A. B. BAULE AND W. G. KIRCHHOFF.

OPERATING DEVICE FOR VALVE GRINDERS.

APPLICATION FILED AUG. 29, 1919.

1,386,674.

Patented Aug. 9, 1921.

Fig. 1.

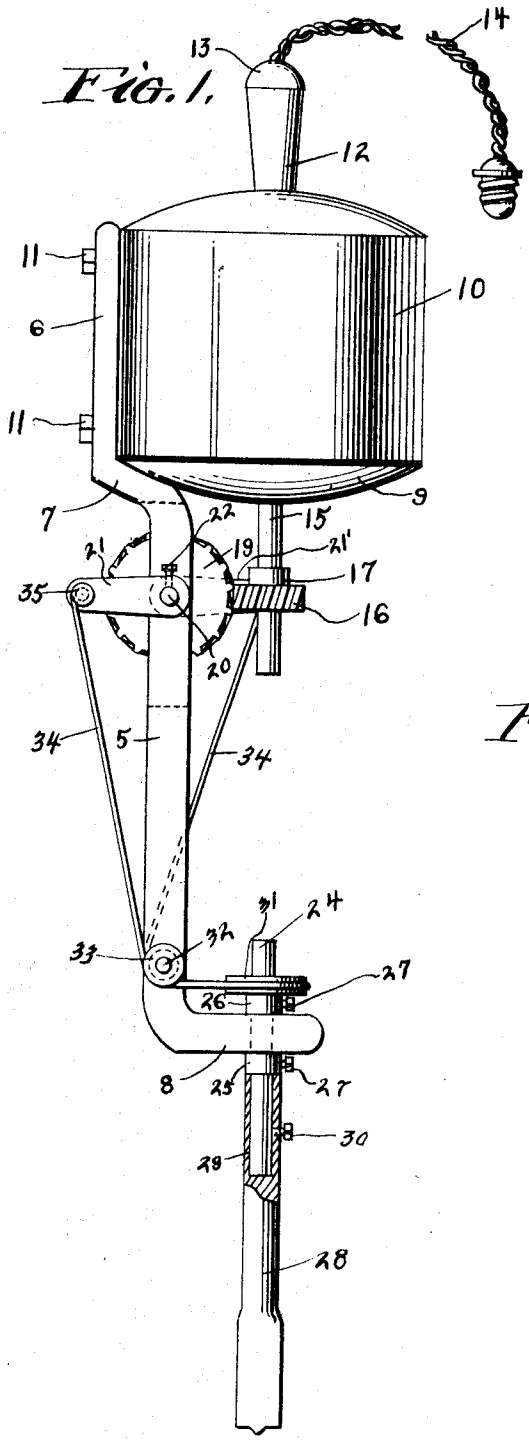
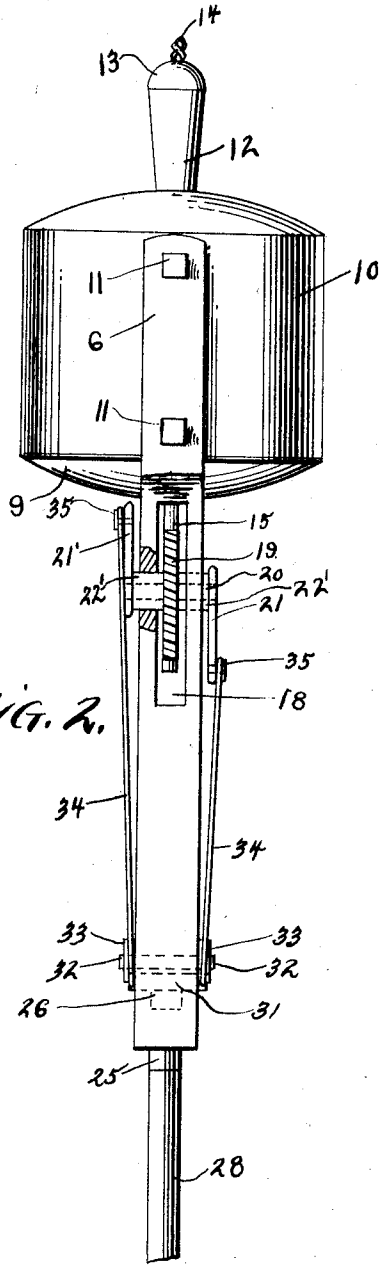


Fig. 2.



Inventor

Arno B. Baule

William G. Kirchhoff

UNITED STATES PATENT OFFICE.

ARNO B. BAULE AND WILLIAM G. KIRCHHOFF, OF CANTON, OHIO.

OPERATING DEVICE FOR VALVE-GRINDERS.

1,386,674. Specification of Letters Patent. Patented Aug. 9, 1921.

Application filed August 29, 1919. Serial No. 320,733.

To all whom it may concern:

Be it known that we, ARNO B. BAULE and WILLIAM G. KIRCHHOFF, citizens of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Operating Devices for Valve-Grinders, of which the following is a specification.

Our invention relates to new and useful improvements in operating devices for valve grinders and more particularly to an electrically operated grinder.

The primary object of our invention is to provide a device of the above mentioned character that is so constructed that the movement imparted to the grinding tool through the operation of the motor will revolve the tool in alternate directions, thus effectually performing the function for which it is designed.

A further object of the invention is to provide a device of the above mentioned character, the parts of which coöperate in such a manner that the grinding of the valves may be accomplished approximately in one-third of the time which it heretofore required.

A further object of the invention is to provide a device of the above mentioned character which is simple in structure, easy to operate, reliable in such operation, and inexpensive to manufacture.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Figure 1, is a side view of our invention, and

Fig. 2, is a rear view thereof.

In the drawings, wherein for the purpose of illustration, we have shown a preferred embodiment of our invention, the numeral 5 designates a vertically extending bracket having its upper end 6 slightly offset to provide the supporting arm 7. The opposite end of the bracket is bent at a right angle to provide the laterally projecting arm 8. The convex bottom 9 of the casing 10 inclosing the motor has its edge seated upon the supporting arm 7 and its side connected to the upper end 6 of the bracket by means of the screws 11. A handle 12 extends upwardly from the center of the top of the casing, the upper end of which receives the socket 13 connected to an electric circuit by the wires 14. The shaft 15 of the motor extends downwardly a substantial distance below the bottom 9 of the casing having a spiral gear wheel 16 equipped with the collar 17 attached thereto by a set screw or other suitable means.

The bracket 5 adjacent the supporting arm 7 is provided with a transverse elongated slot 18 as clearly shown in Fig. 2. Centrally located within this slot is a second spiral gear 19 of larger diameter than the first mentioned spiral gear which is adapted to mesh therewith. The gear 19 is rigidly attached to the shaft 20 which passes through the center of the slot and extends slightly beyond the sides of the bracket 5. Attached to each end of the shaft 20 are crank arms 21 and 21′ which extend in opposite direction to each other. These crank arms are rigidly attached to the shaft by the set screws 22. In order that the gear wheel 19 may remain in the center of the slot 18 a pair of sleeves 22′ are journaled upon the shaft 20 between the crank arms 21 and 21′ and the gear wheel. By placing the spiral gears at a right angle to each other less noise and shock is caused when the grinder is running at a high speed.

The outer end of the laterally projecting arm 8 is provided with a vertically extending opening 23 which is in alinement with the shaft 15 of the motor. Mounted to revolve in this opening is a shaft 24 which is held in place by the collars 25 and 26 secured thereto by means of the set screws 27 on opposite sides of the arm 8. A grinding tool 28 of the usual configuration has its upper end recessed as at 29 to receive the lower end of the shaft 24 to which it is rigidly attached by means of the set screw 30. The upper end of the shaft 24 is equipped with a drive pulley 31 which is rigidly attached thereto adjacent the upper side of the collar 26. A shaft 32 extends through the lower end of the bracket 5 having each end equipped with an idler pulley 33. A flexible leather or rubber belt 34 has one end connected to the free end of the arm 21 and extends downwardly beneath the idler pulley 33 on one side of the bracket and around the drive pulley 31, then beneath the idler pulley 33 on the opposite side of the bracket and upwardly to the free end of the arm 21′ which extends in the oppo-

site direction to the arm 21. This belt is connected to the arms by means of pins 35.

In operation the connection 14 is connected to an electric circuit to furnish power to the motor which revolves the shaft 15 upon which the spiral gear 16 is rigidly attached. The gear 16 meshes with the larger gear 19, thus imparting movement to the arms 21 and 21′ which extend from the gear shaft 20 in opposite directions. The free ends of the belt 34 are connected to the ends of the arms 21 and 21′, said belt passing around the drive pulley 31 which is rigidly attached to the shaft 24. Thus the movement of the arms 21 will transmit an oscillating movement to the shaft 24 in alternate directions. The connecting of the different parts is so arranged that a quarter of a turn in each direction will be imparted to the grinding tool 28, thus enabling the tool to effectually perform its function for which it is designed. As is obvious from the foregoing description when not in use the parts may be easily taken apart and folded into a very small compass which is highly convenient when shipping or storing the same.

It is to be understood that the form of our invention herewith shown and described, is to be taken as a preferred example of the same, and that certain changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

Having thus fully described our invention, we claim:—

In a valve grinder, the combination of a bracket having its upper end offset and lower end bent at a right angle, a motor carried by the offset portion, a gear attached to the projecting end of the motor shaft, a second gear mounted by the bracket and meshing with the first mentioned gear, arms extending in opposite directions from the shaft of the second mentioned gear, a revolving grinder shaft vertically mounted in the lower end of the bracket, a drive pulley rigidly attached to the grinder shaft, and a flexible element connecting the said arms with the drive pulley, imparting an oscillating movement to the grinder shaft.

In testimony whereof, we have affixed our signatures in the presence of two witnesses.

ARNO B. BAULE.
WILLIAM G. KIRCHHOFF.

Witnesses:
SAUL STETSON,
HENRY F. HEIN.