

No. 611,904.

Patented Oct. 4, 1898.

N. B. HAMILTON.  
BOILER FLUE CLEANER.

(Application filed Dec. 23, 1897.)

(No Model.)

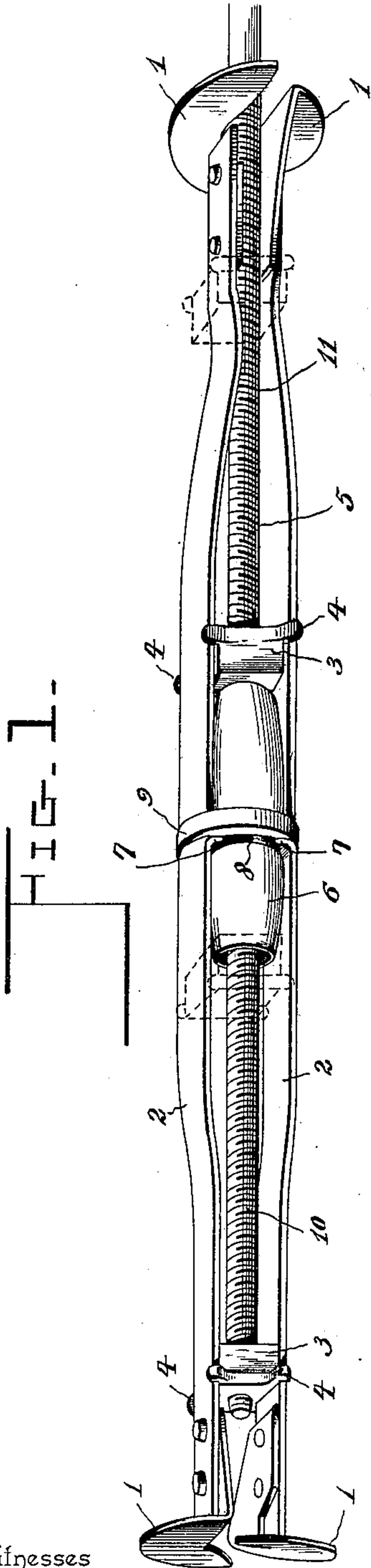


FIG. 4.

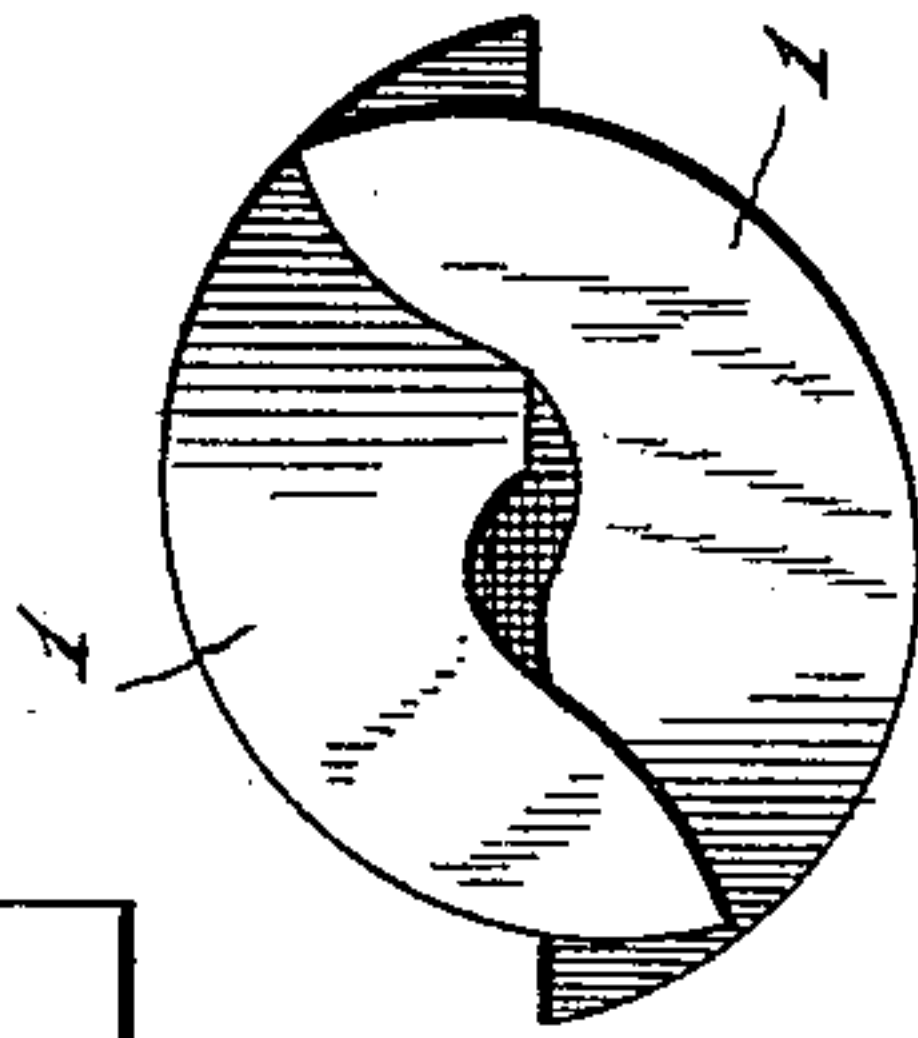


FIG. 2.

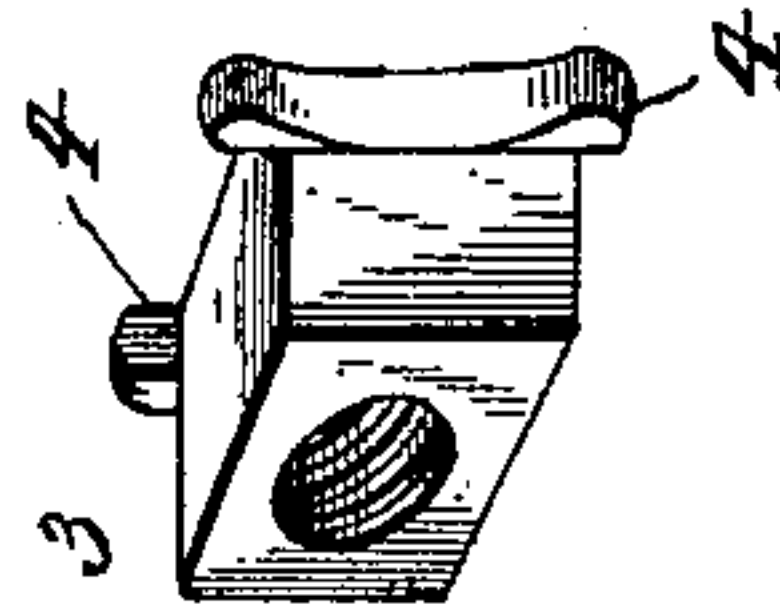
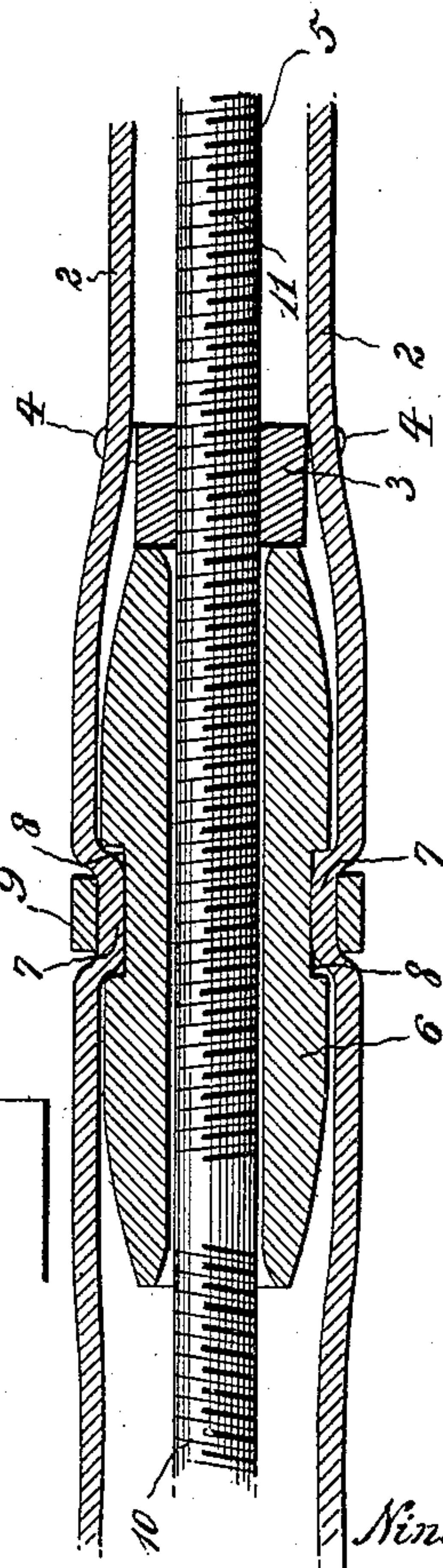


FIG. 3.

Witnesses

John F. Deufferwiel  
*[Signature]*

By his Attorneys,

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Inventor

Ninian B. Hamilton.



# UNITED STATES PATENT OFFICE.

NINIAN B. HAMILTON, OF SAN ANTONIO, TEXAS.

## BOILER-FLUE CLEANER.

SPECIFICATION forming part of Letters Patent No. 611,904, dated October 4, 1898.

Application filed December 23, 1897. Serial No. 663,205. (No model.)

*To all whom it may concern:*

Be it known that I, NINIAN B. HAMILTON, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Boiler-Flue Cleaner, of which the following is a specification.

My invention relates to boiler-flue cleaners, and has for its object to provide a simple, strong, light, and efficient device adapted for double action, or to operate both in pulling and pushing, the scraping-blades being adapted for expansion, respectively, according to the direction of the application of power.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a flue-cleaner constructed in accordance with my invention, the parts being adapted for pushing the scraper, and showing in dotted lines the arrangement of the operating or shifting rod when the scraper is being drawn through a flue. Fig. 2 is a partial longitudinal section. Fig. 3 is a detail view of one of the adjustable spreaders. Fig. 4 is an end view.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The scraping-blades 1 are arranged in duplicate, a pair of blades being arranged at each end of the scraper and being carried by the spring-arms 2, having a normal tendency toward each other to fold the cooperating blades when released. In the construction illustrated the blades, which are of crescent shape and have circular outer edges for contact with the inner surface of a flue, are spirally disposed or are arranged at an inclination, whereby when folded their contiguous extremities overlap and insure a compact arrangement, as shown in Fig. 4. These blades are preferably attached to the extremities of the supporting-arms 2, whereby when worn they may be replaced. In addition to having an inward tendency the blade-supporting arms are deflected toward each other to form cam-surfaces at their inner sides for cooperation with spreading slides 3, which are mounted between the members

of each pair of arms. In the construction illustrated these spreaders are provided with side seats 4 to receive the arms and prevent displacement; but it will be understood that the number of arms is not necessarily limited to two, as shown in the drawings, and hence the spreaders are susceptible of variations in construction to suit the number of arms employed.

The scraper shaft or rod 5 extends longitudinally between the supporting-arms of the scraping-blades and is mounted for reciprocatory movement in a tubular guide 6, to which the inner or contiguous ends of the supporting-arms are secured. In the construction illustrated the aligned supporting-arms at the same side of the scraper are formed of a continuous bar of metal, and at the point of junction of the arms the bar is deflected to form a seat 7, of which the convex side is fitted in a circumferential groove 8 in the exterior surface of said tubular guide, while said seats in the bars are engaged by a holding-ring 9 to hold the bars in engagement with said grooves in the guide. This forms a compact and at the same time strong arrangement of parts, and the displacement of the arms is impossible without cutting the ring.

As above indicated, the scraper embodying my invention is provided at opposite ends with transversely or laterally expansible scraping-blades, of which the members are carried, respectively, by contracting arms, and that mounted to slide between these arms are spreaders for separating the members of the blades. These spreaders are carried by the reciprocatory rod, which operates through the central guide of the scraper, and the sliding movement of the operating-rod in either direction is limited by one of the spreaders coming in contact with the contiguous end of the guide. The guide is elongated, in the first place, to stop the reciprocatory rod without allowing an excessive reciprocatory movement thereof and also to provide an extended bearing for the rod to prevent bending or twisting; but the rod is further guided with relation to the arms of the scraper by the engagement of the spreaders with the opposite edges of the arms, as hereinbefore described.

Obviously there are differences in the diameters of the bores of different boiler-flues,



and in order to adapt the scraper for different diameters of bores and also to enable the blades to be spread to a greater or less extent as the operation proceeds I preferably construct the operating-rod with right and left threaded portions 10 and 11 for respective engagement by the spreaders, and it is obvious that by turning the rod in one direction the spreaders will be separated longitudinally of the rod, while an opposite rotation will cause the movement of said spreaders toward each other. Thus by separating the spreaders longitudinally a greater throw of the operating-rod is allowed before this movement is checked by the contact of a spreader with the end of the guide, and hence a greater expansion of the scraping-blades will be attained. On the other hand, when the spreaders are adjusted toward each other the movement of the operating-rod is limited to a shorter stroke, and hence a less extensive expansion of the scraping-blades will result.

Having described my invention, what I claim is—

25 1. A boiler-flue scraper provided at opposite ends with expansible scraper-blades, yielding arms for supporting the members of said blades, a central longitudinal guide by which said arms are supported, an operating-rod extending for reciprocation through said guide, and spreaders adjustably fitted upon the operating-rod upon opposite sides of the plane of the guide, for controlling the relative positions of the yielding arms and adapted for contact with opposite ends of the guide to limit the reciprocatory movement of the rod, the adjustment of the spreaders upon the operating-rod being adapted to vary the extent of movement thereof, substantially as  
40 specified.

2. A boiler-flue scraper provided at opposite ends with expansible scraping-blades, supporting-arms respectively carrying the members of said blades and provided with cam-faced inner sides, said supporting-arms 45 having a normal tendency toward each other, a central guide interposed between the arms, an operating-rod mounted to slide in said guide and provided with opposite screw-threaded portions, and spreaders respectively 50 fitted upon said opposite screw-threaded portions of the operating-rod and adapted to cooperate with the cam-faces of the supporting-arms, the throw of the operating-rod and the extent of lateral motion of the members of 55 the scraping-blades being controlled by the relative positions of the spreaders upon said rod, substantially as specified.

3. A boiler-flue scraper having a tubular guide provided with a circumferential groove, 60 bars extending longitudinally in opposite directions from said guide and provided at their centers with offset portions engaging the circumferential groove of the guide, a ring engaging and securing said offset portions of 65 the bars in the groove of the guide, scraping-blade members carried respectively by the extremities of said bars, an operating-rod mounted for reciprocatory movement in the guide, and spreaders carried by said rod for 70 expanding the scraping-blades, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NINIAN B. HAMILTON.

Witnesses:

JOHN B. NEUENDORFF,  
SANTOS A. LEAL.