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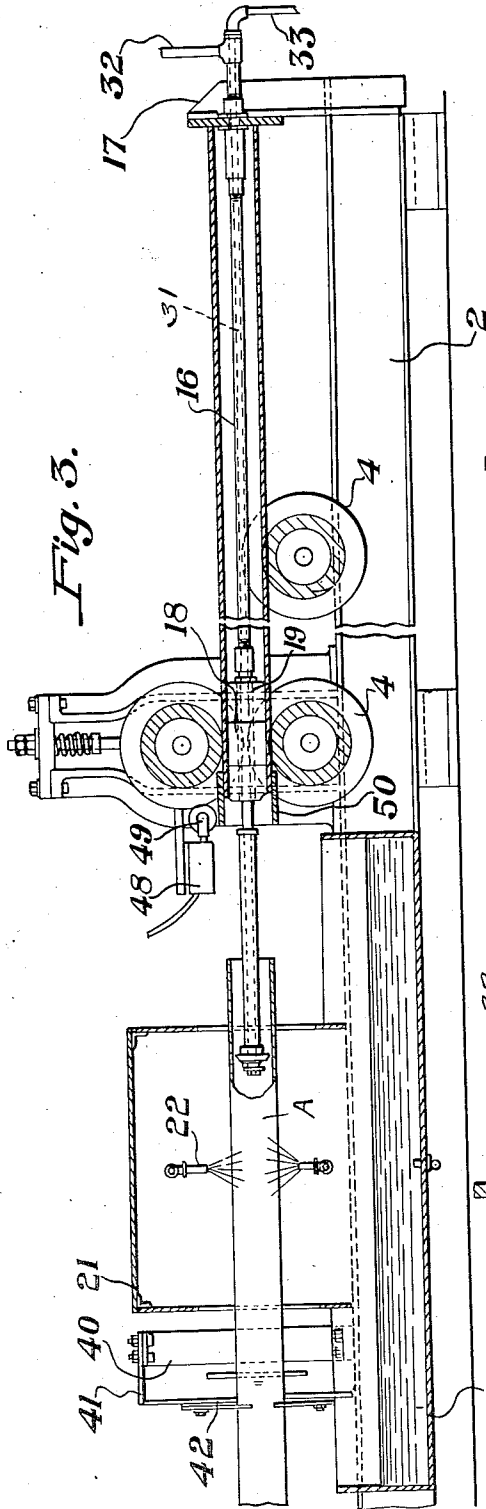
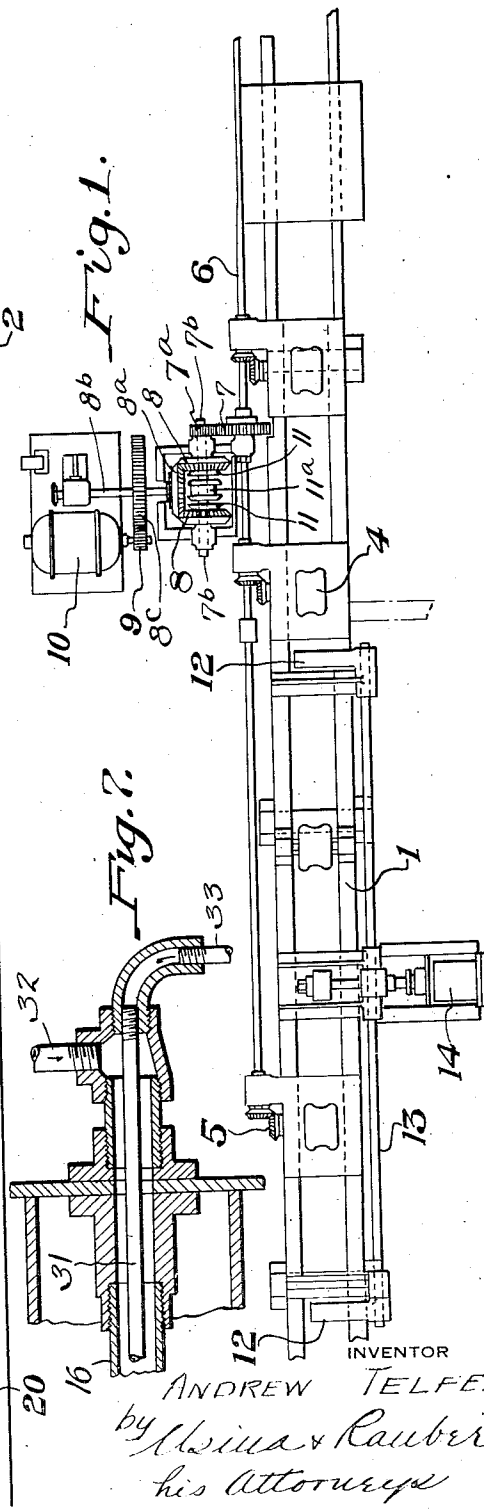
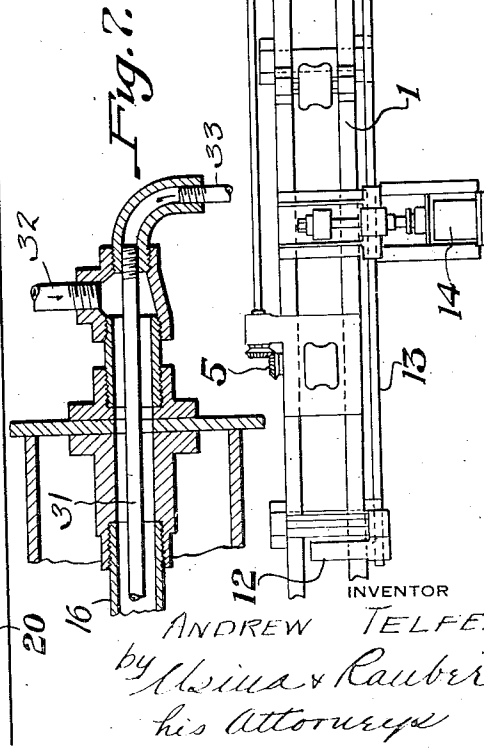
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PIPE COATING AND DRIFTING MECHANISM

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2 Sheets-Sheet 1



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UNITED STATES PATENT OFFICE

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PIPE COATING AND DRIFTING MECHANISM

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This invention relates to apparatus for interiorly and exteriorly coating piping or tubing with a protective material or compound and it is among the objects thereof to provide a combined coating and drifting machine which shall be adapted to drift the interior of the pipe simultaneously with the carrying out of the coating process.

Another object of the invention is to provide apparatus of the above designed character which shall be adapted to simultaneously coat the exterior and the interior of the pipe or to coat either the exterior or the interior by rendering the apparatus for coating one or the other inoperative, without necessitating the removal or alteration of any other part of the apparatus.

Another object of the invention is the provision of means for wiping the exterior coating of the pipe after it is applied, to remove the excess coating and to spread the coating smoothly and uniformly over the exterior of the pipe.

Another object of the invention is to provide simple and improved mechanism for carrying out the operations in a manner to expedite coating, wiping and drifting of the pipe, and to produce articles of uniform quality.

These and other objects of the invention will become more apparent from a consideration of the accompanying drawings in which like reference characters designate like parts and in which—

Figure 1 is a top plan view of apparatus embodying the principles of the invention.

Figure 2 is a cross-sectional view transversely of the coating box showing the exterior coating spray.

Figure 3 is a vertical section extending longitudinally of the apparatus, as shown in Figures 1 and 2.

Figure 4 is a cross-sectional view taken longitudinally of the interior coating mechanism.

Figure 5 is a sectional elevation view of the rolls and drift.

Figure 6 is an end elevation of the wiper employed exteriorly of the coating box.

Fig. 7 is a detail view of the air and fluid connections to the drifting bar.

With reference to the several figures of the drawings, the reference character 1 designates a roll conveyor comprising a supporting frame structure 2 upon which are mounted a plurality of journal brackets 3 in which conveyor rolls 4 are rotatably mounted, the rolls being connected through mitre beveled gears 5 with a shaft 6 extending longitudinally of the conveyor. The shaft 6 carries a drive gear 7 which is meshed with a pinion 7^a carried by a jack shaft 7^b. The jack shaft 7^b has bevel gears 8 mounted thereon for free rotation and constantly meshed with a bevel gear 8^a secured to a drive shaft 8^b. The shaft 8^b also carries a gear 8^c which is meshed with a pinion 9 on the armature shaft of a drive motor 10. Each of the bevel gears 8 is provided with a friction clutch part 11 which parts are adapted to be selectively engaged by a double faced clutch member 11^a carried by and slidable on the shaft 7^b. By shifting the clutch member 11^a from engagement with the clutch part 11 of one of the gears 8 to the clutch part 11 of the other gear 8 the direction of drive of the shaft 6 and conveyor rolls 4 is reversed, and the direction of travel of the pipe on the conveyor is also reversed.

As shown in Figure 1, a dumping mechanism is provided for discharging the pipe from the conveyor to skids or other conveying means, the dumping mechanism comprising a pair of arms 12 in spaced relation which lie in the path of the conveyor and which are mounted to a hinge bar 13 which is actuated through a fluid pressure device 14 to raise and lower the arms 12 in their pipe discharging movement.

As is more clearly shown in connection with Figure 3 of the drawings, a drifting bar 16 extends longitudinally of the conveyor and consists of a hollow pipe which is fastened to an end support 17. A drifting ball 18 is secured to the bar 16 and is of a specified size and dimensions for the particular pipe to be drifted and sprayed, the ball 18 being provided with guide ends 19. The drifting bar 16 extends beyond the ball 18 for the purpose

of mounting a spraying device for coating the interior of the pipe.

Mounted on the conveyor frame is a reservoir 20 containing the coating solution, the reservoir being open at its top and being provided with a coating box 21 in which are mounted a plurality of spray nozzles 22 for coating the exterior of the pipe, these nozzles being more clearly illustrated in connection with Figure 4 of the drawings. There may be any number of spray nozzles of which there are three shown in Figure 2. These nozzles are connected by inter-connecting pipe 23 to a feed line 24 which in turn is connected to a fluid pressure pump 25 having a passage 26 leading to the reservoir 20. The feed line 24 is provided with a by-pass 27 in which a pressure relief valve 28 is connected, the relief valve functioning to maintain a uniform pressure in the feed line 24 by bypassing excess fluid through the passage 27 back to the reservoir 20.

The interior spray mechanism is more clearly shown in connection with Figure 4 of the drawings and consists of a guard element 30 which is fastened to the end of the drifting bar 16 and which functions to protect the spraying device from contact with the interior of the pipe to be coated. As previously stated, the drifting bar is hollow and a hollow pipe 31 is mounted therein to conduct the coating material to the spraying mechanism. The drifting bar and pipe 31 extend beyond the end support of the conveyor and are connected to an air line 32 and a feed line 33 for the coating material which line may be connected with the reservoir 20 or to a separate source of coating fluid or compound.

The end of the drifting bar 16 is provided with a fitting 34 having ports 35 which are inverted at one end to impinge the air on the blades or vanes 36 of a revolving disk 37 which is in spaced relation with a second revolving disk 38, against which the coating material is directed by a nozzle 39. By spinning the disk in the manner described, the coating material is subjected to centrifugal action and thrown under pressure against the inner wall of the tubing to be coated, the amount of coating being regulated by controlling the air line and the line delivering the coating material so that there will be no excess coating to be drained or wiped from the interior of the pipe.

As shown in Figs. 3 and 6 of the drawings, the wiper is provided adjacent the coating box and consists of a supporting frame 40 having mounted thereon carry plates 41 on which are mounted a plurality of semi-circular wipers 42. The carry plates 41 are supported on oscillating arms 43 which are provided with springs 44 and 45 to normally bias the wipers to a vertical position. When, however, a pipe passes through the wipers they

are inclined against the tension of the springs thereby producing a wiping action on the exterior of the pipe.

The drifting apparatus, aside from the drifting ball 18, employs a pair of rolls, one of which constitutes a conveyor roll 4 which is driven through the beveled gear and drive shaft connections 4 and 6 respectively, in the manner hereinbefore explained, and the other roll is in vertical alinement with the bottom roll and rotates through gear wheels 47. By this construction the drifting apparatus is made a part of the coating apparatus and requires no additional floor space or extra operation for drifting.

A limit switch 48 is provided adjacent the drifting apparatus for open circuiting the drive motor when the flange of the tube reaches the roller of the drifting apparatus, the limit switch being operative through a roll 49 which engages a flange 50 on the pipe, as shown in Figure 3.

The operation of the combined coating and drifting apparatus is briefly as follows: A tube, designated A, is placed on the conveyor rollers 4 and the latter through their drive connections with the motor 10 carry the tube through the coating box and around the drifting ball in the direction of a bumping post fastened to the end support 17 of the conveyor. When the tube or pipe has traversed over the drifting ball, the tube flange 50 will contact the rollers 49 stopping the motor 10 and the operator, through the gear mechanism and clutch of the motor drive, reverses the direction of rotation of the conveyor rolls 4 causing the tube to return and pass through the coating box.

During its travel through the coating box, both the exterior and interior spray mechanisms may be operated to uniformly coat the interior and exterior of the tube and as the tube passes between the wipers 42 the exterior coating is wiped smoothly and excess coating material drips down into the reservoir 20. When the piping has been completely wiped, it is discharged from the conveyor through the arms 12 of the dumping mechanism and another pipe is laid on the conveyor and the cycle of operation is repeated.

The term "drifting" as used throughout this specification is meant to define the operation of forcing a pipe over a plug or ball of substantially the same outside diameter as the inside diameter of the pipe so as to scrape or cut off and remove accumulations of scale or foreign matter from the inside surface of the pipe.

It is evident from the foregoing description of this invention that the combined pipe coating and drifting apparatus described therein provides simple and efficient means for both coating and drifting piping in a minimum of time.

It is further evident that the apparatus

may function to simultaneously carry out the operations of external and internal coating of pipe and drifting the interior of the pipe, or it may be utilized to conduct any one of these operations separately.

Although one embodiment of the invention has been herein described and illustrated, it will be obvious to those skilled in the art that various modifications may be made in the details of construction without departing from the principles herein set forth.

I claim:

1. In a pipe spraying and drifting apparatus a fixed hollow bar supported at one end, means for conveying pipe longitudinally of said bar in reverse directions, a drifting head mounted intermediate the ends of said bar, a spray head mounted on the free end of said bar, a conduit extending through said bar for conducting liquid coating material to said spray head, said spray head having at least one disk mounted for rotation and adapted to distribute the coating material by centrifugal force, said disk being provided with vanes, means for supplying fluid under pressure to said hollow bar, and means for directing the fluid under pressure from said bar against said vanes to cause said disk to rotate.

2. In a pipe spraying and drifting apparatus a fixed hollow bar supported at one end, means for conveying pipe longitudinally of said bar in reverse directions, and a spray head mounted on the free end of said bar, said head comprising a fitting secured in the free end of said bar, a hollow spindle mounted in said fitting, a pair of spaced disks secured together and mounted for rotary movement on said hollow spindle, a conduit extending through said bar and connected to said spindle for conducting liquid coating material to said spray head, the one of said disks nearest said bar being provided with vanes, the other of said disks having an uninterrupted flat surface, means for directing a stream of coating material from said hollow spindle onto said last named disk, means for delivering fluid under pressure to the interior of said bar, and said fitting in the end of said bar being provided with nozzle openings adapted to direct said fluid against said vanes on said first named disks, whereby said disks will be rotated so as to distribute the coating material by centrifugal force.

3. In a pipe spraying and drifting apparatus a fixed hollow bar supported at one end, means for telescopically conveying pipe longitudinally of said bar, a spray head mounted on the free end of said bar, a conduit extending through said bar for conducting liquid coating material to said spray head, said spray head having at least one disk mounted for rotation and adapted to distribute the coating material by centrifugal force, said disk being provided with vanes, means for

supplying fluid under pressure to said hollow bar, and means for directing the fluid under pressure from said bar against said vanes to cause said disk to rotate.

4. In a pipe spraying and drifting apparatus a fixed hollow bar supported at one end, means for telescopically conveying pipe longitudinally of said bar, a spray head mounted on the free end of said bar, said head including a pair of spaced disks secured together and mounted for rotary movement, a conduit extending through said bar for conducting fluid coating material to said head, one of said disks being provided with vanes and the other of said disks having uninterrupted flat surfaces, means for directing a stream of coating material from said conduit onto said last named disk, means for delivering fluid under pressure to the interior of said bar, and means for directing said fluid under pressure from the interior of said bar against said vanes on said first named disk, whereby said disks will be rotated so as to distribute the coating material by centrifugal force.

In testimony whereof, I have hereunto set my hand.

ANDREW TELFER.

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