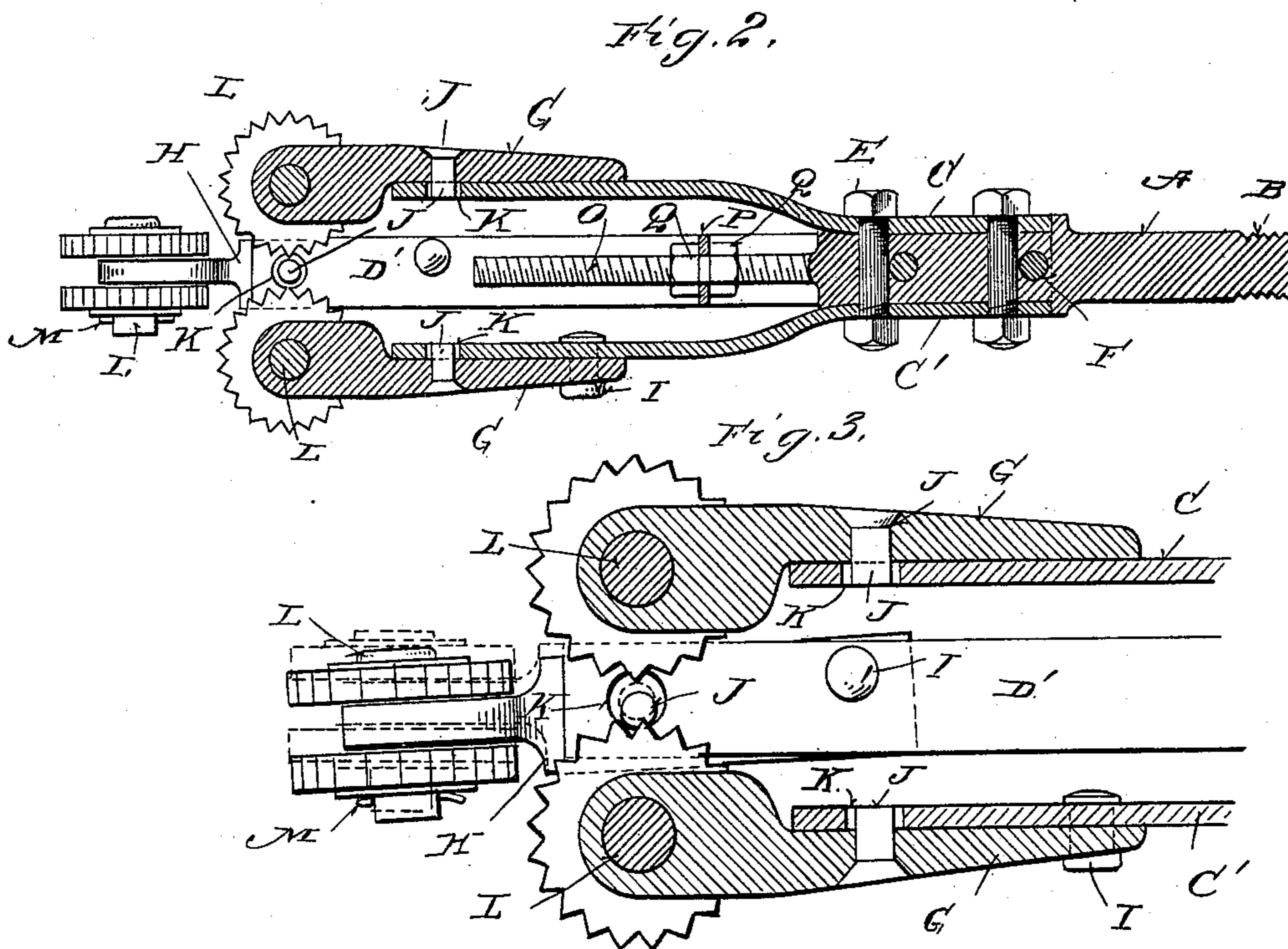
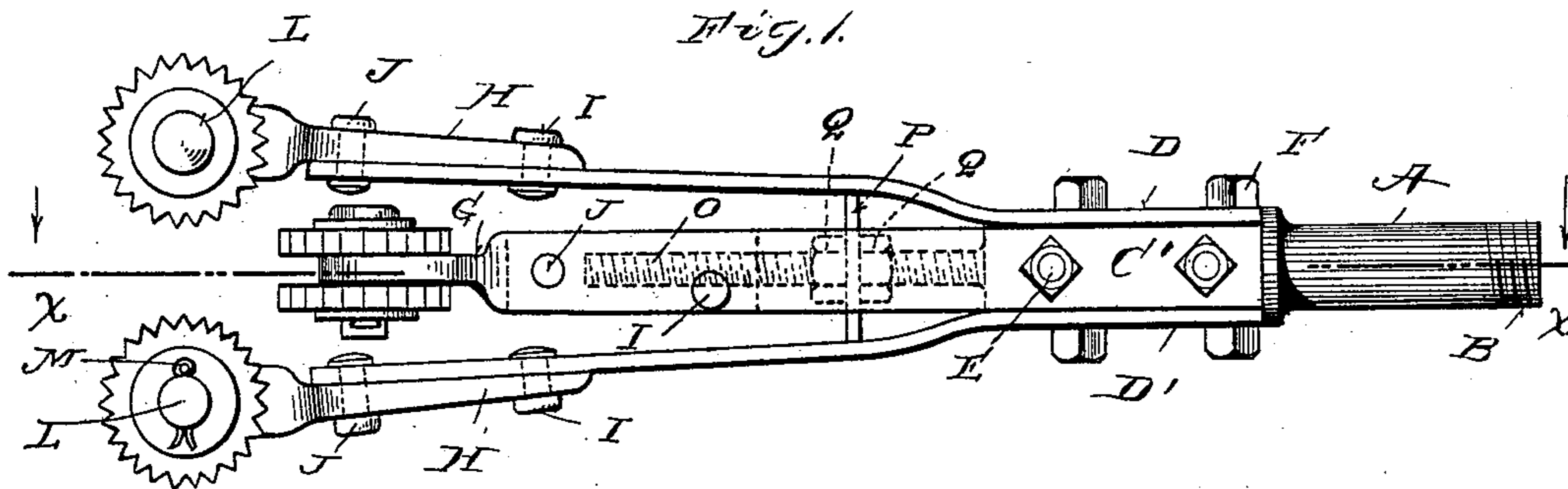


(No. Model.)

H. F. WEINLAND.  
FLUE CLEANER.

No. 594,221.

Patented Nov. 23, 1897.



Witnesses  
J. D. Hawley  
H. M. McNair.

Inventor  
Henry F. Weinland.  
By his Attorney  
H. A. Toulmin.

# UNITED STATES PATENT OFFICE.

HENRY F. WEINLAND, OF SPRINGFIELD, OHIO, ASSIGNOR TO LAGONDA MANUFACTURING CO., OF SAME PLACE.

## FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 594,221, dated November 23, 1897.

Application filed July 2, 1897. Serial No. 643,242. (No model.)

*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 Flue-Cleaners, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved tool for cleaning steam-boiler flues, and I term it a "flue-cleaner."

It consists, essentially, of a stem or body with a plurality of spring-arms secured to it, each arm having one or more toothed wheels, and the group of arms, with their wheels, adapted to enter the boiler-flue and to be worked back and forth therein, the toothed wheels shifting to one side somewhat when pushing the tool into the tube and shifting back when drawing it out, whereby the wheels are made to travel over different paths, so as to attack the scale or incrustation at all points within the tube.

In the accompanying drawings, on which like reference-letters indicate corresponding parts, Figure 1 is a side elevation of my improved tube-cleaner; Fig. 2, a longitudinal sectional view thereof on the line  $x x$  of Fig. 1, and Fig. 3 an enlarged sectional view and elevation of several of the arms and wheels.

The letter A designates the shank or body of the tool, consisting of a stout bar screw-threaded at B, so that it may be connected with an extension to enable the user to project the tool into a long boiler tube or flue. A part of the shank is squared, and to each face are secured spring-arms C C' and D D', bolts and nuts E and F being used for this purpose. To the outer ends of these arms are attached plates G and H, respectively. The attachment is somewhat peculiar. It consists in each instance of a pivot I, placed somewhat to one side of the center of the plates and passing through the plates and the spring-arms, respectively. It also consists of studs or bolts J, secured to the plates and extended through slots or enlarged openings K in the spring-arms, so that the studs shall have play or movement to a limited extent in such slots or openings. Referring to Fig. 3 the purpose

of this construction will be understood—namely, to permit the plates to shift sidewise somewhat, so that the different paths are traveled in the tube or flue as the tool is reciprocated or worked back and forth therein. Thus when the tool is pushed forward or into a tube or flue the plates will shift as shown in full lines in Fig. 3, and when the tool is drawn outward the plate will shift to the dotted-line position. Thus the wheels presently to be referred to will travel in different paths as the tool is moved back and forth and in this manner more effectually attack all the parts of the incrustation or foreign coating within the tubes or flues. These wheels are in the form of disks with sharp saw-like teeth on their peripheries and are mounted in pairs on each plate by means of a pin L, passing through the plate and wheels and retained by a cotter-pin M or other means. The wheels are capable of rotating freely, so that the teeth attack the substance to be removed from the interior of the tubes or flues of steam-boilers.

As a means of expanding or adjusting the arms D D', which are the longer arms, and also as the means of making them firmer by reducing their length from the point of support, I provide the shank or body with a screw-threaded extension O, carrying a bar P, and nuts Q, which engage the bar and hold it in adjusted positions, the ends of the bar being against the springs D D'. Thus the yielding portions of the springs D D' can be varied in length, and thus also these springs can be adjusted outward or inward to accommodate different-sized flues and different degrees of incrustation or scale on the interior of such tubes or flues.

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

1. In a boiler-tube-cleaning tool, a shank or body, a plurality of spring-arms secured thereto, a plate shiftingly attached to each spring and one or more toothed wheels carried by each plate.

2. In a boiler-tube-cleaning tool, a body or shank having two sets of springs secured thereto, a plate secured to each spring, a pair

of toothed wheels secured to each plate, the plates being shiftingly attached to the springs so as to move sidewise somewhat.

3. In a boiler-tube-cleaning tool, a shank  
5 or body having two sets of springs secured thereto, and means to expand one set of springs from each other or permit them to come closer together, a plate shiftingly secured to each spring so as to change the position laterally  
10 and one or more toothed wheels carried by each plate.

4. In a boiler-tube-cleaning tool, a shank or body having at one end a screw-threaded extension and a bar held by said nuts, four

springs secured to the shank or body, two of 15 which are engaged by the ends of said bar, a plate pivoted to each spring, a stud secured to each plate and shiftable in an opening or slot in the respective springs, and a pair of toothed wheels rotatably carried by each 20 plate with their axes at right angles to said studs as to the respective paths.

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

HENRY F. WEINLAND.

Witnesses:

M. T. BURNHAM,

J. J. MILLER.