BRUSH ASSEMBLY FOR PIPE WRAPPING MACHINE

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FIG. 1.

FIG. 2.

FIG. 3.

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This invention relates to pipe cleaning apparatus for attachment to a pipe wrapping machine.

In the wrapping or other treating of pipe the effectiveness of treatment may be impaired by the presence of rust, scale, dirt and extraneous matter on the surface of the pipe. The presence of air and oxidizing matter in such a product object of the tend to promote corrosion at the surface of a pipe and to defeat the purpose of wrapping. When an adhesive type wrapping is used to wrap a pipe, particles of scale or foreign material may cover the inner surface of the wrapping fabric and prevent direct contact of the adhesive to the pipe. It is possible for concentrations of dirt at the exterior surface of a pipe to form irregularities of sufficient magnitude to prevent the proper sealing of successive helical courses of wrapping material and to expose areas at the surface of the pipe to the air, if above ground, and to earth formations, if buried.

While the practice of cleaning pipe prior to wrapping is well known, the means used hereforefor for that purpose have not been entirely satisfactory. Methods of cleaning pipe by hand as with a wire brush are costly and slow and generally impractical for large scale operations. Separate cleaning machines made to precede a wrapping machine require additional labor for their operation and consume additional time in their assembly about a length of pipe; if a cleaning machine greatly precedes a wrapping operation dust may accumulate at the surface of a pipe during the interim between cleaning and wrapping. The need for an additional source of power to operate a separate cleaning machine increases both the initial and operating expenses of a cleaning operation and may increase the possibilities of wasted time through mechanical failures.

An important object of the invention is to provide a pipe cleaning machine suitable for attachment to and used as a coactive subassembly of a pipe wrapping machine.

A further object of the invention is to provide means for cleaning pipe during a wrapping operation wherein no additional machine need be assembled about or attached to a length of pipe.

Another object of the invention is to provide a pipe cleaning machine attached to a pipe wrapping machine in such a manner that the cleaning operation will closely precede the wrapping operation.

A further object of the invention is to provide a pipe cleaning machine suitable for operation in conjunction with a pipe wrapping machine and wherein no additional source of power is required for its operation.

A particular object of the invention is to provide a pipe cleaning machine suitable for automatic and simultaneous adjustment with the adjustment of a pipe wrapping machine to accommodate various diameters of pipe.

An additional object of the invention is to provide a pipe cleaning machine capable of operation at all points on the exterior surface of a pipe.

A further object of the invention is to provide a pipe cleaning machine which propels extraneous matter in a direction away from the surface of a pipe and away from a following wrapping operation.

These and other objects will become apparent from the following description and the accompanying drawings, wherein:

Figure 1 is a side elevation of the frame or carriage and wheels of a pipe wrapping machine shown and described in my copending application, Serial Number 529,443 filed Aug. 19, 1955.

Figure 2 is a top view of a brush assembly in accordance with the invention.

Figure 3 is a side elevation of a brush assembly for a pipe wrapping machine as described hereinafter.

In the drawing, a circular brush 10 having stiff bristles projecting radially from a central hub 11 is mounted on a shaft 12. One end of the shaft 12 projects beyond the hub 11 and is journaled through opposite sides of a U-shaped frame 13. A driven gear 14 is mounted on the shaft 12 within the U-shaped frame 13 and a pipe 15 with a tread of resilient material, such as rubber, is journaled about a shaft 16 extending through opposite sides of the frame 13 parallel with the first shaft 12. A driving gear 17 is mounted for free rotation on the shaft 16 and is attached to the roller 15 so that the roller and the driving gear rotate about the shaft 16 as a unit. The driving gear 17 is positioned opposite the driven gear 14 and is made so that the teeth of the two gears mesh and transmit rotary power from the roller 15 to the brush 10. A U-shaped bracket 18 is attached to the U-shaped frame 13 in a manner whereby the arms of the bracket are perpendicular to the shaft 16 and perpendicular to the adjacent edges of the sides of the U-shaped frame. Trunnions 19 projecting coaxially from the outer surfaces of the opposite sides of the U-shaped bracket 18 are journaled through the ends of the opposite sides of the U-shaped frame 13. The extending ends of the U-shaped frame 13 are slotted and substantial coaxial openings are provided through the slotted end for receiving bolts 20 to tighten the journals about the trunnions 19. A cylindrical post 21 is attached to the closed end of the U-shaped bracket 18 perpendicular to the shaft 16.

In Figure 1 the primary components of a pipe wrapping machine are shown wherein circular members 22 are accurately positioned about a common axis. Longitudinal supports 23 extend between and beyond the circular members 22 to which they are attached. Wheels 24, mounted in U-shaped brackets 25, extend inward of the circular members 22 and are supported by the longitudinal supports 23 by means of cylindrical posts 26. A sprocket 27, mounted on and intermediate the ends of the longitudinal supports 23, provides means for transmitting motive power for rotating the pipe wrapping machine. The tape head, carrying a roll of adhesive tape is not shown.

In the illustrated form of the invention the rollers 15 of the pipe cleaning machine replace three wheels 22 of a pipe wrapping machine. In this preferred construction it will be noted that posts 21 replace posts 26, and are journaled through longitudinal supports 23 of the illustrated pipe wrapping machine.

In operation, the roller 15 makes contact with the pipe 28 when the described brush assembly is attached to the pipe wrapping machine. The rotation of the latter about the pipe, and the helical travel of the wheels 15 rotate the brushes 10 in a direction forwardly of the travel of the machine. The three brushes depend from the longitudinal supports 23 of the pipe wrapping machine and contact the pipe 28 at positions approximately 120 degrees apart; each brush contacts and cleans a separate helical path about the surface of the pipe, which path overlaps the paths swept by the other two brushes.
The relatively narrow path swept by each brush permits the use of conventional cylindrical brushes in the construction of the invention and obviates any need for brushes with concave surfaces to helically conform with the cylindrical surface of the pipe. The journaled disposition of the posts 21 through the longitudinal supports 23 provides a simple and accurate means of adjusting and orientating the brush assemblies about the surface of the pipe. The referred to tape head, not shown, is secured to the machine in the usual manner, at the rear end thereof, and the pipe 28 to be cleaned is wrapped immediately after the brushing and cleaning operation.

The invention is not limited to the exemplary constructions herein shown and described, but may be made in many ways within the scope of the appended claim.

What is claimed is:

In combination with an annular carriage adapted to surround a pipe while rotating thereabout and advancing therealong, at least one brush unit mounted on said carriage, said brush unit comprising a frame, first and second parallel shafts journaled in said frame and canted to the central carriage axis so as to be transverse to the generally helical path of the brush unit, a friction roller mounted on the first shaft, a cylindrical brush mounted on the second shaft, both the roller and brush extending inwardly of the carriage to engage said pipe, and meshed gears mounted on and connecting said shafts, whereby a pipe sweeping rotation is imparted to the brush from the roller as the brush unit traverses a helical path about the pipe.

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