2 Sheets—Sheet 1.

W. S. LEVAKE.

Boiler Flue Cleaner.

No. 234,044. Patented Nov. 2, 1880.

Fig. 1.

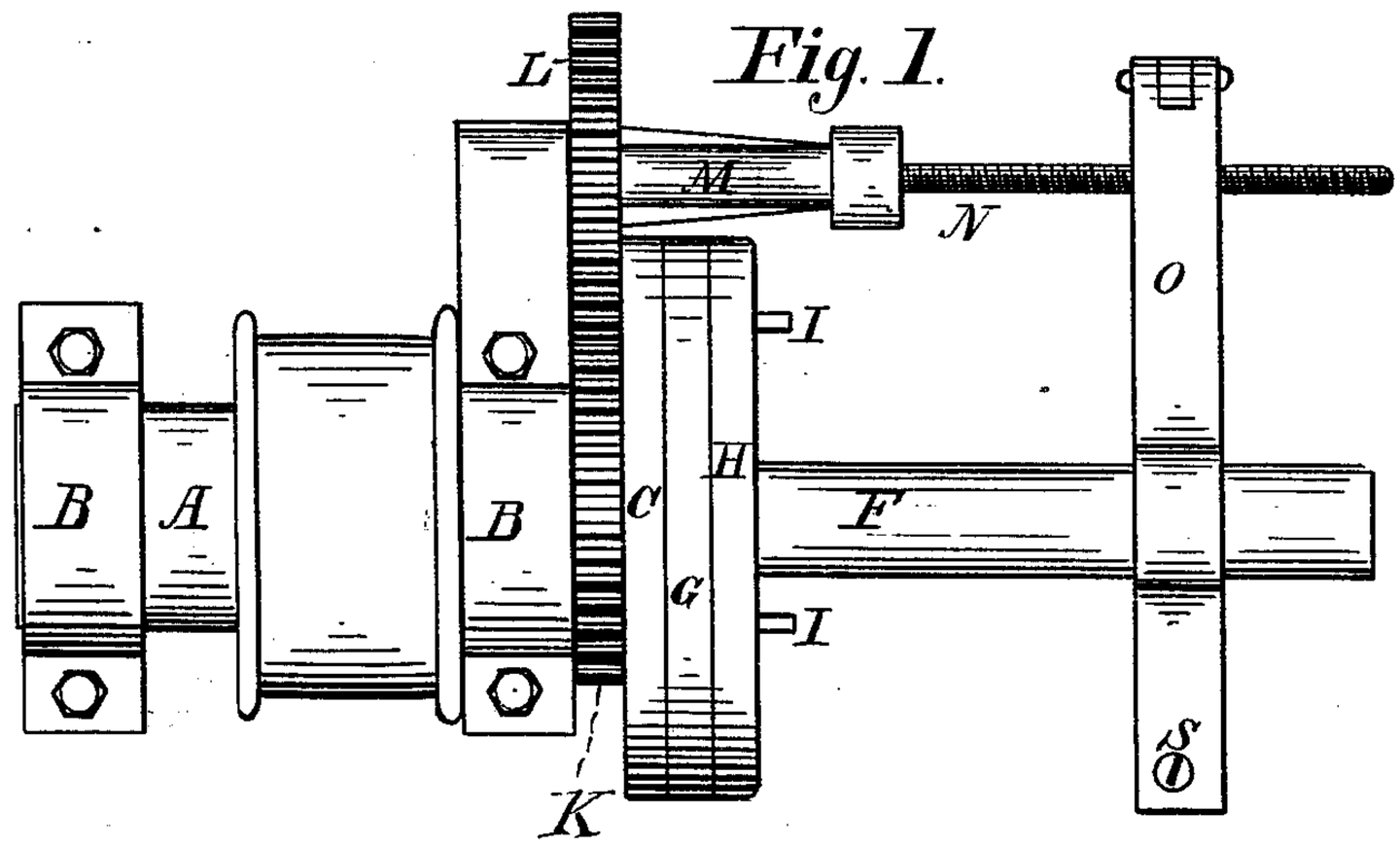


Fig. 2.

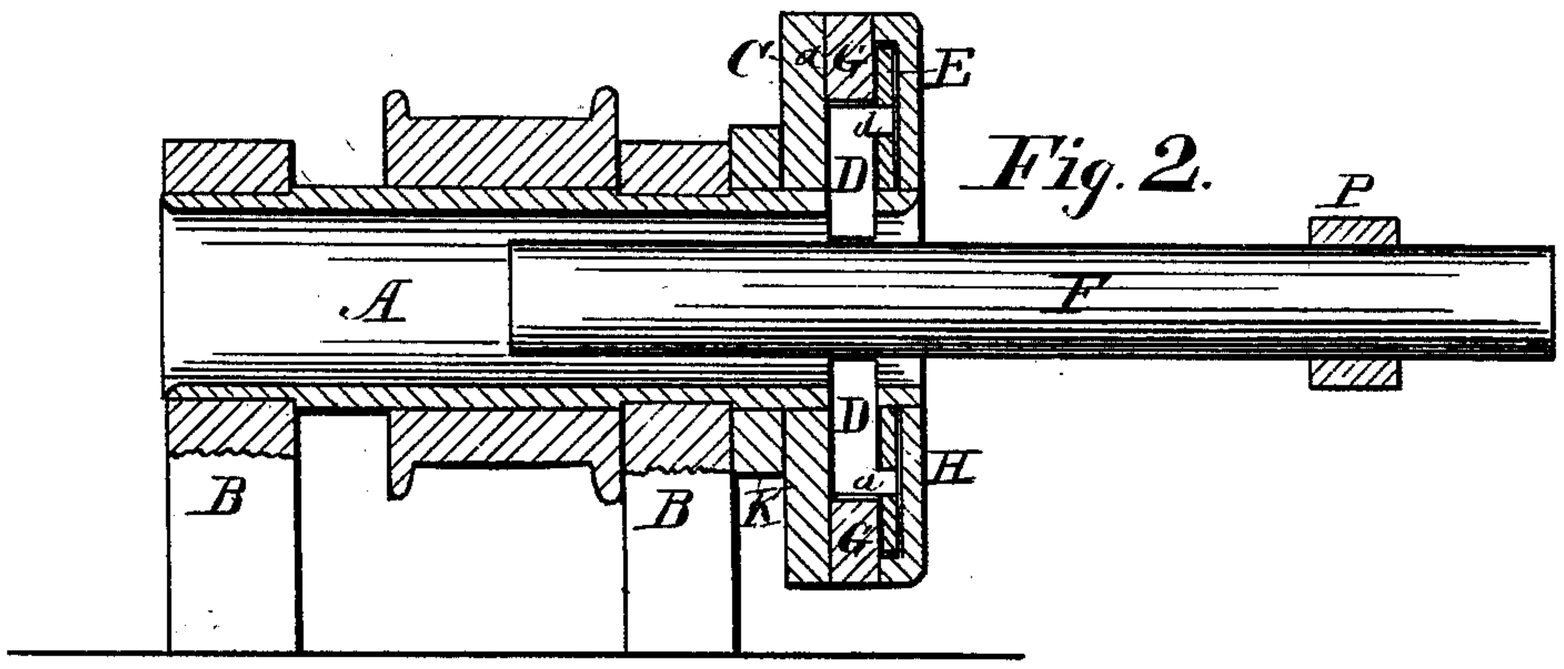


Fig. 4.

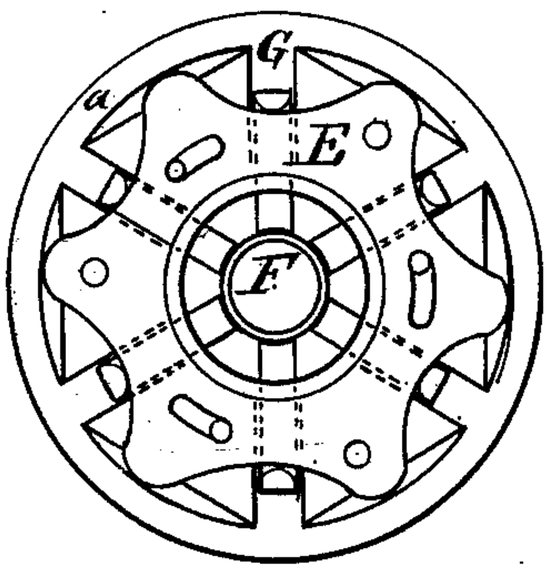


Fig. 5.

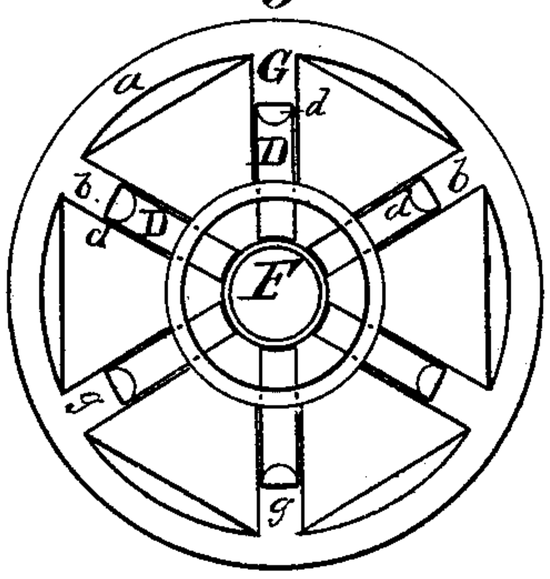
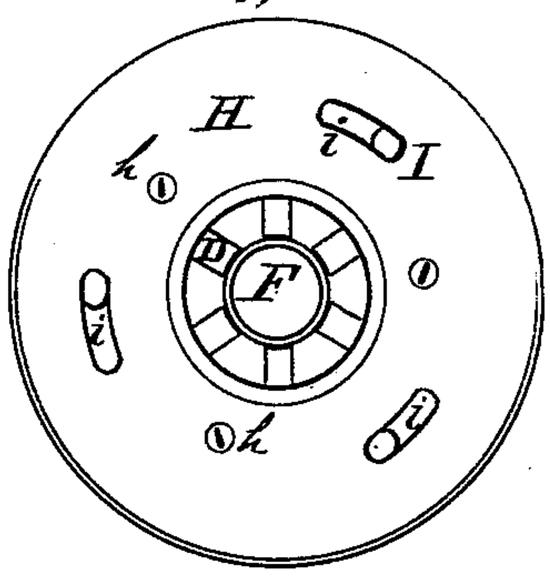


Fig. 3.



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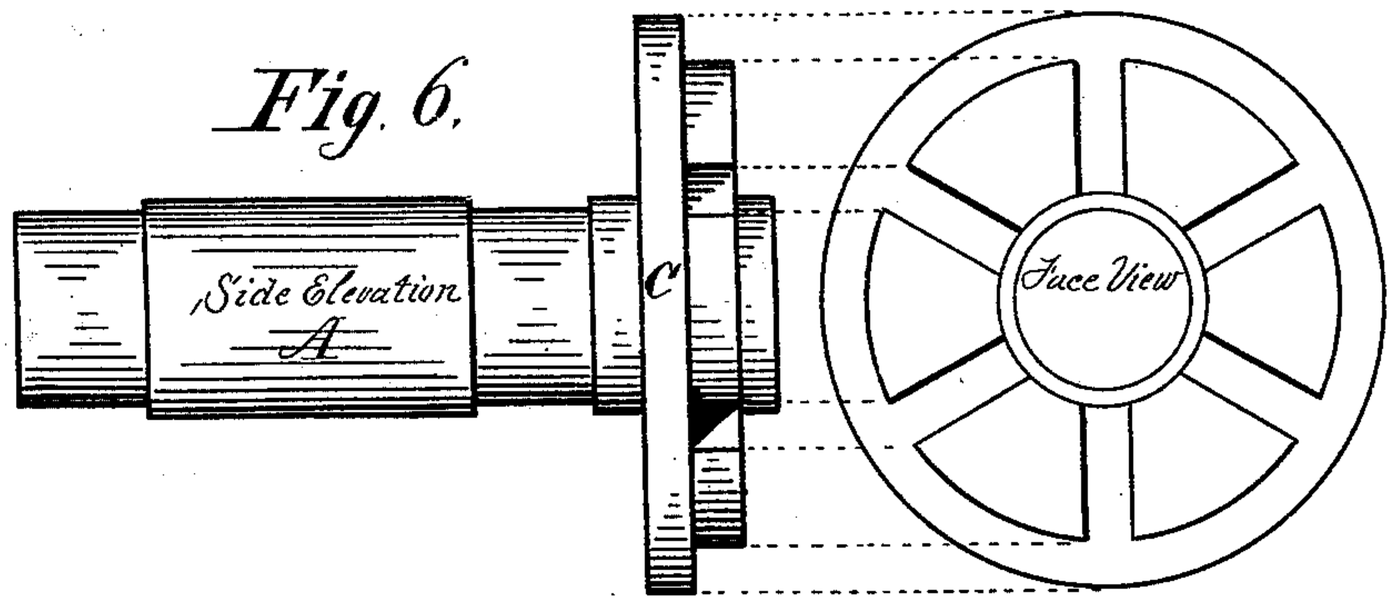
2 Sheets—Sheet 2.

W. S. LEVAKE.

Boiler Flue Cleaner.

No. 234,044. **Patented Nov. 2, 1880.**

Fig. 6.



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UNITED STATES PATENT OFFICE.

WINFIELD S. LEVAKE, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO EDGAR SLAIGHT, OF SAME PLACE.

BOILER-FLUE CLEANER.

SPECIFICATION forming part of Letters Patent No. 234,044, dated November 2, 1880.

Application filed February 25, 1880.

To all whom it may concern:

Be it known that I, WINFIELD SCOTT LEVAKE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Steam-Boiler-Flue Cleaners, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a top or plan view. Fig. 2 is a vertical longitudinal section. Fig. 3 is a face view of the revolving tool-holding head. Fig. 4 is a face view of the same with the cap removed. Fig. 5 is a similar view with the tool-adjuster removed. Fig. 6 is a detached view of the revolving tool-holding head, showing the rabbet and concentric grooves.

My invention relates to a device for cleaning the outside of boiler-flues; and it consists of a revolving tool-holding head fixed on a hollow shaft in such a manner that the flue is passed through by means of suitable feed mechanism and quickly and thoroughly cleaned of all scale and deposits from the water which gather and adhere thereon.

The construction and operation are as follows.

Similar letters of reference indicate similar parts throughout the several views.

A is a hollow shaft set so as to revolve in suitable bearings B B, to one end of which is fixed a head or disk, C, having an annular groove or rabbet, *a*, in its periphery, connecting with radial grooves *b b*, opening into the center of the said hollow shaft A.

The tools D D consist of steel bars having a short arm, *d*, on their outer ends, which project forward and rest on the outer edge of an adjusting-plate, E, which lies over the face of the said disk C and covers the tools D as they lie in their respective grooves.

The adjusting-plate consists of a disk, E, fitted and turning on the hollow shaft A, and has its periphery formed with inclined edges, so that the turning of the plate will raise or expand the said tools when desired for receiving the flue F.

Lying in the annular groove or rabbet *a* is a rubber ring, G, having short projections *g g*, which extend into the outer ends of the tool-grooves *b b* and bear against the heads of the said tools and serve as springs to press the tools inward and against the outside surface of the flue.

H is a cap fitted to cover over the tools, springs, and adjusting-plate, secured with screws *h h*, which pass through slots in the said adjusting-plate, so as not to interfere with its working. The said cover or cap H also has slots *i i*, through which arms I I on said adjusting-plate project, whereby the said plate may be operated.

Upon the shaft A is placed a gear-wheel, K, just back of the disk C, which meshes with a corresponding gear, L, fixed on a short shaft, M, set in suitable bearings by the side of the said rotary tool-head. Said shaft M carries a feed-screw, N, employed for conveying the flue forward while the machine is working.

O is a clamp, consisting of two bars, P, hinged together, and having a space for clasping the flue, as seen in Fig. 1, a screw, *s*, serving to secure the said bars together, thus clamping the flue firmly in its gripe, the said feed-screw N also passing through said clamp and playing in a screw-thread cut therein.

The operation of this device is as follows: The clamp O is placed on one end of the flue, and then the other end of the flue is placed in the opening in the revolving head, the tools being expanded so as to receive it. The machine is then set in motion, the feed-screw N directed into its place in the said clamp, when the machine automatically performs its work.

Each alternate tool is a stiff brush, while the others are cutting-tools. It will be observed that the brushes set a little forward of the cutters, and thus precede them, wiping and brushing off all loose scales and dirt. The cutters also have slightly beveled front sides, so as to present their cutting-edges in a slightly diagonal line on the surface of the flue, which greatly facilitates their work.

Heretofore boiler-flues have been cleaned of the scale and sediment deposit by hand by the use of cold-chisels and hammer. By the use of this machine the labor of removing the scale from boiler-flues is very greatly lessened, and is very rapidly and thoroughly done.

Having described my invention, I claim—

1. The revolving tool-holding head consist-

ing of the disk C, having the annular groove or rabbet *a* and radial grooves *b b*, adjusting-plate E, rubber spring G, and cap H, in combination with the hollow shaft A, substantially as described.

2. In combination with the revolving tool-head constructed substantially as shown, the cutting-tools and brushes D D, having short arms *d d*, whereby said tools are adjusted by the movement of said adjusting-plate, as and for the purpose specified.

3. In combination with the revolving tool-head, the gears K L, shaft M, feed-screw N, and clamp O, for conveying the flue forward, as specified.

Witnesses: W. S. LEVAKE.

GEO. W. TIBBITTS,

E. W. LAIRD.