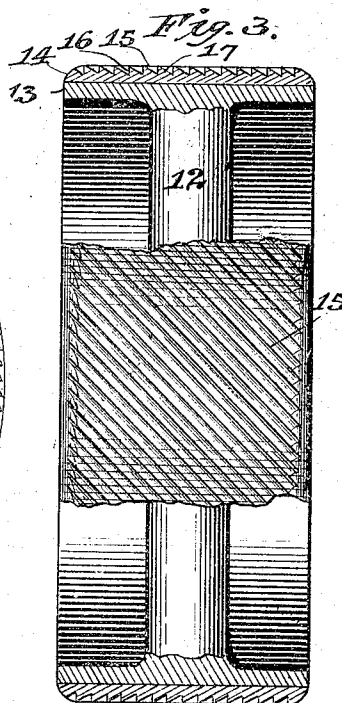
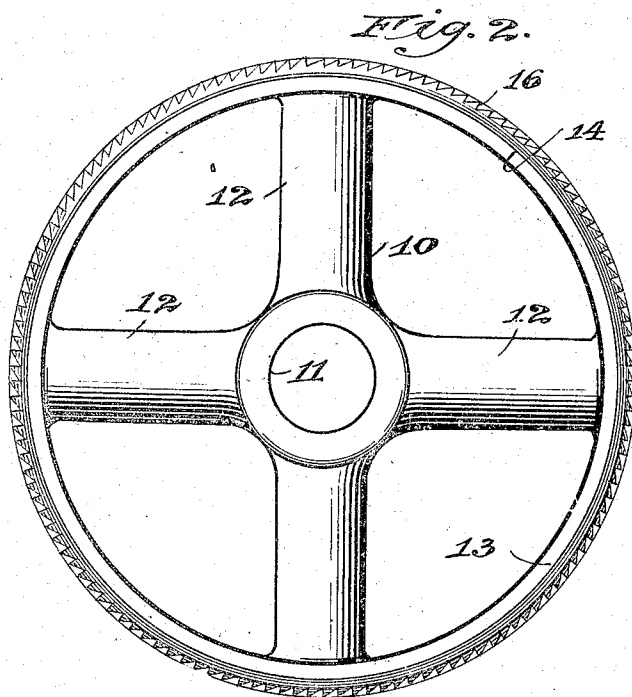
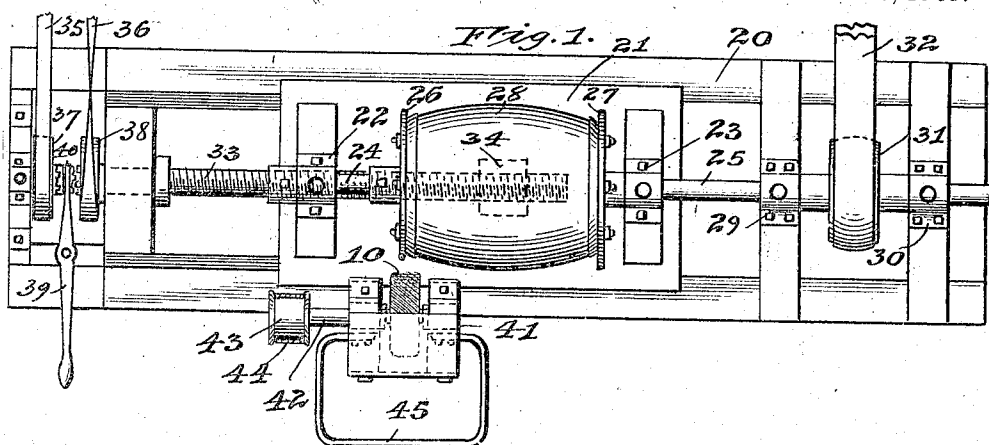


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CIRCULAR CUTTER.
APPLICATION FILED MAY 27, 1909.

942,081

Patented Dec. 7, 1909.



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UNITED STATES PATENT OFFICE.

ROBERT D. KINYON, OF CHICAGO, ILLINOIS.

CIRCULAR CUTTER.

942,081.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed May 27, 1909. Serial No. 498,722.

To all whom it may concern:

Be it known that I, ROBERT D. KINYON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Circular Cutters, of which the following is a specification.

This invention relates to rotary circular cutters suitable especially, though not exclusively, for smoothing or finishing the exterior curved surfaces of barrels, casks, firkins, or other containers, and for removing painted or printed marks, advertisements, labels, or the like from wooden boxes or similar packages.

In revolving cutters of this kind I have found that such devices must have a large number of cutting edges close together and preferably diagonally arranged on the outer face of the cutter so as not to gouge, splinter, or otherwise injure the surface of the barrel or other container, but rather smooth and plane the same. By thus forming the cutter and arranging its cutting teeth, a considerable number of the same are acting simultaneously on the work presented thereto, although only a comparatively small portion of each cutting edge is acting at any one time.

With this improved device a barrel or box may be readily and quickly smoothed without liability of splintering or otherwise damaging the wooden staves or boards forming parts thereof.

In the preferred embodiment of the invention the cutter proper has an outer band, supplied with cutting teeth, which is case-hardened and shrunk on to an inner wheel or support.

Other features of novelty and improvement will be made apparent from a consideration of the following description of one embodiment of the invention, which should be taken in connection with the accompanying drawing, forming a part of this specification and throughout the various views of which like reference characters refer to the same parts.

In the drawing—Figure 1 is a plan view of a barrel finishing appliance equipped with one of my improved and novel forms of rotary cutters; Fig. 2 is an elevation of such cutter on an enlarged scale; and Fig. 3 is a face elevation and partial section of the same.

Referring first to Figs. 2 and 3, it will be

noticed that the cutter comprises an inner wheel 10, having a central hub 11, a plurality of radiating arms 12, and a circular or cylindrical outer portion 13, shrunk on the face of which is the cutter proper composed of a band 14 having on its outer face a considerable or large number of sharp-edged cutting teeth 15 arranged diagonally on the outer face of the band at approximately forty-five degrees (45°), as is clearly shown in Fig. 3. The front faces 16 of these teeth are abrupt and have all portions thereof substantially-radially disposed with relation to the axis or center of the inner support 10, while the back faces 17 of these teeth slope rearwardly, as is clearly shown, and form with the front faces 16 an angle of substantially sixty degrees (60°). I have found that a cutter constructed in this manner and having these characteristics is peculiarly and especially adapted for smoothing barrels or the like and eliminates any tendency to splinter or gouge the wood of the article operated upon, due to the large number of teeth and their arrangement on the cutter. Owing to the diagonal disposition of these cutting teeth, as is shown in Fig. 3, a considerable number of the same act on the barrel or other container at the same time and do not have opportunity to cut into the wood deeper than is intended, it being understood that the various successive portions of each sharp-edged tooth become active in succession, whereby only a small portion of any tooth is cutting at any one time. The angles of these teeth indicated above have been found in practice to render the cutter efficient and effective in carrying out the operation specified, although such angles could doubtless be modified to some extent without substantial reduction of the beneficial and advantageous action of the cutter.

In Fig. 1 I have shown a machine in which a cutter of this type may be employed for smoothing, finishing or planing the convex curved outer surface of a barrel, cask or similar container. The machine comprises a base 20 on which is a sliding carriage 21 supplied with a pair of bearings 22 and 23 which accommodate the shafts 24 and 25, having at their adjacent ends the rotary barrel supports 26 and 27 adapted to clamp and support between them the barrel 28. The shaft 25 is comparatively long and rotates and slides longitudinally in a pair of

bearings 29 and 30 mounted on the base 20, such shaft being rotatable by a pulley 31 and co-acting belt 32.

The carriage or traveling support 21 for the barrel may be caused to reciprocate by a suitably-mounted rotary screw-shaft 33 engaging the threads of a fixed nut 34 on the bottom of the carriage and being capable of rotation in opposite directions by the two belts 35 and 36, the latter of which is crossed. These belts encircle and co-act with a pair of pulleys 37 and 38, either of which may be clutched to the screw-shaft 33 and rotate the latter by operating the clutch handle 39 which controls the operation of the clutch 40. Also on the base 20 a frame or support 41 is mounted so as to be freely movable to cause the cutter thereon to engage and follow the contour of the barrel as it passes by the same, such cutter 10 being mounted on a shaft 42 rotated by a pulley 43 on its end by means of a suitable belt 44. The shaft 42 rotates in bearings on the support 41, the latter being shiftable by a loop handle 45 to render the cutter active on the barrel's surface. It will, therefore, be apparent that both the cutter and the barrel rotate during the smoothing or finishing operation, that the barrel travels along with relation to the cutter, and that the workman may manipulate the latter so as to cause it to follow the bulging shape or contour of the staves composing the barrel.

Whereas I have herein indicated a form of machine in which such a cutter may be advantageously employed for the purpose for which it is intended, it is nevertheless to be understood that the invention is in no wise restricted or limited to the construction of such machine, and in this connection I direct attention to a mechanism of this general character which has been set forth by me in a copending patent application, Serial No. 482,061, filed March 8, 1909. In ad-

dition it should be understood that a cutter of this type may be readily used for effacing or removing the lettering on wooden boxes or other similar containers, in which case of course no such mechanism of the character shown in Fig. 1 would be employed, it being merely necessary to apply the box or the like in any approved manner to the face of the cutter, which will quickly and readily remove the lettering and leave the surface of the box planed and smoothed. It is furthermore to be noted that this invention is not necessarily confined to the exact construction of the cutter proper, since the structure of the same and its various features may be varied within wide limits without departure from the substance and essence of the invention.

I have found it desirable to simultaneously case-harden and shrink the cutter band on the inner support or wheel, but it should be understood that this is a matter of minor importance.

I claim:

In a machine of the character described, the combination of a work holder, means to rotate the work, a rotary cutter, and means to rotate said cutter in contact with the work, said cutter consisting of an inner support and a case-hardened band shrunk on said support and having on its face a plurality of cutting teeth diagonally disposed at an angle of approximately forty-five degrees, the front faces of said teeth being abrupt and having all parts thereof substantially radial to said cutter, the back faces of the teeth being sloping and forming an angle of approximately sixty degrees with the front faces of the teeth, substantially as described.

ROBERT D. KINYON.

Witnesses:

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