H. B. HOLT.

FLUID PRESSURE MOTOR.

APPLICATION FILED JUNE 14, 1909.

957,339. Patented May 10, 1910.

FIG. 1.

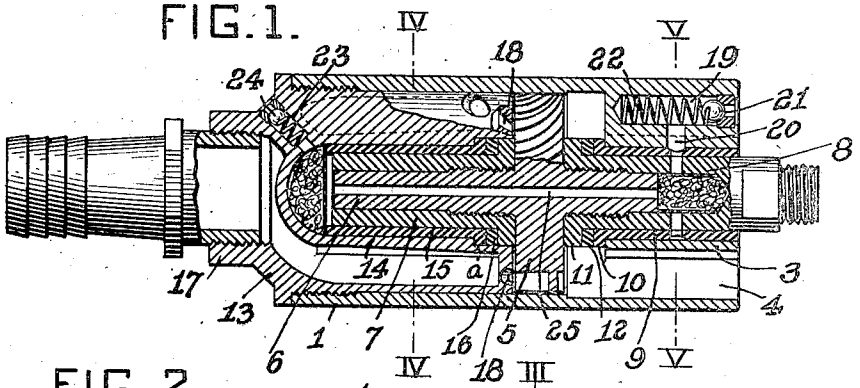


FIG. 2.

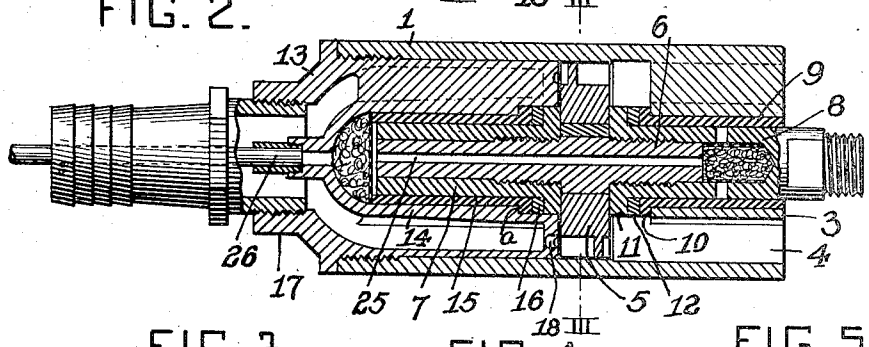


FIG. 3.

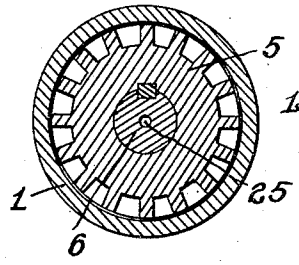


FIG. 4.

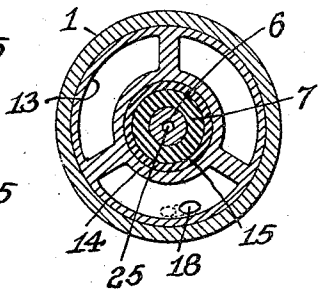


FIG. 5.

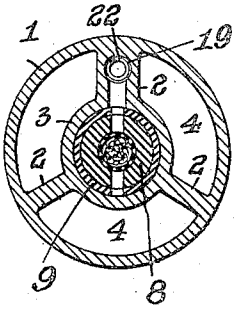
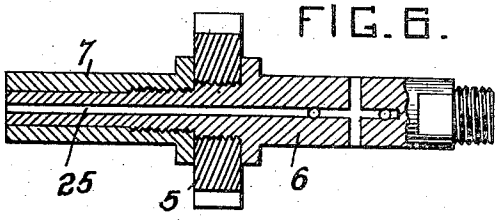


FIG. 6.



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UNITED STATES PATENT OFFICE.

HARRIS B. HOLT, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO CHARLES A. CONN, OF PITTSBURG, PENNSYLVANIA.

FLUID-PRESSURE MOTOR.

957,339. Specification of Letters Patent. Patented May 10, 1910.

Application filed June 14, 1909. Serial No. 502,068.

To all whom it may concern:

Be it known that I, HARRIS B. HOLT, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Fluid-Pressure Motors, of which improvements the following is a specification.

The invention described herein relates to certain improvements in rotary fluid pressure motors, especially of the class or kind employed for operating boiler tube cleaners.

The invention is hereinafter more fully described and claimed.

In the accompanying drawing forming a part of this specification, Figure 1 is a sectional elevation of my improved motor; Fig. 2 is a similar view on a plane at right angles to the plane of section of Fig. 1; Figs. 3, 4 and 5 are transverse sections on planes indicated respectively by the lines III—III, IV—IV, and V—V Figs. 1 and 2, and Fig. 6 is a detail view showing a modification of the spindle.

In the practice of my invention the casing 1 is formed with radial wings 2 having an annular bearing 3 formed integral therewith. The spaces or passages 4 between the wings form outlets for the fluid. These wings extend along the casing to a point adjacent to the wheel 5 which in the construction shown in Fig. 1 is formed integral with the spindle 6, and has suitably shaped blades on its periphery. This wheel and its spindle are formed of a non-corrosive metal as brass or bronze. The spindle is threaded adjacent to wheel and internally threaded sleeves 7 and 8 are fitted onto the spindle, the sleeve 8 for the front end of the motor extending beyond the casing and having its projecting end constructed for attachment to a tool. A bushing 9 is placed in the annular bearing 3, and the forward end of the spindle is slipped into this bushing which it will be observed, is provided with a flange 10 bearing against the inner end of the annular bearing. The sleeve 8 is provided with a shoulder 11 which will bear, preferably through the medium of a washer or wearing ring 12 against the end of the bushing 9. The sleeves are formed of hard metal as steel and being secured to the spindle provide good wearing surfaces for the latter. As the sleeves are screwed tightly against the sides of the wheel the frictional engagement of the forward sleeve with the wheel will cause the latter to transmit a portion of the driving power to the tool.

A hollow annular shell 13 is inserted into the rear portion of the casing being held therein by screw threads. The inner wall of this shell forms a bearing 14 for the rear end of the spindle 6. A bushing 15 similar to the bushing 9 is interposed between the bearing 14 and the spindle, the flange in the sleeve bearing against a shoulder *a* on the inner wall of the bearing 14. A washer or wearing ring 16 is interposed between the bushing and a shoulder on the sleeve 7. The shell when screwed into position holds all the parts of the motor in place in the casing and also serves to conduct the fluid to the blades on the periphery of the wheel, having at its outer end a threaded nozzle 17 for attachment to the supply pipe and with outlet ports 18 for directing the fluid against the blades.

A pocket or recess 19 is formed in one of the radial wings 2 for the reception of lubricating material and said pocket is provided with an outlet port 20 for conducting the lubricant to the front portion of the spindle. While the pocket may be closed by any suitable means, it is preferred to employ a ball 21 held to its seat by a spring 22, for that purpose. Sufficient space is provided at the rear end of the bearing 14 to form a chamber for lubricating material, which is introduced through a port 23 normally closed by a spring seated ball 24. It is preferred to fill the oil chamber in the bearing 14 and the chamber at the front end of the sleeve 8 with waste or other absorbent material which should be kept saturated with oil. It is also preferred to form an axial passage 25 through the spindle so that oil can pass from one lubricating chamber to the other, in case the oil in one becomes exhausted.

As shown in Figs. 2 and 6, the wheel 5 may be formed independent of the spindle 6, and either keyed thereto as in Fig. 2 or screwed into the spindle as in Fig. 6. In both of these forms the entire spindle would be formed of steel. As shown to the right in Fig. 6 the sleeves may be omitted and the shoulders designed to bear on the thrust

bushings, may be formed integral with the spindle, but when the wheel is formed independent of the spindle, one end of the latter is made smaller than the other to permit of the wheel being slipped into position, and in such a case a sleeve should be placed on the reduced end, said sleeve having an external diameter equal or approximately equal to that of the other end of the spindle.

As shown in Fig. 2, the axial passage 25 may be connected by a tube 26 to a supply of lubricating material under pressure, said tube passing through the pipe supply, the fluid pressure for operating the motor as shown and described in an application Serial No. 480,547, filed March 1, 1909, by F. M. Cannon.

It is characteristic of my improvements that the several parts thereof are placed in position through the rear end of the casing and that by screwing in the shell 13 all parts are held in proper operative relation to each other. Each part is held in position by the succeeding part and all finally locked by the shell.

I claim herein as my invention:

1. In a fluid pressure motor the combination of a casing having bearings adjacent to its ends, a wheel provided with spindles, sleeves engaging said spindles and forming the journals of the wheel, one of said sleeves being provided with means for attachment to a tool.

2. A wheel for fluid pressure motors formed of non-corrosive metal in combination with a spindle having the wheel keyed thereon and sleeves formed of hard metal secured to the spindle, one of said sleeves being provided with means for attachment to a tool.

In testimony whereof, I have hereunto set my hand.

HARRIS B. HOLT.

Witnesses:
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