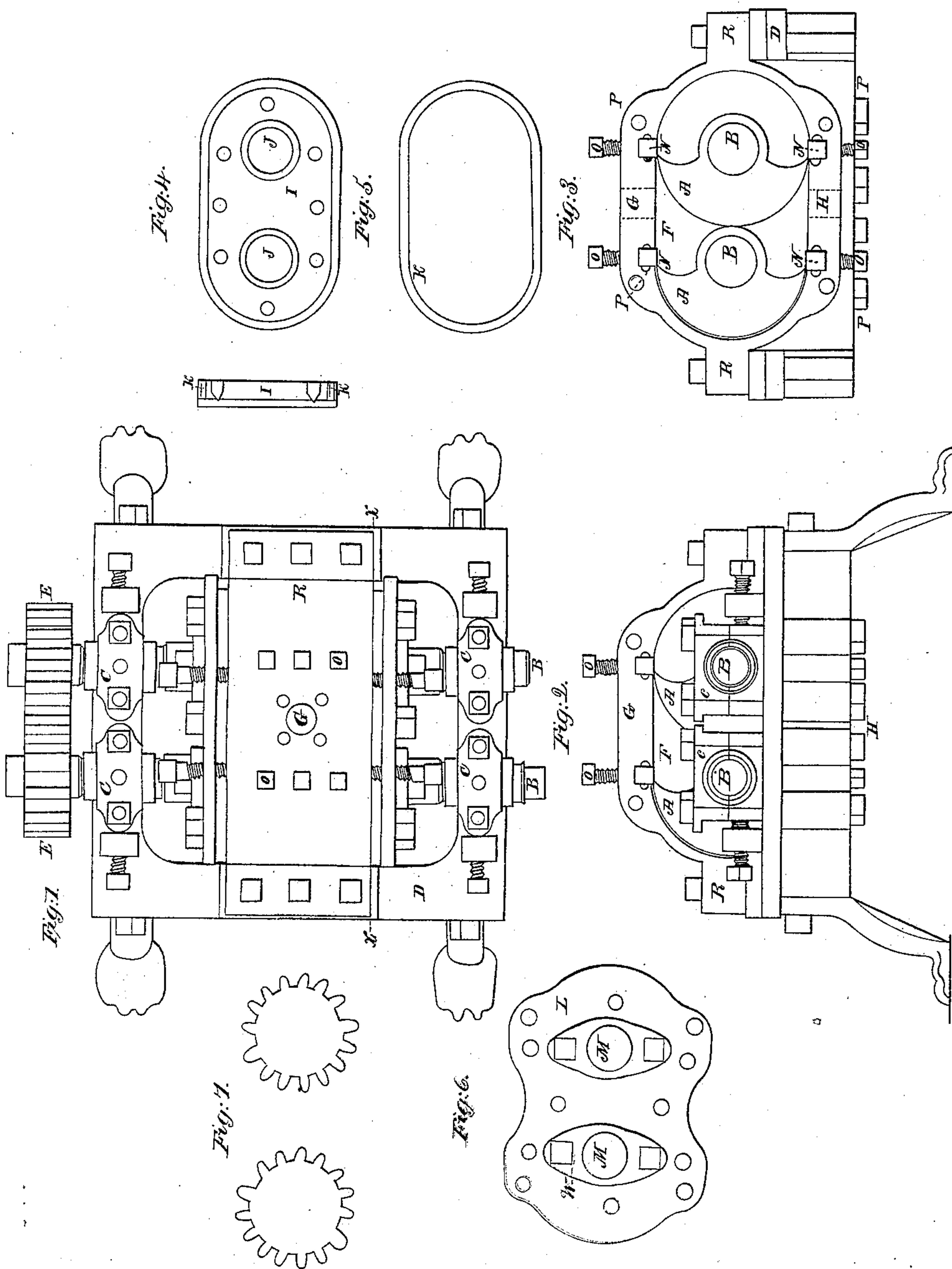


Baker & Baldwin,
Rotary Steam Engine.
No 1,295. *Patented Aug. 21, 1839.*



UNITED STATES PATENT OFFICE.

WM. H. BAKER AND SAMUEL H. BALDWIN, OF COHOES, NEW YORK.

ROTARY STEAM-ENGINE.

Specification of Letters Patent No. 1,295, dated August 21, 1839.

To all whom it may concern:

Be it known that we, WILLIAM H. BAKER and SAMUEL H. BALDWIN, of Cohoes, in the county of Albany and State of New York, have invented a new and useful Improvement in Rotary Steam-Engines and Pumps, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a top view of the engine. Fig. 2 is an end view, the end plate of the chamber being removed. Fig. 3 is a section at the line $x x$ of Fig. 1; Fig. 4, packing plate; Fig. 5, packing ring; Fig. 6, end plate; Fig. 7, gearing.

Similar letters refer to similar parts in the several figures.

This engine consists of two revolving segment pistons A A turning in opposite directions in such manner that while one is acting as a piston and receiving the action of the steam the other is acting as a valve in shutting off the steam from the same, and so alternately, their axles B B being parallel and turning in suitable boxes C supported on a convenient frame D and having a cog wheel E (one half of which being of greater diameter than the other) fixed to the end of each axle, said cog wheels working into each other, the circumference of the smaller segment working into the circumference of the larger segment of the cog wheel, by which an unequal motion, hereafter described, is given to the pistons necessary to form a tight joint between them as they revolve. These segment pistons are inclosed in a tight chamber F having straight parallel sides and curved ends, made in two parts, or in one part, bolted to the frame; if made in two parts, as represented in the drawing, to be bolted together by screw bolts passing through flanges R. An aperture G is made in the upper side for admitting the steam and another H in the under side for discharging it, or vice versa, provided with the ordinary four way valve for regulating the admission and discharge of the steam, said openings to be used alternately as occasion may require for admitting and discharging the steam for reversing the motion of the engine. The ends of this steam chamber are secured by ordinary metallic and hemp packing, plates, screws, and stuffing boxes. The metallic packing may consist of a plate such as that represented at I, Fig. 4, made to fit the

inside of the chamber, which plate having two rounded apertures J to admit the axles and stuffing boxes. This plate is also turned down or cut away near the edge, so as to leave a shoulder around it to admit a sufficient quantity of hemp packing, as well as a ring K, Fig. 5, for compressing the same close against the inside of the chamber, so as to form a steam tight joint, and after the metallic plate with its hemp packing and ring is put in its proper place in the chamber it is secured by means of an external plate L, Fig. 6, screwed firmly by screw bolts to the end of the chamber, having also round apertures M for the axles and stuffing boxes for rendering the joints tight. The other end of the chamber is secured in a similar manner, so that the chamber when thus formed shall be completely steam tight. Inside said steam chamber there are four or more parallel metallic packing blocks N, Fig. 3, running parallel with the axles of the revolving pistons and placed in channels formed in the inside of the steam chamber and regulated by screws O from the outside. Grooves P are made at the sides of said channels, into which are placed hemp packings pressing against the sides of the metallic packing blocks. The diameter of the curved ends of the steam chamber is greater than the diameter of the pistons. Therefore the latter never touch the former as they revolve, but only touch the metallic packing blocks N and each other.

The gears or cog wheels E, Fig. 7, are of a peculiar formation and may be called cam gears, one half of each cog wheel being the segment of a circle of a greater diameter than the other half, the pitch lines of the two segments being of the same length to cause them to run together. They are so arranged on the axles that the small part of one wheel shall gear into the large part of the other, in order to cause the points of the segment pistons to form a tight joint in passing each other to prevent the escape of the steam, for the segment pistons being less than a semi-circle in passing each other would cause both joints to open if they had not an unequal motion arising from said unequal size of the segments of the gear and consequent extension of the points of the pistons as they revolve. Now suppose the four points of the segment pistons to be in a straight line there would be an open joint where the two inner ends of the seg-

ment pistons extended over to their small diameters, if it were not for giving the segment pistons an unequal motion by means of said gearing, which causes one of the segment pistons to slacken its pace while the other continues its regular motion, thereby causing the end of the segment piston having a regular motion to touch the small curve of the opposite segment piston before its corresponding end leaves the smaller curve of the regularly moving segment piston. In case these segment pistons should wear at their bearing surfaces they may be again closed or brought nearer together by means of horizontal screws, which move the boxes of the axles horizontally toward each other.

This engine may be used as a force pump with great effect.

The invention claimed and desired to be secured by Letters Patent consists in—

1. The mode of keeping the joints tight between the segment pistons as they revolve by means of the segment or cam gearing on the axles of the segment pistons which gives to the pistons unequal velocities as they revolve.

2. In the arrangement of the parallel metallic packings against which the segment pistons revolve, regulated by screws from the outside of the chamber, in combination with the hemp packings at the sides of said metallic packings as described.

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