(No Model.) 2 Sheets—Sheet 1.

H. SKINNER.

BLOWER, PUMP, ENGINE, &c.

No. 419,723. Patented Jan. 21, 1890.

Fig. 1.

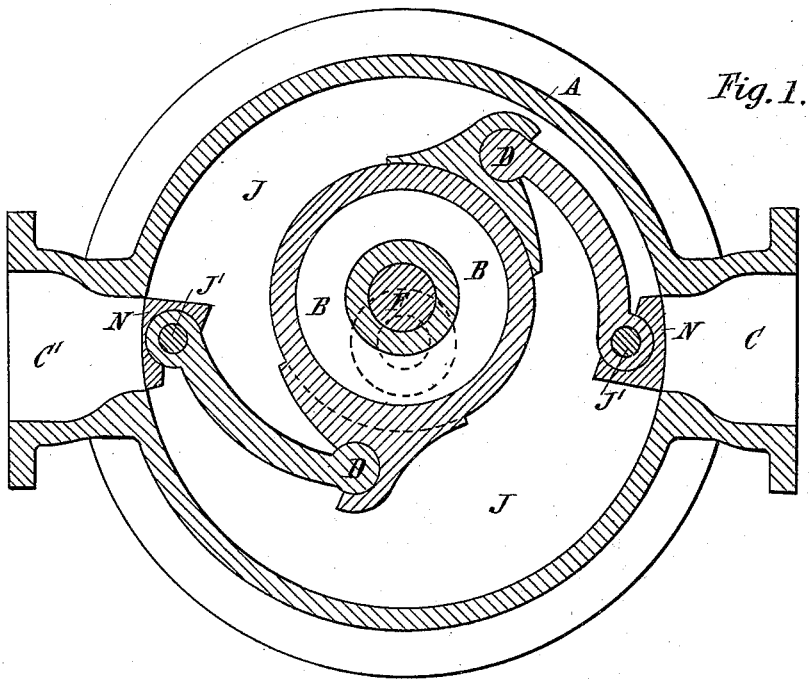
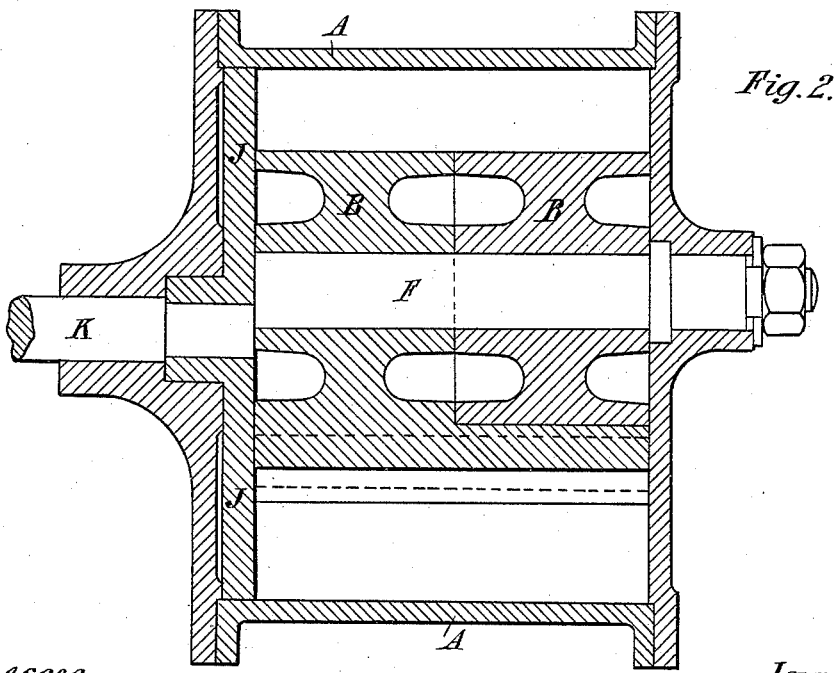


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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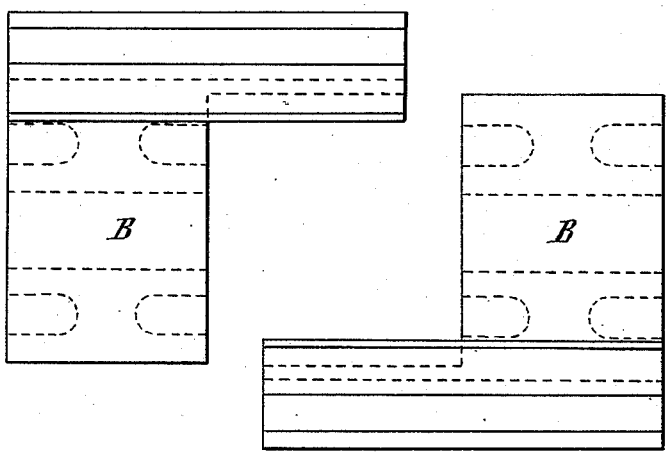
Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY SKINNER, OF GRAVESEND, COUNTY OF KENT, ASSIGNOR OF ONE-HALF TO PHILIP FRANCIS ODDIE, OF MIDDLESEX, ENGLAND.

BLOWER, PUMP, ENGINE, &c.

SPECIFICATION forming part of Letters Patent No. 419,723, dated January 21, 1890.

Application filed December 2, 1889. Serial No. 332,260. (No model.) Patented in England July 28, 1888, No. 10,964; in France February 22, 1889, No. 196,236; in Belgium February 22, 1889, No. 85,117, and in Germany February 26, 1889, No. 48,848.

To all whom it may concern:

Be it known that I, HENRY SKINNER, engineer, a subject of the Queen of Great Britain, residing at 43 Singlewell Road, Gravesend, in the county of Kent, England, have invented certain new and useful Improvements in Blowers, Pumps, Engines, and Meters, (for which I have received Letters Patent in Great Britain, No. 10,964, dated July 28, 1888; in France, No. 196,236, dated February 22, 1889; in Belgium, No. 85,117, dated February 22, 1889, and in Germany, No. 48,848, dated February 26, 1889,) of which the following is a specification.

My invention relates to rotary engines of that class in which a cylindrical outer casing closed at each end and provided with inlet and outlet ports has within and parallel with, but eccentric to it, a second cylinder or axle and blades or flaps bridging the space between the casing and this inner cylinder or axle, and which are hinged at one end to the inner cylinder or axle, and at their opposite end are held always close to the inner circumference of the casing.

The objects of my invention are to prevent leakage and to avoid undue friction in engines of this kind. These I attain as follows: To hold the outer ends of the flaps in close proximity to the inner circumference of the casing I joint the outer ends of the flaps to pins or supports carried by a disk, which is at one end of the casing and is on a shaft concentric with it, while the inner ends of the flaps I joint to cylindrical thimbles, which are set side by side and are free to turn on an axle which is eccentric to the casing.

In the accompanying drawings, which represent so much of an apparatus embodying all my improvements as is necessary to illustrate the subject-matter herein claimed, Figure 1 is a transverse section, Fig. 2 a longitudinal section, and Fig. 3 an elevation, of the inner cylindrical thimbles set at a distance apart.

A cylindrical outer casing A is shown as provided with inlet and outlet ports C C′, respectively situated on opposite sides thereof in line with each other. Cylindrical thimbles B fit loosely side by side on an axle F, fixed at one end to one of the heads of the outer casing, to which it is eccentric. Blades or flaps D are jointed at one end to these cylinders and at the other to pins J′, projecting laterally from the inner face of a disk J, fixed on a shaft K, passing through one of the heads of the casing. This shaft can either drive the disk or segments and blades or flaps or be driven by them, as needful. The outer ends of the flaps carry slipper-pieces N, fitting them and the interior of the outer casing to make a tight joint. These slipper-pieces may either be loose and free to turn somewhat on the ends of the flaps, or they might be fixed to the disk J and then form bearings for the outer ends of the flaps to turn in. The flaps not only bridge the space between the thimbles B and the casing, but extend from end to end of the latter, so as to make a tight joint at the ends, as well as at their outer and inner sides. Each cylindrical thimble B is formed with an arm standing out from it and extending from end to end of the casing, and the portion of the arm which extends beyond the thimble is made to fit closely to the circumference of the other thimble, so as to obstruct the passage of fluid between them. The flaps are jointed to these arms. The joint is shown as made by inserting the enlarged rounded end of the flap endwise into a correspondingly-shaped groove in the arm.

The above figures show two flaps only, but three or more flaps jointed to three or more cylindrical thimbles may be used with good effect.

If three or more flaps are used, the inlet and outlet ports of the outer casing need not be opposite to one another, but might be in other suitable positions relatively to one another so long as their distance apart is such that the direct passage between them is always closed by one or other of the flaps.

The operation of the apparatus will be readily understood from the foregoing description. The flaps being jointed at their inner ends to the cylindrical thimbles, these thimbles are made to rotate around the shaft F whenever the disk J, to which the outer ends

of the flaps are jointed, is made to rotate, and each thimble being free to turn independently of the other or others permit of the free movement of the flaps.

Having thus fully described the construction, organization, and operation of my improved apparatus, what I claim therein as new and of my own invention is—

The combination, substantially as hereinbefore set forth, of an outer casing provided with inlet and outlet ports, cylindrical thimbles inclosed therein and set side by side on an axle eccentric thereto, a disk within the casing and at one end thereof carried by a shaft concentric with the outer casing, and flaps jointed at their opposite ends to the cylindrical thimbles and to pins or bearings carried by the disk, respectively.

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