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APPARATUS FOR COATING PIPES AND THE LIKE

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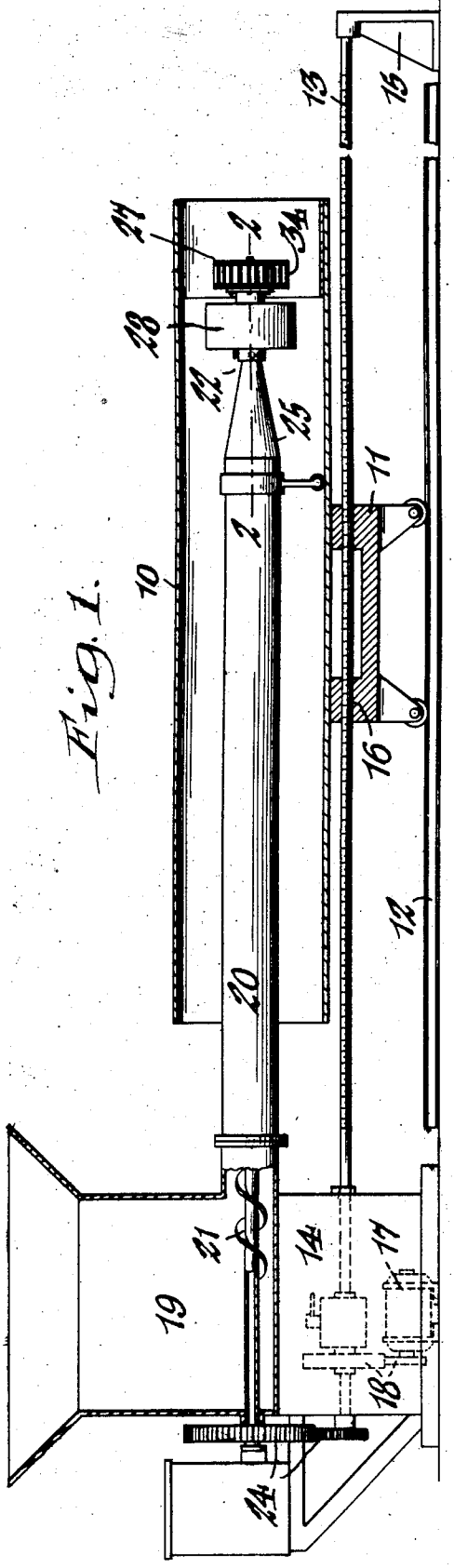


Fig. 1.

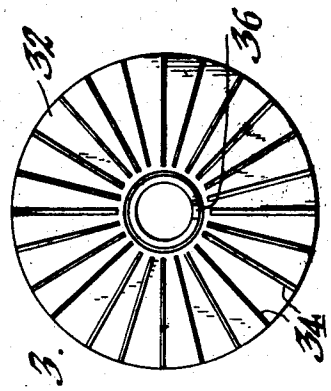


Fig. 3.



Fig. 4.

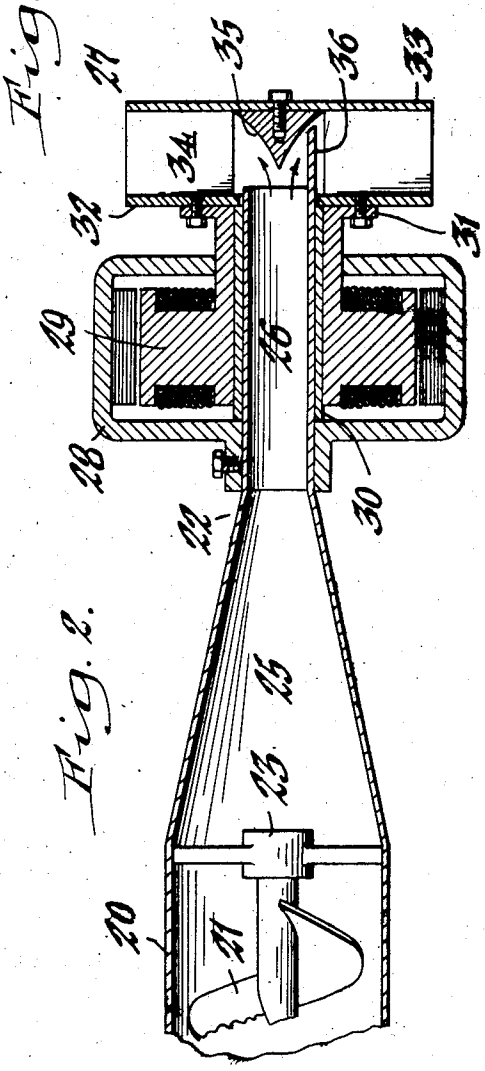


Fig. 2.

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APPARATUS FOR COATING PIPES AND THE LIKE

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3 Claims. (Cl. 91—44)

This invention relates generally to certain new and useful improvements in apparatus for applying a protective coating or lining to the inner walls of pipes, conduits and the like, but more particularly to improvements in the means for distributing the coating material onto the pipe wall.

It has for one of its objects to provide an apparatus of this character having a distributing means which is so designed as to provide for a continuous feed of the material without clogging and without interruption, whereby an even and uniform distribution of the coating material or mortar is applied to the pipe wall.

Another object of the invention is to provide a distributer head for pipe coating apparatus which is designed to provide for the free and uninterrupted passage of the mortar in an axial direction onto a distributing cone and thence between blades of a rotary dispenser for centrifugal application to the pipe wall.

A further object is to provide the distributer head with means for preventing a too free down or gravity flow of the mortar as it reaches the head and at the same time afford a means for eliminating clogging of the mortar at the center of the head.

In the accompanying drawing:

Figure 1 is a sectional side elevation of the coating apparatus showing my improved distributer head applied thereto. Figure 2 is an enlarged fragmentary longitudinal section thereof taken in the plane of line 2—2 of Figure 1. Figure 3 is a face view of the distributer head with the front plate thereof and its cone removed. Figure 4 is a fragmentary perspective view of the discharge end of the feed conduit.

Similar characters of reference indicate corresponding parts throughout the several views.

While my improved distributer or dispensing head may be applied to various types of pipe coating apparatus, it has been shown, by way of example, in connection with an apparatus for treating the inner walls of pipe lines of comparatively small diameter with a protective coating of plastic or mortar-like material.

Referring to Figure 1 of the drawing, 10 indicates a section of steel pipe which is supported for movement during the coating operation on a carriage 11 guided on suitable tracks 12. Any suitable means may be employed for transmitting motion to the carriage, that shown in the drawing consisting of a revolving power screw 13 journaled at one end in a base member or frame 14 and at its upper end in a bracket 15. Intermediate its ends this screw passes through threaded openings 16 in the carriage and an electric motor 17 mounted in the frame 14 and connected by interposed gearing 18 with the screw serves to turn the screw at a slow speed in one direction or the other.

Surmounting the frame 14 is a hopper 19 for receiving the mortar-like coating material and from the lower end of which projects a horizontally-disposed feed conduit 20 about which the pipe to be treated is concentrically disposed, so that as the pipe is moved axially by the carrier 11 relative to the conduit, the mortar is applied by my improved head to the inner wall of the pipe by centrifugal force. Contained in the conduit and extending part way into the hopper 19 is a screw conveyor 21 for propelling the coating material from the hopper to the front or discharge end 22 of the conduit. This feed screw is journaled at one end in the side wall of the hopper while its opposite end is journaled in a bearing member 23 arranged adjacent the discharge end of the conduit. As shown in Figure 1, this feed screw may be driven at a comparatively slow speed from the motor 17 by appropriate gearing 24. The discharge end of the conduit preferably includes a forwardly-tapering section 25 which constitutes a chamber into which the mortar is delivered by feed screw 21, and a cylindrical portion 26 of comparatively small diameter which is open at its forward end to discharge the mortar directly into the dispensing or applicator head indicated generally by the numeral 27. This construction assures a maximum amount of mortar to be contained in the discharge end of the conduit and a steady supply of mortar being delivered to the dispensing head to assure a uniform and accurate coating of mortar onto the pipe wall.

This dispensing head receives the material from the axial discharge end of the feed conduit-section 26 and is rotated at high speed to deliver the material by centrifugal force onto the pipe wall. While any suitable means may be employed for rotating the dispensing head, I have provided an electric drive unit in the form of an electric motor which is mounted directly on the conduit-section 26 and consists of a stator or field 28 bolted or otherwise secured to such section and a rotor or armature 29 free to revolve on a bearing sleeve 30 applied to said section, as shown in Figure 2. Connected to the flanged end 31 of this rotor is the distributor head which consists of axially spaced plates 32 and 33 between which are disposed suitably spaced radial

blades 34 forming intervening passages for the discharge of the material onto the pipe wall. These blades terminate short of the center or hub portion of the head and outwardly of the discharge opening of the conduit-section 26 to provide an uninterrupted flow of mortar to the center of the head. Applied to the head-plate 33 in opposing relation to the axial discharge of the feed conduit is a substantially conical deflector or distributor element 35 which intercepts the mortar discharged from the end of the conduit section 26 and directs it evenly and uniformly to the radial spaces between the blades 34 to thereby effect a uniform distribution of the mortar throughout the head and consequently assure a uniform distribution of the mortar about the pipe wall.

By this construction a continuity of feed of the mortar to the distributer head is maintained at all times without interruption, there being no obstruction in its path impeding such continuous feed of the mortar, and the conical distributer element assures the proper distribution of the material to all parts of the dispensing head. To prevent the normal tendency of the mortar dropping by gravity into the lower portion of the dispensing head, I provide the lower portion of the front end of the conduit section 26 with a baffle or intercepter 36 which extends into the hub portion of the dispenser head to a point short of the distributer element 35. This intercepter spans or bridges the companion inner end of the bladed portion of the head and thereby prevents a too free flow of the mortar by gravity into such portion of the head.

I claim as my invention:

1. An apparatus for lining pipe walls and the like, comprising a feed conduit for the coating material having an axial discharge, and a revolving dispensing member disposed in operative relation to said conduit-discharge for receiving and discharging the material centrifugally therefrom, the hub portion of said dispensing member having a deflector element thereon in axial relation with and in opposing relation to the conduit-discharge for intercepting the material and distributing it uniformly toward the inner portion of the dispensing member, the discharge end of said feed conduit having an extension at its bottom side projecting into the hub of said dispensing member adjacent its deflector element.

2. An apparatus for lining pipe walls and the like, comprising a feed conduit for the coating material having an axial discharge, and a revolving dispensing member disposed in operative relation to said conduit-discharge for receiving and discharging the material centrifugally therefrom, said dispensing member having means thereon outwardly of its hub and radially beyond said conduit-discharge for directing the material by centrifugal force onto the pipe wall, and a distributor element of substantially conical shape applied to the hub portion of said dispensing member in axially opposed relation to the conduit-discharge, the discharge end of said feed conduit having an extension at its bottom side projecting into said dispensing member between its material-directing means and its distributor element and constituting a baffle for retarding the gravity flow of the material into said member.

3. An apparatus for lining pipe walls and the like, comprising a feed conduit for the coating material having an axial discharge, a revolving dispensing member disposed in operative enclosing relation to said conduit-discharge for receiving and discharging the material centrifugally therefrom, and means extending from the bottom side of the discharge end of said conduit into the adjoining portion of said dispensing member for baffling the gravity flow of the material thereto.

ALBERT G. PERKINS.