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2,469,936

ROTARY PUMP

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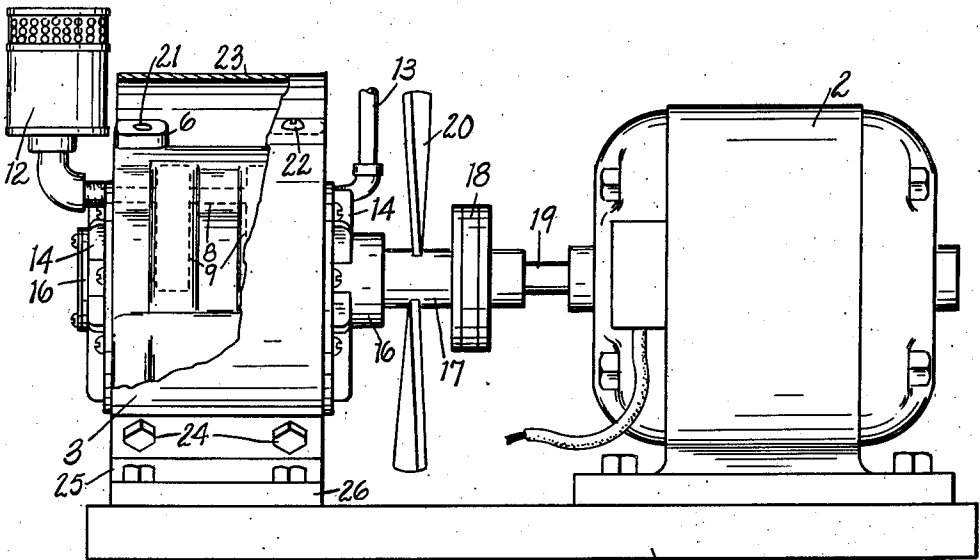


Fig. 1.

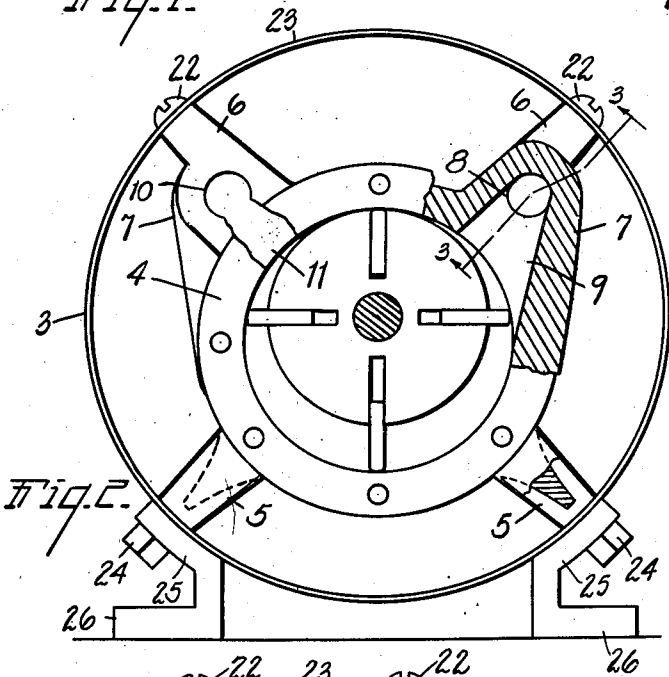


Fig. 2.

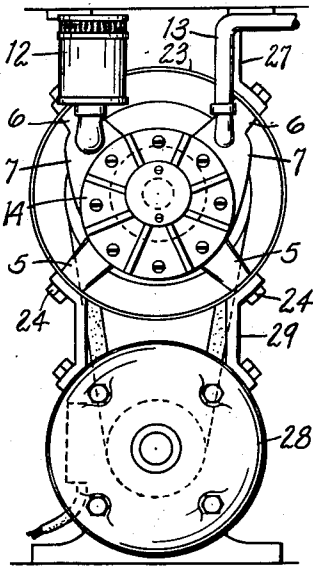


Fig. 4.

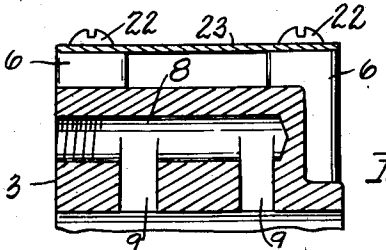


Fig. 3.

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ROTARY PUMP

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9 Claims. (Cl. 230—152)

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This invention relates to improvements in rotary pumps.

The main objects of this invention are:

First, to provide a rotary pump which has a wide adaptation of mounting for association with its source of power or in relation to other parts with which it is assembled for use.

Second, to provide a rotary pump adapted as a rotary, vacuum, pressure, or liquid pump which is very simple and economical in its parts.

Third, to provide an improved pump having these advantages in which certain of the functional parts constitute heat exchange elements and a structure which may be efficiently cooled.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a side elevation of a pump embodying the features of the invention, parts being broken away to disclose structural details.

Fig. 2 is a view with one of the head or end members of the cylinder removed, parts being shown in section and partially broken away.

Fig. 3 is a fragmentary view in section on the broken line 3—3 of Fig. 2.

Fig. 4 is an end elevation illustrating my improved pump in a different association or relation to the motor from that illustrated in Fig. 1 and illustrating the general adaptability of the pump of the invention.

In the embodiment of the invention shown in Fig. 1, I provide a base 1 on which the motor 2 is mounted as is also my improved pump designated generally by the numeral 3.

The pump of this invention comprises a cylinder 4 having angularly spaced radial post-like enlargements or bosses 5, 5 and 6, 6 extending therefrom. These are, in the embodiment illustrated, in uniformly spaced pairs.

Between the posts or bosses 6, 6, the cylinder wall has enlargements or bosses 7 in one of which is formed a longitudinal inlet passage 8 with longitudinally spaced flaring ports 9 opening to the cylinder. The other has a longitudinal outlet passage 10 with ports 11 opening to the cylinder. The passages 8 and 10 open axially outwardly at the sides of the posts 6 and enlargements 7 as shown more particularly in Figs. 2, 3 and 4.

The structure illustrated is designed as an air pump or compressor and has an inlet muffler 12 which also serves to collect dust and moisture and oil that may be in the atmosphere, this of

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course depending somewhat on the position in which the pump is operating. The outlet pipe is indicated at 13.

The cylinder is provided with heads 14 suitably bolted or secured thereto by lag screws and carrying bearings 16 for the shaft 17. This shaft is connected by the coupling 18 to the shaft 19 of the motor 2. The shaft 17 is preferably provided with a fan 20.

The posts 5 and 6 are tapped at 21 to receive screws 22 by means of which the housing 23 is secured, the housing being further secured by the screws 24 passing through the seat members 25 of the supporting brackets 26 radially aligned with the posts. These supporting brackets are designed to be selectively positioned either as shown in Figs. 1 and 2 supporting the pump from below or other brackets may be in the form of suspending brackets or hangers 27, see Fig. 4, the motor in this case being suspended by the hanger brackets 29.

It will be obvious that the brackets might be positioned at the side of the pump if desired. By having the four bosses equally spaced, any one of the brackets can be attached in any one of four positions relative to the housing and pump. The webs extend between the bosses or posts 5, these webs and the enlargements constituting heat exchange elements.

Pumps embodying my invention may be very economically produced. They are, as stated, capable of a wide variety of adaptations and are readily adapted for use as compression or vacuum pumps or liquid pumps. In the embodiment illustrated, the head members are provided with heat exchange or radiating vanes 30.

I have not attempted to illustrate the various possible adaptations and adjustments of pumps embodying my invention as it is believed that the disclosure made will enable those skilled in the art to adapt the same as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A rotary pump comprising a cylinder body member having a plurality of angularly spaced pairs of radial post-like projections integral therewith and constituting cylinder support members, the posts of each pair being spaced in a direction parallel to the rotary axis of the pump, there being integral cylinder wall enlargements extending between the two posts of each pair of two pairs of said posts, one of said enlargements having an inlet passage therein with longitudinally spaced ports opening to said cylinder, the

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other having an outlet passage therein with longitudinally spaced ports opening to said cylinder, webs extending between the two posts of each pair of the other pairs of posts, said posts, enlargements and webs constituting heat exchange elements for said cylinder, cylinder end members constituting end enclosure walls for the cylinder body member and secured thereto and provided with bearings, a rotor provided with fluid impelling elements and mounted within said cylinder body member, a shaft rotatably supporting said rotor and carried by said bearings, a fan on said shaft, an open-ended cylindrical housing constituting an air conduit mounted on the outer ends of said posts, supporting brackets having segmental seat portions engaging said housing opposite selected spaced pairs of said posts, and screws extending through said seat members and housing into said posts of said selected spaced pairs of posts, said supporting brackets being selectively connectable to selected posts whereby the pump may be supported by the supporting brackets arranged in different positions relative to the cylinder.

2. A rotary pump comprising a cylinder body member having a plurality of angularly spaced pairs of radial post-like projections integral therewith and constituting cylinder support members, the posts of each pair being spaced in a direction parallel to the rotary axis of the pump, there being integral cylinder wall enlargements extending between the two posts of each pair of two pairs of said posts, one of said enlargements having an inlet passage therein with longitudinally spaced ports opening to said cylinder, the other having an outlet passage therein with longitudinally spaced ports opening to said cylinder, webs extending between the two posts of each pair of the other pairs of posts, said posts, enlargements and webs constituting heat exchange elements for said cylinder, cylinder end members constituting end enclosure walls for the cylinder body member and secured thereto and provided with bearings, said inlet and outlet passages opening axially outwardly to facilitate connection thereto of conduits disposed axially outwardly of the end enclosure walls, a rotor provided with fluid impelling elements and mounted within said cylinder body member, a shaft rotatably supporting said rotor and carried by said bearings, supporting brackets radially aligned with selected spaced pairs of said posts, and screws securing said brackets to said posts of said selected spaced pairs of posts, said supporting bracket being selectively connectable to selected posts whereby the pump may be supported by the supporting brackets arranged in different positions relative to the cylinder.

3. A rotary pump comprising a cylinder body member having a plurality of angularly spaced pairs of radial post-like projections integral therewith and constituting cylinder support members, the posts of each pair being spaced in a direction parallel to the rotary axis of the pump, there being integral cylinder wall enlargements extending between the two posts of each pair of two pairs of said posts, one of said enlargements having an inlet passage therein with longitudinally spaced ports opening to said cylinder, the other having an outlet passage therein with longitudinally spaced ports opening to said cylinder, cylinder end members constituting end enclosure walls for the cylinder body member and secured thereto and provided with bearings, a rotor provided with fluid impelling elements and mounted within said

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cylinder body member, a shaft rotatably supporting said rotor and carried by said bearings, an open-ended cylindrical housing constituting an air conduit mounted on the outer ends of said posts, supporting brackets having aligned seat portions engaging said housing opposite selected spaced pairs of said posts, and screws extending through said seat members and housing into said posts of said selected spaced pairs of posts, said supporting brackets being selectively connectable to selected spaced pairs of said posts.

4. A rotary pump comprising a cylinder body member having a plurality of angularly spaced pairs of radial post-like projections integral therewith and constituting cylinder support members, the posts of each pair being spaced in a direction parallel to the rotary axis of the pump, there being integral cylinder wall enlargements extending between the two posts of each pair of two pairs of said posts, one of said enlargements having an inlet passage therein with longitudinally spaced ports opening to said cylinder, the other having an outlet passage therein with longitudinally spaced ports opening to said cylinder, cylinder end members constituting end enclosure walls for the cylinder body member and secured thereto and provided with bearings, said inlet and outlet passages opening axially outwardly to facilitate connection thereto of conduits disposed axially outwardly of the end enclosure walls, a rotor provided with fluid impelling elements and mounted within said cylinder body member, a shaft rotatably supporting said rotor and carried by said bearings, supporting brackets radially aligned with selected spaced pairs of said posts, and screws for securing said brackets to said posts of said selected spaced pairs of posts, said supporting brackets being selectively connectable to selected spaced pairs of said posts.

5. A rotary pump comprising a cylinder body member having a plurality of angularly spaced outwardly projecting portions integral with the cylinder body member, one of said outwardly projecting portions having an inlet passage therein with a port opening to said cylinder, the other having an outlet passage therein with a port opening to said cylinder, said outwardly projecting portions constituting heat exchange elements for said cylinder, cylinder end members constituting end enclosure walls for the cylinder body member and secured thereto and provided with bearings, a rotor provided with fluid impelling elements and mounted within said cylinder body member, a shaft rotatably supporting said rotor and carried by said bearings, a fan on said shaft, an open-ended cylindrical housing constituting an air conduit mounted on said outwardly projecting portions, and supporting brackets engaging said housing opposite said outwardly projecting portions and secured thereto through said housing.

6. A rotary pump comprising a cylinder body member having a plurality of angularly spaced outwardly projecting portions integral with the cylinder body member, one of said outwardly projecting portions having an inlet passage therein with a port opening to said cylinder, the other having an outlet passage therein with a port opening to said cylinder, an open-ended housing constituting an air conduit surrounding said cylinder body member and mounted on said outwardly projecting portions, cylinder end members constituting end enclosure walls for the cylinder body member and secured thereto and provided with bearings, a rotor provided with fluid impelling ele-

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ments and mounted within said cylinder body member, a shaft rotatably supporting said rotor and carried by said bearings, and supporting brackets engaging said housing opposite said outwardly projecting portions and secured thereto. 5

7. A rotary pump comprising a cylinder body member having a plurality of angularly spaced integral radial posts, cylinder end members constituting end enclosure walls for the cylinder body member and secured thereto and provided with bearings, a rotor provided with fluid impelling elements and mounted within said cylinder body member, a shaft rotatably supporting said rotor and carried by said bearings, an open-ended cylindrical housing constituting an air conduit mounted on said posts, and supporting brackets engaging said housing opposite said posts and secured thereto through said housing. 10 15

8. A rotary pump comprising a cylinder body member having a plurality of angularly spaced integral posts projecting therefrom, cylinder end members constituting end enclosure walls for the cylinder body member and secured thereto and provided with bearings, a rotor provided with fluid impelling elements and mounted within said cylinder body member, a shaft rotatably supporting said rotor and carried by said bearings, an open-ended housing constituting an air conduit surrounding said cylinder body member and mounted on said posts, and supporting brackets disposed exteriorly of said housing and in opposed relation to the ends of said posts and selectively connectable with said posts whereby the brackets may be arranged in different selected positions for supporting the pump. 20 25 30

9. A rotary pump comprising a cylinder body

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member provided with a cylindrical wall and end closure walls, said cylindrical wall having a plurality of angularly spaced radially outwardly projecting portions, certain of said outwardly projecting portions having passages, one of said passages constituting an inlet passage with one end opening radially inwardly through said cylindrical wall and with the other end opening laterally outwardly to facilitate connection thereto of a conduit disposed laterally outwardly of an end closure wall, another of said passages constituting an outlet passage with one end opening radially inwardly through the cylindrical wall and with the other end opening laterally outwardly to facilitate connection thereto of a conduit disposed laterally outwardly of an end closure wall, a rotor provided with fluid impaling elements disposed within said cylinder body member, and supporting brackets radially aligned with certain of said radially outwardly projecting portions and detachably connected thereto, said supporting brackets each being selectively connectable to a plurality of the outwardly projecting portions to facilitate relative angular adjustment of the cylinder body member and the supporting brackets. 25

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