

No. 695,896.

Patented Mar. 18, 1902.

L. E. TROXLER.
ROTARY MOTOR.

(Application filed May 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig 1.

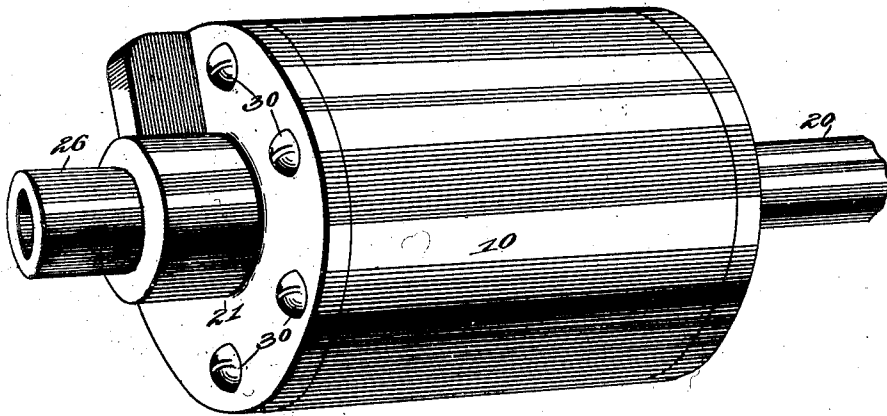


Fig 4.

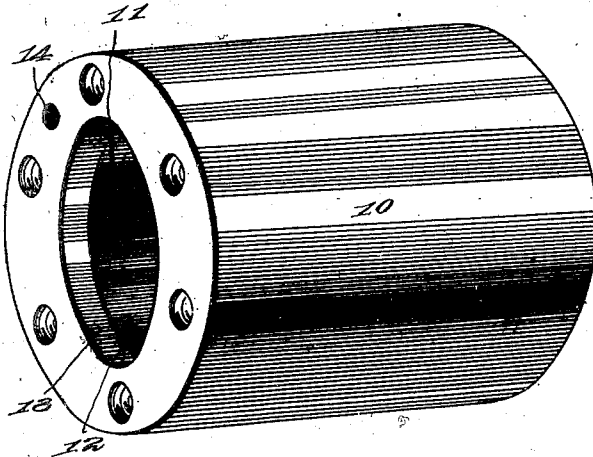
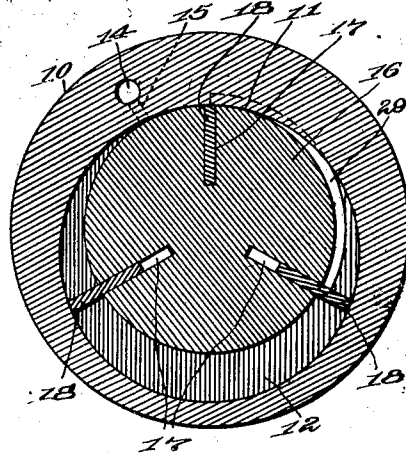


Fig 3.



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2 Sheets—Sheet 2.

Fig 2.

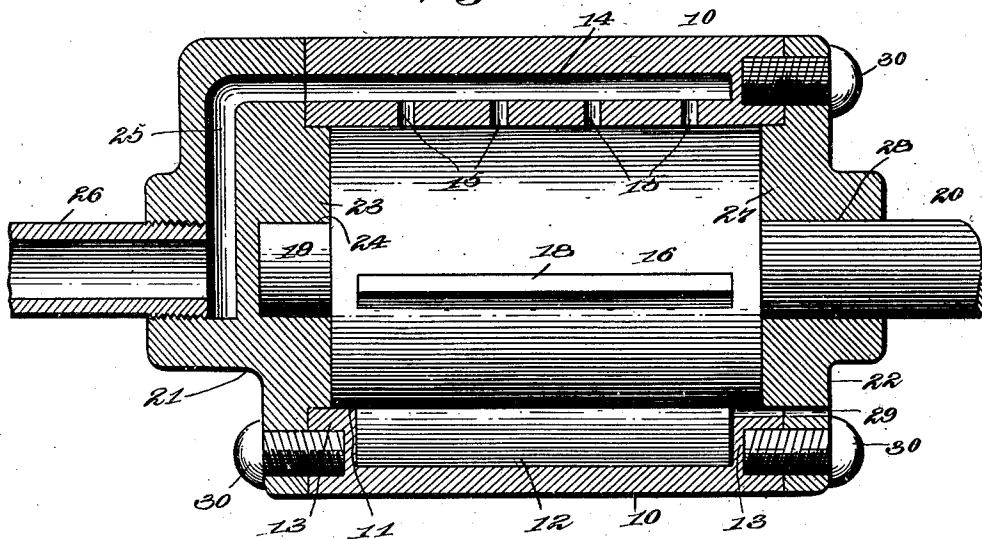


Fig 5.

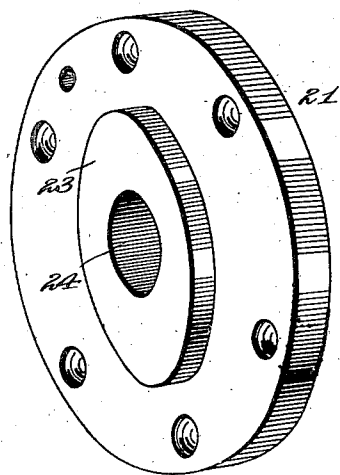
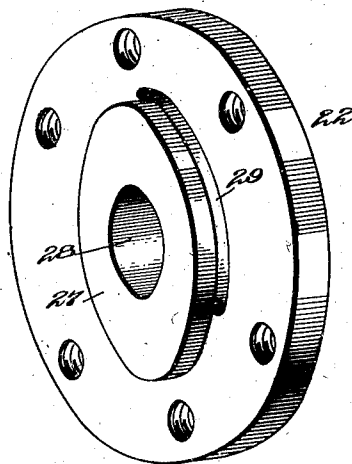


Fig 6.



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UNITED STATES PATENT OFFICE.

LAURENCE E. TROXLER, OF LOUISVILLE, KENTUCKY, ASSIGNOR OF ONE-HALF TO CHARLES G. SCHAEFER, JR., AND O. H. SCHAEFER, OF LOUISVILLE, KENTUCKY.

ROTARY MOTOR.

SPECIFICATION forming part of Letters Patent No. 695,896, dated March 18, 1902.

Application filed May 18, 1901. Serial No. 60,887. (No model.)

To all whom it may concern:

Be it known that I, LAURENCE E. TROXLER, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Rotary Motor, of which the following is a specification.

The present invention relates to rotary motors designed to be operated by water, steam, compressed air, or other suitable motive power; and one of the principal objects is to provide a practical construction that will have no unnecessary portions projecting from the cylinder or casing, so that the motor will occupy an exceedingly small amount of space.

A still further object is to provide a rotary motor having a few simple parts and at the same time employ a construction which will utilize the expansible force of the motive fluid and in which there will be comparatively little back pressure.

In carrying out these objects the construction preferably employed is fully described in the following specification and shown in the accompanying drawings. It will of course be understood that such slight changes may be made from said construction as may fall within the scope of the appended claims.

In the drawings, Figure 1 is a perspective view of a motor embodying the present invention. Fig. 2 is a longitudinal sectional view through the same. Fig. 3 is a vertical cross-section, and Fig. 4 is a detail perspective view, of the cylinder employed. Figs. 5 and 6 are perspective views of the heads detached from the cylinders.

Similar numerals of reference designate like and corresponding parts in all the figures of the drawings.

In the embodiment of the invention as shown a cylinder is provided (designated as a whole by the reference-numeral 10) and comprising an open-ended cylindrical casing having a concentric bore 11 and a counter-bore 12, which is eccentric to the axis of the concentric bore and terminates short of the ends of the cylinder, thus forming the integral bearing-flanges 13. The cylinder-wall is also provided with a longitudinally-dis-

posed inlet-port 14, which terminates at one end of the cylinder and is provided with a plurality of inlet-orifices 15, communicating with the interior bore 11.

A rotary piston 16 is located longitudinally within the cylinder 10, this piston being in the form of a cylinder, the diameter of which is equal to the diameter of the concentric bore 11, and extending nearly to the ends of the cylinder. The piston is provided with a plurality of longitudinally-disposed sockets 17, preferably three in number, the length of each being equal to the length of the counter-bore 12. In each one of these sockets is slidably mounted a piston-head 18, consisting of a rectangular plate that is arranged to extend across the counterbore 12 in a manner readily understood. A short concentric gudgeon 19 is located at one end of the cylinder, and a suitable driven shaft 20 projects from the opposite end.

Closing the ends of the cylinder 10 is a pair of cylinder-heads, (designated, respectively, 21 and 22,) one of said heads being provided with a concentric boss 23, that fits snugly in the concentric bore of the cylinder, said boss having a socket 24, that receives the gudgeon of the piston. This head is furthermore provided with an inlet-port 25, one end of which communicates with the inlet 14 of the cylinder, while the other end is counterbored and preferably screw-threaded to receive the end of a motive-fluid-supply pipe, as 26. The other head 22 is provided with a boss 27, that fits in the opposite end of the cylinder 10, said head being furthermore provided with a central opening 28, through which the shaft 20 of the piston passes. This head also has an arcuate slot 29, extending for some distance about the same and passing entirely through and communicating with the interior bore of the cylinder 10. This slot forms an exhaust-port, as will be hereinafter more fully explained. Suitable bolts 30 fasten both heads in place.

In the specific form shown the inlet-orifices 15 are located a short distance beyond the point where the piston touches the interior face of the cylinder-wall, and one end of

the exhaust-port is at an angular distance of two hundred and ten degrees from the inlet-orifices, while the other end is thirty degrees. The movable piston-heads are arranged at
5 equal distances apart, so that the angular distance between each will be one hundred and twenty degrees.

In operation motive fluid obtained from any suitable source of supply is conducted
10 by the supply-pipe 26 to the motor, and passing through the inlet-ports discharges through the orifices 15 behind one of the piston-heads 18. This will cause the piston to revolve in the direction shown by the arrow in Fig. 3,
15 and the compartment behind the abutment will continue to take the fluid at full pressure until the next abutment passes the inlet-orifices. The first-named compartment will thus contain compressed fluid, which ex-
20 erts an equal pressure per square inch in all directions, but because of the greater area of the foremost piston-head a forward pressure will be exerted thereon, and as the compartment enlarges, because of the eccentric counter-
25 bore, the expansion of the fluid will be utilized. This forward pressure will thus continue until the exposed areas of both piston-heads are equal or are in substantially the position shown in Fig. 3. At this point, how-
30 ever, the exhaust-port 29 is uncovered and the motive fluid will escape.

It will thus be seen that an exceedingly simple motor is provided which utilizes the expansive force of the motive fluid and in
35 which a back pressure is reduced to a minimum. Furthermore, the construction is such that a very small space is occupied and there are no elements or mechanism projecting from the annular walls of the cylinder.

40 From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be under-
45 stood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

50 Having thus described my invention, what I claim as new, and desire to secure by means of Letters Patent, is—

1. In a rotary motor, the combination with
55 a cylinder having a smooth peripheral face and a longitudinally-disposed bore, said cylinder being also provided with a counter-bore eccentric to the axis of the longitudinal bore and terminating short of the ends of the

cylinder, thereby forming integral bearing-
60 flanges, of cylinder-heads closing the ends of the cylinder, a motive-fluid-supply pipe connected to one of the cylinder-heads and having communication with the bore of the cylinder, a rotary piston located within the con-
65 centric bore and bearing against said integral flanges, said piston extending across the counter-bore, and movable piston-heads carried by the rotary piston and arranged to project across the counterbore and engage the walls
70 thereof.

2. In a rotary motor, the combination with
a cylinder having a longitudinal bore, of a piston rotatably mounted in the bore, mov-
able piston-heads carried by the piston, heads
75 secured to the cylinder and covering the ends of the bore, one of said cylinder-heads being provided with an inlet-port, a shaft connect-
ed to the piston and projecting from the other head, and a motive-fluid-supply pipe secured
80 to the head having the inlet-port, said supply-pipe being located in substantial alignment with the shaft.

3. In a rotary motor, the combination with
a cylinder having a longitudinally-disposed
85 concentric bore and a counterbore eccentric to the axis of the concentric bore and terminating short of the ends of the cylinder thus forming integral bearing-flanges, said cylinder being furthermore provided with a long-
90 titudinally-disposed inlet-port terminating at one end of the cylinder and provided with a plurality of inlet-orifices communicating with the bore, of a rotary piston located long-
95 titudinally in the concentric bore and bearing upon the flanges, said piston being provided at one end with a concentric shaft, and
at the other end with a concentric gudgeon, piston-heads carried by the piston and mov-
able across the eccentric counterbore, a head
100 closing one end of the cylinder and provided with an inlet-port communicating with the port of the cylinder, said cylinder-head being also provided with a bearing-socket that receives the gudgeon of the piston, and an-
105 other head closing the opposite end of the cylinder and having an opening through which the piston-shaft passes, said latter head being furthermore provided with an exhaust-
port.

In testimony that I claim the foregoing as
110 my own I have hereto affixed my signature in the presence of two witnesses.

LAURENCE E. TROXLER.

Witnesses:

OTTO H. SCHAEFER,
JAMES J. HYMES.