

Sept. 14, 1937.

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2,093,360

PNEUMATIC GRINDING TOOL

Filed Dec. 9, 1936

2 Sheets-Sheet 1

Fig. 1.

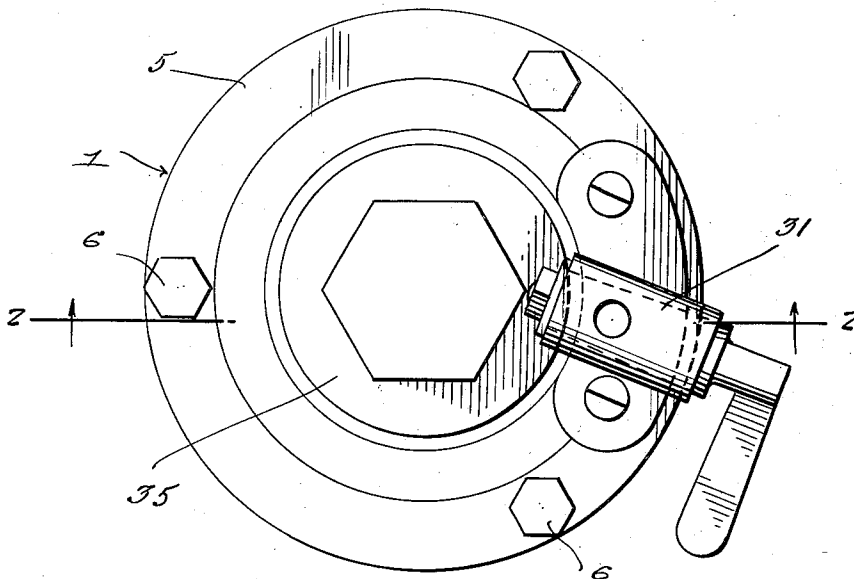
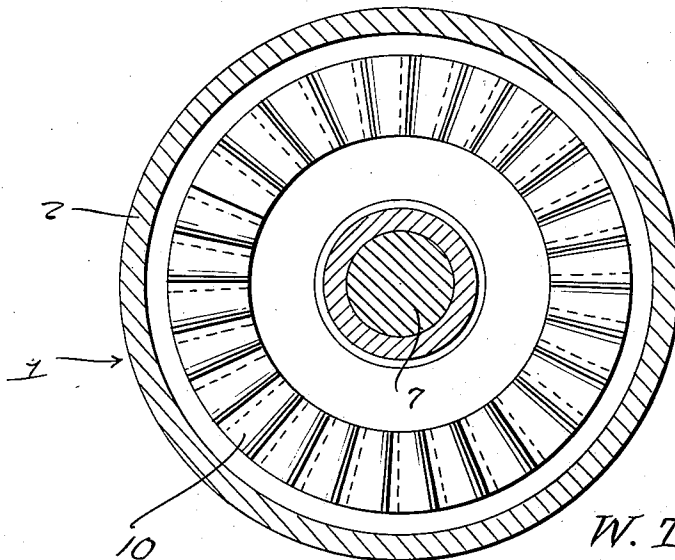


Fig. 3.



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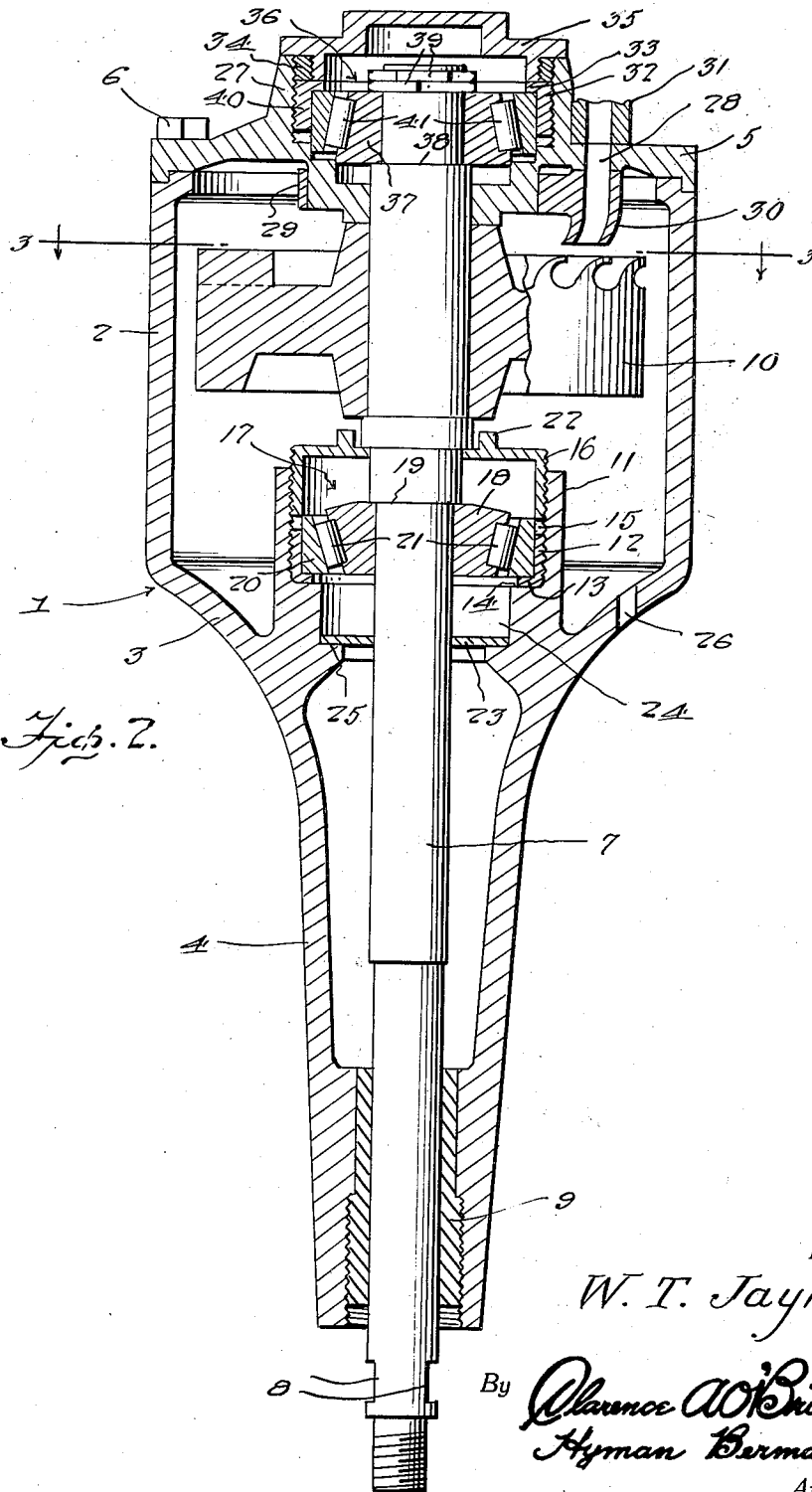
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PNEUMATIC GRINDING TOOL

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3 Claims. (Cl. 253—2)

The present invention relates to new and useful improvements in pneumatic grinding tools of the type including an air driven rotary shaft and has for its primary object to provide, in a manner as hereinafter set forth, a device of this character embodying a novel construction and arrangement of adjustable bearings for said shaft.

Other objects of the invention are to provide a pneumatic grinding tool of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, light in weight and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views and wherein:

Figure 1 is a view in top plan of a preferred embodiment of the invention.

Figure 2 is a vertical sectional view, taken substantially on the line 2—2 of Fig. 1.

Figure 3 is a horizontal sectional view, taken substantially on the line 3—3 of Fig. 2.

Referring now to the drawings in detail it will be seen that the embodiment of the invention which has been illustrated comprises a casing which is designated generally by the reference numeral 1, said casing including a head portion 2 from which a shoulder portion 3 depends, said shoulder portion 3 terminating in an elongated, tapered barrel or neck 4. The head 2 of the casing 1 is provided with a removable cover 5 which is secured in position by bolts 6. Rotatably mounted in the casing 1 and projecting from the free end of the barrel 4 is a shaft 7 having substantially flat face portions 8 on its outer end portion for receiving a suitable holding tool for assembling the device. A fibre bushing 9 is threaded into the outer portion of the barrel 4 in which the shaft 7 is journaled. The reference numeral 10 designates a rotor which is fixed on the shaft 7 in the upper portion of the casing head 2. It will be noted that the shaft 7 extends substantially from end to end of the casing 1.

Formed integrally with the shoulder portion 3 of the casing 1 and extending therefrom into the head 2 is an internally threaded neck 11. Threadedly mounted for adjustment in the neck 11 is a container 12 having an inturned flange 13 on its bottom engageable on a shoulder 14 in said neck 11. Notches 15 are provided in the container 12 for receiving a suitable adjusting tool. Also

threadedly mounted in the neck 11 is a cover 16 having lugs 22 thereon for engagement by an adjusting tool.

The reference numeral 17 designates a roller bearing which is provided for the shaft 7 in the neck 11. The bearing 17 includes a substantially conical inner race 18 which is pressed on the shaft 7 into engagement with a shoulder 19 on said shaft. The bearing 17 further includes an outer race 20 which is pressed into the container 12. Rollers 21 are provided between the inner and outer races 18 and 20, respectively. A metallic baffle 23 is pressed into the internally reduced lower portion 24 of the neck 11 against a shoulder 25 for preventing the lubricant used in the shaft bearings from being blown out by air pressure behind said bearings. An air exhaust port 26 is provided in the shoulder portion 3 of the casing 1.

The cover 5 of the casing 1 includes a hub 27 adjacent which is an air intake port 28. Mounted on the inner portion of the hub 27 is a ring 29 which carries a nozzle 30 which is aligned with the intake port 28 and which directs the air against the rotor 10. Secured on the cover 5 and communicating with the intake port 28 is a control valve which is designated generally by the reference numeral 31 (see Fig. 1) and which is adapted for connection with a suitable source of air supply.

The outer portion of the hub 27 is internally threaded and adjustably mounted therein is a container 32 having an internal flange 33 on its upper end. Also threaded into the upper portion of the hub 27, above the container 32, is a ring 34 which is internally as well as externally threaded to receive a removable cap 35. The reference numeral 36 designates generally a roller bearing for the shaft 7 in the hub 27 of the cover 5. The bearing 36 includes a substantially conical inner race 37 which is pressed on the shaft 7 against a shoulder 38 on said shaft and secured by nuts 39. The bearing 36 further includes an outer race 40 which is pressed into the container 32 against the flange 33. Rollers 41 are provided between the inner and outer races 37 and 40 of the bearing 36.

It is thought that the operation of the tool will be readily apparent from a consideration of the foregoing. Air under pressure from a suitable source of supply, with the valve 31 open, enters the casing 1 through the intake port 28 and, passing through the nozzle 30, impinges against and actuates the rotor 10 with the shaft 7. This air is exhausted from the casing 1 to the atmosphere

through the port 26. The bearings 17 and 36 may be adjusted to compensate for wear by screwing the containers 12 and 32, respectively, inwardly or outwardly. Any suitable means may, if desired, be provided for lubricating the bearings 17 and 36. Access to the bearing 36 may be conveniently had by simply removing the hub cap 35. Of course, to gain access to the bearing 17 it is necessary to remove the cover 5, the rotor 10, the shaft 7, etc.

It is believed that the many advantages of a pneumatic grinding tool constructed in accordance with the present invention will be readily apparent and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:—

1. A tool of the class described comprising a casing including a removable cover having an air intake port therein, said cover including a hub, a shaft rotatably mounted in the casing, a rotor fixed on said shaft, a nozzle adapted to communicate with the intake port and to direct air therefrom against the rotor, and means for mounting the nozzle in centered relation to said port and including a ring mounted on an inner portion of the hub.

2. A pneumatic grinding tool of the class described comprising a casing including a removable cover, said cover comprising an internally threaded hub, a shaft rotatably mounted in the casing and extending into the hub, a fluid actuated rotor fixed on the shaft, an internally flanged container threadedly mounted for adjustment in the hub, an inner bearing race fixed on the shaft, an outer bearing race fixed in the container, rollers mounted between the inner and outer bearing races, and a removable cap threadedly mounted on the hub.

3. In a tool of the class described, a casing including a chambered head open at its upper end and having a central opening in its bottom and a circular neck extending from the latter and surrounding said opening, a cover for said casing having a central hub, a shaft in said casing extending through said chamber, opening, and neck and into said hub and having a shoulder thereon in said neck, an annular flanged container adjustably threaded into said neck, a tapered roller bearing unit having an outer race fitted into said container against said flange and an inner race bearing against the shoulder on said shaft, a cover threaded into said neck to close said container, and a roller bearing unit for the shaft adjustably mounted in said hub and tapered oppositely relative to the bearing unit first mentioned.

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