

H. B. HOLT & C. A. CONN.
MOTOR.
APPLICATION FILED NOV. 15, 1909.

994,401.

Patented June 6, 1911.

FIG. 1.

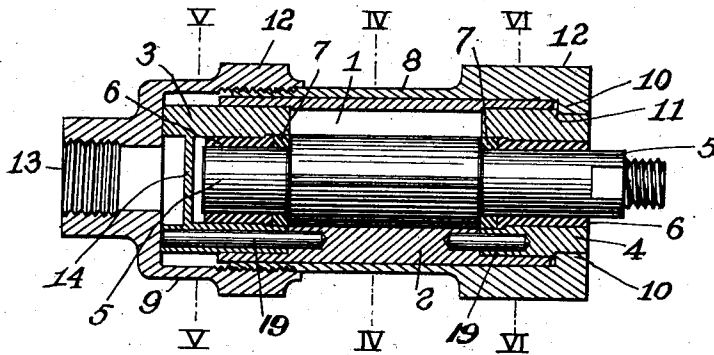


FIG. 2.

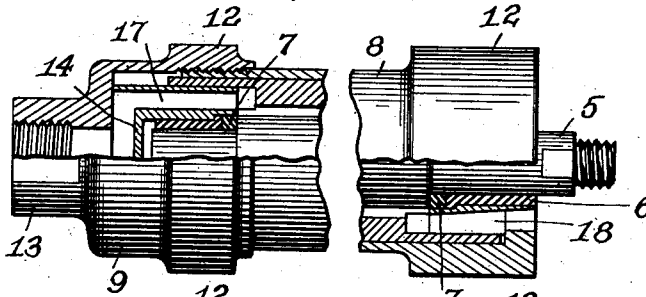


FIG. 3.

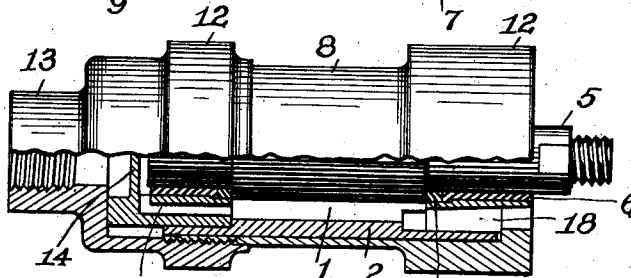
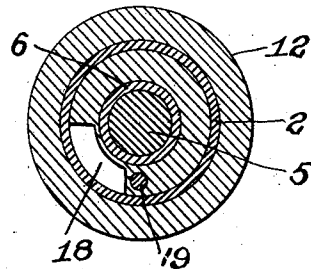
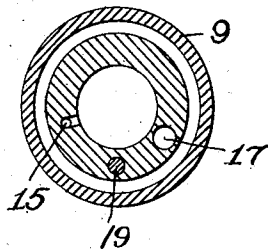
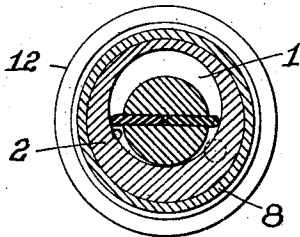


FIG. 4.

FIG. 5.

FIG. 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRIS B. HOLT AND CHARLES A. CONN, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS,
BY MESNE ASSIGNMENTS, TO THE LAGONDA MANUFACTURING COMPANY, OF
SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

MOTOR.

994,401.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed November 15, 1909. Serial No. 528,080.

To all whom it may concern:

Be it known that we, HARRIS B. HOLT and CHARLES A. CONN, both residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, and citizens of the United States, have invented or discovered certain new and useful Improvements in Motors, of which improvements the following is a specification.

The invention described herein relates to certain improvements of that class or kind of motors employed for operating tube-cleaning tools, such motor being attached to the shaft of such tool and necessarily adapted to pass through the tube being cleaned in the rear of the cutter.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification Figure 1 is a sectional view on a plane coinciding with the axis of the motor; Fig. 2 is a view partly in section and partly in elevation, the section being on radial lines passing through the inlet and exhaust ports of the motor. Fig. 3 is a view partly in elevation and partly in section, the plane of section being on a line passing through the exhaust port alone. Figs. 4, 5 and 6 are transverse sections on planes indicated respectively by the lines IV—IV, V—V and VI—VI Fig. 1.

In the practice of our invention the working chamber 1 in which the rotary member 1^a operates is bored eccentrically in a cylindrical block 2 and at the ends of the working chamber this cylindrical block is provided with concentric recesses for the reception of annular bearing blocks 3 and 4 for the journals 5 of the rotary member. As these journal blocks are arranged in the cylinder 2 concentric with its axis it follows that the axis of the rotary member will be concentric with the axis of such cylinder and eccentric to the axis of the working chamber. It is preferred that the bearing blocks 3 and 4 should be lined with suitable anti-friction metal sleeves 6 surrounding the journals 5 and that hard metal wearing

rings 7 should be interposed between the ends of these sleeves or bushings and the shoulders at the end of the body portion of the rotary member in which are mounted radially movable blades or vanes. Pins 19 as shown in Fig. 1 are provided to prevent the blocks from turning in the cylinder and keep the ports of the blocks and cylinder hereinafter described in register. These bearing blocks have a close fit in their seats or recesses in the ends of the cylinder 2, but are not in positive engagement therewith, being held in position by means of an external sectional shell consisting of the parts 8 and 9. The part 8 slips over the front end of the motor and has an inward projecting flange 10 engaging a peripheral shoulder 11 on the bearing block 4. The part 9 of the shell is provided at its rear end with a nozzle 13 adapted to be connected to the fluid pressure supply pipe, and is internally threaded at its forward end so as to be screwed upon the rear end of the section 8. The shoulder formed by contracting this section to form the inlet nozzle bears upon the rear end of the bearing block 3. By screwing these two sections together, the bearing blocks are forced firmly in against shoulders formed in the interior wall of the cylinder 2 and hold all the parts of the motor together. This clamping shell or casing is provided with enlargements preferably two or more in number adapted to form bearings or supports for the motor as it is forced into the tube to be cleaned, the surfaces of such shoulders bearing against the inner wall of the tube. In practice it has been found that a motor of a given size, is capable of operating the tools adapted to clean two, three or more sizes of boiler tubes. Heretofore a separate motor has necessarily been employed for each size of tube, but by employing shells varying in diameter through the shoulders or abutments according to the size of tube to be cleaned, the same motor can be used for cleaning two or more sizes of tubes simply by changing this external shell or casing.

The opening through the journal block 3 is closed by a diaphragm 14 forming a chamber at the rear end of the journal block communicating with a nozzle 13. From this chamber extends the inlet passage 17 to the working chamber 1 as shown in Fig. 2. The journal block 4 is cut away at one place to provide an exhaust outlet 18 as shown in Figs. 2, 3 and 6. It will be seen the flange 10 of the part 8 of the casing engages the block 4 to move the same longitudinally and that said engagement is radially outside of the exhaust port 18, affording an uninterrupted outlet for said port in any position to which said casing is rotated on said cylinder.

As the fit between the bushings 7 and the journals of the rotary member must be sufficiently loose to permit a free rotation of the latter, the fluid employed will inevitably escape in small amounts between the bushing and the journal. At the front end of the motor such escaping air will pass out into the tube to be cleaned. At the rear end this air will enter the chamber of the bearing block 3 in which the rear journal rotates and can escape therefrom through a port 15 in the journal block into the exhaust side of the working cylinder or chamber and pass thence through the exhaust. The air flowing between the bushing 7 and the journal and into the chamber of the bearing block, will carry with it some of the oil vapor from the working chamber and journal which will deposit such vapor on the surfaces in the exhaust portion of the working cylinder as the air flows from the port 15 into such portion.

We claim herein as our invention:

1. In a motor, the combination of a cylinder forming a working chamber, a rotary member in said chamber, blocks seated in the respective ends of said cylinder, in which said rotary member is journaled and a two part casing extending over said cylinder engaging said blocks and having a single uniting joint adapted to tighten and hold said blocks in place, substantially as described.

2. In a motor, the combination of a cylinder forming a working chamber, a rotary member in said chamber, said cylinder having annular recesses at its respective ends, blocks seated in said recesses in which said rotary member is journaled, and a two part casing fitted over said cylinder, having inwardly extending flanges adapted to engage said blocks, one part of said casing overlapping the other at their inner ends and screw-threaded together to tighten and hold said blocks in place, substantially as described.

3. In a rotary motor the combination of a

cylinder having a working chamber formed therein, an annular journal block arranged in the front end of the cylinder, a journal block provided with a socket arranged in the rear end of the cylinder, a rotary member having its journals mounted in said blocks, the front journal block being cut away to form an exhaust port and a passage extending from the recess in the rear journal block to the exhaust portion of the working chamber.

4. In a motor, a cylinder forming a working chamber having an inlet port, a rotary member in said chamber, a block seated in the end of said cylinder in which said rotary member is journaled, said block having an exhaust port therethrough, a two part casing fitted over said cylinder having inwardly extending flanges at its outer ends, one of said flanges engaging said block to move the same longitudinally, said engagement being radially outside of said exhaust port affording an uninterrupted outlet for said port in any position to which said casing is rotated on said cylinder, said casing having a single uniting joint at its inner ends adapted to tighten and hold said block to its seat, substantially as described.

5. In a motor, a rotary member, a cylinder forming a working chamber for said rotary member and having an inlet port in the walls thereof to said working chamber, a casing secured to said cylinder having an inwardly extending flange, a hollow block seated within the cylinder having a central diaphragm forming with said flange an admission chamber on one side of said diaphragm having a port which connects said chamber with the inlet port of the cylinder, the hollow portion upon the other side of said diaphragm forming a seat in which the rotary member is journaled, substantially as described.

6. In a motor, a cylinder forming a working chamber having an inlet port, a rotary member in said chamber, a two part casing fitted over said cylinder having inwardly extending flanges at its outer ends, a journal block seated in the end of said cylinder and adapted with one of said flanges to form an admission chamber in said block having a port communicating with the inlet port of the cylinder, said flange engaging the outer end of said block and being further adapted to attach a supply conduit communicating with said admission chamber, said casing having a single uniting joint at its inner ends adapted to tighten and hold said block to its seat, substantially as described.

7. In a motor, the combination of a cylinder forming a working chamber, a rotary member in said chamber, a block seated in

the end of said cylinder in which said rotary member is journaled, said block having an exhaust port therethrough and a casing secured to said cylinder having an inwardly extending flange engaging the end of said block radially outside of said exhaust port, substantially as described.

In testimony whereof, we have hereunto set our hands.

HARRIS B. HOLT.
CHARLES A. CONN.

Witnesses:

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FRANCIS J. TOMASSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
