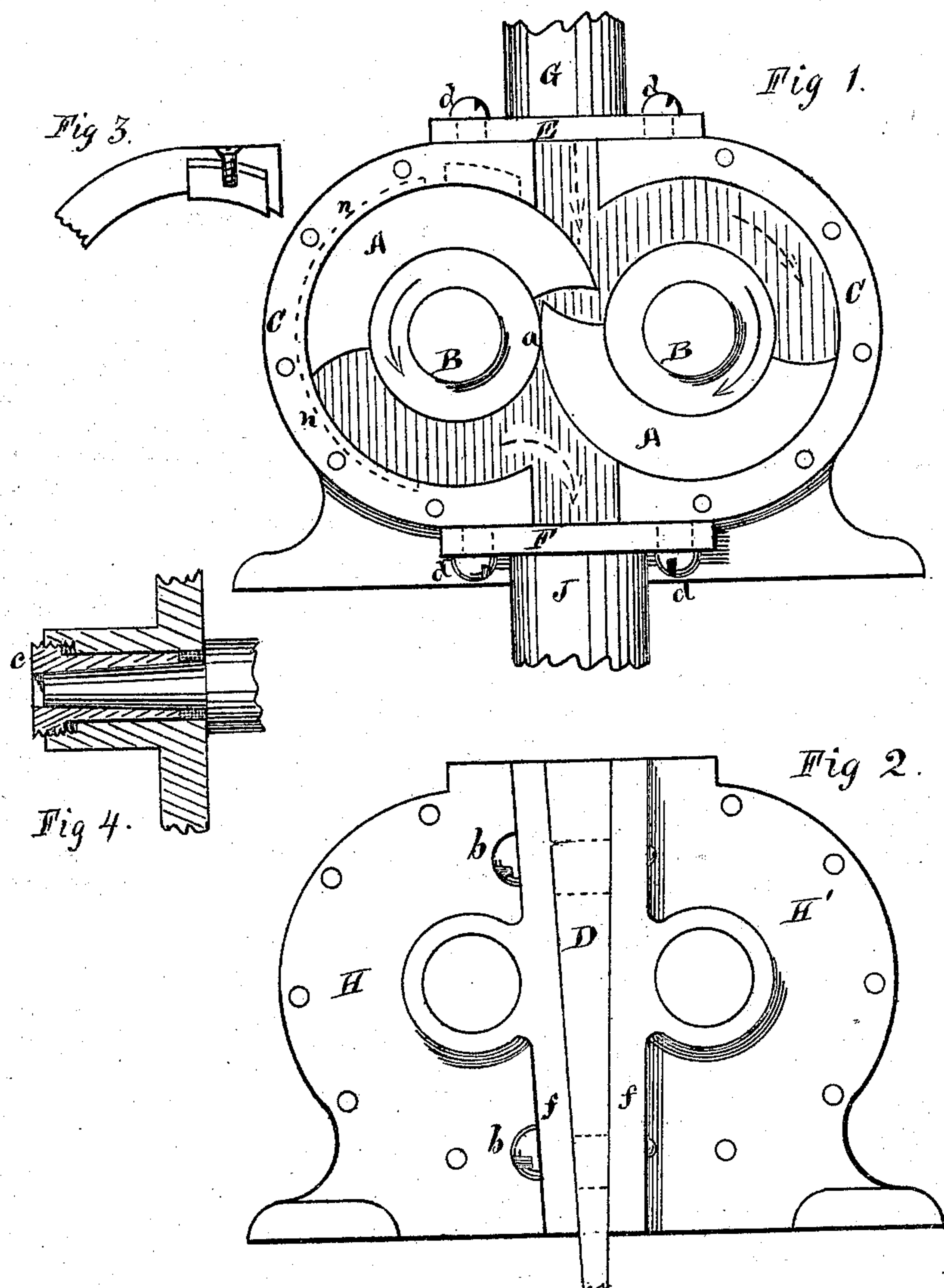


J. C. SPENCER.
Rotary-Engines.

No. 143,936.

Patented Oct. 21, 1873.



Witnesses.
 Geo. B. Selden.
 G. J. Hughes.

Inventor.
 James C. Spencer.
 By *Wm. C. Coughlin*
Att'y.

UNITED STATES PATENT OFFICE.

JAMES C. SPENCER, OF PHELPS, NEW YORK, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO JABEZ K. BABCOCK, CASSIUS M. MILLER, AND EDWD. C. HOFF, OF SAME PLACE.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. 143,936, dated October 21, 1873; application filed August 26, 1873.

To all whom it may concern:

Be it known that I, JAMES C. SPENCER, of Phelps, in the county of Ontario and State of New York, have invented certain Improvements in Rotary Steam-Engines, of which the following is a specification:

The nature of this invention will be better understood by reference to the drawings and specification. It consists essentially in the employment of two half-cylinders, in duplicate, of peculiar formation, the shafts of which are parallel and are geared together, in combination with a contractible shell or case.

Figure 1 is an end elevation of the engine, with that head removed. Fig. 2 is a front elevation of either head. Fig. 3 shows a modification. Fig. 4 represents a conical box for the piston-shafts.

The object of this invention is to provide a rotary engine that shall be simple in construction, cheap, and durable.

A is the pistons; B, the shafts; C, the cylindrical case; H and H', the heads; D, the adjustable wedges; E F, the caps which connect the two sections of the shell or case C, and through which the induction and eduction or exhaust pipes G and J lead.

I divide the heads in two parts, as shown in Fig. 2, and provide their contiguous edges with a suitable flange, *f*, to receive the clamping-bolts *b*. These edges are dressed true, and the wedge D is fitted and placed between them, as shown, where it is secured by the bolts *b*. The inner face of the built-up head is then dressed off. The case C, after having its edges dressed, is bored out to correspond with the exact diameter of the rotary pistons A. These are formed or shaped as shown, and are turned off exactly the same size as the inner diameter of the shell. The wings or pistons A may be made separately and bolted to the shafts B, or the shafts and pistons may be cast together. In either case the shaft should be nicely turned and fitted where its surface at *a* impinges upon that of the piston as they revolve together. The distance between the centers of the shafts must correspond exactly with half the diameter of the circle of the piston added to half

that of the shaft. These diameters may be varied, of course, as may be desired.

The shell or case may be recessed out, if desired, as indicated by the dotted line *n*, Fig. 1. It might be found desirable to apply an adjustable section in the case at each side of the live-steam and the exhaust ports, as represented in Fig. 3, which could be adjusted with great accuracy to act as a fixed packing for the pistons to work against.

The caps E and F are secured to the two sections of the case by suitable bolts *d*. The holes through the flange of these caps should be slotted, so as to permit the opposite segments of the case to be drawn together, or toward each other, when necessary, which is done by loosening the bolts *b*; the holes for which through the wedges being slotted, said wedges are driven out until the desired contraction between the two pistons and shafts is effected, when the bolts *b* are retightened. This compensates for any wear between the periphery of the pistons and the shafts. The latter are geared together, so as to insure the proper relative position of the two pistons at all times.

The shafts might be turned somewhat conical and provided with corresponding-shaped boxes *c*, the latter being fitted to screw in cylindrical bearings in the heads, as shown in Fig. 4.

It will be seen that, as the steam enters from the pipe G, it forces the pistons to turn from each other in the direction of the arrows in Fig. 1.

This engine is equally applicable for a pump.

What I claim as my invention is—

1. The combination, in rotary steam-engines, of the shafts B, geared together, and rotary segmental pistons A, with the contractible heads H and H', and shell or case C, for the purposes set forth.

2. The heads H and H', divided vertically, and provided with an intervening adjustable wedge, D, in combination with the segmental pistons A, for the purposes set forth.

Witnesses: JAMES C. SPENCER.

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