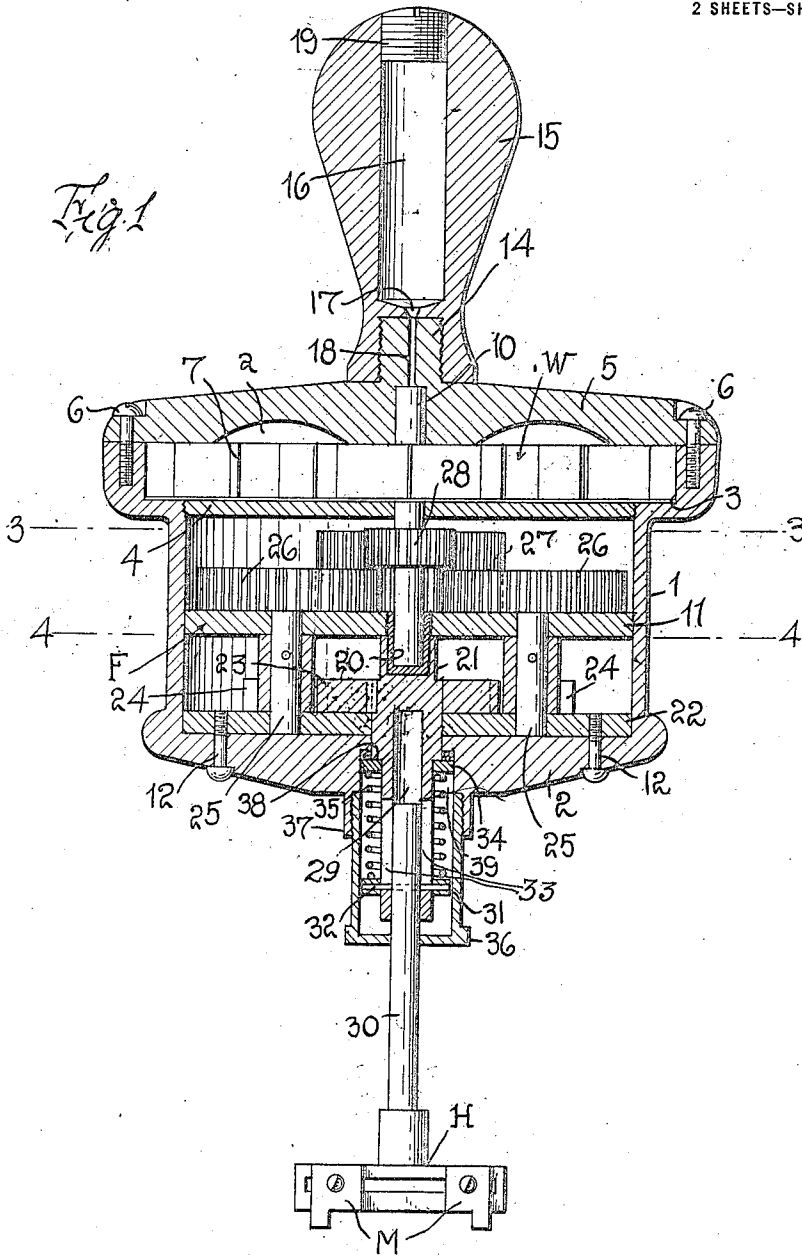


G. W. BOULDS.
GRINDING TOOL.
APPLICATION FILED AUG. 2, 1916.

1,209,931.

Patented Dec. 26, 1916.

2 SHEETS—SHEET 1.



Inventor

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Fig. 2

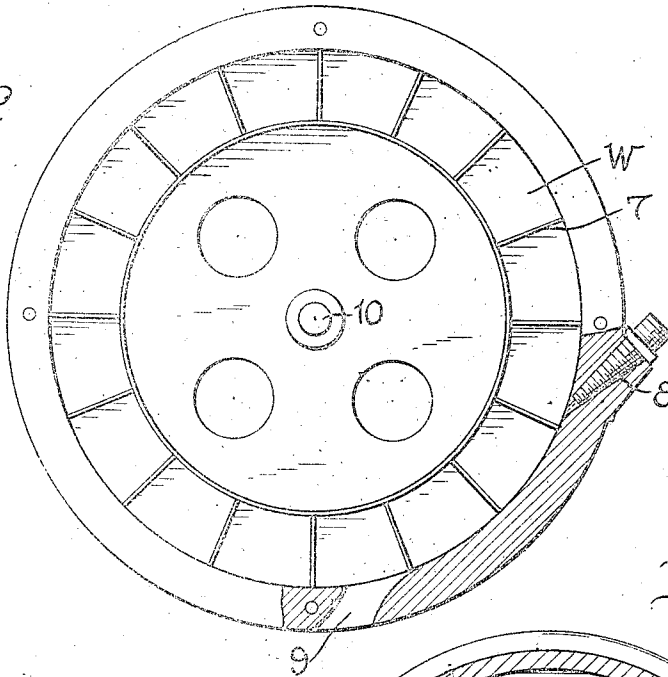


Fig. 4

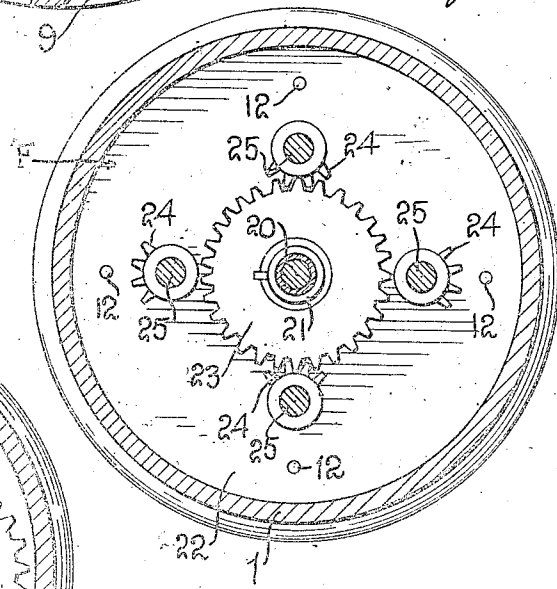
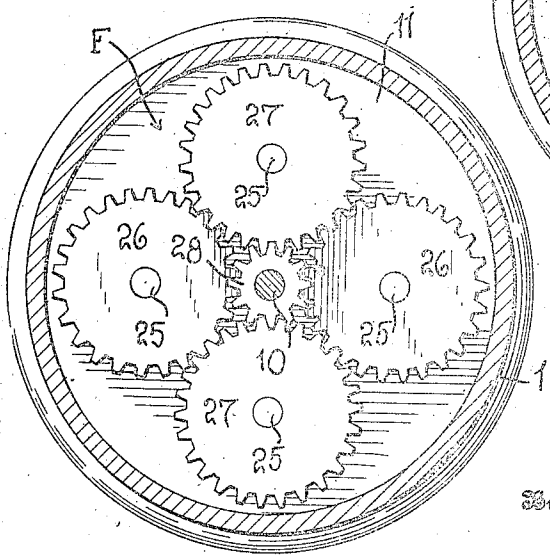


Fig. 3



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UNITED STATES PATENT OFFICE.

GROVENOR W. BOULDS, OF ISLAND POND, VERMONT.

GRINDING-TOOL.

1,209,931.

Specification of Letters Patent.

Patented Dec. 26, 1916.

Application filed August 2, 1916. Serial No. 112,776.

To all whom it may concern:

Be it known that I, GROVENOR W. BOULDS, a citizen of the United States, residing at Island Pond, in the county of Essex and State of Vermont, have invented certain new and useful Improvements in Grinding-Tools, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in grinding tools and has relation more particularly to a device of this general character especially designed and adapted for use in connection with valves as used upon automobiles or the like; and it is an object of the invention to provide a novel and improved device of this general character which may be readily and conveniently operated under the influence of an expansive fluid and preferably compressed air.

It is also an object of the invention to provide a device of this general character including a grinding member together with novel and improved means whereby said member may be caused to move or rotate in opposite directions while the drive wheel or shaft is rotated continuously in one direction.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved tool whereby certain important advantages are attained and the device is rendered simpler, less expensive and otherwise convenient and advantageous for use, all as will be hereinafter more fully set forth.

The novel features of the invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein—

Figure 1 is a vertical sectional view with parts in elevation, of a grinding tool constructed in accordance with an embodiment of my invention; Fig. 2 is a view partly in top plan and partly in section of the device as herein included with the top plate and operating handle omitted; Fig. 3 is a sectional view taken substantially on the line 3—3 of Fig. 1; and Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 1.

As disclosed in the accompanying drawings, 1 denotes a cylindrical casing, preferably aluminum, and which has its lower end

2 closed and its upper or open end enlarged transversely, as at 3. The interior wall of the casing 1, immediately adjacent the enlarged portion 3, has in threaded engagement therewith the disk 4 which serves to close the open end portion of the casing 1.

Secured to the upper or free edge of the casing 1 is the top 5 which is detachably held to the casing 1 through the medium of the anchoring members 6 herein disclosed as conventional headed screws. The disk 4 and top 5 afford a chamber α in which is mounted the drive wheel W provided at its periphery with the veins 7 with which is adapted to impact fluid under pressure, preferably compressed air, which is admitted within the chamber α through the tangentially directed vent 8 arranged in a side wall of the chamber α . In predetermined spaced relation to the vent 8 is an exhaust opening 9 for a purpose which is believed to be self-evident and which is particularly illustrated in Fig. 2.

The wheel W is affixed to the shaft 10 having its upper end mounted within the top 5 and its lower end disposed through the upper plate 11 of the gear frame F. The frame F snugly fits within the casing 1 and rests upon the closed lower end 2 thereof and is detachably held in applied position through the medium of the anchoring members 12 herein disclosed as conventional headed screws.

The top 5, at its axial center and in alignment with the shaft 10, is provided with the outstanding boss 14 with which is detachably engaged the handle member 15. The handle member 15 is provided with a longitudinally disposed recess 16 adapted to contain a supply of lubricant, preferably grease, and at its inner end is provided with a discharge opening 17 in communication with the feed channel 18 disposed through the boss 14, whereby the lubricant within the recess 16 may be delivered to the shaft 10. The outer end of the recess 16 is adapted to be closed in any desired manner and, as herein shown, such closure is effected through the medium of the threaded plug 19.

A sleeve or thimble 20 is centrally threaded in the plate 11 and extends downwardly into a longitudinal socket formed in a bushing 21 which is loosely disposed through the plate 22 of the frame F and through the end plate 2 of the casing 1. The lower end of this sleeve is closed and con-

stitutes a bearing seat for the lower end of the shaft 10. Thus an independent bearing is provided for said shaft and excessive friction obviated.

5 The bearing 21 is fixed to or integrally formed with a pinion 23, and with said pinion segmental gears 24 are adapted to mesh, said gears being fixed to the shafts 25
10 rotatably mounted in the frame F and extending above the plate 11. The shafts 25 are four in number and are arranged in pairs, the shafts of each pair being diametrically opposed and the gears 24 of each pair
15 being so related as to cause the bushing 21 to be reversely rotated.

Affixed to the upper end portions of the shafts 25 are the meshing gears 26 and 27, the pair of gears 27 extending above the gears 26 with their extended portions in
20 mesh with the pinion 28 affixed to the shaft 10 whereby it will be perceived that the requisite rotation will be imparted to the shafts 25.

The lower or outer end of the bushing 21 is provided with the socket 29 adapted to receive the inner end portion of the stem 30
25 of the grinding head H.

The stem 30 is adapted to have limited, independent movement longitudinally of the
30 bushing 21 and, as herein disclosed, a sleeve 31 is loosely mounted upon the extended portion of the bushing 21 and has disposed therethrough the pin 32 which also extends through the diametrically opposed, longitudinal slots 33 formed in the bushing 21
35 and the stem 30. Interposed between the sleeve 31 and the washer 34 arranged adjacent the closed end 2, is the expansible member 35 herein disclosed as a coil spring encircling the bushing 21 and whereby it
40 will be perceived that the inward independent movement of the stem 30 is yieldable and which is of especial advantage during a grinding operation. It has also been found
45 of advantage to incase the extended portion of the bushing 21 within the housing 36 herein disclosed as detachably engaged with the outstanding annular flange 37 carried by the closed end 2. It is also to be noted in
50 Fig. 1 that the washer 34 abuts an annular shoulder 38 formed by reducing the outer end portion of the bushing 21 and within an enlargement 39 of the opening in the closed end 2 through which the bushing 21
55 extends. As herein disclosed, the head H is provided with the relatively adjustable grinding members M whereby it will be perceived that the same may be readily arranged in accordance with the size of the
60 valve to be ground.

From the foregoing description, it is thought to be obvious that a tool constructed in accordance with my invention is of an ex-

65 tremely simple and comparatively inexpensive nature and is particularly well adapted for use by reason of the convenience and facility with which it may be assembled, and it will also be obvious that my invention is susceptible of some change and modification
70 without material departure from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice, ex-
75 cept as hereinafter claimed.

I claim:

1. A device of the character described comprising a casing, a bushing rotatably supported by the casing and extending
80 therebeyond, a grinding member operatively engaged with the bushing, a continuously driven member rotatably supported within the casing, means co-acting with said continuously driven member for rotating the
85 bushing, said grinding member having limited independent movement longitudinally of the bushing, and an expansible member for controlling said movement.

2. A device of the character described 90 comprising a casing, a bushing rotatably supported by the casing and extending therebeyond, a grinding member operatively engaged with the bushing, a gear fixed to said bushing, two shafts rotatably supported
95 within the casing, segmental gears fixed to the shaft and adapted to mesh with the gear of the bushing, a segmental gear of one of the shafts being in mesh with the gear of the bushing when the gear of a second shaft
100 is out of mesh therewith, intermeshing gears fixed to said shafts, and a continuously driven member in mesh with one of said last named gears.

3. A device of the character described 105 comprising a casing, a bushing rotatably supported by the casing and extending therebeyond, the extended portion of the bushing being provided with a socket and with longitudinally disposed slots in com-
110 munication with said socket, a grinding member including a stem insertible within the socket of the bushing and capable of independent movement longitudinally of the bushing, a sleeve loosely mounted on the
115 extended portion of the bushing, a pin disposed through the sleeve and the longitudinal slots of the bushing and through the stem, and an expansible member interposed between the sleeve and the casing. 120

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

GROVENOR W. BOULDS.

Witnesses:

A. M. STEVENS,
C. P. POWELL.