

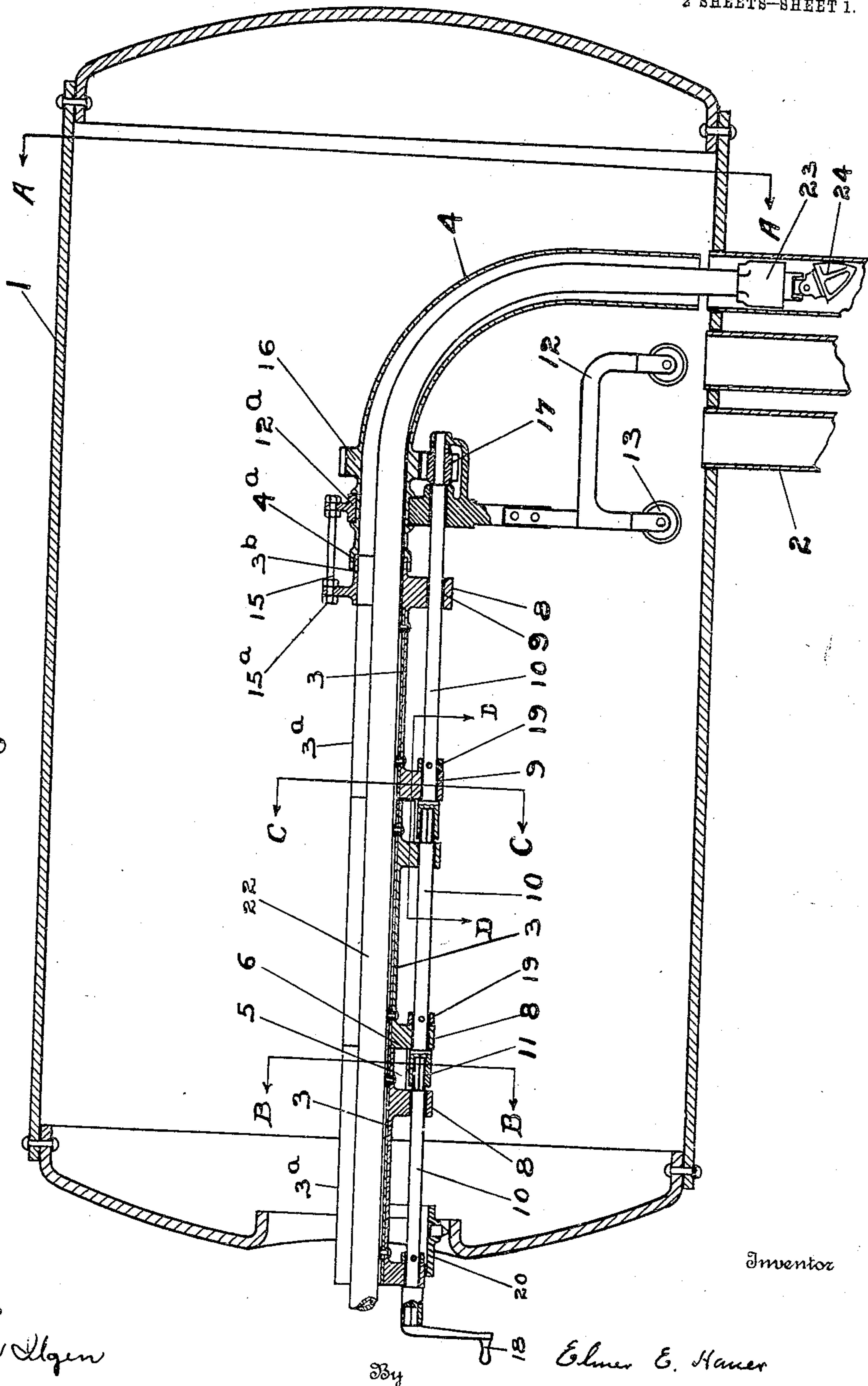
979,295.

E. E. HAUER.  
TUBE CLEANING APPARATUS.  
APPLICATION FILED OCT. 24, 1910.

Patented Dec. 20, 1910.

2 SHEETS—SHEET 1.

FIG. 1.



Witnesses

*Ernest Hagen*

*Virgil Baker*

Inventor

By

*Elmer E. Hauer*

*Percy Norton*

Attorney

E. E. HAUER.  
TUBE CLEANING APPARATUS.  
APPLICATION FILED OCT. 24, 1910.

979,295.

Patented Dec. 20, 1910.

2 SHEETS-SHEET 2.

Fig. 2.

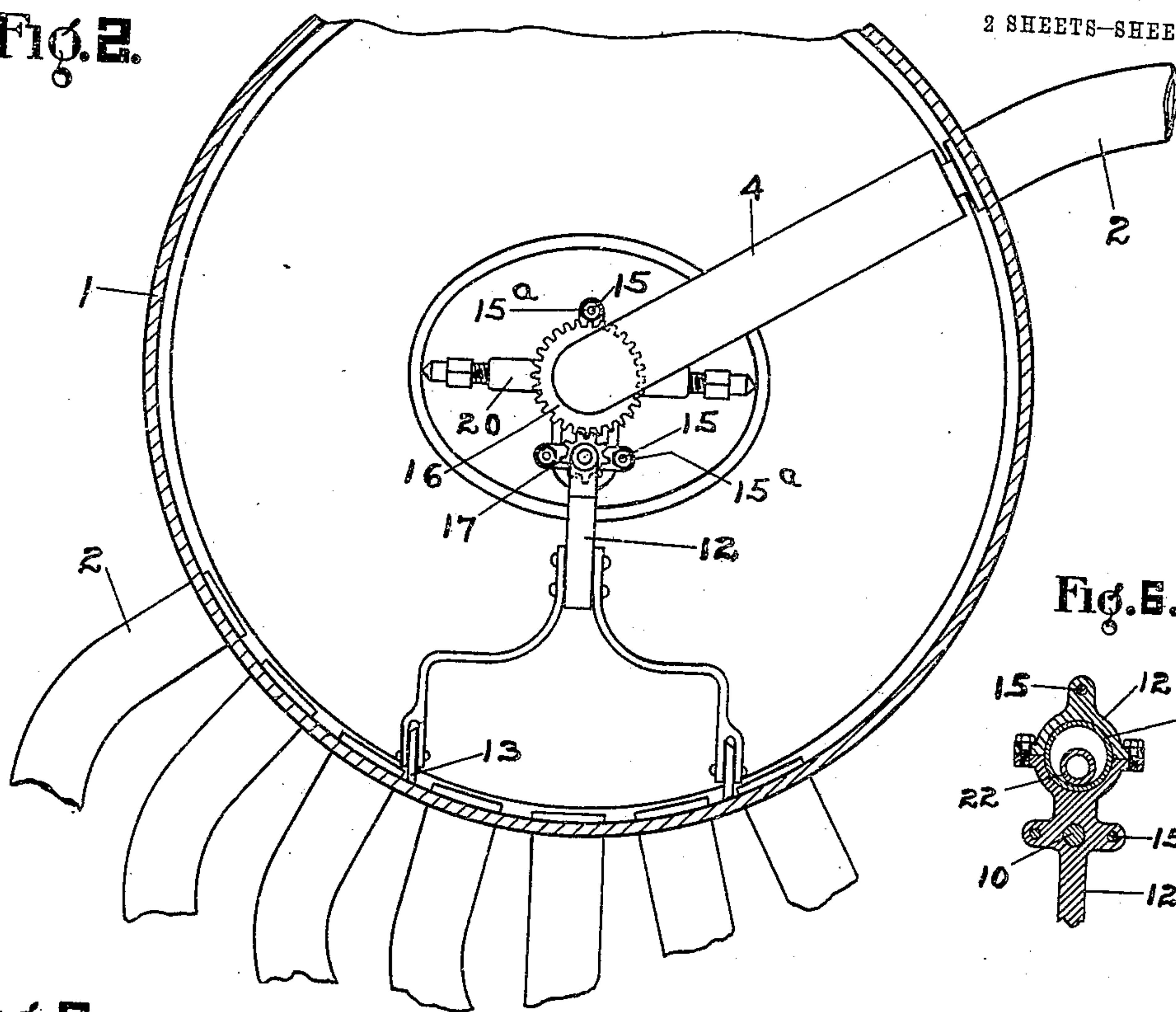


Fig. 3.

Fig. 4.

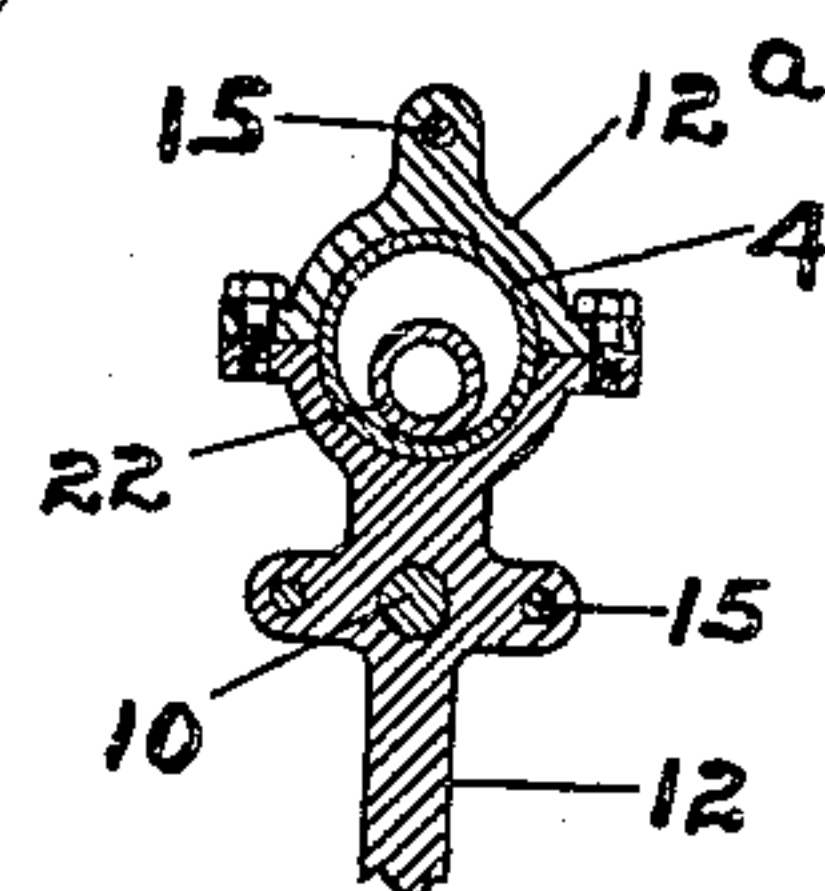


Fig. 5.

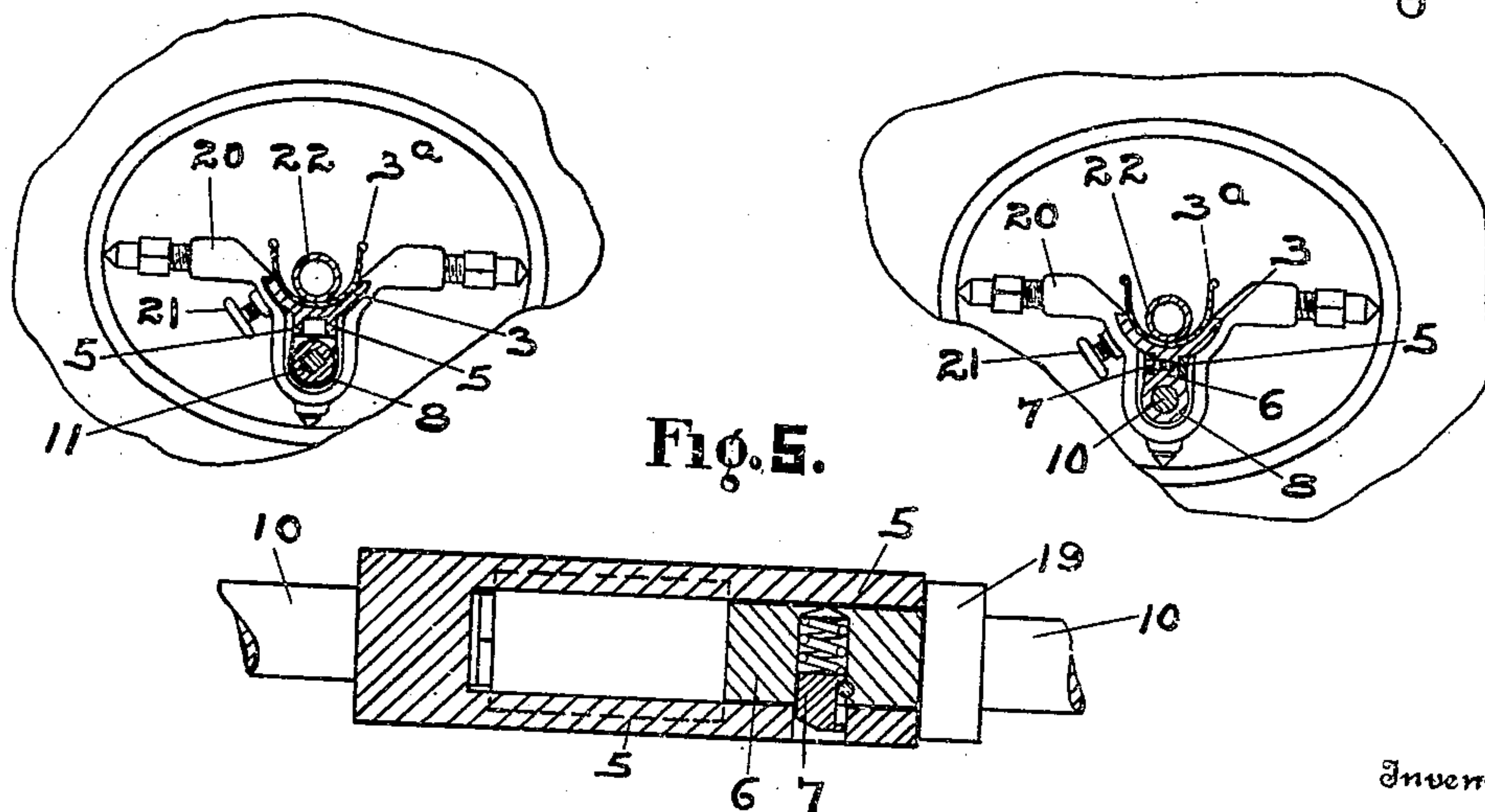


Fig. 5.

Witnesses

Ernest Elger

Virgil Baker

By

Elmer E. Hauer

C Percy Norton

Inventor

Attorney



# UNITED STATES PATENT OFFICE.

ELMER E. HAUER, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE LAGONDA MANUFACTURING COMPANY, OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

## TUBE-CLEANING APPARATUS.

979,295.

Specification of Letters Patent. Patented Dec. 20, 1910.

Application filed October 24, 1910. Serial No. 588,624.

*To all whom it may concern:*

Be it known that I, ELMER E. HAUER, 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 Tube-Cleaning Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a tube cleaning apparatus.

The object of my invention is to provide means for inserting and withdrawing a tube cleaner through the drum into any one of the tubes of a water tube boiler by manipulation from a position outside the drum.

More particularly my invention relates to improved means for moving the cleaner transversely to its line of advancement into the drum and to improved means for supporting and guiding the cleaner into a tube.

With these and other objects in view my invention consists of the constructions and combinations hereinafter described and set forth in the claims.

In the accompanying drawings Figure 1 is a longitudinal section, partly in elevation of a device embodying my invention. Fig. 2 is a cross-section on the line A A of the steam drum in Fig. 1 showing in elevation an end view of the device, looking in the direction of the arrows. Fig. 3 is a cross-section on the line B B of Fig. 1. Fig. 4 is a cross-section on the line C C of Fig. 1. Fig. 5 is a section on the line D D of Fig. 1, and Fig. 6 is a detail showing cap of journal bolted to support.

In the drawings 1 represents the shell of the steam drum of a water tube boiler, and 2 the tubes in said boiler. A channel-iron, preferably formed in two parts 3 and 3<sup>a</sup>, with the part 3<sup>a</sup> held within the part 3, and riveted together as shown, extends into the drum and has secured at its inner end a curved guide pipe 4 terminating over the tubes 2 of the boiler. The channel-iron is preferably made in sections as shown, each section being provided at one end with longitudinally extending ears 5 and at the other end with a tongue 6, the ears of one section extending and fitting over the tongue of the adjacent section. A spring pressed clip 7 in each of the tongues 6 locks the sections together. Said channel-iron is further provided with downwardly projecting portions

8 in which bearings 9 are formed to carry a shaft 10, said shaft being formed in sections to correspond with the sections of the channel-iron, one end of each section of the shaft being enlarged and provided with a rectangular socket 11, the other end being made rectangular in shape to fit the socket of the adjacent section.

A support 12 provided with rollers 13 carries the channel-iron and guide pipe longitudinally in the drum. Said support 12 and a cap 12<sup>a</sup> bolted to the support as particularly shown in Fig. 6 fits within an annular groove in the guide pipe and forms a bearing in which said pipe is journaled. The inner end 3<sup>b</sup> of the inner section of channel-iron is formed into a pipe which extends within an annular flange 4<sup>a</sup> of the guide pipe and the channel-iron is secured to the support by bolts or threaded spindles 15 and nuts 15<sup>a</sup>.

A spur gear 16 secured to or formed integrally with the guide pipe meshes with a pinion 17 fixed on the shaft and a handle 18 having a rectangular projection to engage a rectangular socket in the outer end of the shaft is provided. The enlarged ends of the shafts engage one side of the bearings and collars 19 the other side to hold the shafts in place.

A support 20 adapted to be fixed in the man-hole of the drum as shown supports the outer end of the channel-iron and shaft; and a set-screw 21 is provided to hold the channel-iron and shaft in place in their adjusted positions.

A supply hose 22 connected with a suitable source of supply is provided at its inner end with a motor 23 having a cleaner head 24.

It will be seen the channel-iron and guide pipe can be manipulated from outside the drum to move the same longitudinally so that the guide pipe will open over any one of a longitudinal row of tubes; and that by operating the handle 18 the guide pipe will be moved to open over any one of a transverse row of tubes; and that the supply hose, motor and cleaner head can be manipulated from outside the drum to advance the same into and withdraw the same from any one of the tubes and from the drum.

Having thus described my invention I claim:—

1. In a device such as described, the combination of a channel-iron and a guide pipe



terminating at the open end of a boiler tube, a gear on said guide pipe, a support in which said guide pipe is journaled, a shaft having a gear thereon adapted to mesh with the  
5 gear on said guide pipe, and means whereby said shaft can be rotated, substantially as described.

2. In a device such as described, the combination of a channel-iron and a shaft, said  
10 channel-iron and shaft each being divided longitudinally into sections jointed at their adjacent ends and means common to said channel-iron and shaft to secure the respective sections together, substantially as de-  
15 scribed.

3. The combination of a flexible member having a tube cleaner thereon and a channel-iron, guide and support for same, extending into the drum of a boiler, the guide termi-  
20 nating at the open end of a tube, a shaft geared to said guide and manipulated outside said drum to position said guide at the open end of any one of a transverse row of tubes, substantially as described.

25 4. The combination of a flexible member having a tube cleaner thereon and a channel-iron, guide and support for same, extending longitudinally into the drum of a boiler, said guide also being adapted to turn trans-  
30 versely to the longitudinally extending channel-iron and terminating at the open end of a tube, a shaft geared to said guide and

manipulated from outside the drum to cause said transverse movement and position said  
guide at the open end of any one of a trans- 35  
verse row of tubes, substantially as described.

5. The combination of a flexible member having a tube cleaner thereon and a channel-iron, guide and support adapted to be in-  
serted in the drum of a boiler with means 40  
located outside said drum to shift said member and cleaner and the channel-iron, guide and support longitudinally in the drum, the longitudinal movement of the member and  
cleaner being independent of the longitudinal 45  
movement of the channel-iron, guide and support, said guide being adapted to open into a tube and further arranged to turn on said support transversely to the line of its  
longitudinal advancement and carry said 50  
member and cleaner therewith, means, including a shaft and gears on said shaft and guide, manipulated from outside said drum and adapted to cause said transverse move-  
ment to position said guide and direct said 55  
member and cleaner into any one of a plurality of tubes, substantially as described.

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

ELMER E. HAUER.

Witnesses:

OLIVER H. HAUSE,  
VIRGIL BAKER.