

(No Model.)

G. H. WESTON.
ROTARY STEAM ENGINE.

No. 426,553.

Patented Apr. 29, 1890.

Fig:1

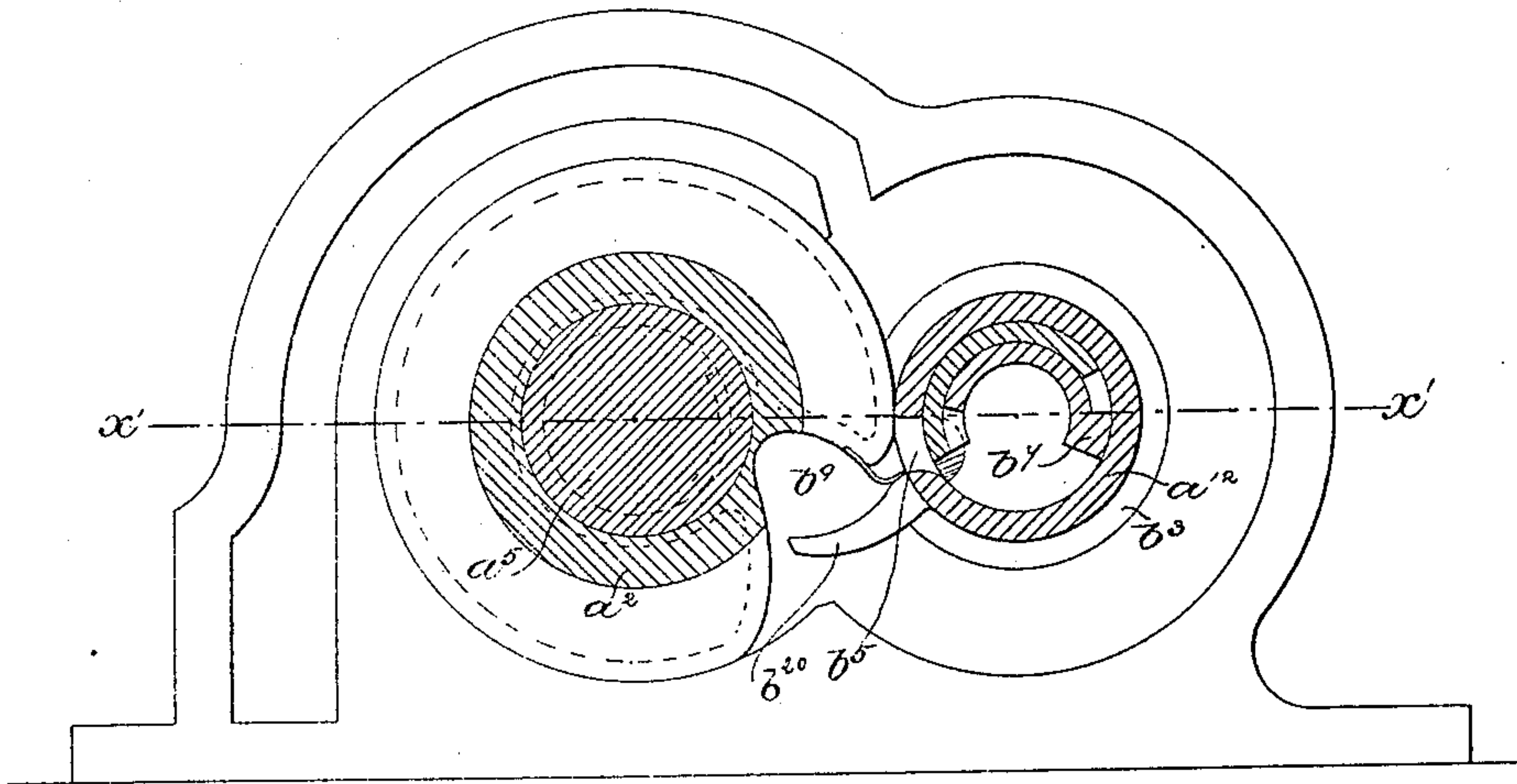
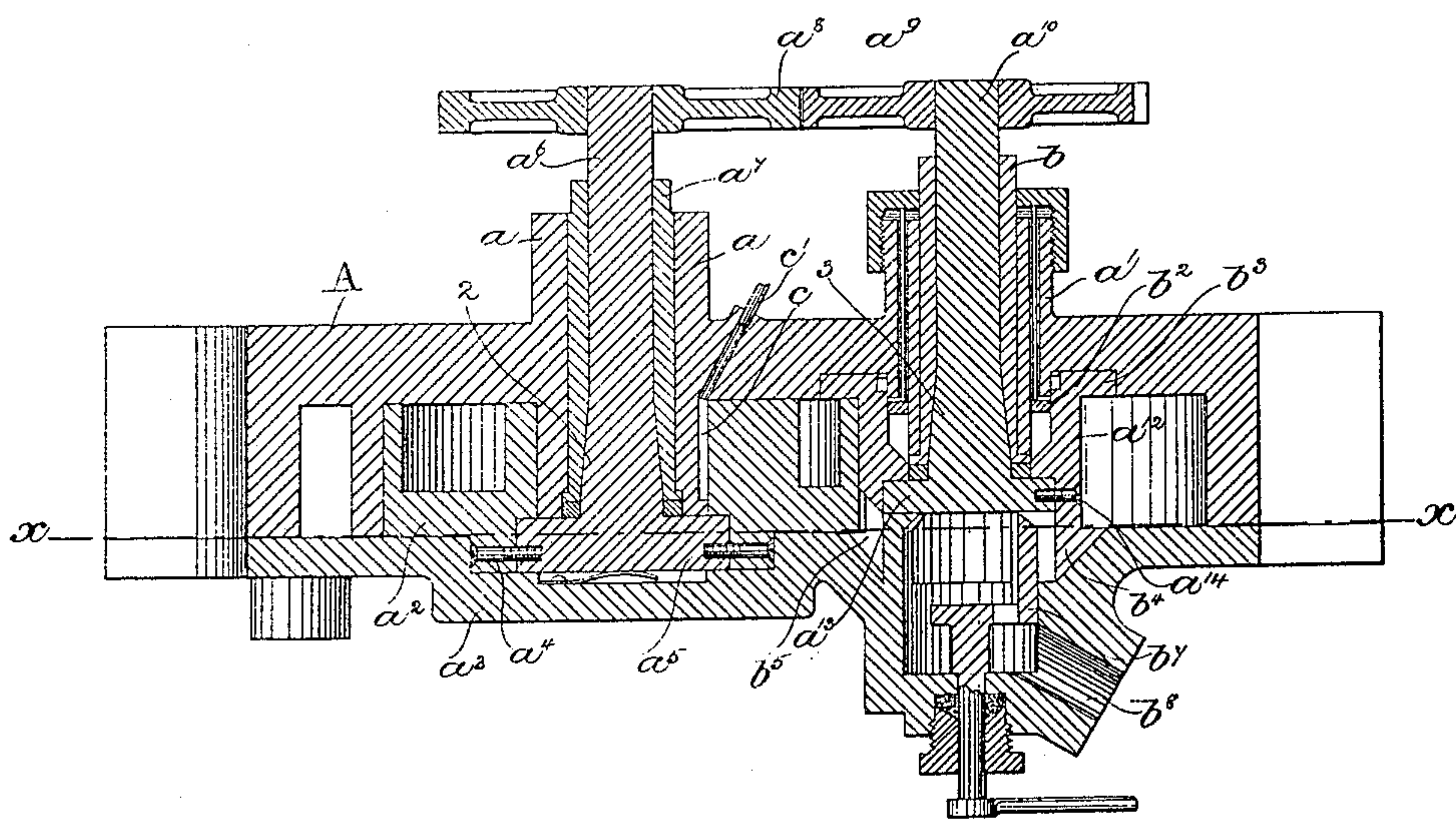


Fig: 2.



Witnesses:

Fred. S. Greenleaf
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Inventor.

George H. Weston.
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UNITED STATES PATENT OFFICE.

GEORGE H. WESTON, OF BOSTON, MASSACHUSETTS.

ROTARY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 426,553, dated April 29, 1890.

Application filed July 23, 1889. Serial No. 318,352. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. WESTON, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Rotary Steam-Engines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to rotary engines, and is an improvement upon the engine shown and described in another application, Serial No. 291,764, filed by me November 27, 1888, and has for its object to improve the construction of the same.

4177.6215 One feature of my present invention consists in providing between the abutment and the bearing for the shaft of the said abutment a steam space or chamber into which steam is admitted to effect a counterbalance of pressure of the steam admitted through the piston-valve, thereby relieving the bearings from pressure and diminishing the wear upon the same, and as a result prolonging the life of the engine.

Another feature of my invention consists in providing the piston-valve with an annular flange to increase the strength of the said valve, and with an inlet-port of increased area, by which a larger amount of steam may be admitted through the port to act on the abutment, as will be described.

The particular feature in which my invention consists will be pointed out in the claims at the end of this specification.

Figure 1 is a transverse section of a rotary engine embodying my invention, the section being supposed to be taken on line xx , Fig. 2; Fig. 2, a section of the engine shown in Fig. 1 on the line $x'x'$.

Referring to Fig. 2, the cylindrical case A is provided with the bearings $a a'$, the bearing a' being extended into the case and having mounted upon it the abutment a^2 , located in the said case, and the cover a^3 , secured to the said case in any suitable manner, substantially as shown and described in the application referred to. The abutment a^2 is detachably secured, as by screw a^4 , to an enlarged head a^5 , secured to or forming part of the shaft a^6 , extending through the sleeve a^7 ,

(herein shown as made conical near its inner end,) to fit upon a conically-shaped portion of the shaft a^6 , (marked 2.) The shaft a^6 is coupled by gears $a^8 a^9$, as in the application referred to, to the shaft a^{10} of the piston-valve a^{12} , detachably secured, as by screw a^{14} , to the enlarged head a^{13} of the said shaft. The shaft a^{10} is extended through a sleeve b , provided with a conically-shaped end to fit the conically-shaped portion of the shaft a^{10} , (marked 3.) The sleeve b is inserted through the extended bearing a' , and is surrounded by a suitable packing-ring b^2 .

The piston-valve a^{12} on its inner end, as herein shown, is provided with an annular flange b^3 , fitted into a recess on the inner side of the cylindrical case A, and at its opposite end the said piston-valve is provided with an extension b^4 , preferably made bevel-shaped, as shown in Fig. 2, the said extension being projected into a recess in the cap a^3 to obtain a larger piston-valve, so that the inlet-port b^5 (indicated by dotted lines, Fig. 2, and full lines, Fig. 1) may be made larger than shown in United States Patent No. 392,853, granted to me November 13, 1888. The piston-valve a^{12} has co-operating with it the cut-off b^7 , substantially as in the application referred to, and the said valve is provided with the arm b^{20} , extended into the re-entrant portion of the abutment. The steam enters by the port b^8 and passes through the cut-out and through the port b^5 into the re-entering portion b^9 of the abutment, and in order to counterbalance the pressure of steam upon the re-entering portion of the abutment, and thereby diminish the wear upon the bearings of the said abutment and its shaft, an annular channel is cut in the bearing a within the case A, to form a chamber c , into which steam is admitted through the port c' in the case A, the said port being connected by a pipe (not shown) to the steam-supply pipe, or, if desired, to any other source of supply of steam. The flange b^3 on the piston-valve a^{12} adds increased strength to the said valve, so that the engine may be run a much longer time than if the said flange were dispensed with.

If it is desired to renew the shafts $a^6 a^{10}$ —as, for instance, for the purpose of truing the same—they may readily be detached from

the abutment and the piston-valve by removing the screws a^4 a^{14} , the cover a^3 being removed.

I prefer to make the shafts a^6 a^{10} conical at the parts marked 2 3, as it will readily be seen that by driving the sleeves a^7 b farther into the case the bearing for the shaft may always be tight.

I claim—

10 1. In a rotary engine, the combination, with an inclosing-case provided with bearings, of an abutment, a shaft for said abutment, an independent hollow piston-valve, and a shaft for said piston-valve provided with a flange
15 to which the said piston-valve is detachably secured, substantially as described.

20 2. In a rotary engine, the combination, with an inclosing-case fitted with an extended bearing, of a revolving abutment mounted upon said bearing and provided with a re-entrant portion b^9 , an annular channel c on the outside of the said bearing between it

and the said revolving abutment, a piston-valve having an arm to enter said re-entrant portion, shafts for said abutment and piston-valve, and gearing to connect said shafts, substantially as described. 25

3. In a rotary engine, the combination, with an inclosing-case, an abutment having a shaft extended through said case and provided with the re-entering portion b^9 , of a piston-valve having an extension b^4 , provided with an enlarged port-opening b^5 , and a cap provided with a recess into which the extended end of the piston-valve projects, substantially as described. 30 35

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE H. WESTON.

Witnesses:

JAS. H. CHURCHILL,
EMMA J. BENNETT.