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FORM DRESSING TOOL

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Fig. 1

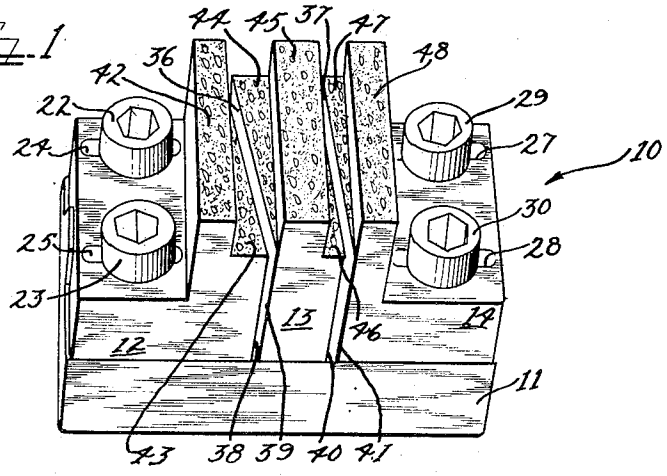


Fig. 3

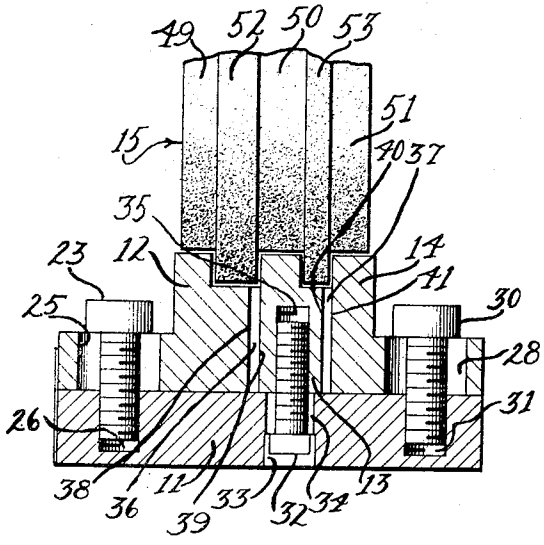
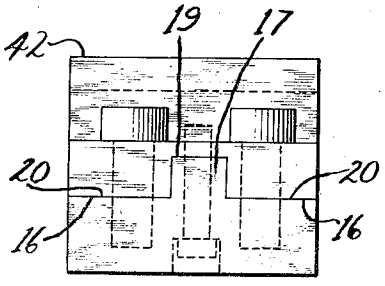


Fig. 2



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FORM DRESSING TOOL

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The present invention relates to a form dressing tool, and more particularly relates to a tool for form dressing and surfacing such devices as grinding wheels and the like by cutting the peripheries thereof to a desired contour and configuration. One of the principal features of the present invention, and an object thereof, is to provide a form dressing tool which is adjustable without impairing the effective operation of the tool and without disturbing the cutting operation or the abrading operation of the tool on the grinding wheel. That is, one of the principal objects and features of the present invention is to provide a form dressing tool which is operative to abrade and form dress the periphery of various sizes of grinding wheels by means of adjusting the width of the form dressing tool or spacing between the segments thereof.

This feature of the form dressing tools embodying the principles of the present invention is permitted by providing the tool segments with adjacent faces which are oblique to lines extending longitudinally of the cutting faces and intersecting the cutting faces so that the segments of the tool may be variously spaced while lines extending longitudinally of the tool will include at least a portion of an abrading face of the tool.

Heretofore, whenever it was desired to abrade or form dress it was necessary to either template form dress the grinding wheel with a single or multiple point tool which would follow the path of the template. Another method which might have been employed for dressing various sizes of grinding wheels for various purposes, was to provide a plurality of sizes of form dressing tools.

Both of these methods were quite expensive and cause a waste of a great deal of expensive material.

By the present invention, however, these difficulties are avoided and there may be provided a single form dressing tool which may be adjusted to form dress various sizes of the work such as grinding wheels and the like.

Therefore, another object of the present invention is to provide a new and improved form dressing tool which is formed of a plurality of segments having corresponding oblique faces whereby spacing of the segments of the tool will not destroy engagement of all parts of a contoured face of a grinding wheel with an abrading surface on the form dressing tool.

Still another object of the present invention is to provide a new and improved form dressing tool wherein segments having abrading faces are adjustably secured to a base block so that they may be variously spaced from each other and have faces so arranged that a line extending longitudinally of the abrading surface will intersect at least a portion of an abrading surface.

Another object of the present invention is to provide a new and improved segmental adjustable form dressing tool wherein the segments are separated by parallel faces extending obliquely with respect to lines longitudinal of the abrading surface of the tool whereby lines extending longitudinally of the tool on the abrading surface and intersecting the separating faces will have at least a portion thereof on each of the abrading surfaces of a pair of immediately adjacent segments.

Still other objects, features and advantages of the present invention will become apparent to those skilled in the art and others, from the following detailed description of the present invention and a preferred embodiment thereof, from the claims, and from the accompanying drawings in which each and every detail shown is fully and completely disclosed as a part of this specification, in which like reference numerals refer to like parts, and in which:

Figure 1 is a perspective view of a form dressing tool embodying the principles of the present invention;

Figure 2 is a side elevational view of the tool of Figure 1; and

Figure 3 is a transverse sectional view of the form dressing tool of Figure 1 shown in position abrading the surface of a grinding wheel which is shown fragmentally and in elevation.

As shown on the drawings:

There is illustrated in the drawings a form dressing tool embodying the principles of the present invention and operative to be adjusted for form dressing of various sizes of grinding wheels. The form dressing tool, indicated generally at **10**, has a tracklike base **11** on which there are mounted a plurality of segments or tool blocks **12**, **13** and **14** each having longitudinally extending abrading surfaces, for abrading and form dressing such devices as a grinding wheel **15** or the like. For firmly mounting the tool blocks **12**, **13** and **14** on the base block **11**, the base block is formed as a tracking block having a pair of transversely extending displaced surfaces **16** on either side of a raised track **17** extending transversely of the base. This track **17** is received in corresponding transverse grooves **19** in each of the segment blocks **12**, **13** and **14** respectively.

The block segments are provided with spaced transverse faces **20** corresponding with the faces **16** and an abutment groove **19** whereby the blocks **12**, **13** and **14** may be properly aligned on the base **11** even though they may be moved relative to each other transversely.

It will be understood, of course, that any desired number of abrading block segments may be employed according to the principles of the present invention and three such blocks have been shown here for the purposes of illustration. Means for fastening the abrading surface block segments **12**, **13** and **14** to the base **11** and permitting lateral adjustment and lateral spacing of the block segments has been provided in the form of such a convenient means as Allen head machine screws. For example, the block segment **12** is secured to the base **11** by screws **22** and **23** which extend through slots **24** and **25** respectively in the block segment **12** and thread into appropriately threaded recesses **26** in the base **11**. The slots **24** and **25** are elongated as shown whereby the block **12** may be moved transversely on the base **11** and secured in any desired transverse position thereon within the limits of movement defined by the lateral extremes of the slots **24** and **25**.

The other end block **14** is similarly provided with a pair of similar slots **27** and **28** through which there extend similar machine screws **29** and **30** respectively which thread into appropriately threaded recesses **31** in the base **11**. The intermediate block segment **13**, or such numbers of intermediate blocks as may be desired, are secured in a laterally adjusted position on the base **11** by screws **32** which are countersunk in appropriate recesses **33** extending upwardly from the bottom of the base **11**. Slots **34** in the base **11**, corresponding in character to slots **24**, **25**, **27** and **28**, and appropriately threaded recesses **35** in the bottom of the block segment **13** for receiving the screws **32**, permit the blocks **13** to be

laterally adjusted to any particular desired position on the base 11 within the limits of movement permitted by the dimension of the slots 34.

For form dressing a grinding wheel as by abrading the periphery thereof, it is preferred that the form dressing tool be so made as to have a rectilinear abrading surface such as a surface having a single layer of diamond points therein of such size as to pass a mesh within the range of 8 to 400. It is also preferred that the abrading surface of the form dressing tool have a transverse configuration to be transmitted to the grinding wheel and that the surface be rectilinear so that lines extending longitudinally thereof on the surface of the tool are straight lines. This form of construction is preferred so that the tool may be oscillated longitudinally thereof or so that the grinding wheel, while being rotated, may be moved longitudinally of the form dressing tool. By this construction and method of abrading and form dressing of the periphery of the grinding wheel, the surface of the grinding wheel may be dressed to a highly accurate configuration with a maximum efficiency of the use of the form dressing tool and a maximum life therefor.

If the segments of the tool were separated by spaces extending truly longitudinally of the tool then the regions of the periphery of the grinding wheel encountering those spaces would not be dressed or abraded and the surface of the grinding wheel would not be accurately dressed. In accordance with the principles of the present invention, however, these spaces between the segments of the blocks carrying the abrading surfaces for form dressing the grinding wheel do not extend truly longitudinally thereof but are defined by surfaces on each of the blocks which lie in planes oblique to longitudinal lines on the abrading surfaces. This construction is best viewed in Figure 1 wherein it is shown that gaps 36 and 37 may exist between the blocks 12 and 13 and between blocks 13 and 14 respectively and will be defined by parallel oblique faces 38 and 39 on the blocks 12 and 13 defining the gap 36 and faces 40 and 41 defining the gap 37 between the blocks 13 and 14.

For purposes of convenience the form dressing tool 10 has been illustrated as one for a dressing ribs and grooves peripheral surface of the grinding wheel 15, and to this end the dressing tool is provided with lands and grooves in such a manner that the block segment 12 has an abrading surface land 42 and a groove abrading surface 43. The intermediate block has a first groove abrading surface 44, and abrading surface land 45, and a second groove abrading surface 46 laterally opposite to the surface 44; and the other end abrading block segment 44 has a groove abrading surface 47 and abrading land surface 48. These abrading surfaces will thus dress the grinding wheel so that the land abrading surfaces 42, 45 and 48 will dress the groove faces 49, 50 and 51 respectively in the wheel 15 while the groove abrading surfaces will dress lands 52 and 53 in the periphery of the wheel 15.

It will be evident from Figure 3 that, as stated above, if the gaps 36 and 37 extended truly longitudinally of the abrading tool, then the portions of the lands 52 and 53 of the grinding wheel meeting these gaps would not be dressed by any of the abrading surfaces and the wheel 15 would, therefore, be inaccurately dressed. By the oblique setting of these gaps, the triangular faces 43 and 44 for abrading the land 52 on the wheel 15 will so transversely overlap that any line extending truly longitudinally of the tool along the surfaces 43 and/or 44 will lie in at least one of those surfaces. That is, any circumferential line on the land 52 of the wheel 15 will touch either the abrading surface 43 or the abrading surface 44 so that the entire face of the land 52 and the wheel 15 will be dressed. Stating it still another way, by the construction described the faces 43 and 44 will transversely overlap, or at least meet, in such a manner that

all longitudinal lines necessary for abrading will lie in at least one of the surfaces 43 and 44. These same statements all apply to the surfaces 46 and 47 for abrading the land 53 on the wheel 15.

Thus, it will be seen that in a form dressing tool incorporating the principles of the present invention, the block segments may be variously spaced so that, as in the example illustrated, the tool is operative to dress grinding wheels and provide the same with various sizes of lands thereon. Still further tools incorporating the principles of the present invention are operative to dress various sizes of grinding wheels and the segments thereof may be variously spaced so that the segments are each spaced the same transverse distance from each other or so that various adjacent segments are spaced different transverse distances from each other. In any of these events a form dressing tool embodying the principles of the present invention will, nevertheless, be operative to truly and accurately form dress such work as grinding wheels or the like.

From the foregoing, it will be readily observed, that numerous variations and modifications may be effected without departing from the true spirit and scope of the novel concepts and principles of this invention. We, therefore, intend to cover all such modifications and variations as fall within the spirit and scope of the novel concepts and principles of this invention.

We claim as our invention:

1. An adjustable form dressing tool comprising a base, a first abrading block segment fixedly secured thereto, a second abrading block segment positioned on said base laterally of and movable with respect to said first block segment, cooperating means associated with said second block segment and said base for fastening said second block segment to said base in the desired laterally spaced relation to said first block segment, each of said block segments having a longitudinally extending raised land surface and a partial groove surface depressed from but laterally adjacent to the corresponding land surface, said land and partial groove surfaces having abrasive particles embedded therein, said block segments having spaced opposed plane surfaces extending obliquely to the longitudinal extent of said lands and from said partial groove surfaces to said base, whereby said block segments may be moved relatively to each other to vary the spacing therebetween without impairing the effectiveness of said partial groove surfaces acting together as a unitary abrading surface.

2. An adjustable form dressing tool comprising a base, block segments adjustably mounted on said base, each of said segments having a rectangularly outlined plane surface at one level, adjacent ones of said segments having a common rectangularly outlined plane surface at a different level and having spaced confronting lateral faces extending obliquely to the longitudinal extent and within the rectangular outline of said common plane surface, and means securing said block segments to said base with said confronting lateral faces in adjusted spaced relationship, each of said plane surfaces within the rectangular outlines thereof having abrasive particles embedded therein and so distributed throughout that at least some abrasive particles lie in any rectilinear line extending longitudinally of such plane surfaces within the rectangular outlines defining the same.

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