

Jan. 2, 1923.

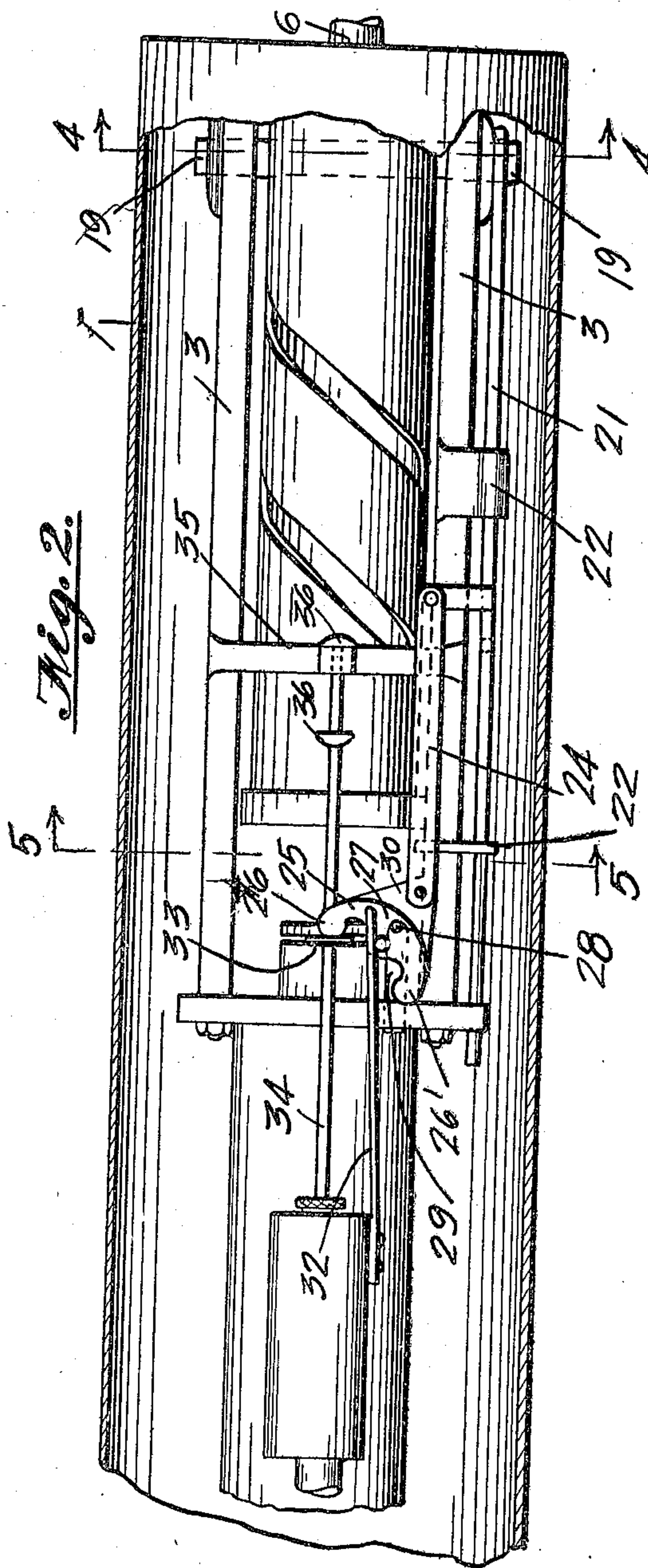
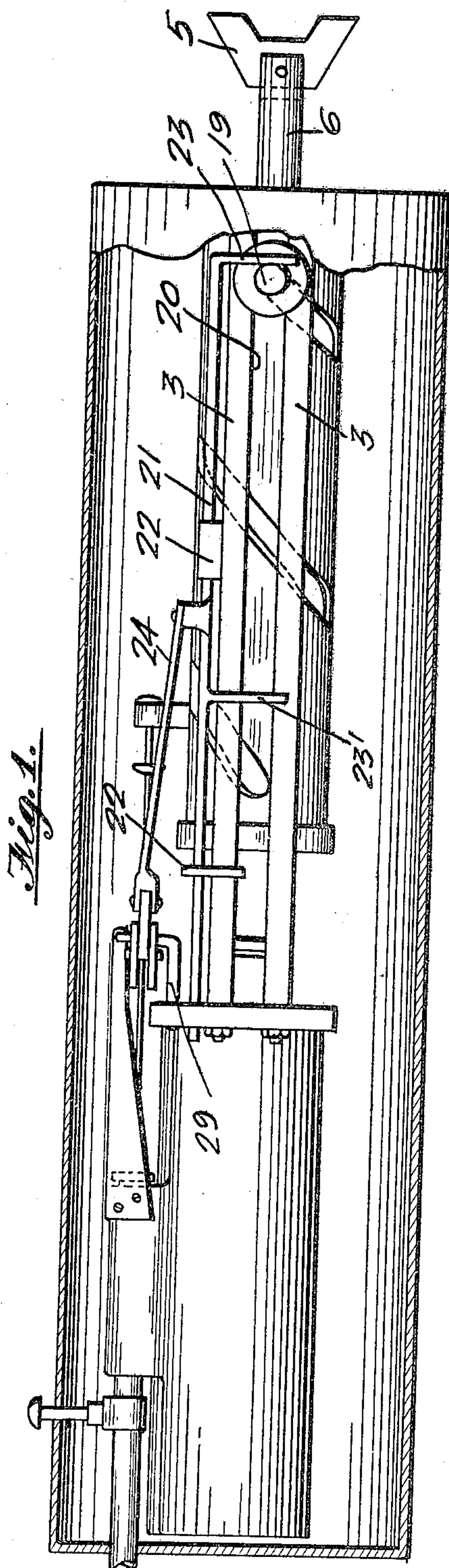
1,440,522.

L. B. BAUHAUS.  
VALVE GRINDING APPARATUS.

# VALVE GRINDING APPARATUS.

FILED AUG. 31, 1921.

2 SHEETS--SHEET 1.

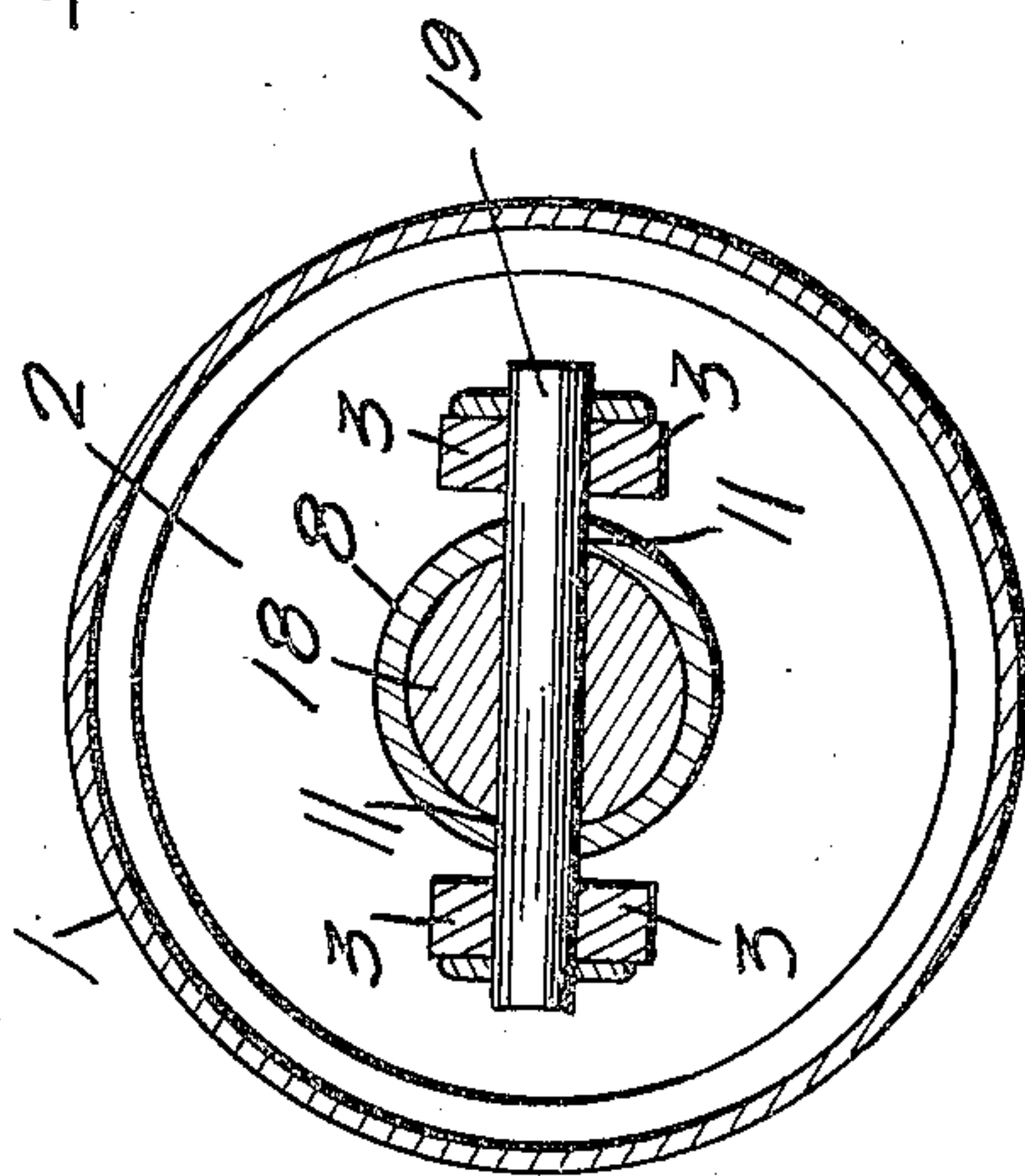
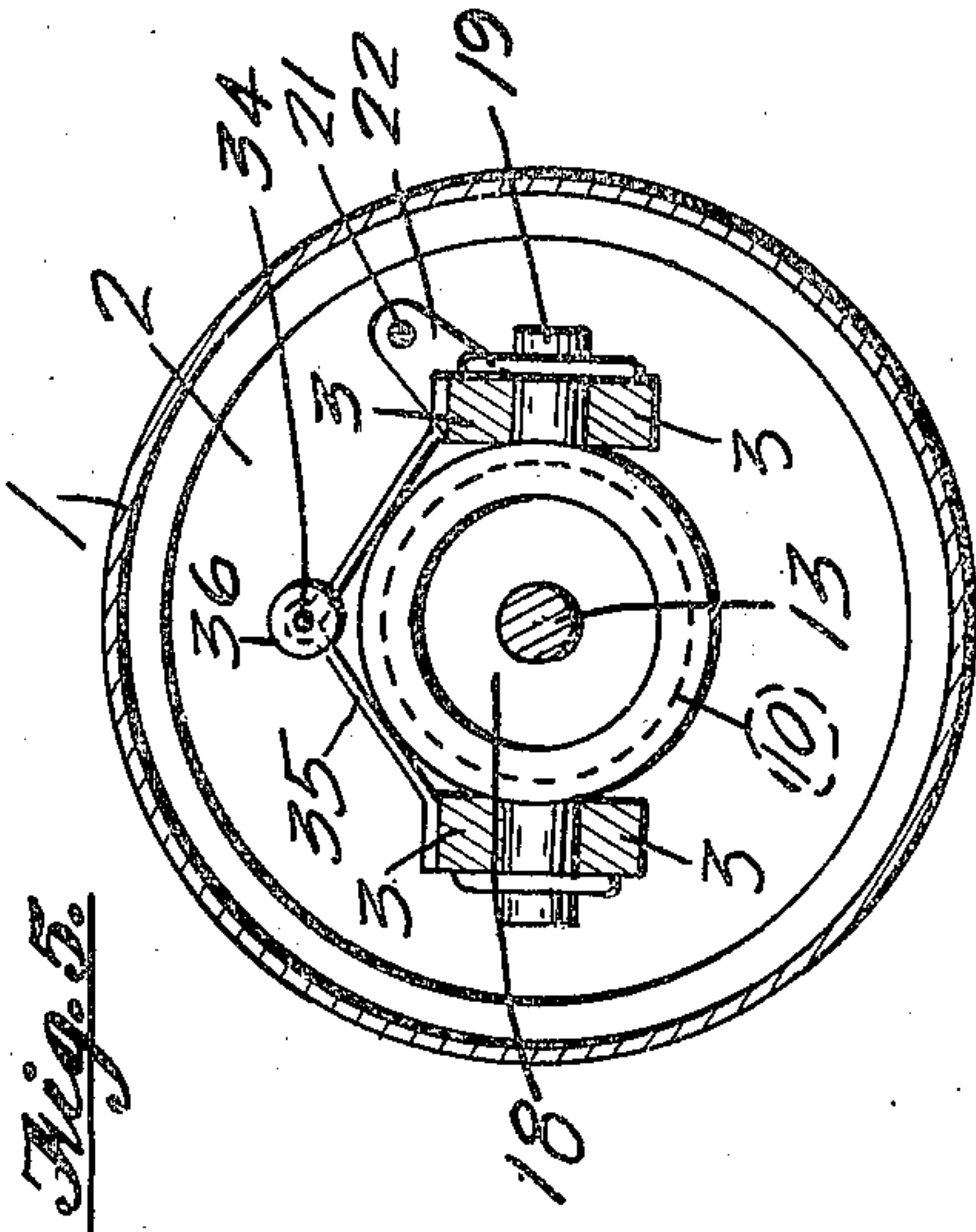
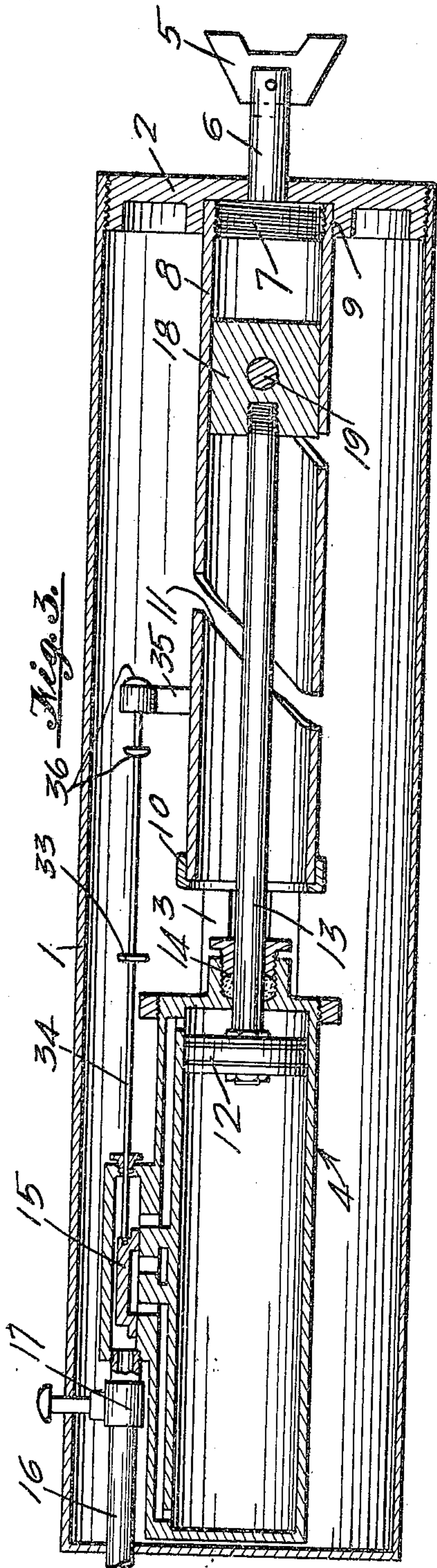


Jan. 2, 1923.

L. B. BAUHAUS.  
VALVE GRINDING-APPARATUS.  
FILED AUG. 31, 1921.

1,440,522.

2 SHEETS—SHEET 2.



INVENTOR.  
*Louis B. Bauhaus*  
BY *Herman Miller*  
ATTORNEY



Patented Jan. 2, 1923.

1,440,522

# UNITED STATES PATENT OFFICE.

LOUIS B. BAUHAUS, OF SANTA BARBARA, CALIFORNIA.

## VALVE-GRINDING APPARATUS.

Application filed August 31, 1921. Serial No. 497,230.

*To all whom it may concern:*

Be it known that I, LOUIS B. BAUHAUS, a citizen of the United States, residing at Santa Barbara, in the county of Santa Barbara and State of California, have invented new and useful Improvements in Valve-Grinding Apparatus, of which the following is a specification.

This invention relates to valve grinding apparatus and more particularly to a pneumatic valve grinder for grinding valves of automobile engines, or other types of valves wherein the apparatus could be used and has for its object to provide a novel means by which the valve can be very readily ground with the least expenditure of energy on the part of the operator.

Another object is to provide a device of this kind that can be readily assembled and dismantled for inspection of the same and also to provide means for regulating the speed of oscillation of the valve.

Other objects and advantages will be seen and the invention readily understood from the following description of the accompanying drawings in which:

Fig. 1 is a side elevation of the valve grinding apparatus with the casing partly broken away showing the valve actuating means in elevation.

Fig. 2 is a plan view the casing being broken away showing the valve actuating means in full.

Fig. 3 is a central longitudinal vertical section of the device.

Fig. 4 is a transverse section on line 4—4 of Fig. 2.

Fig. 5 is a transverse section on line 5—5 of Fig. 2.

The invention is shown as comprising a casing 1 having one end closed and a base 2 screw threaded in the other end of the casing 1. Extending rearwardly from the base 2 are slotted guide supports 3 secured at their outer ends to one end of a pneumatic engine 4 of the piston type or other suitable reciprocating mechanism.

Projecting forwardly from the base is a valve engaging member 5 which can be of any suitable construction so as to be adapted to fit different types of valves and which is fastened by any suitable means to an actuating rod 6 having an enlarged end portion 7 screw threaded into a cylinder 8 and rigidly fixed thereto so as to prevent relative rotation between the same. The means

provided for oscillating the valve as is ordinarily done in the process of grinding comprises substantially the casing 8 being rotatably journaled as at 9 in the base 2 and rotatably supported at its other end as by a cap 10 rigidly fastened to the supports 3. A helical groove 11 is formed in the walls of the casing 8 and means are provided for causing rotation of the casing through the helical grooves when the piston of the engine 4 is drawn in one direction and when the piston has reached its forward limit means are provided for automatically reversing the direction of the piston so as to cause rotation of the casing in the opposite direction which will provide the necessary oscillation of the valve in order that the same may be properly ground. Such means is provided by having the piston 12 of the engine 4 mounted upon a piston rod 13 slidable through a packing gland 14 and the actuating medium is controlled by the well known D-type of valve 15 ordinarily used in steam engines with the ordinary inlet and exhaust ports.

A suitable inlet pipe 16 leads into the valve chamber and has a suitable controlling means as a valve 17 of the push button type for controlling the actuating fluid into the valve chamber.

The opposite end of the rod 13 has a guide member 18 slidable in the casing 8 and projecting through the member 18 and out each side of the casing 8 through the helical groove is a guide pin 19 slidable in the slot 20 formed by the guide supports 3 positioned on each side of the cylinder 8 and it will be seen that as the piston 12 reciprocates the pin 19 being held against rotation by the guide supports 3 will cause the casing 8 to be partially rotated due to the helical groove 11.

Means provided for actuating the valve 15 to reverse the direction of the piston 12 comprises substantially a rod 21 journaled on one of the guide support members as by bearing members 22 and depending from the rod 21 and substantially transversely of the slot 20 is a finger 23 adapted to engage the projecting end of the rod 9 when it has almost completed its forward stroke which will cause a link 24 pivotally carried by the rod 21 to actuate a valve cam member 25 so as to actuate the valve 15 through a disk 33 fastened to the valve rod 34 to open the ports and allow the actuating medium to force the



piston rearwardly, the position of these parts at this point of the operation being shown in Figs. 2 and 3.

The valve cam member comprises cam lugs 26 and 26' formed on the outer ends of a cam body 27 pivoted as at 28 upon a rigid support 29. Projecting rearwardly from the lugs 26 is a lever arm 30 having pivoted connection with the rod 24 and a pin 31 projects outwardly from the cam 25 so as to engage a leaf spring 32 which will hold the cam in position due to the pin 31 being off center and this in turn through the lugs 26 holds the valve in position until the rod 19 has nearly completed its reverse stroke when it then engages a second depending finger 33 which will cause the rod 24 to throw the opposite engaging lug 26' around to engage the opposite face of a disk 33 formed on the valve stem 34 extending rearwardly from the valve. The valve rod is slidably journaled upon a cross member 35 fastened to one side of each of the guide members and there are positioned stops 36 upon the rod so as to limit the motion of the valve and give the same proper timing with relation to the piston.

Various changes may be made in the details of construction by those skilled in the art without departing from the spirit of my invention as set forth in the appended claims.

What is claimed is:

1. A valve grinding apparatus comprising a tubular member sustained for rotational movement and having a helical slot therein, a valve engaging member carried by said member, reciprocating means within the first member, a pin carried by said reciprocating means and movable in said slot, guide sup-

ports slidably receiving the ends of said pin, a reciprocating motor, a reciprocating valve for said motor, a disk operatively connected to said valve, a cam mounted for oscillatory movement to move said disk first in one direction and then in the other for actuating the valve, a rod operatively connected to the cam, and fingers formed on the rod and adapted to be engaged by said pin for effecting movement of the rod first in one direction and then the other to effect oscillatory movement of said cam.

2. A valve grinding apparatus comprising a tubular member sustained for rotational movement and having a helical slot therein, a valve engaging member carried by said member, reciprocating means within the first member, a pin carried by said reciprocating means and movable in said slot, guide supports slidably receiving the ends of said pin, a reciprocating motor, a reciprocating valve for said motor, a disk operatively connected to said valve, a cam mounted for oscillatory movement to move said disk first in one direction and then in the other for actuating the valve, a projection formed on the cam, a spring engageable with the projection to effect a rapid movement of the cam when the latter is moved in either direction, a rod operatively connected to the cam, and fingers formed on the rod and adapted to be engaged by said pin for effecting movement of the rod first in one direction and then in the other to effect oscillatory movement of said cam.

In testimony whereof I have signed my name to this specification.

LOUIS B. BAUHAUS.