March 14, 1944. G. J. BEAUDET 2,344,385

GRINDING WHEEL TOOL

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Fig. 1.

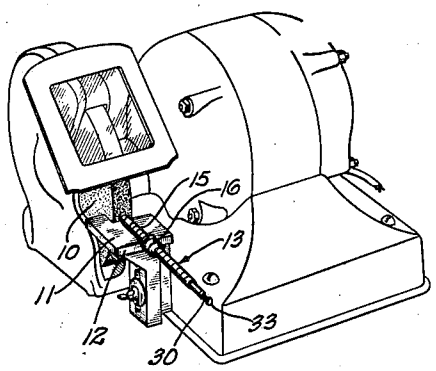


Fig. 5.

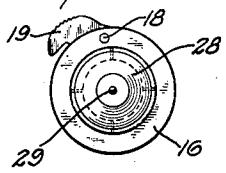


Fig. 4.

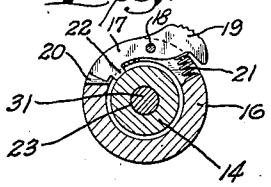


Fig. 2.

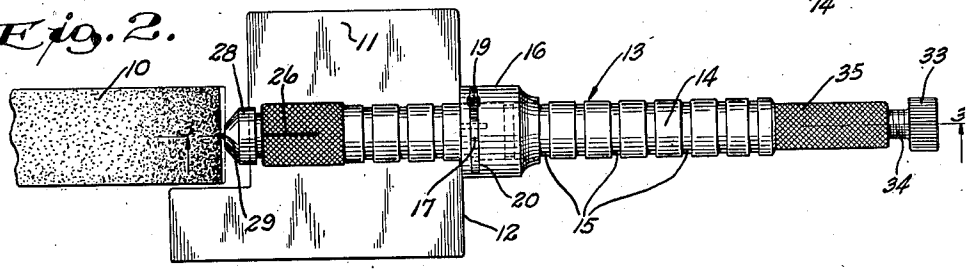


Fig. 3.

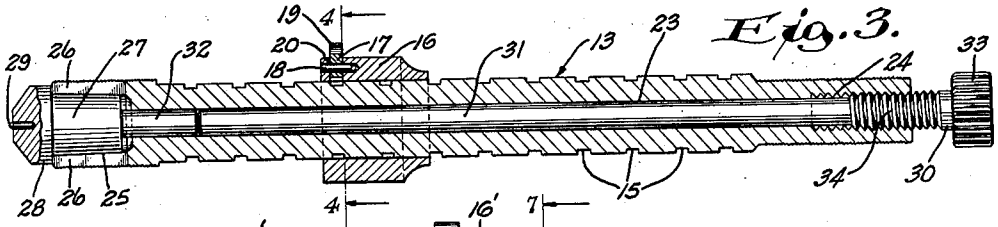


Fig. 6.

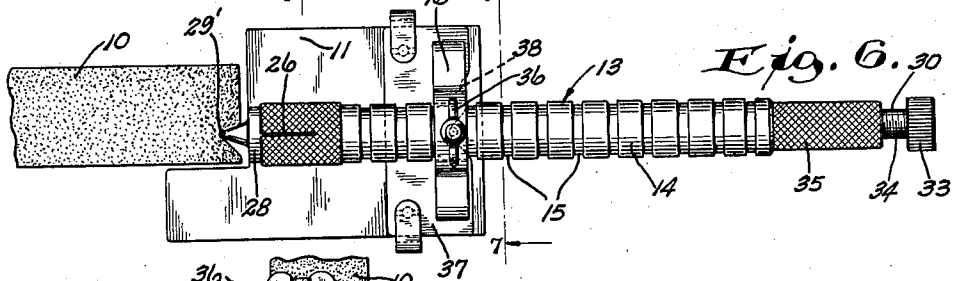
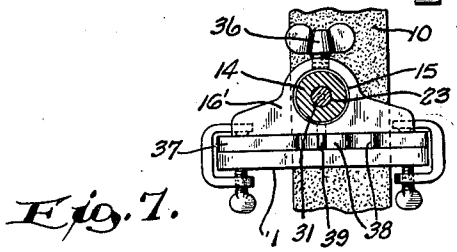


Fig. 7.



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Fig. 8.

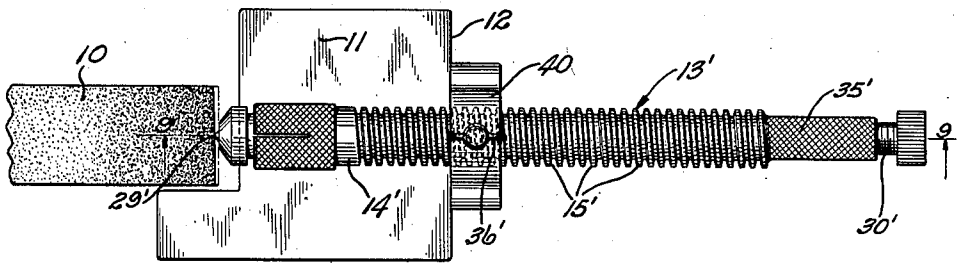
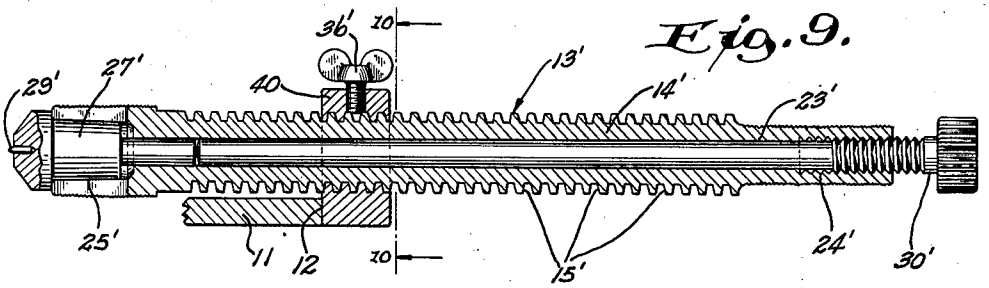


Fig. 9.



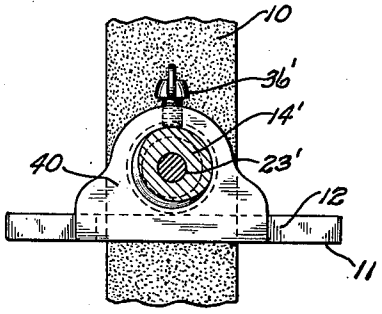


Fig. 10.

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GRINDING WHEEL TOOL

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Application December 14, 1942, Serial No. 468,886

12 Claims. (Cl. 125—11)

This invention relates to improvements in grinding wheel tools, and more particularly to an adjustable tool for dressing and truing grinding wheels.

Tools have heretofore been provided for the dressing and truing of grinding wheels, but the prior tools were not arranged for gauged application to a wheel periphery and proper use of the same required undue skill and touch.

With the above in mind it is a primary object of the present invention to provide a grinding wheel tool provided with an adjustable gauge collar which can be positioned against the edge of a grinding wheel table and moved thereagainst in operation, with the gauge collar being adjusted to roughly locate the work end of the tool adjacent the wheel periphery.

A further object of the invention is to provide a grinding wheel tool having an adjustable gauge collar for roughly locating the work end of the tool adjacent the wheel, together with a fine adjustment member for precisely locating the work end of the tool for proper cutting contact with the wheel.

A further object of the invention is to provide an adjustable grinding wheel tool having a removable and replaceable cutting element carrying sleeve.

A further object of the invention is to provide an adjustable grinding wheel tool having special provision for guided contact with a wheel for radius or irregular dressing operations.

A further object of the invention is to provide a grinding wheel tool which can be easily and accurately handled and manipulated, which is strong and durable, which is inexpensive to manufacture, and which is well adapted for the purposes described.

With the above and other objects in view the invention consists of the improved grinding wheel tool, and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a perspective view of a grinding wheel showing the improved tool properly adjusted and applied to the wheel for dressing or truing operations;

Fig. 2 is an enlarged fragmentary plan view of the wheel and its associated table with the improved tool applied thereto in proper gauged and adjusted position;

Fig. 3 is a longitudinal sectional view of the tool taken on line 3—3 of Fig. 2, and on a larger scale;

Fig. 4 is a cross-sectional view taken on line 4—4 of Fig. 3;

Fig. 5 is an enlarged end view of the tool;

Fig. 6 is an enlarged fragmentary plan view of a grinding wheel and its associated table, with the table having an auxiliary guide plate applied thereto gauging and guiding a modified form of tool adapted for radius grinding;

Fig. 7 is a cross-sectional view taken on line 7—7 of Fig. 6;

Fig. 8 is a plan view similar to Fig. 2 only showing still another modified form of grinding wheel tool as applied to a grinding wheel;

Fig. 9 is an enlarged longitudinal sectional view of the tool of Fig. 8; and

Fig. 10 is a cross-sectional view taken on line 10—10 of Fig. 9.

Referring now more particularly to the drawings it will appear that a conventional form of motor-operated grinding wheel is indicated by the numeral 10, there being mounted forwardly of a peripheral portion of the wheel a rigid table 11 having an outer transverse straight edge portion 12. After a grinding wheel of the type illustrated has been in service for a period of time its periphery may require dressing or truing at proper and regular intervals to increase its efficiency and economical use. For that purpose the improved tool, generally designated by the numeral 13, is adapted to be applied to the wheel, there being special provision for the gauged and adjusted support of the tool in its application to the wheel.

The improved tool 13 comprises an elongated cylindrical, bored barrel 14 provided along the major extent of its outer surface with spaced-apart ring grooves 15. Axially adjustably mounted on the barrel 14 is a gauge collar 16. Within a slot 20 in said gauge collar there is a locking lever 17 pivotally mounted on a pin 18 and having a knurled or ribbed operating finger 19 extending outwardly of the slot 20. Within the slot and engaging the lever 17 so as to yieldingly oppose movement of the same in one direction is a coiled spring 21. The gauge collar 16 is located and firmly held in a desired position of axial adjustment on the barrel 14 by the manipulation of depressing the finger end of the lever 17 to retract a detent or rib 22 at the opposite inner end of the lever. Thereupon the collar may be freely moved along the barrel into adjacency with a selected ring groove 15. Release of manual pressure on the lever finger 19 will permit the spring

21 to actuate the lever so as to then snap the lever detent 22 into the selected, registering ring groove, whereby the gauge collar will be locked in the desired longitudinal position on the barrel.

The bore 23 of the barrel 14 is, throughout its major extent, of uniform diameter. At the outer end said bore is slightly enlarged and is internally threaded, as at 24. At the inner end of the barrel said bore 23 extends into an enlarged tapered externally opening cavity 25. The stock of the barrel surrounding said cavity is knurled, to facilitate grasping, and is also split, as at 26, to form a slightly yielding outer sleeve.

A tapered tool element sleeve 27 is wedgingly but axially adjustably extended into the barrel cavity 25. Integral with the sleeve and projecting beyond the inner end of the barrel is an enlarged tool head 28 in the central portion of whose tapered face is rigidly mounted a projecting cutting element 29 such as a diamond chip or the like.

Closely regulated projection of the element sleeve 27 and cutting element 29 is accomplished by a screw 30. This screw, extended through the barrel bore 23, has an elongated stem 31 whose extremity abuts a stem 32 integral with the tool element sleeve and projecting into the barrel bore therefrom. The outer end of the screw 30 has a knurled head 33 for manual operation, while the screw stem inwardly thereof has a threaded extent 34 in engagement with the bore internal threads 24.

If the improved tool is to be used for the dressing or truing of a grinding wheel, it is applied thereto in the manner shown in Figs. 1 and 2, it being understood that the wheel 10 is set into operation so as to revolve at a high rate of speed. It will be obvious that the inner end of the barrel 14 is rested flatly on the table 11, and the gauge collar 16 is adjusted on the barrel so that the cutting element 29 is almost in contact with the periphery of the wheel 10. Then, by turning the head 33 on the screw 30, the tool element sleeve 27 may be projected outwardly the desired distance so that the cutting element 29 will contact the wheel with the desired degree of pressure. During wheel dressing or truing operations the operator may hold the barrel portion of the tool with his hand, and the outer end of the barrel is knurled, as at 35, for convenience in handling the tool. The inner face of the gauge collar 16 should be in abutment with the outer straight edge portion 12 of the table 11 and the operator, while holding the tool, may move it back and forth along the table edge 12, so that the cutting element 29 will engage the wheel as it is revolving to dress and true the same.

It will be appreciated that the cutting element 29 may in time be subjected to wear and will require replacement. The improved tool permits this at a minimum of expense. By turning inwardly on the screw 30 the tool element sleeve 27 may be projected entirely free of the split barrel sleeve. It is proposed that replacement cutting elements be furnished in similar sleeves 27 and a new cutting element carrying sleeve may be forcefully inserted into the yielding barrel sleeve to reequip the tool. Certain types of work may require different shaped cutting elements, and such elements may be embodied in replaceable or substitute element carrying sleeves.

A slight modification of the invention is illustrated in Figs. 6 and 7 wherein the tool is especially adapted for radius or special grinding of a wheel. The tool 13, save for the collar thereon and cutting element, is precisely similar to that illustrated and described in connection with the principal form of the invention. In fact the barrel and adjusting screw of the principal form of the invention may be used for the substitute elements of the modification. In lieu of the gauge collar 16 of the principal form of the invention, which may be removed axially from the end of the barrel, a gauge block 16' is slipped over the barrel, said gauge block having a circular opening therein. Threadably mounted through the top portion of the gauge block is a winged head adjusting screw 36. The gauge block 16' is held in roughly adjusted position on the barrel by the screw 36 which is turned inwardly to project it into a selected ring groove 15 in the barrel. The split inner end of the barrel has wedgingly inserted therein a cutting element sleeve carrying a projected cutting element 29'.

For radius or special wheel grinding it may be desirable to cut grooves in the periphery of the wheel 10 or to provide shoulders or edges on the wheel periphery. To accomplish this properly and uniformly the tool must be guided in its application to the grinding wheel. An auxiliary guide or pattern plate 37 is secured transversely to the free end portion of the wheel table 11 by clamps or other suitable means. This auxiliary plate 37 has its outer edge formed with grooves or serrations 38 in a desired pattern or arrangement. The gauge block 16' has a lower horizontal edge which rests on the top face of the auxiliary plate 37 when the block 16' is in its secured adjusted position on the barrel 14. Depending from the block 16' is a pin 39 which is adapted to follow the grooves or serrations 38 when the tool is manually moved back and forth across the surface of the auxiliary plate 37. This will therefore cause the cutting element 29', which has been finely adjusted through the screw 30 for proper cutting contact with the wheel 10, to move in the pattern of the grooves 38 so as to cut the desired configurations in the wheel periphery.

Still another form of grinding wheel tool is illustrated in Figs. 8 to 10, inclusive. There, the bored barrel 14' is provided along the major extent of its outer surface with screw threads 15'. An apertured gauge block 40, whose aperture is provided with internal screw threads to mate with the barrel screw threads 15' is adjustably threaded onto the bored barrel 14'. Threadably mounted through the top portion of the gauge block is a winged set screw 36'. The gauge block 40 may be threaded onto the barrel to locate it in any desired roughly adjusted position, and by turning the set screw 36' inwardly to impinge against the barrel the gauge block may be secured in its adjusted position.

It will be noted that the gauge block 40 has an enlarged base or bottom portion which abuts the straight edge portion 12 of the grinding wheel table 11 when the tool is being used. The gauge block is so proportioned and weighted that the same will normally assume the position of Fig. 10 on the barrel so that when the tool is laid on a flat surface the base of the gauge block will prevent the tool from rolling.

In other respects the tool of Figs. 8 to 10, inclusive, is the same as that shown and described in connection with the principal form of the invention. The barrel 14' contains an axial bore 23' which is slightly enlarged and internally threaded as at 24' to receive the threaded portion of the adjusting screw 30'. A tapered tool ele-

ment sleeve 27' is wedgingly but axially adjustably extended into the tapered cavity or socket 25' in the inner end of the barrel. Mounted in the head end of the sleeve 27' is a projecting cutting element 29'.

From the foregoing description it will be seen that the improved grinding wheel tool is of simple and novel construction, is susceptible of very delicate adjustments, is provided with adjustable gauge means for proper location and guiding movement of the tool, and permits very accurate and precise wheel dressing, truing, or cutting operations without undue skill on the part of the operator.

What is claimed as the invention is:

1. A tool, comprising a barrel, a cutting element axially movably carried by one end of the barrel, cutting element adjusting means carried by the barrel and engaging the cutting element to move the same in one direction and projecting from the other end of the barrel, and a gauge and guide member axially adjustably mounted on the barrel independently of the cutting element adjusting means.

2. A tool, comprising a barrel, a cutting element minutely axially adjustably carried by one end of the barrel and projecting therefrom, cutting element adjusting means carried by the barrel and engaging the cutting element to project the same, said adjusting means projecting from the opposite end of the barrel, and a gauge and guide member coarsely axially adjustably mounted on the barrel and independent of the cutting element adjusting means.

3. A tool, comprising an elongated, bored barrel, a portion of the barrel bore having screw threads, the inner end of the barrel being formed with a socket in communication with the barrel bore, a cutting element carrier projecting from the inner end of the barrel and having a shank frictionally engaging said socket, a threaded adjusting rod extending into the barrel bore from the outer end of the barrel and engaging the barrel bore threads and also contacting the cutting element carrier shank to adjustably project the same relative to its socket, and a gauge and guide member axially adjustably mounted on the barrel.

4. A tool, comprising an elongated, bored barrel, a portion of the barrel bore having screw threads, the inner end of the barrel being formed with a yielding socket in communication with the barrel bore, a cutting element carrier projecting from the inner end of the barrel and having a shank frictionally engaging said socket, a threaded adjusting rod extending into the barrel bore from the outer end of the barrel and engaging the barrel bore threads and also contacting the cutting element carrier shank to adjustably project the same relative to its socket, and an independent gauge and guide member axially adjustably mounted on the barrel.

5. A tool, comprising a barrel, a replaceable and interchangeable cutting element carrier removably and axially adjustably carried by one end of the barrel, carrier projecting means mounted in the barrel and engaging the carrier, and a gauge and guide member axially adjustably and removably mounted on the barrel.

6. A grinding wheel tool, comprising a manually engageable barrel having a work end, a cutting element adjustably carried by and projecting from the work end of the barrel, a gauge and guide collar independently adjustably secured about a selected portion of the barrel and engageable with a support surface to roughly position the work end of the barrel relative to a grinding wheel and movable along the support surface in guided relation thereto during operation of the tool, and a fine adjustment member operatively carried by the barrel and engaging the cutting element to accurately, selectively project the same relative to the grinding wheel.

7. A tool comprising a cylindrical barrel having spaced, ring grooves formed therein, a cutting element carrier removably and axially adjustably carried by one end of the barrel, carrier projecting means adjustably mounted in the barrel and engaging the carrier, a gauge and guide member axially movably mounted on the barrel, and a latch associated with the gauge and guide member and projectable into a selected ring groove to adjustably secure the gauge and guide member on a desired portion of the barrel.

8. A tool, comprising a cylindrical barrel having spaced, ring grooves formed therein, a cutting element carrier removably and axially adjustably carried by one end of the barrel, carrier projecting means adjustably mounted in the barrel and engaging the carrier, a gauge and guide member axially movably mounted on the barrel, a manually operable latch movably mounted in the gauge and guide member and having a portion projectable into a selected ring groove to adjustably secure the gauge and guide member on a desired portion of the barrel, and spring means engaging the latch and resiliently urging it toward its projecting position.

9. A grinding wheel tool, comprising an elongated, bored barrel, a portion of the barrel bore having screw threads, the inner end of the barrel being formed with a yielding socket in communication with the barrel bore, a cutting element carrier projecting from the inner end of the barrel and having a shank frictionally engaging said socket, a threaded adjusting rod extending into the barrel bore from the outer end of the barrel and engaging the barrel bore threads and also contacting the cutting element carrier shank to adjustably project the same relative to its socket, the exterior of the barrel being formed with spaced ring grooves therein, a gauge and guide collar axially adjustably and removably mounted on the barrel, a manually operable latch pivotally mounted in the gauge and guide collar and having a portion projectable into a selected ring groove to secure the gauge and guide collar on a desired portion of the barrel, and spring means engaging the latch and resiliently urging it towards its projecting portion.

10. A tool for use on a grinding device having a rigid, forwardly extending supporting table, comprising an auxiliary gauge and pattern plate adapted to be mounted fast on a surface portion of the table, an outer edge of the plate being of irregular contour for tool guiding purposes, a wheel cutting tool resting on the plate and including an elongated barrel and a work end, a projecting cutting element adjustably carried by the work end of the barrel, a collar adjustably mounted on the barrel and contactable with said plate to properly locate the work end of the barrel relative to the wheel, a fastener for releasably holding the collar on a selected portion of the barrel, and a guide pin projecting from the collar and entering the irregular contour portion of the plate to guide the tool in a patterned movement as the tool is manually reciprocated across said plate.

11. A tool, comprising a cylindrical barrel hav-

ing screw threads formed on its outer surface, a cutting element carrier removably and axially adjustably carried by one end of the barrel, carrier projecting means adjustably mounted in the barrel and engaging the carrier, a tapped gauge and guide block threadably mounted on the barrel and axially adjustable thereon, and means for rigidly securing said block in a desired adjusted position on the barrel.

12. A tool, comprising a cylindrical barrel having an intermediate outer surface portion formed with screw threads and having a reduced outer end portion, a cutting element carrier removably and axially adjustably carried by the inner end of the barrel, a tapped gauge and guide block threadably mounted on the threaded portion of the barrel and axially adjustable thereon, said block being removable over the reduced outer end portion of the barrel, and a set screw adjustably carried by the block and engageable with the barrel to rigidly secure the block in an adjusted position on the barrel.

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