

A. THOMAS & E. THOMPSON.

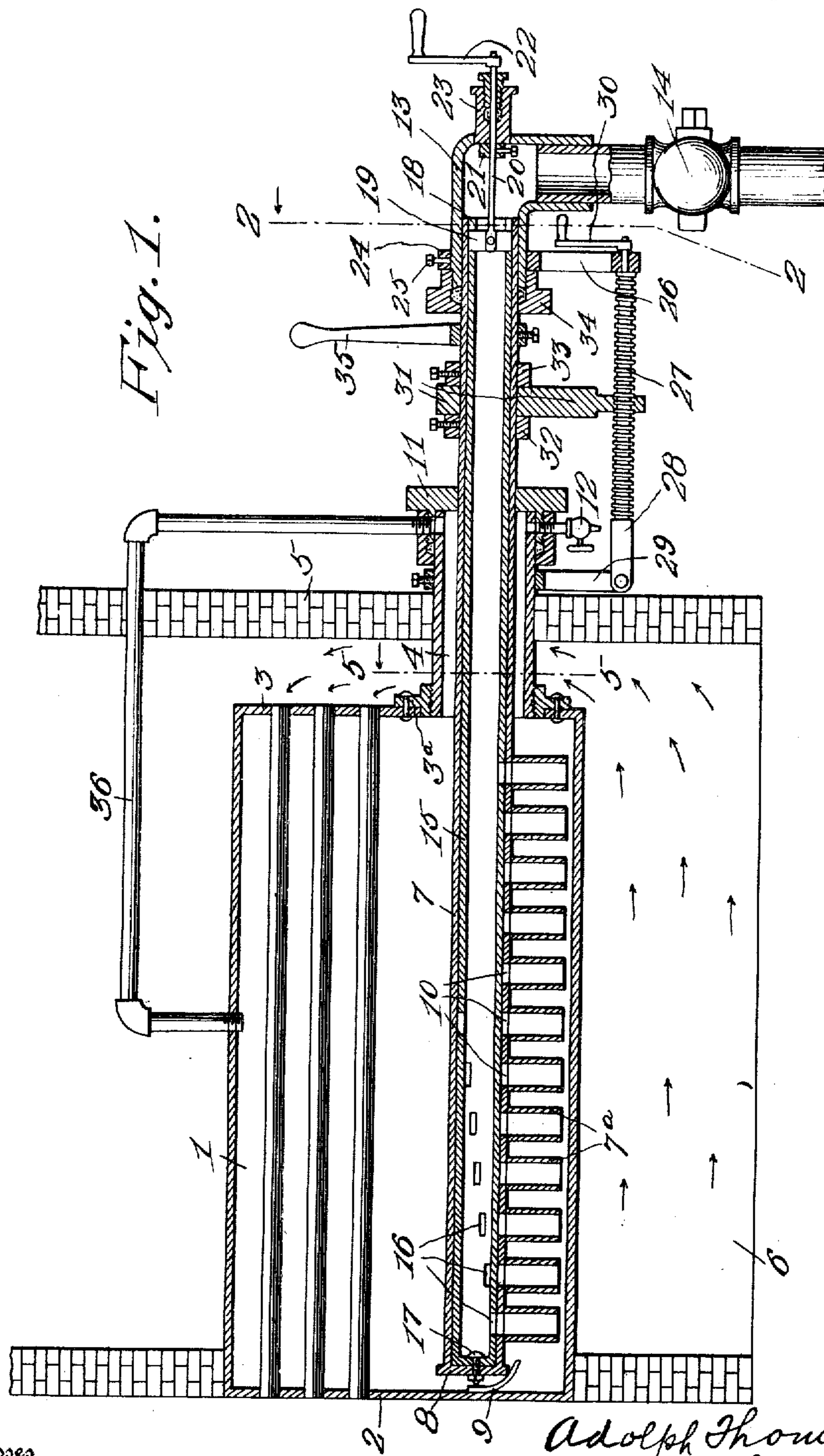
BOILER CLEANING DEVICE.

APPLICATION FILED FEB. 25, 1909.

942,982.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.



Witnesses

James F. Brown  
E. M. Rickette

Inventors

Adolph Thomas  
Edgar Thompson

By

Watson E. Coleman  
Attorney

A. THOMAS & E. THOMPSON.

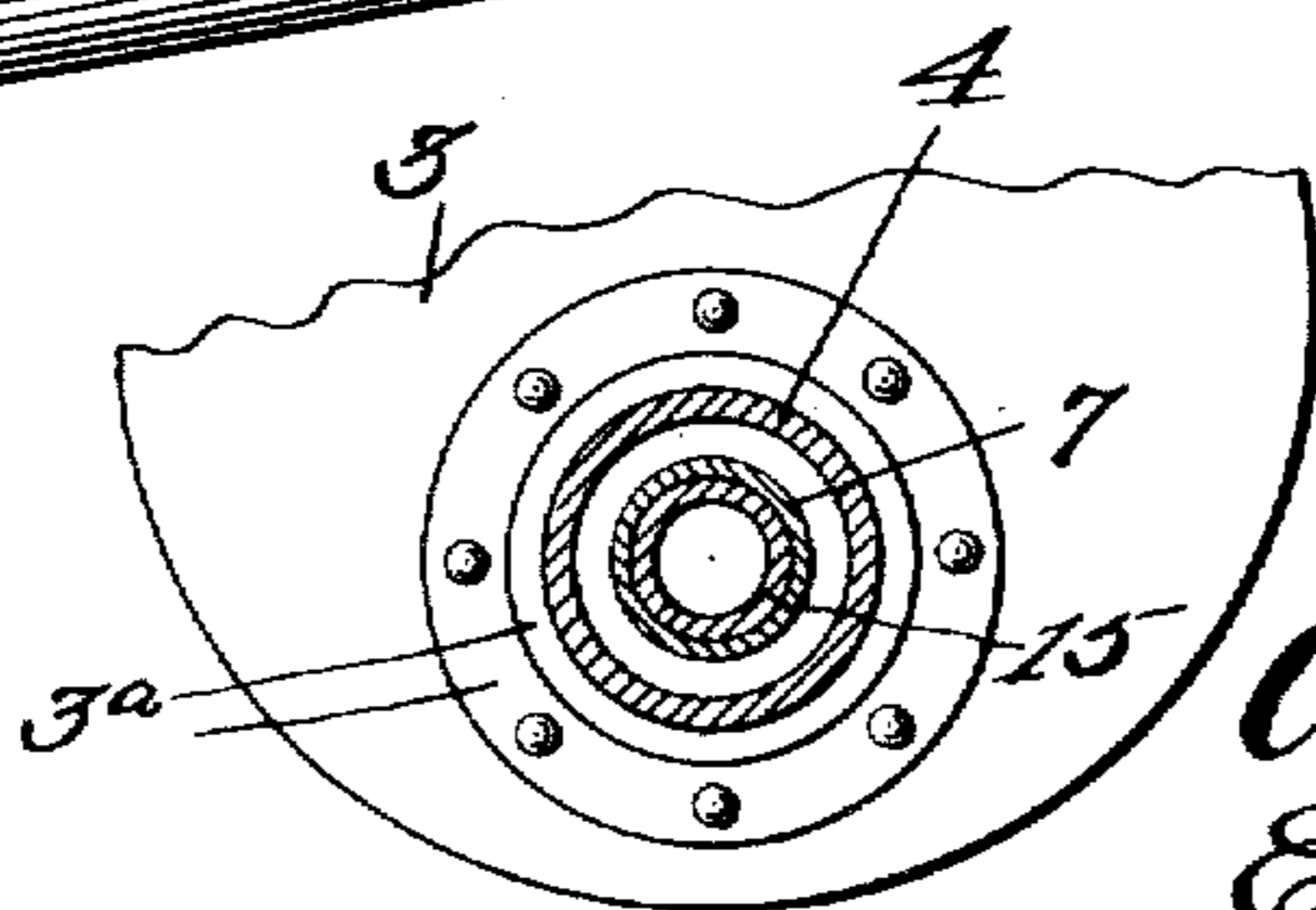
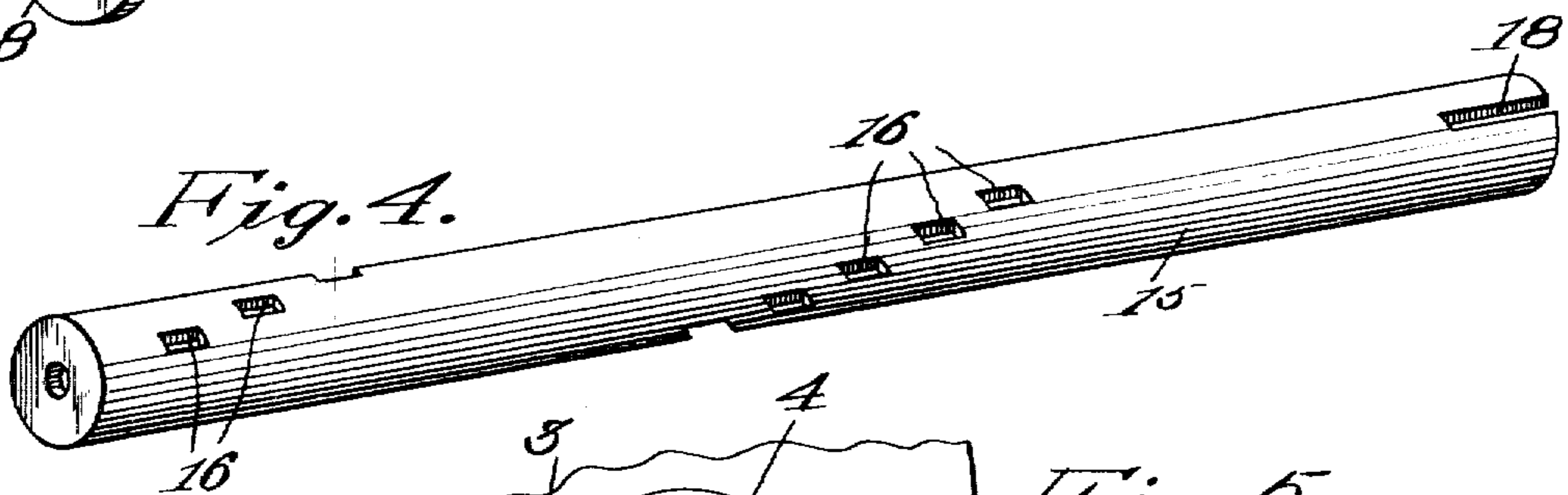
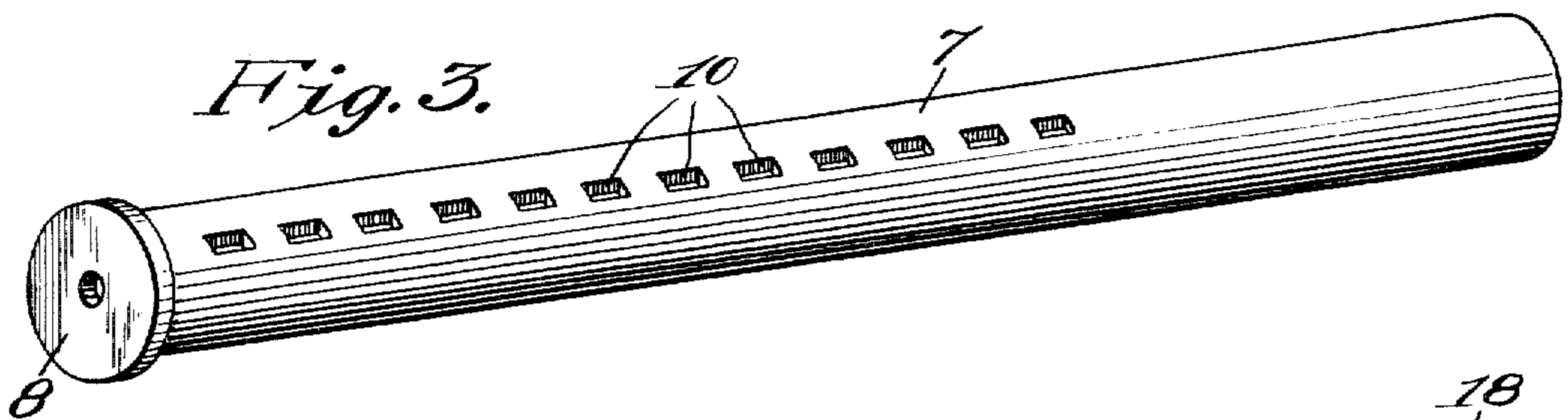
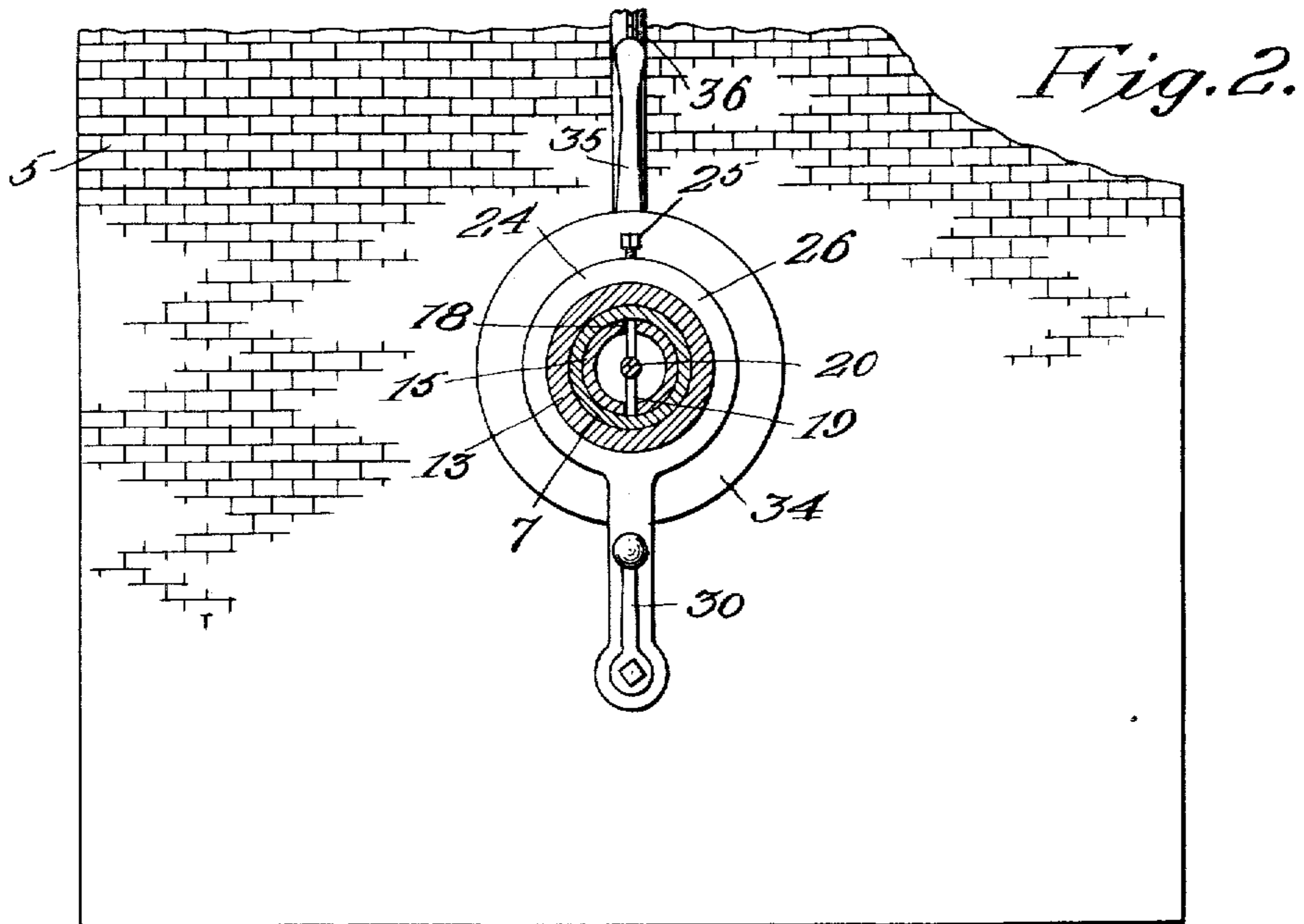
BOILER CLEANING DEVICE.

APPLICATION FILED FEB. 25, 1909.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 2.

942,982.



Witnesses

James F. Crown  
E. W. Rickette

Inventors

Adolph Thomas  
Edgar Thompson

By

Watson E. Coleman  
Attorney

# UNITED STATES PATENT OFFICE.

ADOLPH THOMAS AND EDGAR THOMPSON, OF MINNESOTA LAKE, MINNESOTA.

BOILER-CLEANING DEVICE.

942,982.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed February 25, 1909. Serial No. 480,006.

*To all whom it may concern:*

Be it known that we, ADOLPH THOMAS and EDGAR THOMPSON, citizens of the United States, residing at Minnesota Lake, in the county of Faribault and State of Minnesota, have invented certain new and useful Improvements in Boiler-Cleaning Devices, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to improvements in devices for cleaning steam boilers and the like and more particularly to improved means for removing the scale and dirt from a boiler while it is under pressure.

The object of the invention is to provide an appliance or device for removing scale from a boiler pipe capable of being operated while the boiler is under pressure and which will accomplish the removal of the scale in an efficient manner.

With the above and other objects in view the invention comprises certain novel constructions, combinations and arrangements of parts hereinafter fully described and claimed and fully illustrated in the accompanying drawings, in which:

Figure 1 is a vertical sectional view through a steam boiler having our improved device mounted for operation therein. Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is an enlarged detail view of an outer pipe. Fig. 4 is an enlarged detail view of an inner pipe, and Fig. 5 is a sectional view taken on line 5—5 of Fig. 1.

Referring to the accompanying drawings 1 denotes a boiler of the usual type having a front wall 2 and a back or rear wall 3 provided with a ring 3<sup>a</sup> riveted thereto. A pipe 4 is threaded at its forward end to the ring 3<sup>a</sup> and extends rearwardly through a brick wall 5 of the fire box 6. An outer pipe 7 having a flanged inner end 8 is disposed lengthwise of the boiler, being suitably supported on its forward end by means of a bearing member 9 secured in place by brace rods extending lengthwise of the boiler. The outer pipe 7 is provided with a series of metal extensions 7<sup>a</sup> having open lower ends which extend laterally of said pipe toward the bottom of the boiler and within a short distance thereof so as to suck up dirt and scale therefrom, said extensions being located around the slots 10 of said outer tube. The rear end of the pipe 7 extends through pipe 4 and is formed with a

series of longitudinally spaced slots 10 which are located on its lower half. A packing box 11 is positioned on the pipe 7 and against the rear end of the pipe 4 so as to effectively prevent steam from escaping from the boiler, and a blow off valve 12 is mounted on the pipe 4 adjacent to the packing box 11, and in communication with the bore of pipe 4.

An elbow 13 is connected to the outer end of the pipe 7 by one of its legs and the remaining leg is provided with a valve 14 whereby water and dirt may be discharged from the boiler. A second pipe 15 having a series of spirally disposed slots 16 longitudinally spaced thereon and for register with the slots 10 of the pipe 7 is mounted for rotation therein being connected at its forward end by a bolt 17 with the flanged end 8 of the pipe 7, and is formed on its rear end with longitudinally extending slots 18 adapted for the reception of an operating shaft member 19 mounted on the end of an operating shaft 20, suitably journaled in a bearing and held in place by a collar 21. A stuffing box 23 is provided for shaft 20 and on the outer end of 20 a crank 22, whereby the pipe 15 may be rotated within pipe 7. The forward end of the elbow is provided with a collar 24 secured thereto by a set screw 25, and formed with a depending leg 26 forming a bearing for a worm shaft 27, which shaft is supported at its forward end by a bearing 28 secured on the pipe 4 by an arm 29. A crank 30 is mounted on the rear end of the worm shaft 27 and an arm 31 loosely fixed on the pipe 7 and held in place thereon by fixed collars 32 and 33 is operatively mounted on said shaft, whereby the connected tubes or pipes 7 and 15 may be moved longitudinally of the boiler bottom. The upper end of the elbow 24 is preferably held steam tight by a stuffing box 34. In order to effect the rotation of the outer tube 7 a lever 35 is fixed thereon.

By suitably manipulating the tubes 7 and 15 the scale in the boiler may be loosened and removed by the agitation of the water due to blowing off through the slots 10 and 16 of the outer and inner tubes and the elbow 24, and the valve 14. As the pipe 15 is rotated in the pipe 7 the slots 16 of said pipe will successively cross the slots 10 of the pipe 7 so that the scale will be removed by successive steps, from the bottom of the

boiler. In order to maintain a circulation of steam through the pipe 4 a circulating pipe 36 is connected to the packing box 11 and connected with the top of the boiler.

5 Having described our invention we desire to secure by Letters Patent:

1. In a device for cleaning boilers, in combination with a boiler, an outer tube rotatably mounted in the boiler and formed with  
10 a series of longitudinally spaced slots, a tube having a series of longitudinally spaced slots spirally disposed thereon mounted for rotation within the first tube, a lever connected with the first tube for rotating the  
15 same, a worm shaft for moving the first and second tube over the boiler bottom, a crank shaft connected with the second tube for rotating the same, and means for connecting the crank shaft to the second tube.

2. In a device for cleaning boilers, in combination with an outer tube having a series of longitudinally spaced slots, means for supporting the outer tube in a boiler, a lever mounted on the tube for rotating the same,  
25 an arm loosely fixed to the outer tube, a worm shaft for moving the arm, means for supporting the worm shaft, an inner tube mounted within the outer tube and having a series of longitudinally spaced slots spirally disposed thereon and adapted to successively register with the slots of the outer  
30 tube, a crank for rotating the second tube within the first tube and means for supporting the crank.

3. In a device for cleaning boilers, in combination with a boiler, outer and inner tubes extending into the boiler and formed with co-acting openings, the inner tube being rotatably and slidably mounted, means for rotating the outer tube, means for rotating the  
0 inner tube, a worm shaft arranged parallel with said tubes, means for rotating said worm shaft, spaced stops upon the outer tube and an arm loosely arranged on the  
45 outer tube between said stops and actuated by said worm shaft.

4. In a device for cleaning boilers, in combination with a boiler, outer and inner tubes extending into the boiler and formed with  
50 co-acting openings, the inner tube being ro-

tatable within the outer tube and the outer tube being rotatably and slidably mounted, means for rotating the outer tube, an elbow arranged on the outer end of the outer tube, a valve controlled discharge pipe projecting  
55 from said elbow, the outer end of the inner tube being formed with openings, a shaft rotatably mounted in the elbow and concentric with said tubes, a crank on the outer end of said shaft, a cross member on the inner end  
60 of said shaft and arranged in the openings of the inner tube, whereby the latter may be rotated and means for moving the outer tube longitudinally.

5. In a device of the character described,  
65 in combination with a boiler and a furnace wall, a tubular member extending through the furnace wall and having its inner end in communication with the boiler, a closure for the outer end of said tubular member, a circulating pipe having one end in communication with the upper portion of the boiler and  
70 its other end in communication with the outer portion of said tubular member, inner and outer tubes extending through the boiler  
75 and through said tubular member, the outer tube having longitudinal series of openings and the inner tube a spirally arranged series of slots, said inner tube being rotatable in the outer one and the outer tube being slidably and rotatably mounted, tubular extensions upon the outer tube and surrounding the openings therein, an elbow at the outer end of the outer tube, a valve controlled  
80 pipe projecting from said elbow, a crank shaft for rotating the inner tube, a lever for rotating the outer tube, a worm shaft mounted parallel with said tubes, means for rotating the worm shaft and an arm operatively connected with the outer tube and actuated  
85 by said worm shaft.  
90

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

ADOLPH THOMAS.  
EDGAR THOMPSON.

Witnesses:

E. CATE,  
PETER KREMER.