

C. F. OVERLY.  
TOOL FOR CLEANING TUBES.  
APPLICATION FILED MAY 27, 1908.

959,585.

Patented May 31, 1910.

FIG. 1.

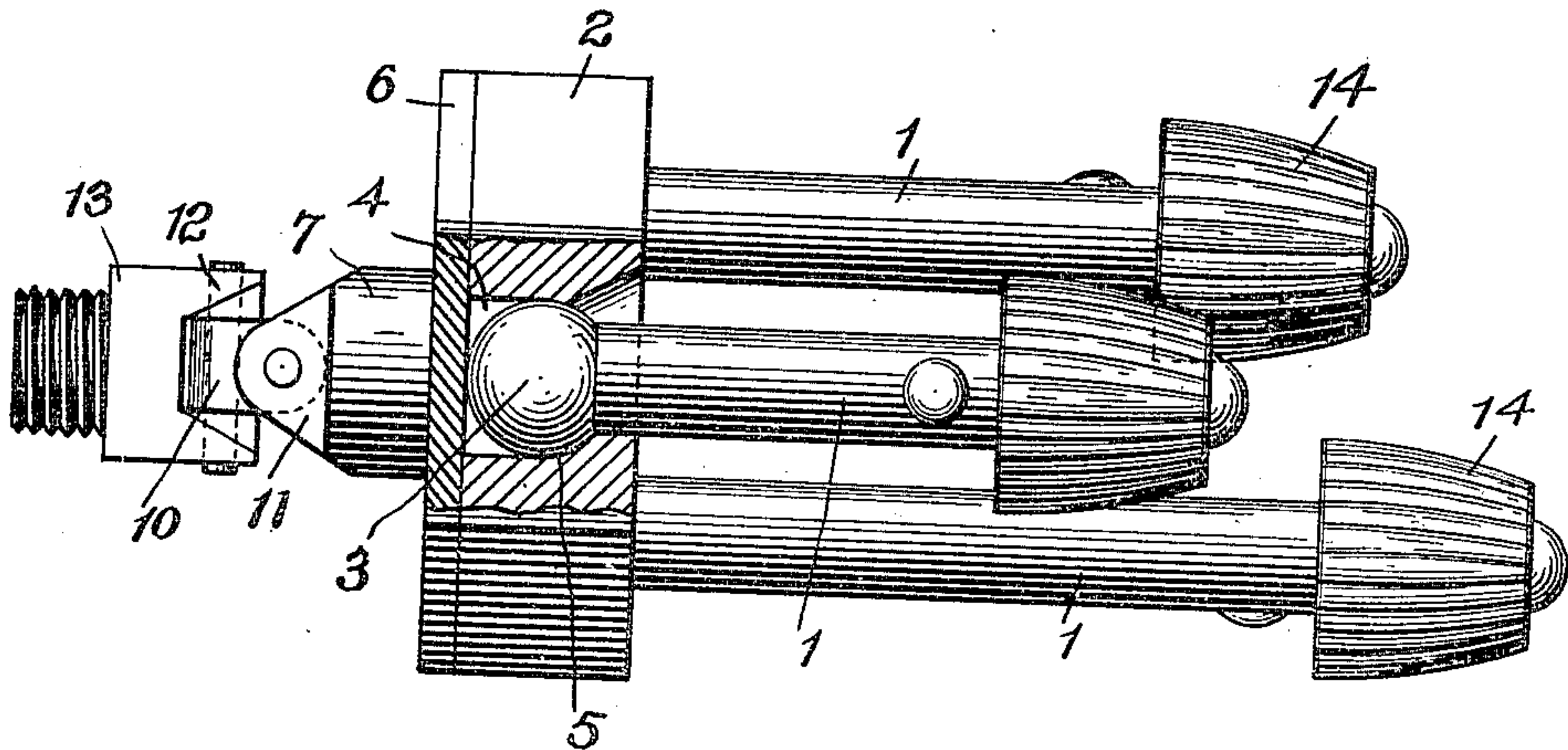


FIG. 2.

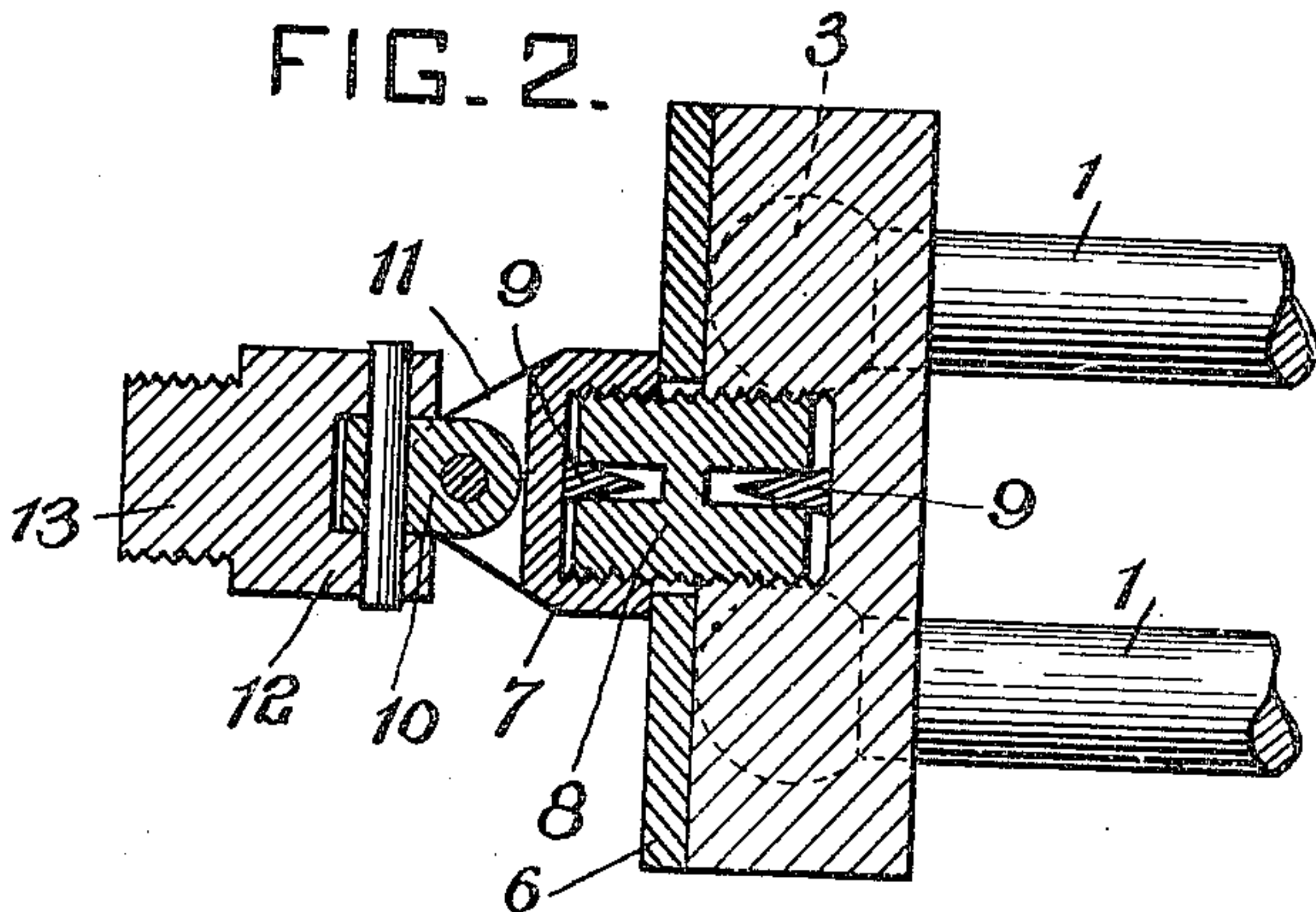


FIG. 3.

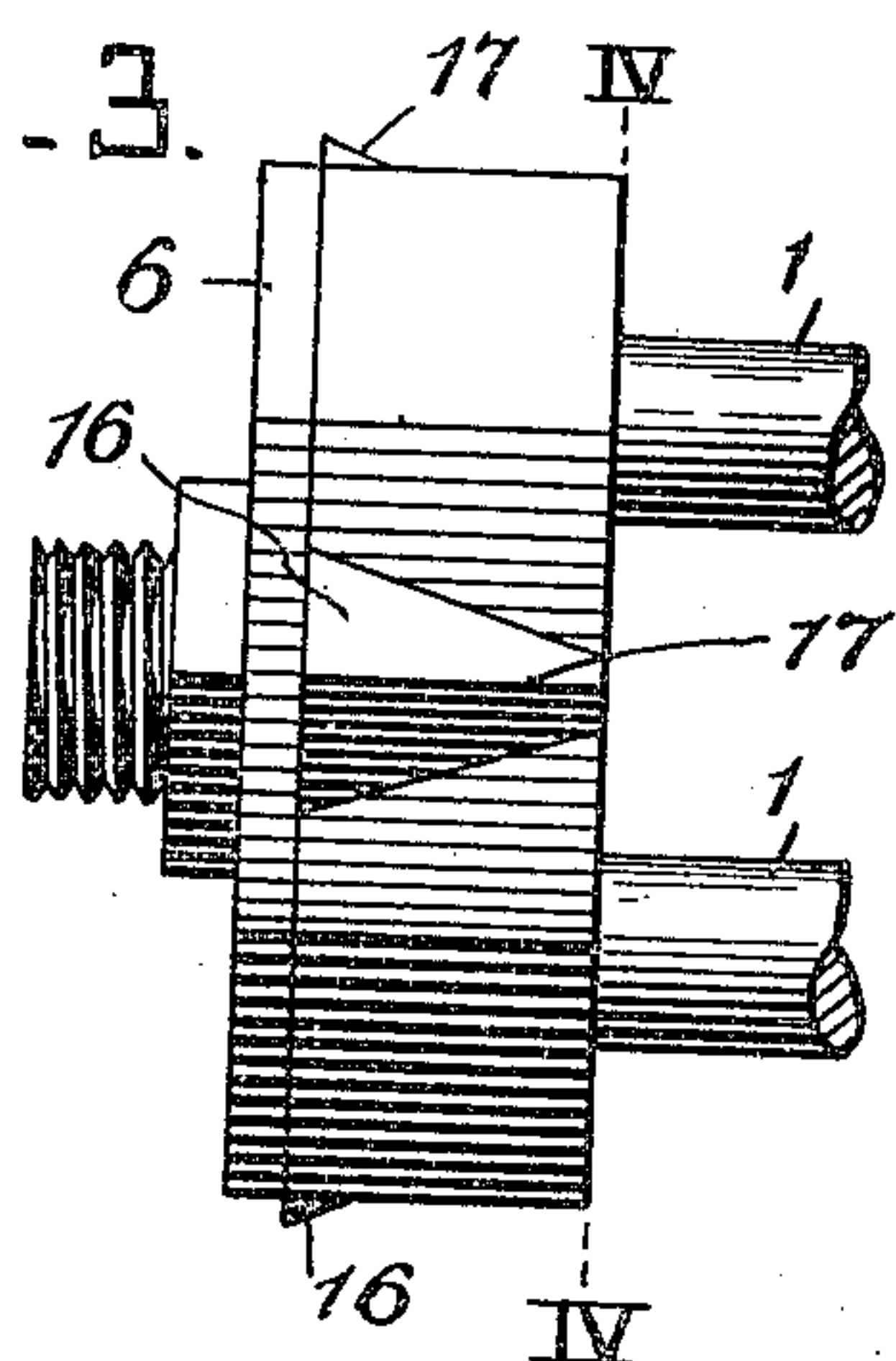


FIG. 4.

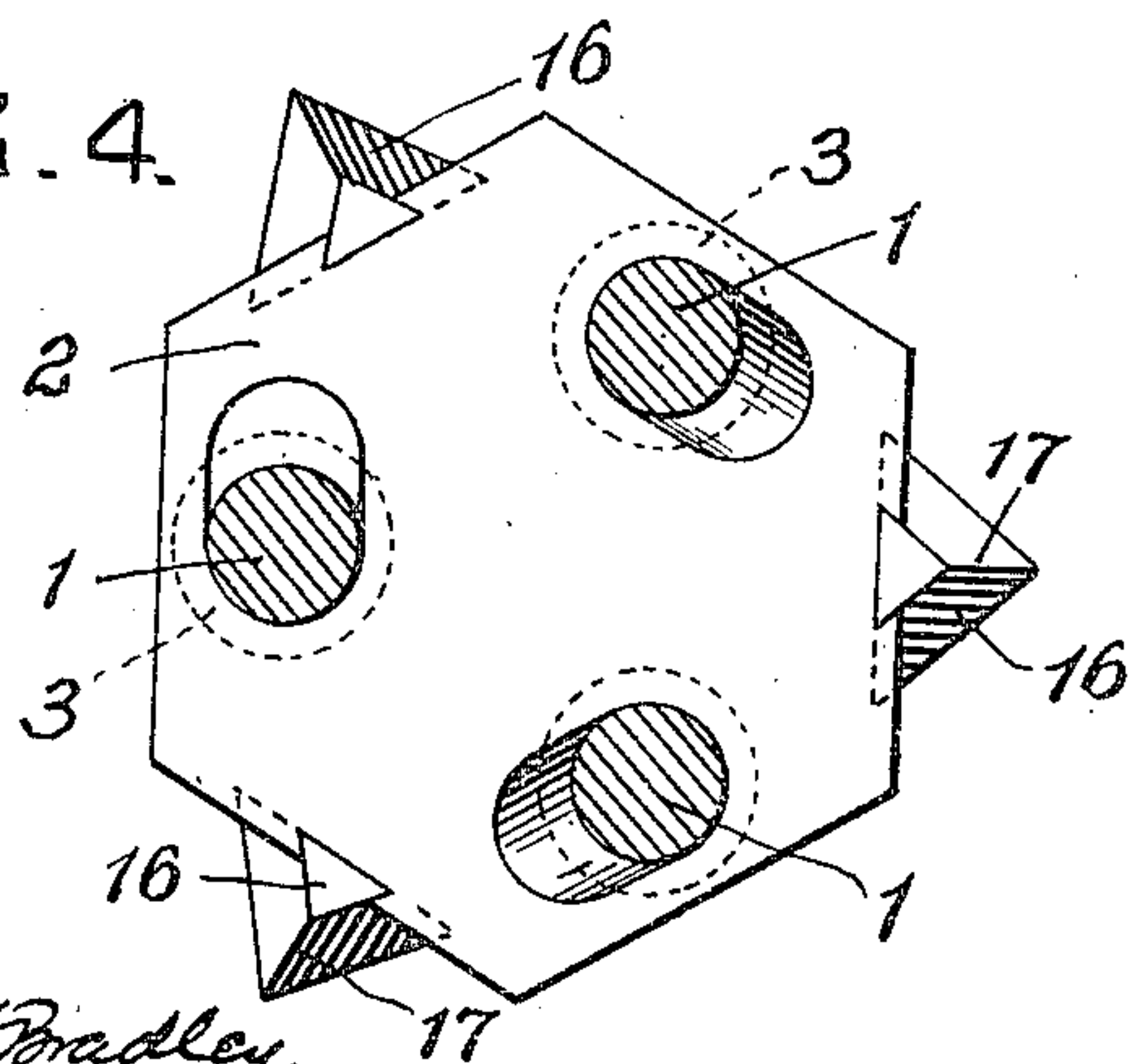
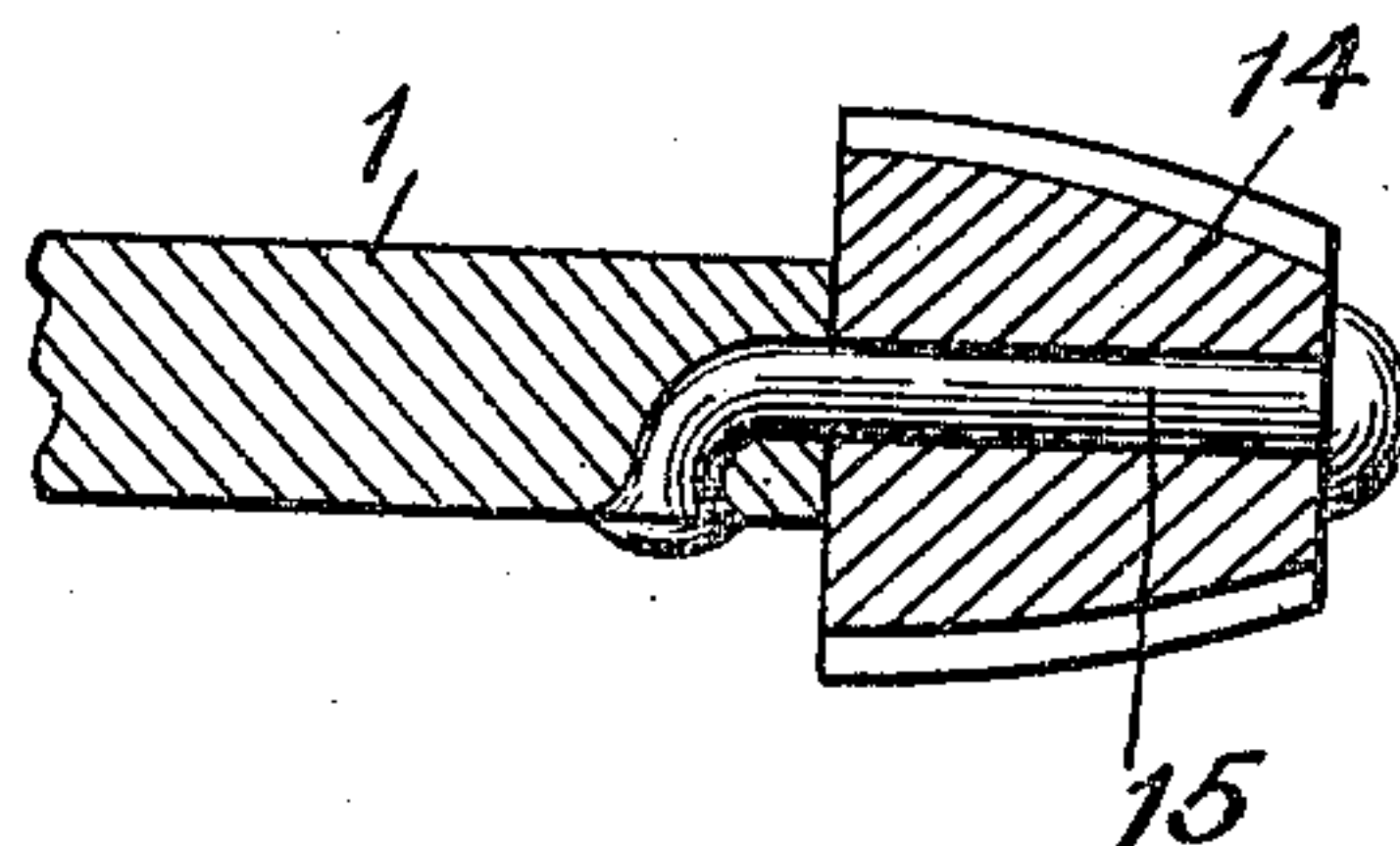


FIG. 5.



WITNESSES:

J. Herbert Bradley.  
Francis J. Tomasson.

INVENTOR

Charles F. Overly.  
Christy & Christy, Attys.



# UNITED STATES PATENT OFFICE.

CHARLES F. OVERLY, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ENTERPRISE MACHINE MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

TOOL FOR CLEANING TUBES.

959,585.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed May 27, 1908. Serial No. 435,224.

*To all whom it may concern:*

Be it known that I, CHARLES F. OVERLY, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Tools for Cleaning Tubes, of which improvements the following is a specification.

The invention described herein relates to certain improvements in tools for cutting scale, etc., from boilers, tubes, etc. These tools usually consist of a plurality of fingers, provided at one end with cutters and so pivotally connected at their opposite ends to a head, that when the latter is rotated, the free ends of the fingers will move outwardly in radial planes causing the cutters to impinge upon the scale. In such a construction the cutters and fingers are subjected to great lateral strains, the fingers being rigidly held as against movement in a peripheral direction by the walls of the radial slots in which the inner ends of the fingers are mounted. In case the fingers are allowed any lateral play in the slots, the lateral strain on the fingers when in operation is borne by the pivotal pins.

The object of the invention described herein is to so construct the tool that the cutters will strike a yielding or spring blow on the scale, a blow of such character being more effective in removing the scale and less injurious to the tool.

The invention also has for its object certain features of construction whereby the tool is rendered more effective, and the repair or renewal of its parts greatly facilitated.

The invention is hereinafter more fully described and claimed.

In the accompanying drawing forming a part of this specification, Figure 1 is a side elevation of my improved tool, a portion of the carrying block or head being broken away; Fig. 2 is a sectional view of the head and the pivotal means for connecting the tool to the motor; Fig. 3 is a side elevation of the head, showing a modification of the tool; Fig. 4 is a sectional elevation on a plane indicated by the line IV—IV Fig. 3; and Fig. 5 is a sectional detail of one of the fingers and cutters.

In the practice of my invention, the fingers 1 have their inner ends so pivotally attached to the head 2, that when the head is

rotated, the outer ends of the fingers will move under centrifugal action, in planes tangential or approximately tangential to the arc of a circle having its center coincident with the axis of the head. It is preferred that the fingers should be formed with ball-shaped enlargements 2 at their inner ends, such enlargements fitting into pockets 4 in the heads. The pockets are formed with curved seats 5 for the balls, and above these seats 5 the pockets are extended in tangential directions to permit of the desired swing of the fingers. The fingers are inserted through these pockets and are held in place by a plate 6. This plate can be held in place in any desired manner, but preferably by a cap 7 screwed on to a plug 8 which is screwed into a socket in the head 2. Slits are cut in the ends of the plug for the reception of wedges 9 which will cause an expansion of the plug to lock the latter and the cap in position. A universal joint is interposed between the head and the means such as a rotary motor whereby the latter is forced into the tube. This joint can be conveniently constructed in the manner shown in Figs. 1 and 2. A link 10 is pivotally connected at one end to lugs 11 on the cap and at its opposite end to lugs 12 on the block 13, the two pivot pins being at right angles to each other.

The cutters 14, which should be free to rotate are connected to the fingers by pins 15 passing loosely through the cutters and through holes extending from the ends of the fingers out through the sides thereof at points adjacent to the ends. The protruding ends of the pins are upset. This construction permits of the easy renewal of the cutters.

While not always necessary, it is preferred to employ finishing cutters 16 which are made preferably in the form of a triangular pyramid one of the faces being at right angles to the base, so as to fit in V-shaped recesses in the periphery of the head, the walls of the recesses being undercut. These cutters are held in position by the plate 6, and present outwardly inclined edges 17 to operate on any scale left by the cutters 14.

I claim herein as my invention:

1. A tool for cleaning tubes having in combination a rotatable head provided with pockets or openings having their walls

shaped to form curved seats in directions tangential or approximately tangential to arcs of circles concentric with the axis of rotation of the head, the openings being  
5 enlarged above the seats, fingers provided with cutters and having balls at their ends adapted to bear upon the seats in the pockets or openings, and a plate for holding the ball like enlargements in the open-  
10 ings.

2. A tool for cleaning tubes, having in

combination a head, fingers movably connected to the head, toothed cutters and pins passing through the cutters into the ends of the fingers and out through the sides of  
15 the fingers.

In testimony whereof, I have hereunto set my hand.

CHARLES F. OVERLY.

Witnesses:

CHARLES BARNETT,  
FRIEDA E. WOLFF.