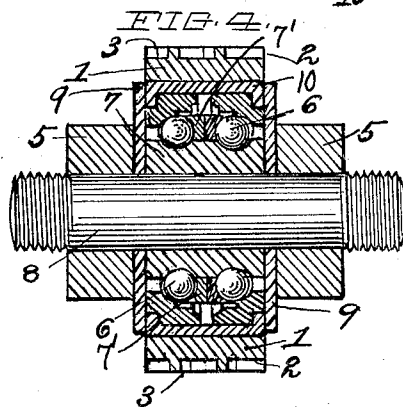
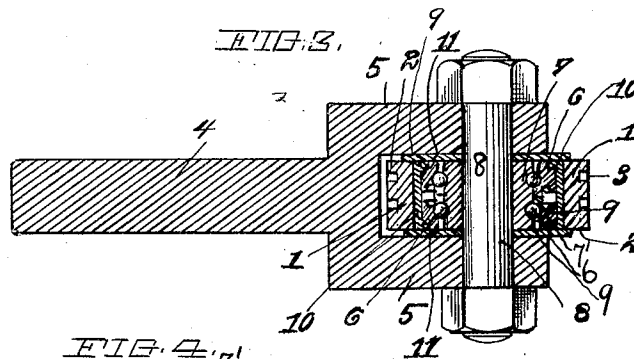
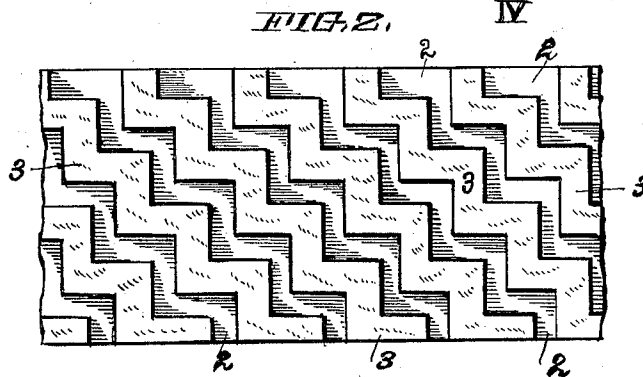
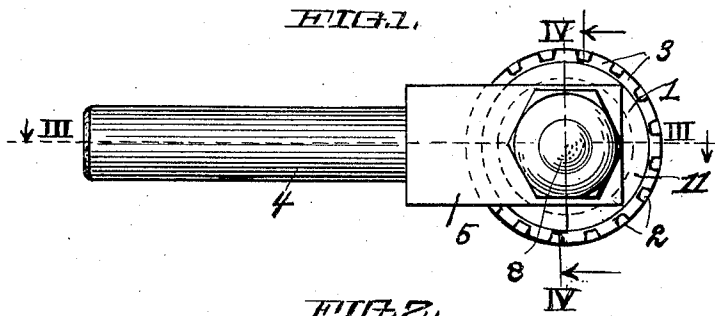


W. E. ROSS.
WHEEL DRESSER.
APPLICATION FILED FEB. 17, 1917.

1,330,656.

Patented Feb. 10, 1920.



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WHEEL-DRESSER.

1,330,656.

Specification of Letters Patent.

Patented Feb. 10, 1920.

Application filed February 17, 1917. Serial No. 149,332.

To all whom it may concern:

Be it known that I, WILLIAM E. ROSS, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented new and useful Improvements in Wheel-Dressers, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to a device for dressing wheels and particularly to that class of such devices used for dressing carborundum or other composition wheels. In its general nature, said invention relates to devices shown, described and claimed in U. S. Letters Patent No. 1,256,167 issued Feb. 12, 1918, upon my invention in wheel-dressers. My invention is designed to have an effect upon the wheel that is dressed wholly different from that effected by any other device of this character with which I am acquainted. Furthermore, my improved wheel dresser is designed to greatly increase the amount of work which can be obtained with a wheel of a given character.

The annexed drawing and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various mechanical forms in which the principle of the invention may be applied.

In said annexed drawing:—

Figure 1 represents a side elevation of a tool holder in which my improved wheel dresser is mounted.

Fig. 2 represents, upon an enlarged scale, a broken plan view of my improved wheel dresser;

Fig. 3 represents a longitudinal section taken in the plane indicated by the line III—III, Fig. 1; and

Fig. 4 represents, upon an enlarged scale, a section taken in the planes indicated by the lines IV—IV, Fig. 1, said Figs. 3 and 4 illustrating the method of mounting the dresser in a suitable holder.

The illustrated embodiment of my invention comprises a rotatable member 1 in which grooves 2 are formed either by milling, grinding, die casting, die sinking, or in any other approved manner. These grooves 2, in the form shown, are of equal width throughout, extend from side to side of the

member 1, and the sectors thereof lie one-half in planes parallel with the axis of the member 1 and one-half in planes at right angles to said axis, the parallel and right angle sectors of the grooves, in the form shown, being of equal length, thus producing a plurality of continuous crooked angular raised dressing areas 3, complementary to the grooves 2, and having two series of parallel cutting edges, the edges in one series being parallel to the axis of the member 1 and the edges in the other series lying in planes at right angles to said axis. Thus the plurality of entirely disconnected areas 3 is formed which, in the form shown, are equal in size, and lie in the surface of the cylinder whose axis coincides with the axis of rotation of the member 1. These areas 3, as shown, thus constitute a plurality of separate relatively staggered areas systematically arranged and detached both lengthwise and crosswise of the cylinder.

I have found that by altering the size of the areas 3 I obtain different results from the wheels to which the dresser is applied. When it is desired that the wheel to be dressed shall rough finish the work I decrease the size of the areas. This may be done by increasing the width of the grooves 2. When the sum of all the areas is equal to from twenty (20) to forty (40) per cent. of the possible cylindrical area of the member the tool is suitable for preparing a carborundum or emery wheel for rough finishing, when this sum is increased to from forty (40) to eighty-five (85) per cent. of the possible cylindrical area, the wheel to which the tool is applied will be suitable for fine finishing the work.

It is desirable and conducive to efficiency to have the parts of the outer surface of the tool remaining, distributed with a substantial uniformity throughout the periphery of the wheel, yet, it is not essential that this uniformity be more than reasonably approximate in degree; and I wish to be understood as meaning when I use the word "uniformity" merely a reasonable approximation to absolute uniformity or such uniformity as will produce the same or similar result to that produced by the device shown. It is obvious also that while the limits of proportion which I have specified above are the ordinary limits in connection with carborundum wheels of usual composition, these

proportions of dimensions may be varied to some extent, when my dressing wheels are constructed to dress wheels of novel or less well known composition, and I desire accordingly to be understood as not restricting myself to the percentages specified above, save in the present connection.

It will be noted from the above described construction that every plane passing through member 1 at right angles to its axis intersects the areas 3, so that no part of the grinding wheel to which the dresser is applied escapes the action of the cutting edges, regardless of the speed at which the dresser is caused to travel across the periphery of the grinding wheel. Uniformity of operation upon the latter is thus obtained.

I have found that wheels dressed with the above described tool will perform a grinding operation for a greatly increased length of time before it is necessary to again redress them, as compared with grinding wheels dressed by means of other devices heretofore known and of which I am aware.

The above described member may be mounted in any suitable holder or handle but I have illustrated one form of holder which I have found to be suitable and which I shall now describe, the dressing member 1 therein indicated being shown as a shell securely impressed or otherwise suitably fixed to elements now to be described. Said holder consists of a handle portion 4 formed with a yoke whose two arms 5 receive inner and outer races 7 and 11 provided with suitable ball-bearings 6, the inner race 7 being securely fastened to a member 8 intersecting and secured in the arms 5, and the outer race 11 being secured by a shell or cover member 10, there being provided a suitable separator member 7' as shown. The shell member 1, with its presenting or face surface formed with the complementary grooves and dressing areas, as hereinbefore fully explained, is secured to said shell or cover member 10. In order that damaging extraneous matter may be kept from the ball-bearings, I have bushing members 9 securely interposed, between the arms 5 of the holder and the roller bearings. These elements constitute simply one way of mounting the dressing member and may be varied as requirements and preferences dictate.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. In wheel dressers, a body portion having formed upon its presenting or face surface a plurality of angular grooves, creating a plurality of raised dressing areas each provided with a plurality of cutting edges progressively fed to the work.

2. In a wheel dresser, a rotatable member whose dressing surface is provided with a plurality of continuous crooked grooves

comprised of a plurality of sectors forming a plurality of isolated areas alternating with said grooves, such groove sectors being arranged in a generally oblique direction from side to side of the member.

3. In a wheel dresser, a rotatable member provided with a plurality of peripheral areas lying in the surface of a cylinder having its axis coinciding with the axis of said member, each such area being provided with cutting edges, meeting each other at an angle, and formed by oblique continuous depressions in the surface of the cylinder, each such depression comprising a plurality of angularly related sectors.

4. In a wheel dresser, a rotatable member provided with a plurality of peripheral, disconnected areas bounded wholly by continuous lines whose limits are the sides of the member and each comprising two series of parallel sectors, the sectors of the two series being alternately arranged, said areas lying in the surface of a cylinder having its axis coinciding with the axis of rotation of said member, each of said areas including a plurality of pairs of cutting edges angularly related to each other, all of said areas being fixed relatively to each other, said areas extending crosswise and generally lengthwise of the cylinder.

5. In a wheel dresser, a rotatable member provided with a plurality of peripheral, disconnected areas bounded wholly by continuous lines whose limits are the sides of the member and each comprising a plurality of relatively angular sectors, said areas lying in the surface of a cylinder having its axis coinciding with the axis of rotation of said member, each of said areas including a plurality of pairs of cutting edges angularly related to each other, all of said areas being fixed relatively to each other, said areas extending crosswise and generally lengthwise of the cylinder.

6. In a wheel dresser, a rotatable member provided with a plurality of peripheral relatively fixed and disconnected areas lying in the surface of a cylinder having its axis coinciding with the axis of said member and so located that every plane passing through the member perpendicular to said axis will intersect such areas, each of the latter including a plurality of pairs of cutting edges of equal length angularly related to each other and respectively lying in planes containing the axis of the member and in planes at right angles thereto.

7. In a wheel dresser, a rotatable member provided with a multiplicity of disconnected areas formed by continuous grooves comprising a plurality of sectors disposed in planes containing the axis of the member and a plurality of alternate sectors disposed in planes perpendicular to the axis of the member, the outermost boundaries of said

grooves being lines lying in the surface of a cylinder, having its axis coinciding with the axis of said member, said areas extending crosswise and generally lengthwise of the cylinder and being so located that every plane passing through said member and perpendicular to the axis will intersect said areas.

8. In a wheel dresser, a rotatable member provided with a plurality of peripheral, disconnected areas bounded wholly by continuous lines whose limits are the sides of the member and each comprising a plurality of alternately arranged sectors disposed in planes containing the axis of the member and in planes at right angles thereto, respectively, said areas lying in the surface of a cylinder having its axis coinciding with the axis of rotation of said member and so located that every plane passing through the member and perpendicular to said axis will intersect such areas, each of the latter including a plurality of pairs of cutting edges angularly related to each other, all of said areas being fixed relatively to each other, said areas extending crosswise and generally lengthwise of the cylinder.

9. In a wheel dresser for preparing grinding wheels for fine finishing the work, a rotatable member provided with a peripheral surface lying in the surface of a cylinder having its axis coinciding with the axis of said member, the possible peripheral area determined by the outer dimensions of the member being interrupted and the remaining surface being more than forty per cent. of such possible surface, and said remaining surface consisting of detached areas bounded by continuous, generally oblique, crooked grooves.

10. In a wheel dresser, for preparing grinding wheels for fine finishing the work, a rotatable member provided with a peripheral surface lying in the surface of a cylinder having its axis coinciding with the axis of said member, the possible peripheral area determined by the outer dimensions of the member being interrupted and the remaining surface being more than forty per cent. and less than eighty-five per cent. of such possible surface, said remaining surface consisting of detached areas bounded by continuous, generally oblique, crooked grooves.

11. In a wheel dresser, a rotatable member provided with a multiplicity of relatively disconnected areas formed by continuous, generally oblique, crooked grooves whose outermost boundaries are lines lying in the surface of a cylinder, said areas being so located that every plane passing through said member and perpendicular to the axis will intersect said areas, the sum of said areas being equal to more than forty per cent. of the possible peripheral area deter-

mined by the outer dimensions of the member.

12. In a wheel dresser, a rotatable member provided with a multiplicity of disconnected areas formed by continuous, generally oblique, crooked grooves whose outermost boundaries are lines lying in the surface of a cylinder, said areas being so located that every plane passing through said member and perpendicular to the axis will intersect said areas, the sum of said areas being equal to more than forty per cent. and less than eighty-five per cent. of the possible peripheral area determined by the outer dimensions of the member.

13. In a wheel dresser, a rotatable member formed in its outer surface with dressing areas and disconnected recesses distributed thereamongst creating a plurality of cutting edges for each of said areas, the planes containing each two adjacent cutting edges of said areas being relatively perpendicular.

14. In wheel dressers, a body portion formed upon its presenting or face surface with a plurality of isolated recesses having side walls lying in planes alternately parallel with, and at right angles to, a given plane, thus forming raised rectangular dressing areas.

15. In wheel dressers, a body portion formed upon its presenting or face surface with a plurality of isolated recesses having side walls lying in planes alternately parallel with, and at right angles to, a given plane, forming raised dressing areas respectively comprised of a plurality of rectangular sections.

16. In wheel dressers, a body portion formed upon its presenting or face surface with a plurality of isolated recesses having side walls lying in planes alternately parallel with, and at right angles to, a given plane, forming raised dressing areas whose perimeters comprise a multiplicity of lines (more than four) of which each two adjacent ones meet to form a right angle.

17. In wheel dressers, a body portion formed upon its presenting or face surface with a plurality of recesses extending crosswise and generally lengthwise of said surface and having side walls lying in planes alternately parallel with, and at right angles to, the axis of the body portion, thus forming a plurality of raised dressing areas.

18. In wheel dressers, a body portion formed upon its presenting or face surface with a plurality of isolated recesses having side walls lying in planes alternately parallel with, and at right angles to, the axis of the body portion, thus forming raised rectangular dressing areas presenting simultaneously to the work all points of alternate cutting edges and progressively to the work the points of alternate cutting edges.

19. In a wheel dresser, a body portion

having formed upon its presenting or face surface a plurality of oblique grooves extending from side to side of the member and creating a plurality of raised dressing areas, the grooves being so formed that each dressing area consists of a plurality of rectangular sections progressively fed to the work.

20. In a wheel dresser, a body portion having formed upon its presenting or face surface a plurality of grooves extending generally obliquely of said surface and creating a plurality of raised areas each comprising a plurality of connected sections progressively fed to the work from one end of the respectively adjacent grooves to the other end thereof.

21. In wheel dressers, a body portion formed upon its presenting or face surface with a plurality of angular recesses extended from side to side of the body and having side walls lying in planes alternately parallel with, and at right angles to, a given plane, thus forming a plurality of isolated raised dressing areas having relatively right-angular adjacent cutting edges.

22. In wheel dressers, a body portion formed upon its presenting or face surface with a plurality of angular recesses extended from side to side of the body and having side walls lying in planes alternately parallel with, and at right angles to, the axis of the body portion, thus forming a plurality of isolated raised dressing areas having relatively right-angular adjacent cutting edges.

23. In a wheel dresser, a rotatable member provided with a plurality of peripheral relatively fixed and disconnected areas lying in the surface of a cylinder having its axis coinciding with the axis of said member, each such area being provided with two cutting edges meeting each other to form an

angle of ninety degrees (90°), one of said edges lying in a plane parallel with the member axis.

24. In a wheel dresser, a rotatable member formed in its outer surface with crooked grooves extending cross-wise and generally length-wise of the surface, thus creating a plurality of dressing areas.

25. In a wheel dresser, a rotatable member formed in its outer surface with crooked grooves extending crosswise and generally lengthwise of the surface, thus creating a plurality of isolating dressing areas.

26. In a wheel dresser, a member formed with a longitudinal central spindle-bearing and with crooked, generally oblique, peripheral, uninterrupted grooves of uniform outer width and extended from side to side of the member, thus creating a plurality of raised isolated dressing areas.

27. In a wheel dresser, a rotatable member formed in its outer surface with dressing areas and recesses distributed thereamongst creating a plurality of cutting edges for each of said areas, the planes containing each two adjacent cutting edges of said areas being respectively parallel with, and perpendicular to, the axis of the body portion.

28. In a wheel dresser, a rotatable member formed in its outer surface with dressing areas and generally oblique recesses distributed thereamongst creating a plurality of cutting edges for each of said areas, the planes containing each two adjacent cutting edges of said areas being respectively parallel with, and perpendicular to, the axis of the body portion.

Signed by me, this 15th day of February, 1917.

WILLIAM E. ROSS.