C. E. TIDEMAN.

POWER DRIVEN VALVE GRINDER.

APPLICATION FILED AUG. 30, 1918.

1,318,707.

Patented Oct. 14, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

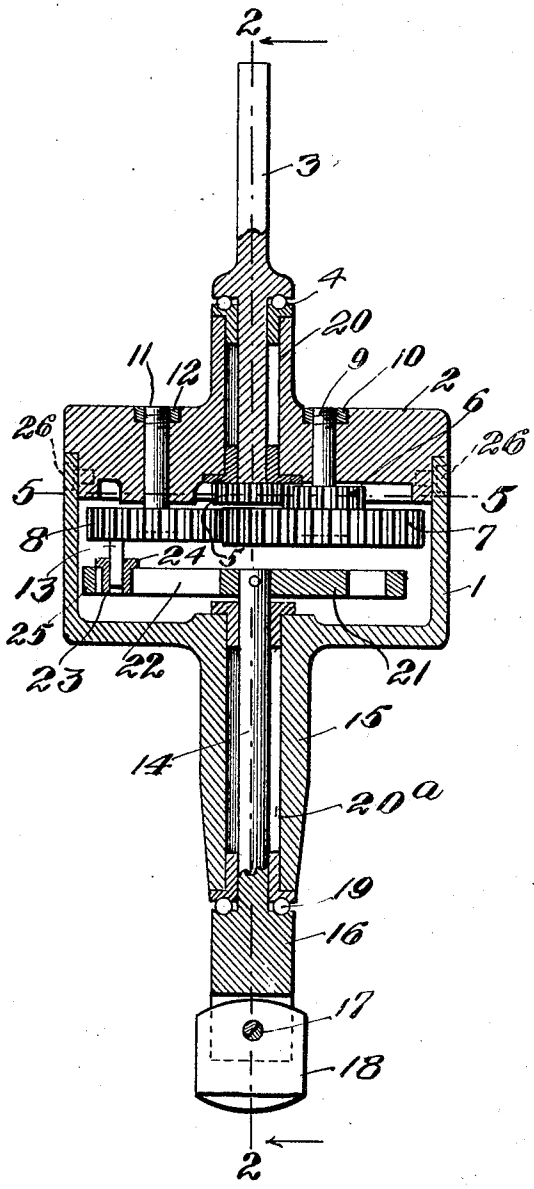
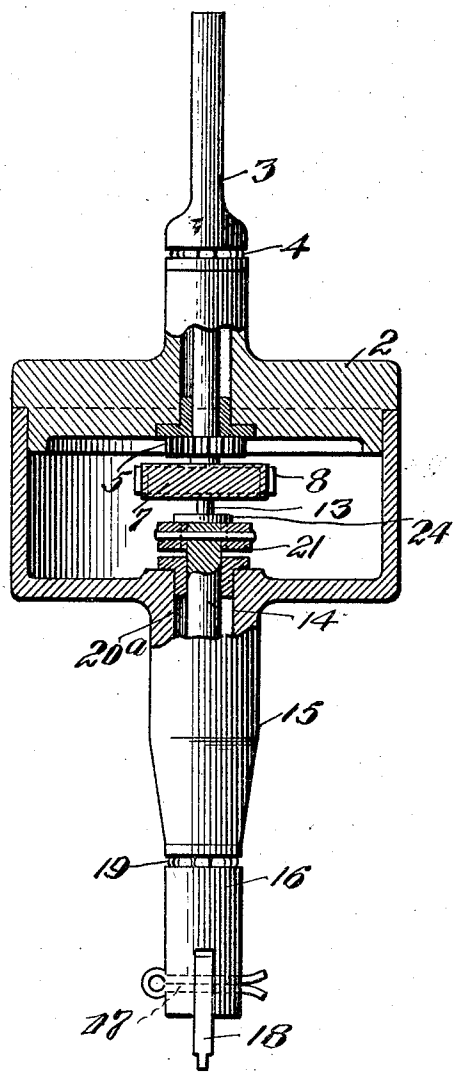


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

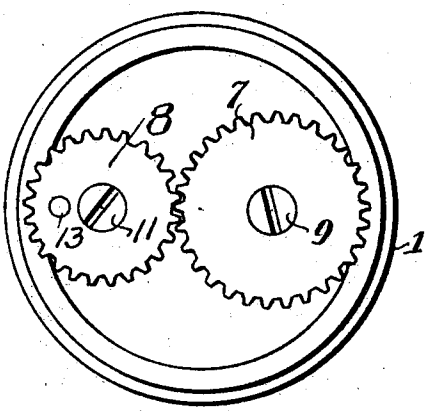


Fig. 5.

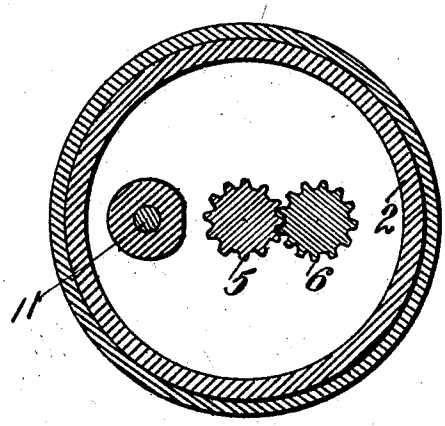


Fig. 4.

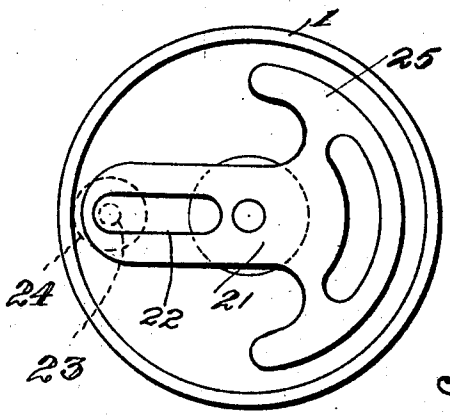


Fig. 6.

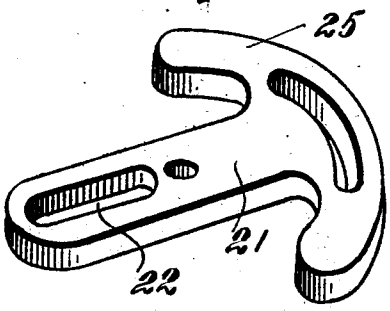
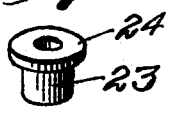


Fig. 7.



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UNITED STATES PATENT OFFICE.

CARL E. TIDEMAN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO VERNER G. ANDERSON, OF WORCESTER, MASSACHUSETTS.

POWER-DRIVEN VALVE-GRINDER.

1,318,707. Specification of Letters Patent. Patented Oct. 14, 1919.

Application filed August 30, 1918. Serial No. 252,077.

To all whom it may concern:

Be it known that I, CARL E. TIDEMAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Power-Driven Valve-Grinders, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a power-driven valve grinder, and has for its object the production of a simple and efficient device for grinding valves of a motor.

With this and other objects in view the invention comprises certain combinations and arrangements of parts as are fully illustrated in the accompanying drawings and specifically described in the following specification, and more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a vertical sectional view of the device, while

Fig. 2 is a similar view taken at right angles to Fig. 1, and on line 2—2, Fig. 1, and looking in the direction of the arrows.

Fig. 3 is a plan view of the inner face of the cap of the device.

Fig. 4 is a top plan view of the casing, the cap being removed.

Fig. 5 is a horizontal sectional view taken on the line 5—5, Fig. 1.

Fig. 6 is a perspective view of the balance-plate.

Fig. 7 is a perspective view of the sleeve normally carried by the balance-plate.

Referring to the drawings by numerals, 1 designates the casing and 2 the cap.

Extending through the cap 2 is a primary shaft 3, which revolves upon ball bearings 4. Secured to the inner end of shaft 3 is a primary cog 5, meshing with the auxiliary cog 6. The auxiliary cog 6 is fixedly secured to the primary gear 7, which gear 7 meshes with the auxiliary gear 8. The auxiliary cog 6 and the primary gear 7, are carried by the screw 9, which screw 9 is provided with a nut 10, sunk in the outer face of the cap 2, Fig. 1. The auxiliary gear 8 is carried by screw 11, which has a nut 12 on its outer end, which nut, like nut 10, is sunk or bedded in the outer face of cap 2. A pin 13 is secured at its inner or upper end to the under face of the auxiliary gear 8.

The auxiliary shaft 14 projects beyond the neck 15 of casing 1, and on its shaft 14 is formed a head 16, and pivotally mounted at 17, upon the head 16, is a valve-engaging bit 18; the pivot 17 is preferably an ordinary cotter pin, whereby the bit 18 is detachably secured on the head 16. Suitable ball bearings 19 are interposed between the head 16 and the lower or outer end of the neck 15, for making the device more efficient by causing the parts to revolve easily.

The primary shaft 3 is surrounded by a sleeve 20 integral with the cap 2, and the auxiliary shaft 14 is also surrounded by a similiarly constructed sleeve 20^a formed by the neck 15 of the casing 1, Figs. 1 and 2.

Fixedly secured to the inner end of the auxiliary shaft 14 is a balance-plate 21. This plate is provided with an elongated slot 22, in which is slidably mounted the sleeve 23; the sleeve 23 is provided with a flanged upper edge 24, that prevents the sleeve from dropping through the slot 22, and the pin 13 of the auxiliary gear is positioned in the sleeve, and as the cogs and gears are rotated through the medium of power shaft 3, the sleeve 23 slides back and forth within the elongated slot 22, permitting the auxiliary gear 8 to completely revolve and thereby impart an oscillatory movement to the balance-plate 21, shaft 14, and bit 18, for enabling the operator to efficiently grind the valve.

It will be noted that the elongated slot 22 extends longitudinally of plate 21, and at substantial right angles to the slot 22 is a curved head 25, constituting a weighted end on the balance-plate, which acts somewhat like a fly wheel in increasing the efficiency of the device by making the oscillatory movement more even and not sudden and "jerky" while the gears are rotating.

Suitable screws, shown by dotted lines 26, Fig. 1, are provided for securing the cap 2 upon the casing 1.

It will be understood that by reason of my specific structure a very efficient device has been produced whereby the rotary movement imparted to the power or drive shaft, and through the medium of the cogs, gears, and balance-plate, will be converted into

oscillatory movement, oscillating the bit 18, and thereby grinding the valve upon which it may be working.

What I claim is:

1. In a device of the class described, the combination of a casing provided with a cap, a shaft carried by said casing provided with means for holding a bit, a balance-plate positioned in the casing and fixedly secured to said shaft, said balance-plate provided with an elongated slot, a sleeve in said slot, and driving means carried by the cap and engaging the sleeve for sliding same within the slot of the plate and thereby imparting reciprocal movement to said plate and shaft.

2. In a device of the class described, the combination of a casing and a cap carried thereby, a power shaft extending through said cap, a primary cog secured to the inner end of said power shaft, a pair of screws extending through said cap, an auxiliary cog and a primary gear wheel carried by one of said screws, the auxiliary cog meshing with the primary cog of the power shaft, an auxiliary gear carried upon the other screw, a depending pin secured to said auxiliary gear, a shaft carried by said casing and projecting beyond one end thereof, said last-mentioned shaft provided with a bit-supporting means, a balance-plate at the upper or inner end of said last mentioned shaft, said balance-plate provided with an elongated slot extending longitudinally of its axis, a sleeve provided with a flange, the sleeve positioned in the elongated slot of the plate and the flanged portion of said sleeve resting upon the top of the plate, said pin extending into said sleeve, and said plate provided with a head at substantially right angles to the body of the plate.

3. A device of the class described, comprising a casing and a cap, shafts carried by said casing and cap, a train of gears carried by said cap and being driven by the shaft of the cap, a balance-plate secured to the shaft of the casing, and means carried by the balance-plate and coöperating with the balance plate and the gears for converting the rotary movement of the gears into a reciprocal movement imparted to the shaft of the casing.

4. In a device of the class described, the combination of a casing provided with a depending neck, a shaft in said neck and extending beyond the lower end of the neck, said shaft provided upon its extended end with bit-carrying means, a balance-plate secured to the inner end of said shaft, said balance-plate provided with an enlarged curved head integral with one end and near its other end with an elongated sleeve-carrying slot, a flanged sleeve slidably mounted in said slot, a plurality of screws carried by said cap, nuts sunk in the outer face of said cap and threaded upon the outer ends of said screws, a power shaft carried by said cap and projecting at its inner end into the casing, a primary cog secured to the inner end of said power shaft, an auxiliary cog meshing with said primary cog and positioned upon one of said screws, a primary gear secured to said auxiliary cog and mounted upon the same screw, an auxiliary gear mounted upon the other screw, and a pin secured to said auxiliary gear and extending into said sleeve.

5. A device of the class described, comprising a casing, a detachable cap carried thereby, a bit-carrying shaft carried by said casing, a driving shaft carried by said cap, and means for converting a rotary motion imparted to said driving shaft into a reciprocal motion imparted to said bit-carrying shaft, said means including a weighted balance-plate and a train of gears furnished with means for oscillating said balance-plate and thereby oscillating the bit-carrying shaft.

In testimony whereof I hereunto affix my signature.

CARL E. TIDEMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."