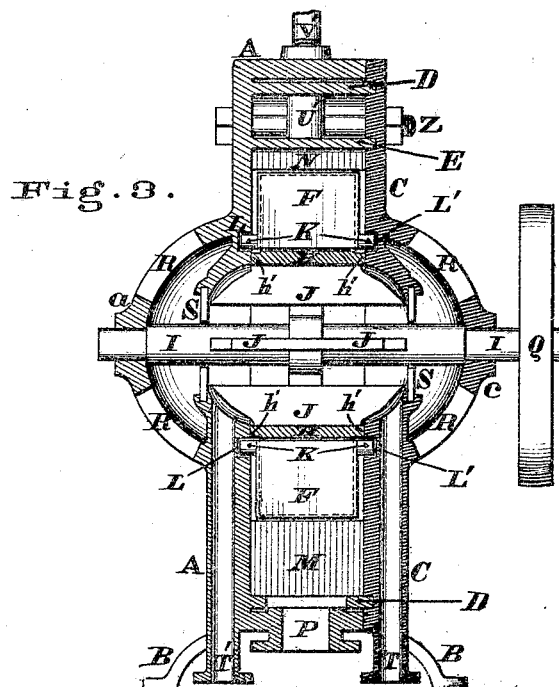
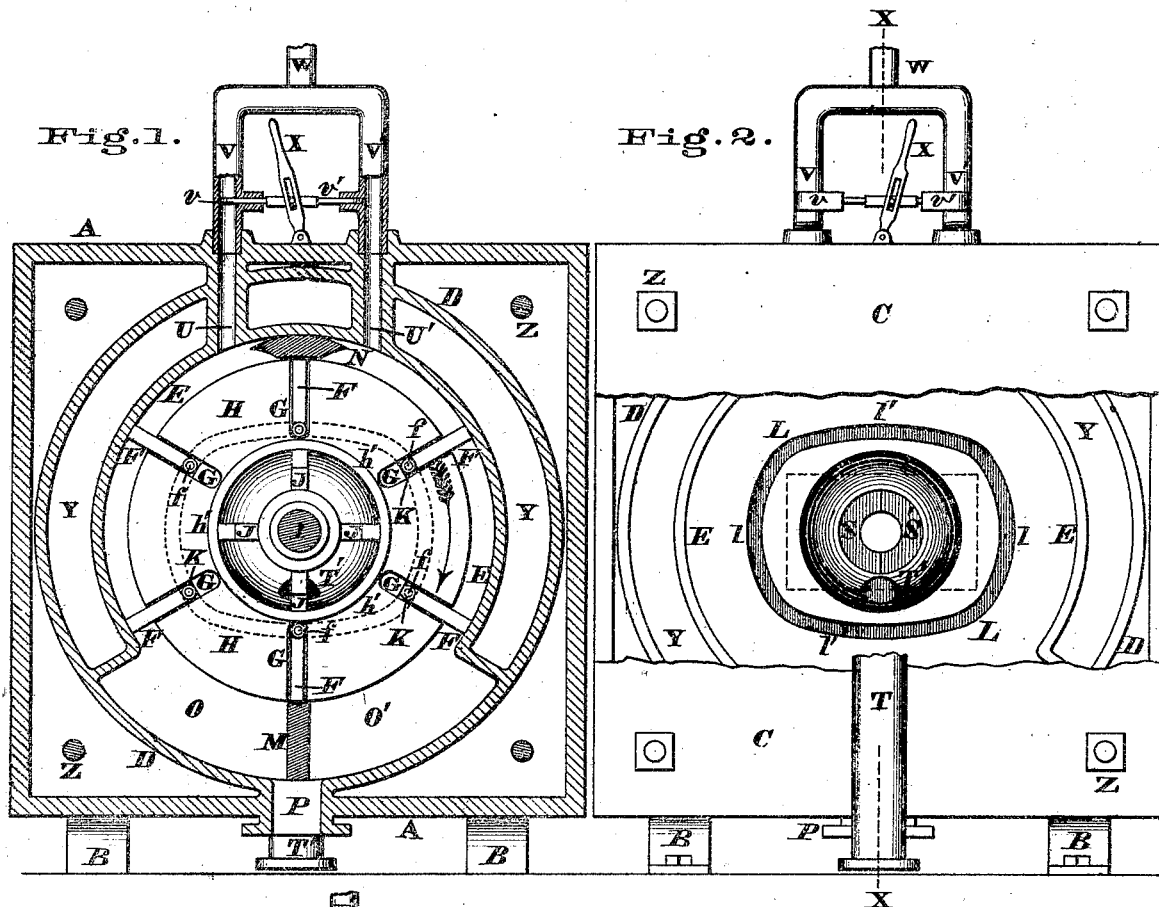


H. P. TENANT.

Improvement in Combined Blowers and Rotary Engines.

No. 114,489.

Patented May 2, 1871.



H. P. Tenant
INVENTOR.
By Knight Bros.
Attyd.

Attest.
Jas. H. Layman.
blm Kitch.

United States Patent Office.

HANSON P. TENANT, OF EAST GERMANTOWN, INDIANA.

Letters Patent No. 114,489, dated May 2, 1871.

IMPROVEMENT IN COMBINED BLOWERS AND ROTARY ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

I, HANSON P. TENANT, of East Germantown, Wayne county, Indiana, have invented an Improved Blower, of which the following is a specification.

Nature and Objects of the Invention.

This invention relates to that class of devices which is employed for producing blasts for cupolas and other purposes; and

My improvement consists in combining a rotary blower and rotary steam-engine within a single case or shell, thereby simplifying the construction of such apparatus and, at the same time, effecting a great saving of space.

Description of the Accompanying Drawing.

Figure 1 is a view of my improved blower, the case or shell and its accessories being shown in vertical section, while the rotary fan and engine are shown in elevation;

Figure 2 is a partially sectionized side elevation of the apparatus with the operative parts removed so as to expose one of the eccentric grooves which actuates the sliding-pistons of the engine; and

Figure 3 is a vertical section of the blower at the line $x x$.

General Description.

A represents the inclosing-case or shell, which consists of a flat box having feet B and a cover, C, which latter, when removed, allows access to the operative parts of the apparatus.

Cast with the shell A is a circular flange, D, which is concentric with an inner one, E, within which rotate the pistons F, that are capable of sliding in the radial slots G of the disk H.

The disk H is connected to the shaft I by means of blades J, which latter constitute the fans of the blower proper.

The inner ends of the sliding pistons F are furnished with studs f , upon which are journaled rollers K, which serve to diminish the friction caused by said studs traversing the eccentric grooves L L', which are arranged as follows:

These grooves are cast on the inner sides of the box A and cover C, and said grooves are furnished with portions l , which are concentric with the shaft I, and also with portions l' , that are concentric therewith. As the wheel H is rotated the concentric portions l cause the pistons F to protrude beyond the periphery of said wheel, and the concentric parts l' retract the pistons within the slots G, as clearly shown in fig. 1.

The apparatus is provided with two abutments, M and N, which are fitted within the case in such a man-

ner as to be directly opposite the pistons when the latter are in their retracted positions.

The upper abutment N serves for the steam to react against, while the lower one, M, divides the exhaust-chamber into two compartments, O O'.

P is the escape-pipe from the exhaust-chambers.

The shaft I is journaled in bosses a and c , which project outwardly from the shell A and cover C, and said bosses are provided with openings, R, through which air enters to supply the fan J.

S S' are sliding plates or gates, which can be opened or closed to a greater or lesser extent, so as to regulate the quantity of air which the fan receives.

The blast is discharged from the fan through the side pipes T T', which are external to the case.

The rotary engine receives steam through two ports, U U', which are located on either side of the upper abutment N.

Pipes V V', communicating with a common steam-pipe, W, serve to conduct the motive power to the ports U U'.

The pipes V V' are provided with cut-offs, $v v'$, which are capable of being operated by a lever, X, in such a manner that when one of them is opened the other will be closed.

The common steam-pipe W may be provided with any approved form of throttle-valve and governor.

The annular space Y, between the two circular flanges D and E, and also the space between the outer flange and shell, serves to prevent the radiation of heat from the engine.

Z are bolts, which secure the cover C to the case A.

The disk H is provided with annular flanges or rims $h h'$, which are ground and accurately fitted so as to form steam-tight joints between said wheel and the shell, thereby preventing the entrance of steam into the fan-chamber.

Q is the fly-wheel.

Operation.

The operation of the apparatus will be readily understood by referring to fig. 1, and it will be seen that if the valve v is closed and the one v' opened the steam will enter the engine through port U'. As the steam enters this port it will, by pressing against the protruded piston and reacting against the abutment N, cause the wheel H to revolve in the direction indicated by the arrow. As this wheel rotates the sliding pistons are protruded and retracted at the proper moment by the eccentric grooves L, as previously described.

The rotation of wheel H carries the shaft I and blades J along with it, and thus discharges a powerful blast of air down the side pipes T T'.

If at any time it is desired to reverse the engine it can be done in a moment by simply reversing the lever X so as to cause the steam to enter the engine through the other port U.

Whenever it is desired to construct an apparatus which will not require to be reversed only one of the ports U and pipes V need be employed.

It will be seen that this apparatus combines all the advantages of a rotary engine and rotary blower in one structure, and thereby avoids the complication of bands, pulleys, and gear-wheels, which are necessary when the two devices are separate.

Claims.

I claim as my invention—

1. The combination of a rotary engine and rotary

blower, when both are arranged to operate within a single case or shell, for the purpose described.

2. The general arrangement and combination of the devices A a C c E F f G H h I J K L l M N P T T', and one or more chambers, O O', and port or ports U U', for the objects stated.

3. In combination with the described elements of the preceding clause, the ports U U' pipes V V' W, reversing lever X, and valves v v', as and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

HANSON P. TENANT.

Witnesses:

GEORGE S. NEFF,
MARTIN SNAVELS.