-wheel.

The operation of the device will be apparent from the foregoing. The cut-offs answer also for abutments, and hold steam away from exhaust until other abutment gets in its proper position. Each abutment or cut-off is in each two-thirds of the time of revolution in operation. The proper relation of the movement of the abutments is of course controlled by the gearing, and the engine is reversed by the lever, when desired.

The steam goes into each end of propeller through ports 28 and 29, Fig. 9, and after making one revolution leaves roller from other end. The slide valve is, of course, used for exhaust and to reverse engine.

Having now fully described my invention, what I claim as new, and desire to secure by Letters-Patent, is:—

1. In a rotary engine, a propeller formed with a longitudinal rib or wing and having a steam inlet in both its faces or ends, said inlets being on opposite sides of the rib or wing and extending to the circumference of the propeller but not to its opposite faces, and cylindrical abutments adapted to work in conjunction with the propeller.

2. In a rotary engine, the combination with a main casing, of a propeller working therein, hollow rotary abutments having cut-away portions, shafts connected to the abutments, and annular guides formed with bearings, said bearings adapted to receive the abutment shafts, so that the guides may be received in and control the abutments.

3. A rotary engine, consisting of a main casing, a propeller journaled therein, hollow cylindrical abutments having a shaft and cut-away portions, said abutments working in conjunction with the propeller, annular guides having bearings for the shafts of the abutments and adapted to be received in and direct the abutments, inlets for the steam, and an exhaust.

4. A rotary engine, consisting of a main casing, a propeller therein, said propeller

having steam inlets and outlets in its ends and circumference but not extending to its opposite faces, a shaft supporting the propeller, hollow cylindrical cut-offs having
 5 shafts journaled in the casing, gearing connecting the shafts of the propeller and cut-offs, a steam chest, inlet ports for the steam leading from the steam chest to the ends of the propeller, an exhaust, a slide valve for
 10 controlling the inlets, and a lever for operating the slide valve.

5. A rotary engine, consisting of a main casing, a propeller journaled in said casing, said propeller formed with a longitudinal
 15 wing and ports at its ends and circumference, hollow cylindrical abutments adapted to work in conjunction with the propeller,

shafts carrying said abutments, annular guides for the abutments, said guides having bearings formed in the same to receive 20 the shafts of the abutments, a steam chest, ports leading from the steam chest to the ends of the main propeller, a valve to control said ports, an exhaust, a drive-wheel connected to the main shaft, and gearing con- 25 necting the shafts of the propeller and abutments.

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

BENJAMIN FRANKLIN ^{his} X ^{mark} WICKERSHAM.

Witnesses:

WM. ELDER,

G. L. CHILTON.