

H. F. WEINLAND.
MOTOR FOR DRIVING BOILER TUBE CLEANERS.
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967,693.

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FIG. 1.

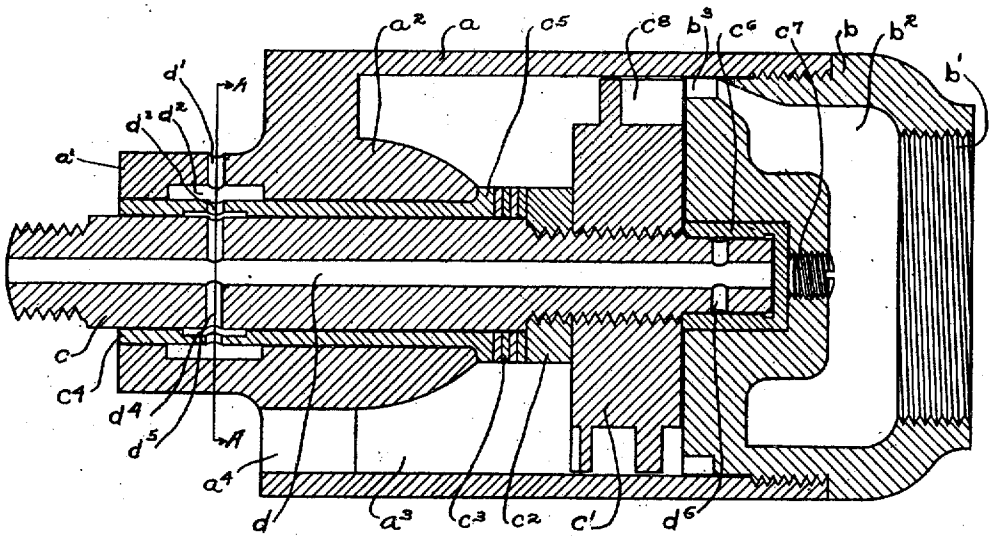
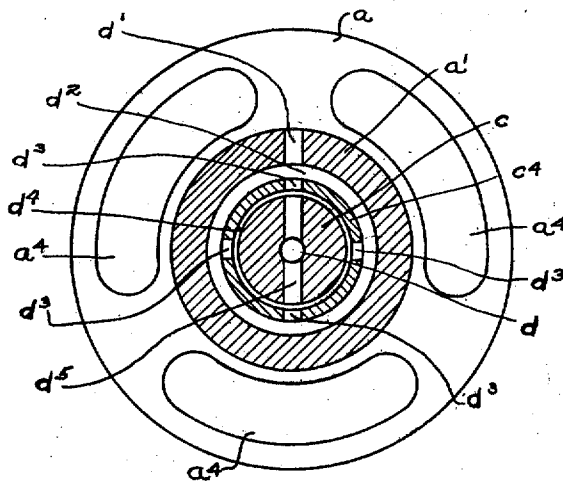


FIG. 2.



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UNITED STATES PATENT OFFICE.

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MOTOR FOR DRIVING BOILER-TUBE CLEANERS.

967,693.

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To all whom it may concern:

Be it known that I, HENRY F. WEINLAND, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Motors for Driving Boiler-Tube Cleaners, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to motors for driving boiler tube cleaners and more particularly motors that are carried through the tube with the cleaner. This class of motors are rotated at a high speed and a proper oiling of the bearings is essential to their successful operation.

The object of my invention is to provide an improved means of oiling the bearings thereby giving the motor greater efficiency and durability.

A further object is to improve the casing and more especially strengthen the front bearing without impairing the discharge of the motor.

With these and other objects in view my invention consists of the constructions and combinations hereinafter described and set forth in the claims.

In the accompanying drawings Figure 1 is a longitudinal section of a motor constructed in accordance with my invention and Fig. 2 is a cross section taken on the line A A of Fig. 1 looking in the direction of the arrows.

Like letters represent the same parts in the two views.

In the drawings *a* represents the casing of a motor having a reduced forward portion *a*¹ and an oppositely extending hub *a*² forming an exceptionally strong front bearing for the motor shaft.

A feed head *b* having a hollow screw threaded rear end *b*¹ to attach to the supply hose coupling and a recess in its forward end to receive the rear end of the driving shaft *c* is screwed into the rear end of the casing as shown. A motor *c*¹ is mounted on a screw threaded portion of the shaft *c* and on the front side of said motor I provide a hardened collar *c*² fixed to the shaft with a number of washers *c*³ loosely mounted on the shaft in front of same to receive the end thrust of the shaft. I preferably provide a bushing *c*⁴ between the portion *a*¹ and *a*² of the casing and the shaft which

forms a removable bearing for the shaft and a shoulder *c*⁵ bears against the washers *c*³. I further preferably provide a bushing *c*⁶ in the recess of the feed head *b* forming a removable bearing for the rear end of the driving shaft *c* and a set screw *c*⁷, accessible through the rear end *b*¹ of the feed head and a chamber *b*² therein, is arranged to take up the wear of the bushing or to remove the same should it stick in its seat.

The actuating medium is introduced through the hollow end *b*¹ and chamber *b*² of the head and thence through ports *b*³ in the head proper to inclined blades or buckets *c*⁸ on the periphery of the motor *c*¹ from which it passes to the chamber *a*³ and thence through discharge openings *a*⁴, the operation of the actuating fluid being in a well known manner.

The front end of the driving shaft I have shown screw threaded to attach to the tube cleaner. Any form of cleaner may be used and attached to the shaft in a suitable manner.

For the purpose of oiling the bearings of the motor I provide a conduit *d* preferably extending throughout the entire length of the shaft and the oil may be introduced through the forward end by removing the cleaner head or by providing a hole through the head but I preferably introduce the oil through an opening *d*¹ in the reduced portion *a*¹ of the casing to a chamber *d*² and thence through one or more holes *d*³ in the bushing *c*⁴ to a recess in the bushing forming a chamber *d*⁴ around the shaft from which the front bearing is lubricated; and further oil passes from the chamber *d*⁴ through one or more transverse holes *d*⁵ in the shaft to the conduit *d* which carries it to the rear bearing. One or more holes *d*⁶ from the conduit may be employed for distributing the oil to the rear bearing, but I have found in practice that the main conduit opening at the rear end of the shaft is sufficient.

The ports for passing the actuating fluid through the feed head make it difficult to introduce oil to the rear bearing by a transverse conduit through the side of the casing and even if this could be accomplished the casing at this point rubs the tube in which it is operating and dirt and grit would work into the conduit. It will be seen that I have provided a safe clean conduit to the rear

bearing with an opening at the front end of the shaft or preferably at d^1 through the reduced portion a^1 of the casing which is removed from the inner wall of the tube through which the motor is operated and at a point where the motor actuating fluid passes over it to keep it clear of dirt and grit.

Having thus described my invention, I claim:

1. In a motor for driving boiler tube cleaners such as described, a runner, a driving shaft rotating therewith and having a conduit to the bearings therefor, a casing forming an exhaust chamber in front of said runner with discharge openings through the front wall of said casing; said wall also having a central opening with oppositely extending hubs formed integrally therewith arranged concentrically with said opening and having a removable bushing therein forming a bearing for the shaft, the wall of said central opening having an annular recess therein abutting said bushing forming a lubricant chamber, said bushing also having an annular recess therein abutting the shaft with communicating openings to the shaft conduit and to the lubricant chamber, a feed head having a bearing for the shaft

into which said conduit opens, the outwardly 30 extending hub being of less diameter than the casing and having a conduit there-through at an angle to its axis to said lubricant chamber, substantially as described.

2. In a motor for driving boiler tube 35 cleaners such as described, a runner, a driving shaft rotating therewith and having a conduit to the bearings therefor, a casing having in its front wall discharge openings for the motive fluid and a central opening 40 with a removable bushing forming a bearing for the shaft, the wall of said central opening having an annular recess therein abutting the bushing forming a lubricant chamber, said bushing also having an an- 45 nular recess abutting the shaft with communicating openings to the shaft conduit and to said lubricant chamber, a feed head having a bearing for the shaft in the rear of the runner into which said conduit opens, 50 and an inlet to said lubricant chamber, substantially as described.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

HENRY F. WEINLAND.

Witnesses:

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O. H. HAUSE.