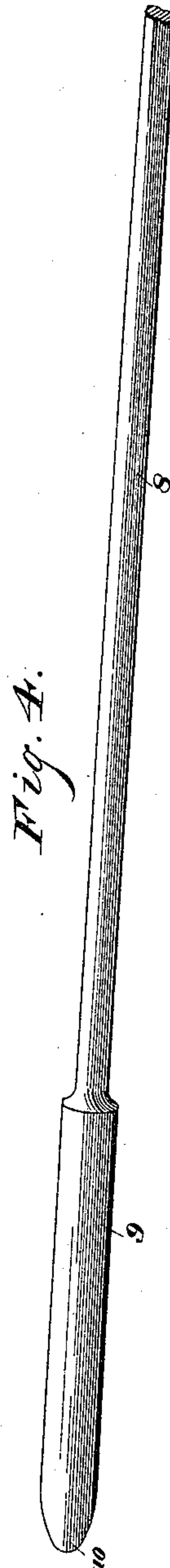
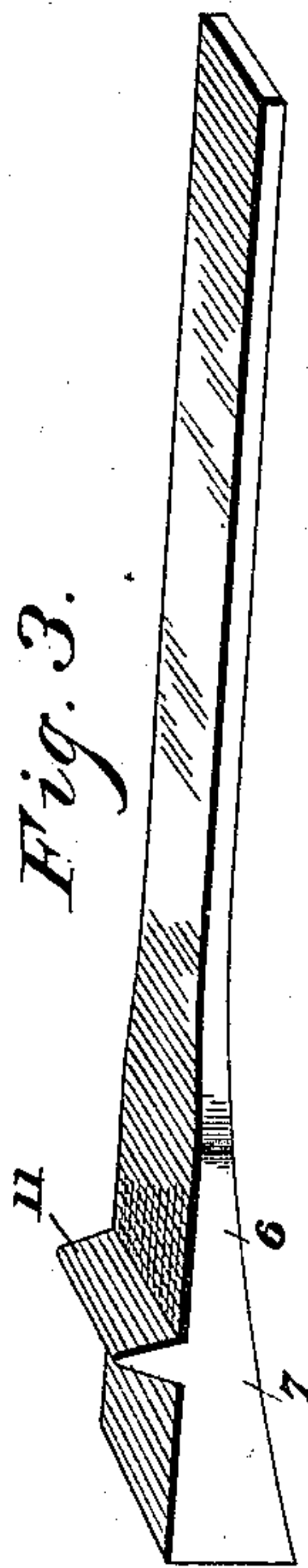
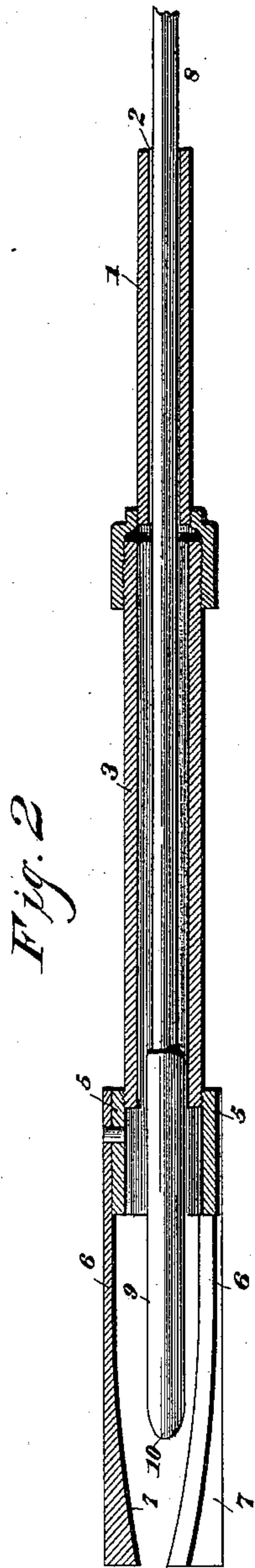
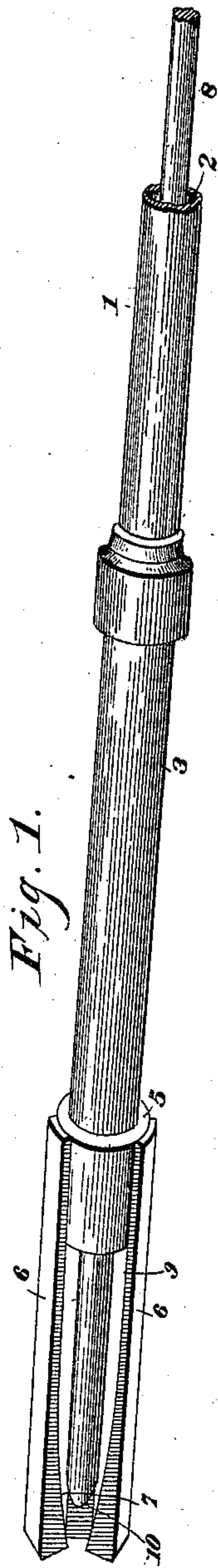


(No Model.)

S. KELLY.  
BOILER TUBE CLEANER.

No. 417,646.

Patented Dec. 17, 1889.



Witnesses:

*M. Witherow,*

*W. J. Small*

By *his* Attorneys,

*C. A. Snow & Co.*

Inventor,  
*Sylvanus Kelly,*



# UNITED STATES PATENT OFFICE.

SYLVANUS KELLY, OF FREMONT, OHIO.

## BOILER-TUBE CLEANER.

SPECIFICATION forming part of Letters Patent No. 417,646, dated December 17, 1889.

Application filed September 14, 1889. Serial No. 323,921. (No model.)

*To all whom it may concern:*

Be it known that I, SYLVANUS KELLY, a citizen of the United States, residing at Fremont, in the county of Sandusky and State of Ohio, have invented a new and useful Cleaner for Fire and Water Tube Boilers, of which the following is a specification.

This invention has relation to cleaners for fire and water tube boilers; and among the objects in view are to provide a device adapted to be inserted within a tube and to knock or chip the scales or accumulations from the inner and outer surfaces of the tubes.

With these general objects in view the invention consists in certain features of construction hereinafter specified, and particularly pointed out in the claims.

In the drawings, Figure 1 represents a perspective of a tube-cleaner constructed in accordance with my invention. Fig. 2 is a longitudinal section; Fig. 3, a detail in perspective of a modified construction of hammer, and Fig. 4 a detail of the plunger.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 represents the handle, which is hollow, as at 2, and has threaded upon its lower end a plunger-tube 3, of larger bore, the forward end of the handle forming a shoulder at the rear end of the plunger-tube. A collar 5 is threaded on the forward end of the plunger-tube and from the same there project—forwardly in this instance—three hammers 6. The hammers 6 have their inner faces gradually enlarged toward their free end, as at 7, and the shanks of the dogs are of spring metal and secured to the outer surface of the collar.

8 represents the plunger-rod, mounted in the bore of the handle, and 9 the plunger, mounted in the plunger-tube and adapted to be withdrawn therein until its rear end abuts against the shoulders in the tube. The front end of the plunger-tube is pointed or cone-shaped, as at 10.

The device herein shown is adapted for use in cleaning fire-tube boilers, and its operation is as follows: The tendency of the spring-shanks being to maintain the hammers in a closed position, the device is readily introduced into a tube, and by reciprocating the plunger through the medium of its rod the same is brought into sudden contact with the curved faces of the hammers, thus imparting expansion to the same and giving the wall of

the tube a series of shocks adapted to loosen the accumulations adhering both to the interior and exterior surfaces thereof.

In instances where the boiler is of the water-tube class it is necessary to provide some means for chipping or cutting the accumulated foreign matter, and this is accomplished by providing each of the hammers, near their free ends, with transversely-disposed laterally-projecting blades or chisels 11, as shown in Fig. 3. The operation of the hammers thus provided is the same as that just described, the chisel merely acting to chip or cut the incrustation from the inner surface of the tube. At the same time the shock serves to loosen the soot and other accumulations from the exterior surface of the tube.

Having described my invention, what I claim is—

1. In a boiler-tube cleaner, the combination, with a hollow handle, of a series of spring-hammers, the inner faces of which are enlarged at their front ends, and a plunger mounted for reciprocation between the hammers, having a rod projecting through the handle, substantially as specified.

2. In a boiler-cleaner, a hollow handle and a plunger-tube connected with the handle and terminating at its rear end in shoulders, in combination with a collar threaded on the forward end of the tube and having a series of spring-shanks secured thereto, said shanks terminating at their front end in hammers, the inner surfaces of which are enlarged, a plunger mounted in the tube and having a cone-shaped end, and a rod mounted in the handle secured to the plunger, substantially as specified.

3. In a boiler-cleaner, the hollow handle having a series of spring-metal hammers 6 secured thereto, having their inner faces enlarged and formed cam-shaped, combined with the plunger 8, running through the hollow handle and having a cone-shaped end adapted to engage the cam-shaped inner faces of the spring-hammers, as set forth.

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

SYLVANUS KELLY.

Witnesses:

JAMES H. FOWLER,  
ROLLIN S. MCCULLOCH.