Nov. 16, 1937. J. J. BOAX 2,099,462

APPARATUS FOR DRYING PIPE COATINGS

Filed Aug. 26, 1936 3 Sheets-Sheet 1

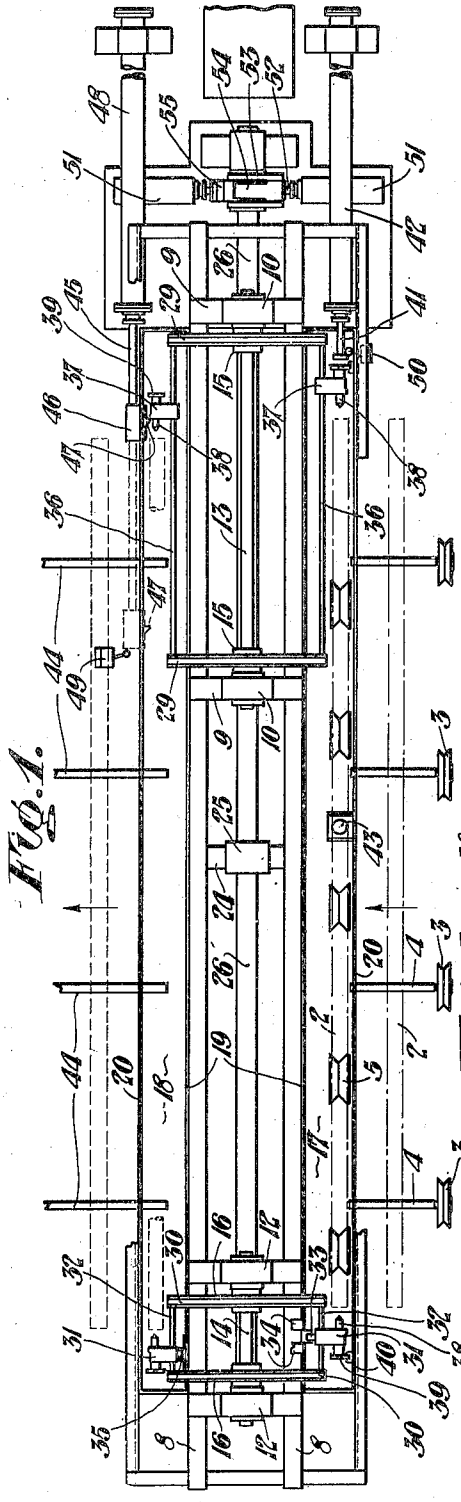


Fig. 1.

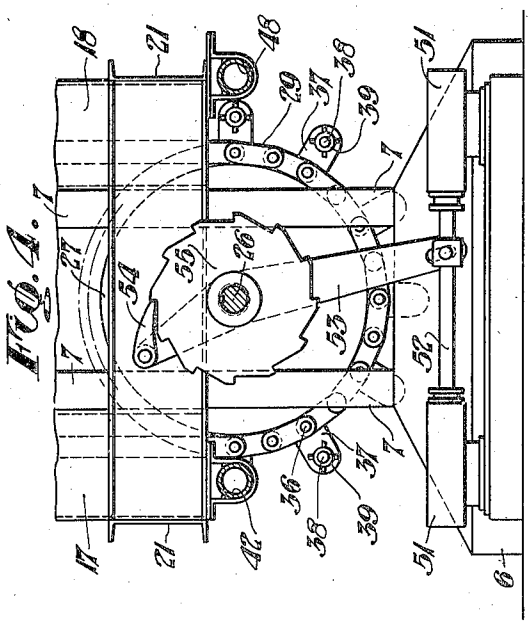


Fig. 4.

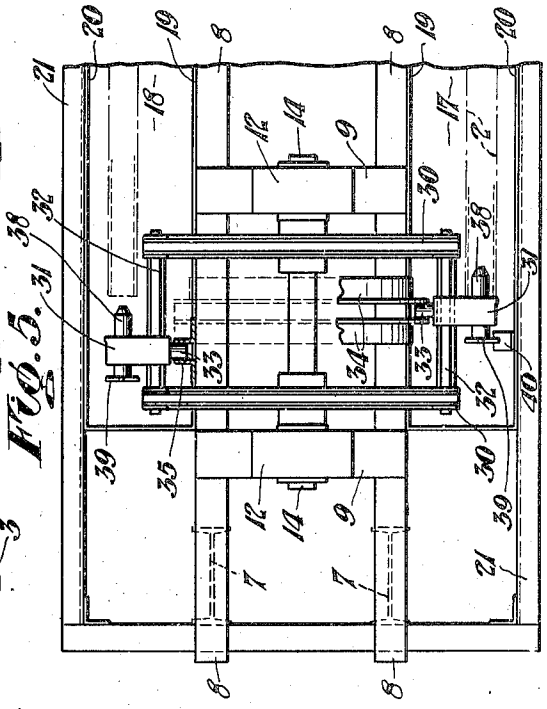


Fig. 3.

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APPARATUS FOR DRYING PIPE COATINGS

Filed Aug. 26, 1936 3 Sheets-Sheet 2

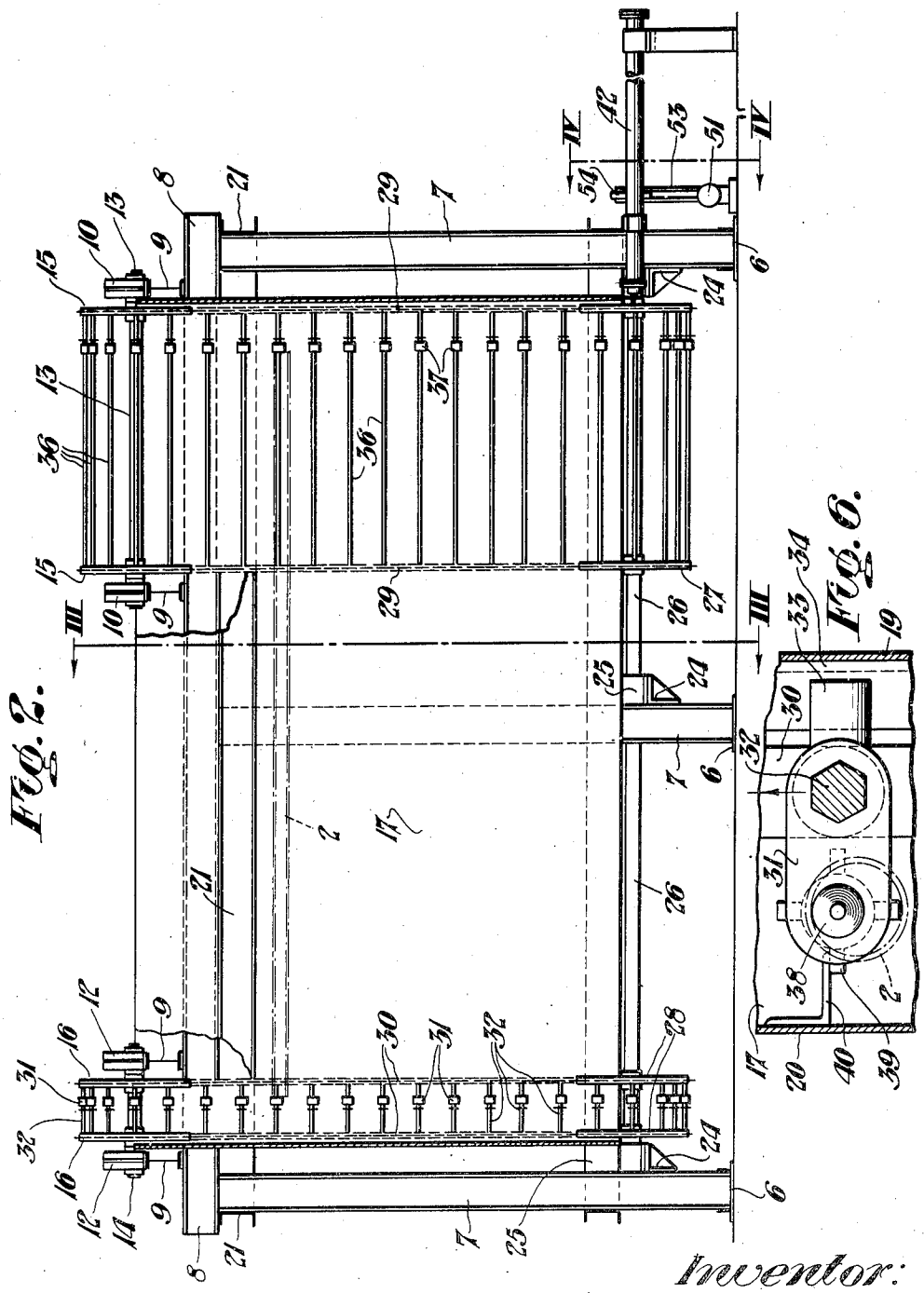


Fig. 2.

Fig. 6.

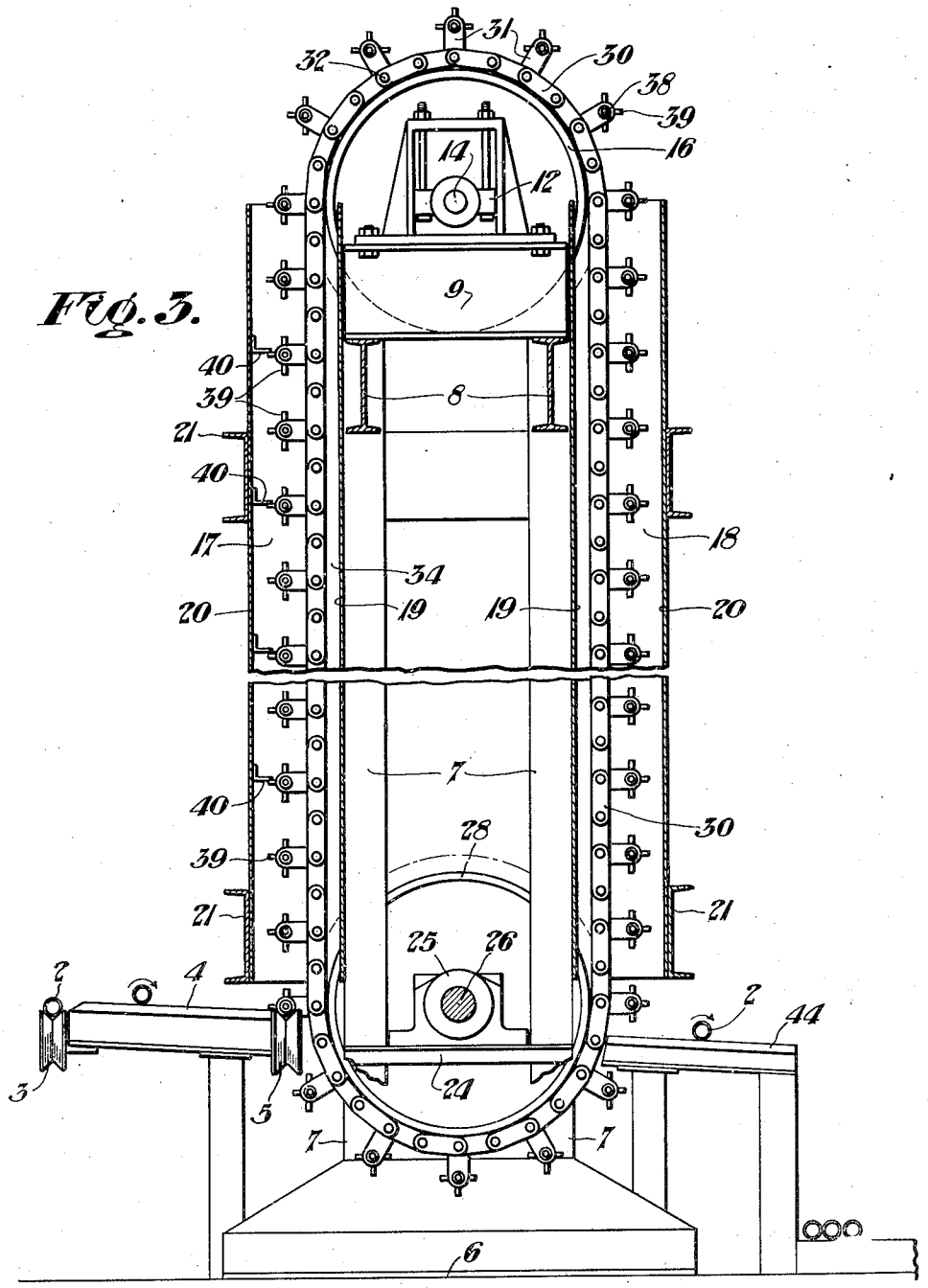
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APPARATUS FOR DRYING PIPE COATINGS

Filed Aug. 26, 1936 3 Sheets-Sheet 3

Fig. 3.



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UNITED STATES PATENT OFFICE

2,099,462

APPARATUS FOR DRYING PIPE COATINGS

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Application August 26, 1936, Serial No. 98,039

7 Claims. (Cl. 34—12)

This invention relates to an improved apparatus for drying coatings on tubular articles.

There has been considerable demand for pipes which have been painted or coated externally with protective or preservative compounds. Ordinary methods of drying these coatings are generally unsatisfactory particularly when the coating is a slow drying oil base material. A big objection to the ordinary method of racking the coated pipes is the tendency of the coating to run to the underside of the pipe and to congeal in globules. Another objection is that the coating is marred by contact of the pipe supports while the coating is drying.

An object of this invention is to provide an automatic apparatus for drying coatings smoothly and evenly on tubular articles.

Other objects and advantages will be apparent as the description proceeds, in which:

Figure 1 is a top plan view showing the operating means of a preferred embodiment of my invention.

Figure 2 is a side elevation partly in section.

Figure 3 is a cross-sectional elevation on line III—III of Figure 2.

Figure 4 is a sectional elevation on line IV—IV of Figure 2.

Figure 5 is an enlarged top plan of an end of apparatus.

Figure 6 is a detailed sectional view of the fingers which grasp the pipe.

In the drawings, the numeral 2 designates coated pipes delivered from the conveyer 3 over skidway 4 to a roller trough 5.

The drying apparatus is supported by base plates 6 and upright beams 7 on which are disposed longitudinal beams 8. Suitably mounted on said longitudinal beams 8 are transverse beams 9 adapted to support bearings 10 and 12 in which shafts 13 and 14 are rotatively mounted. Sprocket wheels 15 and 16 are secured to the respective shafts 13 and 14 for rotation therewith. The drying apparatus includes a heating chamber 17 and a cooling chamber 18 formed by walls 19 and 20. The inner walls 19 are secured to the upright beams 7, while the outer walls 20 are secured to beams 21. A current of heated air may be circulated through the heating chamber 17, by any suitable means, to facilitate oxidation of the coating material.

Cross-beams 24 are suitably secured to said upright beams 7 and provide a support for bearings 25 in which a shaft 26 is rotatively mounted. Sprocket wheels 27 and 28 are keyed to said shaft 26 and connected to the upper sprocket wheels 15 and 16 by sprocket chains 29 and 30. These sprocket chains are adapted to rotate in the drying apparatus.

Secured between the sprocket chains 30 are hexagonal bars 32 on which are reciprocably mounted slides 31. Pipe engaging members 38 rotatively mounted on slides 31 are adapted to contact the inner periphery of said pipes 2 for the purpose of supporting them while they are being carried by the sprocket chains through the drying apparatus.

The slides 31 are provided with an integral guide lug 33 adapted to travel in a guideway 34, offset at 35, at the outlet side of the drying apparatus whereby the pipe engaging members 38 are disengaged from the pipes 2 prior to discharging the pipes from the cooling chamber 18.

Secured between sprocket chains 29 are hexagonal bars 36 on which are reciprocably mounted slides 37. The pipe engaging members 38 are rotatively mounted on the slides 37. Keyed to each of the pipe engaging members 38 are star wheels 39 adapted to contact arms 40 in said heating chamber 17. The pipe engaging members 38 are moved into engagement with the inner periphery of said pipes 2 by the forward movement of piston rod 41, in air cylinder 42, actuated by a switch 43 being closed in the roller trough 5 upon the pipe 2 being delivered thereto.

A skidway 44 is provided at the discharge side of the drying apparatus for removing the pipes after the coat or coatings have been dried thereon. Adjacent the outlet of the cooling chamber 18 there is provided a piston rod 45 having an enlarged portion 46 and a lateral extension 47. The piston rod 45 is connected to a cylinder 48 and is moved forwardly simultaneously with the piston rod 41 when the switch 43 in the trough 5 is closed to affect the operating mechanism for moving the pistons 41 and 45 forwardly. At the forward end of the stroke of the piston rod 45, the projecting portion 46 engages a switch 49 which actuates cylinders 42 and 48 to reverse the movement of the piston rods 41 and 45. On the return stroke of the piston rod 45, the lateral projection 47 engages the pipe engaging members 38 to remove said members from the pipe 2 prior to discharging the same from the chamber 18.

The piston rod 41 at approximately the end of its stroke actuates a switch 50 which causes opposed cylinders 51 to reciprocate a piston rod 52 connected thereto. An arm 53 pivotally connected to the piston rod 52 is mounted on the shaft 26 and is provided with a pawl 54 adapted to en-

gage a ratchet wheel 55 rigidly mounted on said shaft 26. The pawl engaging the teeth of the ratchet rotates the shaft 26 a partial revolution and advances the pipes 2 intermittently through the drying chamber 17. Each successive partial rotation of the shaft 26 brings a pair of opposed fingers 38 into position to grasp another pipe 2 as it comes into position on the roller trough 5 actuating the switch 37 which operates the cylinders 42 and 48.

Thus, it will be seen that the present invention produces a continuous automatic operation and that the outer coated surfaces of the pipes 2 do not come in contact with anything from the time they are delivered to my improved drying apparatus until they are discharged. Also, during the intermittent travel of the pipes 2 through the drying chamber, they are given a series of partial rotations by reason of the star wheels 39 contacting the arms 40. This insures a smooth and even coating on the pipes as globules are prevented from forming on the underside of the pipes while the coatings are being dried thereon.

While I have shown and described a specific embodiment of my invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention, as defined by the following claims.

I claim:

1. An apparatus for drying pipe coatings comprising a pipe drying chamber, two rotatable conveyer chains in said chamber, means on said chains for gripping the ends of coated pipes, means for imparting intermittent motion to said chains, means for intermittently rotating said pipe while being advanced through said drying chamber and means for releasing said pipe supporting means at the discharge side of said drying chamber.

2. An apparatus for drying pipe coatings comprising a pipe drying chamber, means for conveying said pipe through said drying chamber, means carried by said conveying means for supporting said pipe in its travel through said drying chamber, means for rotating said pipe on said conveying means during its travel through said drying chamber and means for releasing said pipe from said supporting means at the discharge side of said pipe drying chamber.

3. An apparatus for drying pipe coatings comprising a pipe drying chamber, means for conveying said pipe through said drying chamber, supporting means for said pipe carried by said conveying means, means for rotating said pipe on said supports during its travel through said drying chamber and means adapted to release said pipe from said supporting means prior to the discharge of said pipe from said drying chamber.

4. In an apparatus for drying coated pipe including a drying chamber, conveying and supporting means for said pipe, means for periodically rotating said coated pipe on said supporting means during its travel through said drying chamber and means for moving said pipe supporting means at periodic intervals so as to engage the pipe ends at the entrance end and disengage said pipes prior to reaching the exit end of said drying chamber.

5. In an apparatus for drying coated pipe including a drying chamber, means for conveying said coated pipe through said drying chamber, supporting means for said pipe positioned at each end of said conveying means and coincident to each other and means adapted to engage and disengage said pipe supporting means with the opposite ends of said pipes.

6. An apparatus for drying pipe coatings comprising a vertical drying chamber having an open bottom, means for feeding said coated pipes to said drying chamber, means for supporting said pipes at opposite ends without touching the coated surface, means for conveying said coated pipes through said chamber, said pipe supporting means carried by said conveying means, means for intermittently engaging and disengaging said pipe supporting means with the ends of said pipe for loading said pipes at one end and discharging said pipes at the other end of said drying chamber, means for introducing a current of air into said chamber for drying the coating on said pipes, and means for intermittently rotating said pipes while being advanced through said drying chamber, the disengagement of said supporting means from the opposite ends of said pipes being prior to the discharging of said pipes from said drying chamber.

7. An apparatus for drying pipe coatings comprising a drying chamber, a pair of spaced sprocket chains rotatably mounted within said drying chamber, cooperative means on each sprocket chain for supporting said coated pipes, means carried by said supporting means adapted to engage means carried by said drying chamber for intermittently rotating said pipes about their own axis as they pass through said drying chamber and means for simultaneously moving said cooperative means on each chain to engage the opposite ends of a pipe at the entrance side of the drying chamber and disengage the ends of a pipe prior to said pipe reaching the discharge end of said drying chamber whereby said pipes may be engaged and disengaged by said supporting means between the intermittent movements of said chains.

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