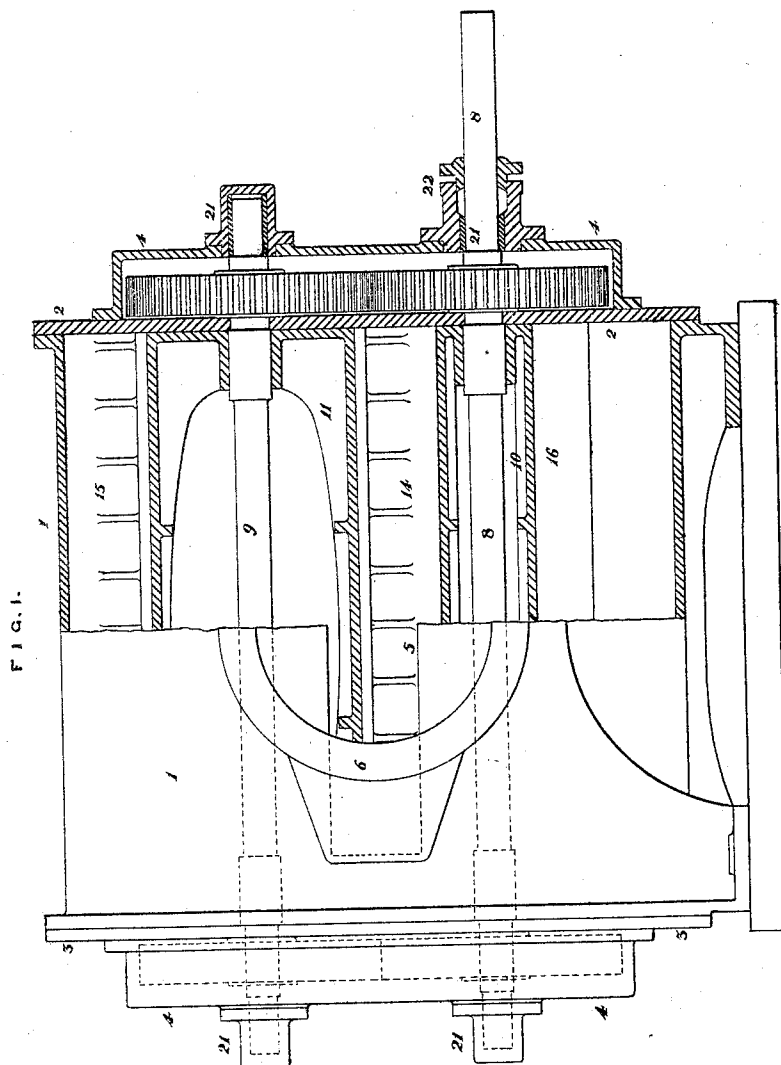
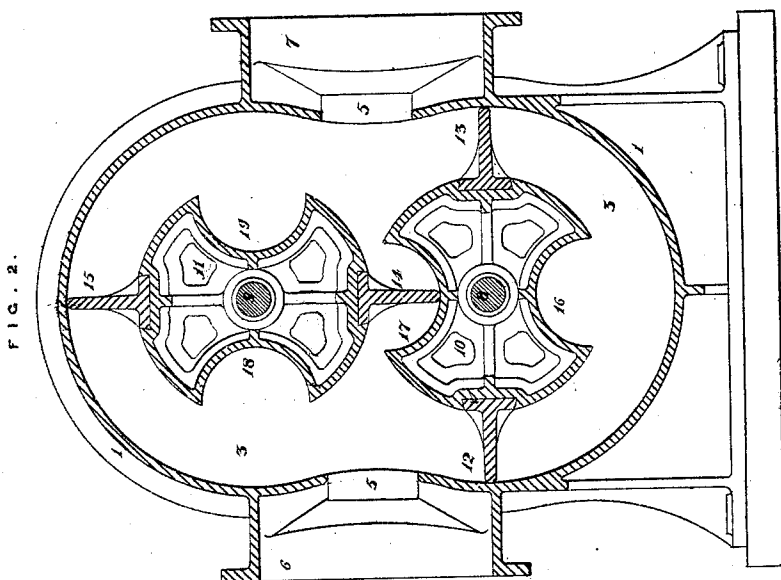


R. LAIDLAW & JOHN THOMSON.
 Improvement in Apparatus for Exhausting Gas, &c.
 No. 114,156. Patented April 25, 1871.



SCALE 1 IN. = 1 FOOT

Inventors.
 Robert Laidlaw
 John Thomson
 By B. F. James, atty.

Witnessed by
 Gordon Porteous
 John Porteous

United States Patent Office.

ROBERT LAIDLAW AND JOHN THOMSON, OF GLASGOW, GREAT BRITAIN.

Letters Patent No. 114,156, dated April 25, 1871.

IMPROVEMENT IN APPARATUS FOR EXHAUSTING GAS, &c.

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

We, ROBERT LAIDLAW and JOHN THOMSON, both of Glasgow, in the county of Lanark, Kingdom of Great Britain and Ireland, have invented an Improvement in Apparatus for Exhausting Gas or for pumping or forcing fluids, of which the following is a specification.

Nature and Objects of the Invention.

Our invention relates to the combination of two peculiar-bladed bosses made to revolve together in a casing by means of inclosed spur-wheels, whereby an extremely simple machine is obtained, and one which can be maintained in order with the least possible trouble.

Our improved apparatus is designed more particularly for exhausting or withdrawing gas from the retorts in the manufacture of illuminating-gas, for which purpose it is especially suitable, as it has no packings nor delicately-fitting parts liable to be clogged by the tarry matter deposited from the gas. It is, however, also applicable for otherwise pumping or forcing fluids.

Description of the Accompanying Drawing.

Figure 1 is a partially-sectional elevation of our gas-exhauster or pump, and

Figure 2 is a vertical section at right angles to fig. 1.

General Description.

The casing of the apparatus comprises a body, 1, with two end plates, 2 3, and two outer casings, 4 4, fixed outside of the end plates 2 3.

The body 1 is shaped internally so that its top and bottom each form somewhat more than the half of a cylinder, while the two cylindrical portions are connected by curved middle parts, in which are formed openings 5 5, serving one as inlet and the other as outlet for the gas or fluid.

These openings 5 5 are interiorly long horizontal slots, but external flanged circular mouth-pieces 6 7 are cast on the body 1, in connection with them, for the attachment of the piping leading to and from the apparatus.

The end plates 2 3 are flat and are perforated by plain eyes for the passage through of two horizontal shafts, 8 9, in positions concentric with the cylindrical parts of the casing.

On the shafts 8 9 two similar hollow bosses, 10 11, are keyed, and these bosses have each, fixed in shallow rebates cast in them for the purpose, two diametrically opposite radial propelling-blades, 12 13 14 15, the outer edges of which work nearly in contact with the cylindrical parts of the casing.

The bosses are shaped cylindrically, excepting at the parts occupied by the blades and excepting at parts midway between the blades, at which latter parts they are formed with concavities 16 17 18 19.

The cylindrical parts of the bosses are of such a radius that one boss works in contact, or nearly so, with the other at certain parts of their revolutions, so as to prevent a direct passage across between them, while the concavities are formed to allow the propelling-blades to pass in alternate succession across the middle, and are shaped so as to keep in contact, or nearly so, with the edges of the blades as long as may be necessary in passing round.

Outside of the end plates 2 3 two pairs of equal-sized spur-wheels, 20, (one pair indicated by dotted lines in fig. 1,) are fixed on the shafts 8 9, by which these shafts are made to revolve together.

By applying spur-wheels at both ends of the shafts in this way the strains are better distributed and a smoother motion is obtained than when the wheels are applied at one end only.

The spur-wheels 20 are covered by the external casings 4 4, not only to protect them from dirt and injury, but also to prevent noise while the wheels are got closer to the end plates, in consequence of the shafts 8 9 being supported in bushed bearings 21 in the external casings 4 4.

All the bearings 21 are closed, excepting one fitted with a stuffing-box, 22, through which one, 8, of the shafts projects to receive a driving-pulley. This shaft 8 may be driven in either direction, provided the inlet and outlet 5 5 are arranged accordingly, and arrows are put on fig. 2 to show corresponding motions of the bosses 10 11, and of the gas or fluid operated upon.

Claims.

We claim as our invention—

The exhausting of gas and pumping or forcing of fluids by means of two parallel bosses, having radial blades and concavities, revolving and gearing together in a casing, as shown in the drawing, and with their shafts connected and made to work together by two pairs of spur-wheels inclosed in casings and placed inside of the bearings supporting the shafts, all substantially as hereinbefore set forth.

ROBERT LAIDLAW.
JOHN THOMSON.

Witnesses:

EDMUND HUNT,
ALEXANDER CALDERHEAD.