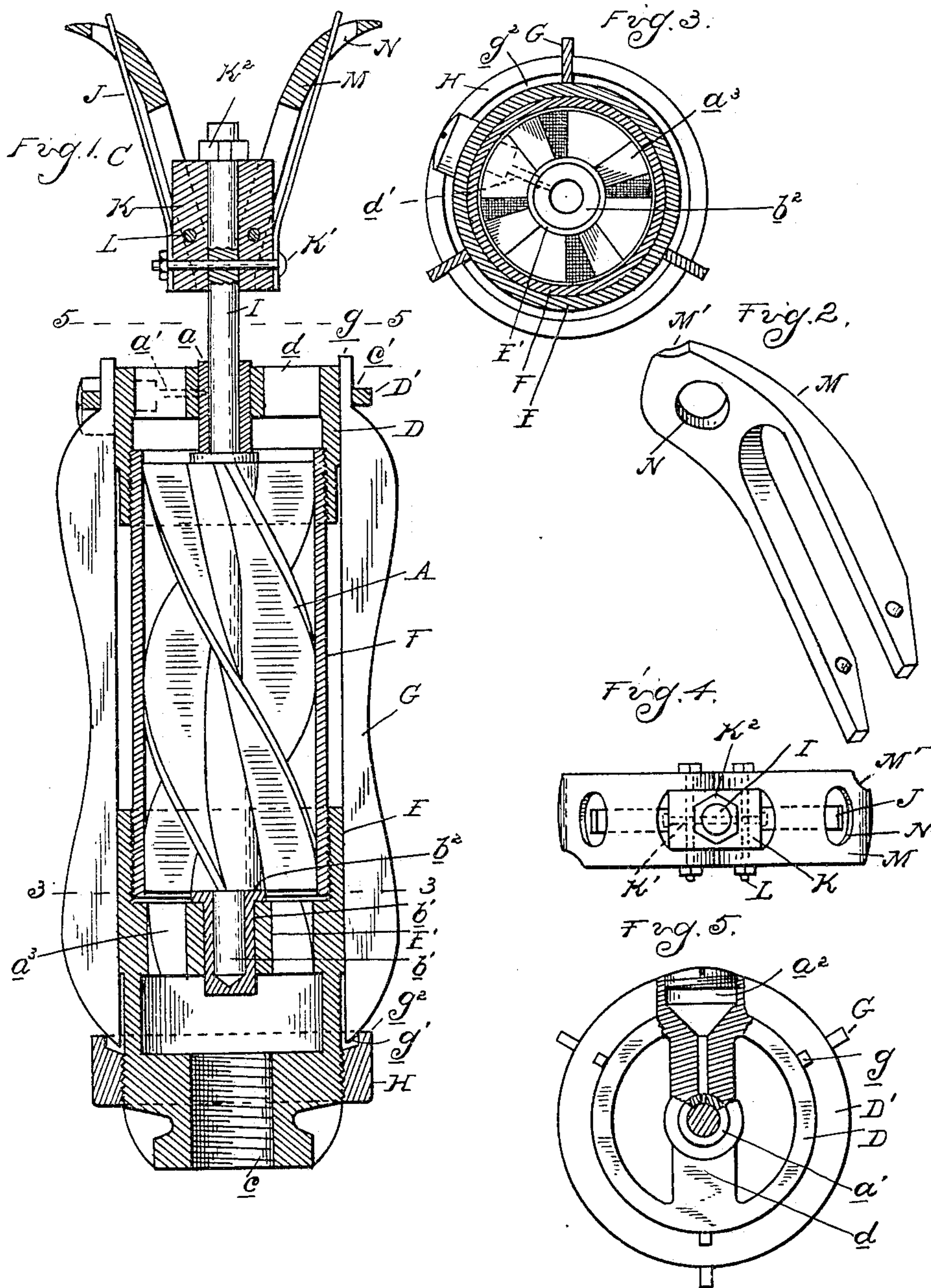


No. 793,204.

PATENTED JUNE 27, 1905.

A. LEMKE.
TUBE CLEANER.

APPLICATION FILED JAN. 27, 1905.



Witnesses
Ed. D. Cuth
H. B. Smith

Inventor
August Lemke
By James Whittmore
Atty.

UNITED STATES PATENT OFFICE.

AUGUST LEMKE, OF DETROIT, MICHIGAN.

TUBE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 793,204, dated June 27, 1905.

Application filed January 27, 1905. Serial No. 242,977.

To all whom it may concern:

Be it known that I, AUGUST LEMKE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have
5 invented certain new and useful Improvements in Tube-Cleaners, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to improvements in
10 cleaners for boiler flues or tubes; and it consists in the novel and simple construction of a device of this character and in the peculiar arrangement and combination of its parts, as hereinafter described.

15 In the drawings, Figure 1 is a vertical central section through a cleaner embodying my invention, showing the parts in working position. Fig. 2 is a detached perspective view of one of the cutter-knives. Fig. 3 is a sectional view of a part of the motor-casing, taken
20 on line 3 3 of Fig. 1. Fig. 4 is an end view of the cutter; and Fig. 5 is an end view of the motor-casing, taken on line 5 5 of Fig. 1, a part of the casing being cut away, showing the lubricator.

25 In construction the cleaner consists of a fluid-motor A, inclosed in a suitable casing B, and a cutter C, operatively connected with the motor, as hereinafter described. The motor-casing consists of a tube F, threaded exteriorly at its ends to receive the detachable
30 sleeves D and E. The sleeve D, preferably in the form of a casting, is provided interiorly with a cross-bar α , centrally apertured and fitted with Babbitt metal, forming a bearing α
35 for the motor-shaft. A passage α' extends within the cross-piece from the exterior of the casing to the bearing and is enlarged and capped in any suitable manner, forming a storage-cup α'' for the lubricant. The sleeve E,
40 also in the form of a casting, has a reduced outer end interiorly threaded, as indicated at ϵ , to receive the fluid-supply pipe for the motor. Intermediate its ends the sleeve is pro-
45 vided with a spider-frame E', preferably integral with the sleeve, and has formed therein oblique inlet-ports α^3 , corresponding in number to the blades of the motor and arranged at such an angle relative to the motor that the

fluid will be discharged from the ports at right
50 angles to the motor-blades, whereby the maximum effect of the motive fluid is obtained. The frame E' is centrally apertured and fitted with a Babbitt cap b , serving as a thrust-bearing for the end b' of the motor-shaft. The
55 cap is held in place by the annular flange b^2 , lying against the inner face of the spider, as shown.

Means are provided whereby the tube-cleaner described may be adapted for flues or
60 tubes of different sizes, the means in this instance consisting of a plurality of ribs or flanges G, detachably arranged upon the exterior of the motor-casing, which serve to prevent oscillation of the latter when in use. A
65 number of sets of ribs or flanges differing in size are preferably provided for each cleaner, the operator being merely required to select the particular set of ribs or flanges that when
70 applied to the cleaner will fit the tube or flue.

On the periphery of the sleeve D is cast an annular flange D', having formed therein perforations ϵ' , corresponding in number to the ribs G. The outer end g of each flange or rib
75 is reduced to fit within its perforation, and its opposite or inner end is inclined, as at g' , to permit of its engagement by an annular flange g'' on the collar H, threaded on the end of the sleeve E, as shown in Fig. 1. It will be ob-
80 vious that by properly adjusting the collar the ribs or flanges may be removed and replaced by others in a ready and effective manner. It will also be noticed that the ribs by being applied directly to the casing have a solid back-
85 ing, which serves to prevent oscillation of the casing when the motor is in operation. The sleeves D and E being adjustable may be moved relatively to each other upon the cas-
90 ing, so as to form proper bearings for the motor-shaft. The sleeve E is provided with a passage α'' , similar to the one in the sleeve D, forming lubricating means for the inner shaft-bearing.

The motor A is of the ordinary screw type, having preferably four blades, and its shaft I
95 extends a considerable distance beyond its outer bearing in the sleeve D.

K represents a rectangular head-block de-

tachably arranged upon the shaft extension, which is held in place by the bolt K' and lock-nut K² upon the extremity of the shaft.

M represents the cutter-knives, bifurcated, as indicated in Fig. 2, with the furcations extending on opposite sides of the head-block and pivoted thereto by bolts L. The knives, as shown, are curved outwardly and at their extremities are provided with cutting edges M'. In proximity to their outer ends the knives are apertured, as at N, and through these apertures springs J extend, rigidly attached at their lower ends to the head by the bolt K'. The springs described serve to hold the cutters in a position longitudinally of the shaft, so that normally their spread will be considerably less than the diameter of the casing, allowing ready insertion of the cleaner within the flue. Upon the operation of the motor the knives spread by reason of the centrifugal force and engage the interior surfaces of the tube or flue.

What I claim as my invention is--

1. In a rotary motor for flue-cleaners, the combination with a casing, of adjustable sleeve members thereon, one provided with oblique inlet-ports, supporting-bearings carried by the sleeves, and a spiral journaled within the bearings in right-angular relation to the ports.

2. In a rotary motor for flue-cleaners, the combination with a casing, of an adjustable sleeve upon the inlet end thereof provided with a plurality of inlet-ports and a central thrust-bearing, a complementary sleeve upon the discharge end of the casing carrying a central bearing, and a spiral having end extensions journaled within said bearings.

3. In a rotary motor for flue-cleaners, the combination with a tubular casing, adjustable sleeves upon the ends thereof each provided with a central opening and ports arranged

circumferentially about the opening, a thrust-bearing for one of the sleeves fitting within and closing its central opening, a tubular bearing within the central opening in the opposite sleeve, and a motor having end extensions journaled in the bearings.

4. The combination with a tubular casing, of adjustable sleeves thereon each carrying a central bearing and having a chamber for the lubricant, and a passage leading from the chamber to the bearing, and a motor having end extensions journaled within the sleeve-bearings.

5. The combination with a casing having inlet and discharge ports, of a rotary fluid-motor therein, and a plurality of rigid guide members extending longitudinally of and detachably mounted upon the casing.

6. The combination with a casing having inlet and discharge ports, of a rotary fluid-motor therein, and a series of rigid longitudinally-extending ribs or flanges each having detachable connections at its opposite ends with the casing.

7. The combination of a tubular casing, adjustable sleeves upon the casing ends, a rotary fluid-motor within the casing, and a plurality of longitudinally-extending guide members detachably connected to the sleeves.

8. In a rotary motor for flue-cleaners, an elongated casing having longitudinally-extending rigid guide members removably mounted upon its exterior.

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

AUGUST LEMKE.

Witnesses:

ED. D. AULT,
H. C. SMITH.