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COMBINATION BRUSH SPACER AND SUPPORT FOR
ROTATABLE PIPE CLEANING MACHINE BRUSHES
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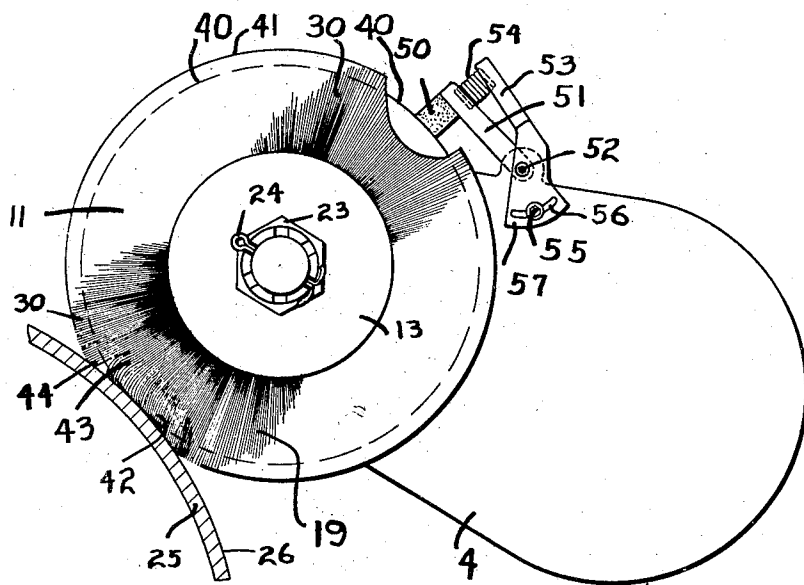
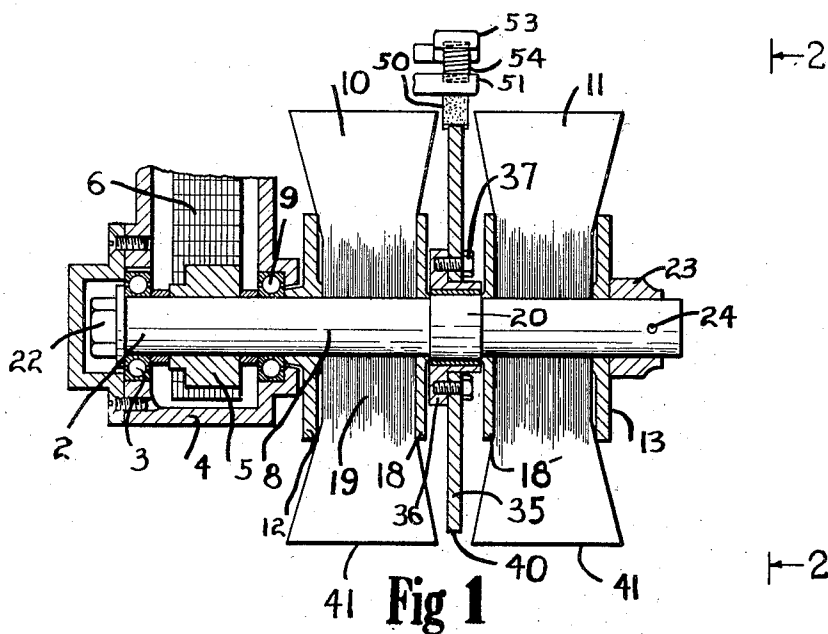


Fig 2

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COMBINATION BRUSH SPACER AND SUPPORT FOR ROTATABLE PIPE CLEANING MACHINE BRUSHES

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2 Claims. (Cl. 15—88)

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The invention relates to a spacer for rotating brushes so as to avoid overloading and excessive flexing of the bristles of the brush.

In accomplishing brushing operation by using rotating brushes, it is not uncommon that excessive pressure is applied to the brush in an attempt to obtain maximum cutting or cleaning action but it has been found that such excessive pressure results in consequent movement of the brush toward the work to such an extent that the bristles of the brush are bent over an excessive amount so that they do not obtain the desired whipping action upon striking the work which results in an efficient operation.

It is difficult to accurately adjust a brush rotating at high speed and particularly brushes which travel along the work while the brushes are rotating. Because the adjustment of the parts are difficult, the brushes are often subjected to excessive pressure and moved too close to the work for efficient operation.

To overcome this, the present invention contemplates a spacer which will bear against and roll on the work as the brushes rotate and travel so as to form a positive stop for movement of the brush against the work and to also absorb any pressure beyond the amount necessary to flex the bristles of the brush. The invention has a wide application but will be here described as particularly applied to rotating brushes used in the cleaning of pipe.

It is one of the objects of the invention to provide a spacer for rotating brushes which will support any excessive loads beyond that required to properly flex the bristles of the brush and to also space the brush the desired distance from the work.

Still another object of the invention is to provide a combination rotating brush and spacer to support the brush in the proper position relative to the work.

A still further object of the invention is to provide a gauge for rotating bristled brushes which will roll on the work and space the brush relative thereto.

Still another object of the invention is to provide a rotating brush spacer member which can be arranged to wear at the same rate as the wear on the bristles of the brushes so that the desired spacing of the brush relative to the work is maintained.

Still another object of the invention is to provide a support disc for brushes so as to avoid undue flexing and injury to the bristle itself.

A still further object of the invention is to

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provide a device for effecting wear for supporting brush discs at the same rate of wear as the wear on the bristles occurs.

Other and further objects of the invention will be readily apparent when the following description is considered in connection with the accompanying drawings, wherein:

Fig. 1 is a vertical sectional view through a rotating brush which has been equipped with the supporting disc of the invention.

Fig. 2 is a side elevation showing the support disc in the brush in actual operation.

The invention herein described can be applied to the type of rotating brush employed to travel along a pipe being cleaned but may be applied in many other fields of brushing.

In Fig. 1 a rotatable shaft 2 is supported in the bearings 3 which are in turn carried by a housing 4. This shaft has a drive pinion 5 thereon which receives a flexible belt or other driving member 6 so as to impart rotation to the shaft. The shaft is outstanding at 3 beyond the interbearing 9 and has affixed thereon the brush units 10 and 11. Each of these brush units is made up of the flanges 12 and 13 on opposite ends thereof so as to generally clamp and retain the metal bristles 19. Each brush is further made up of flanges 18 and 13' positioned by enlarged collar 20 on opposite ends thereof to retain and clamp metal bristles 19. The enlarged collar 20 on the shaft tends to space the respective brushes apart and the nut 22 serves to draw the shaft inwardly so as to confine the flanges on opposite sides of the brush 10 while the nut 23 and the retainer pin 24 clamp the brush 11 into position.

In Fig. 2 a piece of work 25 such as a pipe having a surface 26 which is to be cleaned has been illustrated. This pipe is being brushed by the brushes 10 and 11 being applied thereto by tilting of the housing 4. Suitable pressure is applied to the housing and the brush to force it against the work while the brush is being rotated.

In the copending application referred to, a housing 4 is carried by a rotatable cage which travels around the pipe while the brush in turn rotates against the pipe during this traveling movement.

In order to properly space the brushes 10 and 11 relative to the work so that the ends 30 of the bristles 19 execute the proper sweeping action as they contact the surface 26, it is necessary to space the axle of the brushes a proper distance from the work. This proper distance varies of course upon the amount of cleaning, speed of

rotation of the brushes, the rate of travel, and various other conditions which must be taken into consideration. In many instances, it is often necessary to cut and try in order to obtain the desired spacing of the brush from the surface being cleaned.

The present invention embodies a disc or plate 35 which is shown as having been mounted upon a hub flange 36 by the cap screws 37. This hub is fixed to the collar 20 of the shaft and is arranged to rotate therewith so as to rotate the disc or plate 35. It will be observed that the periphery 40 of this support disc is positioned slightly inwardly from the periphery 41 of the bristles of the brushes. This difference in diameter between the disc and the brushes has been found proper for some particular set of conditions so that the bristles will be flexed somewhat as at 42 in Fig. 2. As these bristles pass along the work and move into a position where they are ready to leave the work, the bristles will flex or snap outwardly so that they move from the curved position 43 to the straight position 44 also seen in Fig. 2.

It will be noted that the periphery 40 of the support disc is traveling peripherally at 26 of the pipe to provide a solid or rigid support for the brush. In this manner, only enough pressure to hold the brush from moving out by centrifugal force is required and then any additional pressure is controlled by the disc 35.

Regardless of the amount of pressure applied to the brush, only a sufficient pressure can be applied to the bristles to cause them to flex and execute the desired cleaning action because any additional pressure is taken up by the wheel or disc 35 traveling on the periphery of the pipe.

This arrangement prevents undue flexing, crystallization, and fatigue in the metal of the bristles and always maintains the bristles in position to execute the maximum cleaning or cutting action.

The disc may be of any suitable material and is preferably constructed so that it will wear by rolling on the periphery of the work at approximately the same rate that the metal bristles are subjected to wear. In this way, the brushes and the disc will be used and worn out simultaneously.

If desired, however, a suitable grinder 50 may be arranged in the form of an abrasive material supported on an arm 51 pivoted at 52 on the housing 4. This arm may be urged against the periphery 40 of the disc 35 by a lever 53 pressing against a spring 54 and adjustable by the cap

screw 55 passing through a slot 56 in the heel 57 of the lever 53. By suitable adjustment, the desired abrasive action may be applied to the periphery 40 of the support wheel so as to cause it to wear in unison with the wear on the bristles.

As stated heretofore the invention has been described in connection with a rotating pipe cleaning brush but it seems it may be utilized with various types of grinders and in various types of cleaning and brushing equipment.

Broadly the invention contemplates a support or gauge for rotating bristle brushes to position the brush for the most efficient operation.

What is claimed is:

1. A rotatable circular brush for pipe cleaning machines comprising a shaft, both a cylindrical spring wire bristle brush unit and a spacer disc of rigid material mounted on said shaft to rotate therewith, said disc being of a slightly lesser diameter than said unit to engage the work to be cleaned and retain said shaft a distance from said work such that said bristles are caused to sweep against the work, means to carry and rotate said shaft, and an abrasive member mounted on said means to rub against said disc to insure that said disc is maintained worn to a slightly lesser diameter than said unit.

2. In a cleaning device, the combination of, a rotary shaft, both a cylindrical brush and a disc slightly smaller in diameter than said brush mounted on said shaft for rotation therewith, a housing to support said shaft for rotation, and an abrasive block on said housing adjustably held against said disc to insure that it is maintained worn to a slightly lesser diameter than said brush.

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